6-001

Title: Effect of bedside pharmacist rounding on hospital consumer assessment of healthcare providers and systems (HCAHPS) scores in a community hospital's progressive care unit

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Purpose: The purpose of this study is to determine whether bedside pharmacist rounding will improve HCAHPS scores in the progressive care unit at a community hospital. In order to address the four medication-related questions included in the HCAHPS survey, pharmacists will discuss the purpose of medications, describe potential side effects, assess whether the patient is experiencing any pain, and address pain management with each patient on a daily basis.

Methods: This study will be submitted to the Institutional Review Board for approval. Pharmacists will participate in bedside, face-to-face interactions with each patient on the progressive care unit on a daily basis to discuss the purpose and potential side effects of new medications, address pain status and pain management, and answer any other medication related questions. Eligible patients will be sent the HCAHPS survey to complete between 48 hours and 6 weeks after discharge in accordance with the HCAHPS rules and regulations. A 3 month period of HCAHPS scores for the progressive care unit prior to implementation of pharmacist rounding will be compared to scores for a 3 month period after implementation of pharmacist rounding to determine whether scores increase, decrease, or remain the same. The number of pharmacist interventions prior to and after implementation of pharmacist rounding will also be compared during the same time frames. Pharmacist job satisfaction will be assessed from a survey distributed prior to and 3 months after implementation of pharmacist rounding.

6-002

Title: Implementation of medication therapy management services by pharmacy residents at a community ambulatory clinic

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Purpose: Medication Therapy Management (MTM) is a term used to describe a wide array of patient care services provided by pharmacists that optimize therapeutic outcomes for individual patients. The primary objective of this pharmacy resident research project is to perform a pilot program to optimize medication therapy management for patients with diabetes in an ambulatory care community clinic. Secondary objectives will include the number of medication related issues that were identified, the number of interventions accepted by the practitioners and finally, patient and practitioner satisfaction.

Methods: IRB approval pending. Residents will be contacting patients via telephone one week prior to their scheduled clinic visit. At that time, medication reconciliation will be conducted. The resident will then complete a medication related action plan and identify any issues that should be addressed by the provider. These forms will be placed in the patients chart for review by the provider at the time of the patients appointment. Residents will be recording the patients hemoglobin A1c (HgA1C) values at the time of there scheduled visit. A week after the patients visit, the resident will provide a follow up phone call to the patient and address any questions or concerns the patient may have after their visit. A retrospective chart review will be done after four months to determine the number of interventions that were accepted by the practitioners. In addition, the patients repeat HgA1C will be recorded and compared to their previous one to determine if the residents involvement in MTM had an impact on the patients lab results. The success of this pilot will be measured by patient and practitioner satisfaction, the number of medication related issues that were identified and accepted by the practitioners, and patients HgA1C.

6-003

Title: Medication utilization evaluation of crotalidae polyvalent immune fab antivenom at two medical centers in northern Colorado

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Purpose: Crotalidae polyvalent immune fab (FabAV) is administered to patients with envenomation secondary to a Crotaline snake bite initially to prevent or reduce tissue destruction and subsequently to reduce recurrent coagulopathy. Inappropriate use of this agent can lead to adverse patient consequences and a substantial financial burden for both the patient and health system. The purpose of this retrospective medication use evaluation is to characterize the utilization of FabAV at Poudre Valley Hospital and Medical Center of the Rockies and to establish ways to provide optimal, safe, and cost-effective treatment of patients with FabAV.

Methods: Patients who received FabAV therapy from March 2000 through September 2013 were evaluated for age, height, weight, sex, medical insurance status, location of bite (both physical and geographical), envenomation characteristics, time from envenomation to FabAV administration, initial severity, coagulation laboratory tests, substance abuse prior to bite, and cost to the institution. In addition, the quantity of initial and total FabAV vials required, length of hospital, length of intensive care unit stay, and discharge disposition were collected. The data was then analyzed for use.

Results: Over the last 13.5 years, 47 patients were treated for rattlesnake envenomation and a total of 582 vials of FabAV were administered at the two medical centers. The average age of the patients was 35 years of age (range 5-72 years). The majority of patients were male at 77%. The average number of FabAV vials initially given was 4.47 (range 0-12 vials) and the average total number of vials given was 12.38 (range 4-22 vials.) Thirty-two patients presented with an initial envenomation severity of moderate (68%), eleven were severe (23%) and four had minimal (8.5%) symptoms. The average length of stay was 2.89 days with an average intensive care unit stay of 1.24 days. Lab values obtained during treatment varied, but all patients had at least one value of PT/INR, aPTT and platelets. The frequency and duration of lab values was also noted to be inconsistent. From the year 2000 through 2013 the cost of a vial of FabAV increased from $763 to $1,970 (>250% increase.) On average the patient charge of one vial of FabAV increased by approximately 12% every year.

Conclusion: Results from the medication use evaluation demonstrate a need for the development/and or application of a standardized protocol, including both treatment with FabAV and laboratory monitoring, to help guide physicians in the prescribing of FabAV in order to help minimize cost and optimize patient care.

6-004

Title: Impact of a pharmacist-led asthma education program for elementary school educators

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Purpose: Asthma is a respiratory disease that can be exacerbated by several causes or triggers. Immediate actions of bystanders and first responders are critical to the outcome of asthma patients, especially children. In schools, teachers are often the first responders to an asthma exacerbation, but rarely receive asthma management education. The purpose of this study is to design, implement, and evaluate the impact of an asthma education program provided to elementary school educators. The program will teach critical knowledge about the presentation of asthma and important steps to help teachers identify and manage an asthma exacerbation.

Methods: This is a quality improvement study encompassing seven school districts within the Colorado Springs, Colorado area. Starting in November 2013, the authors will solicit individual school districts to participate in the asthma education program for teachers in their respective elementary schools. Dates, times, and number of class sessions will be established with each school over a three month period. The one hour education session will be divided into three parts. A pre-course assessment will be administered to participating educators to determine the groups baseline asthma knowledge. The pharmacist will present the education, focusing on asthma pathophysiology, pharmacology and role of asthma medications, signs and symptoms of an asthma exacerbation, and proper exacerbation management including administration technique of metered-dose inhalers and asthma action plans. The education will be followed by a post-course assessment. Both assessments will be based upon information covered within the scope of the education program. Data from both pre- and post-course assessments will be analyzed and compared to determine the impact of the education program and if this education should be offered annually.

6-005

Title: Medication use evaluation of enoxaparin after low molecular heparin formulary conversion

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Purpose: Enoxaparin (Lovenox) is a low molecular weight heparin (LMWH) widely prescribed for several different indications. As a cost savings measure, Denver Health Medical Center recently switched the formulary preferred LMWH from dalteparin (Fragmin) to enoxaparin. A medication use evaluation was conducted to assess the appropriateness of dose, indication, and adverse events of enoxaparin across all adult inpatients at our institution during the first three months of the LMWH formulary switch.

Methods: This medication use evaluation is a retrospective quality assurance project conducted in a large academic safety net medical center. Patients were identified using the hospitals electronic medical record system medication dispensing reports. All adult inpatients who received enoxaparin from April 11, 2013 through July 11, 2013 were identified. Patients with missing data were excluded. A random sample of patients divided by prophylaxis and treatment doses were selected for chart review. A data collection form for medical record abstraction was designed to collect: age, sex, weight, height, serum creatinine, enoxaparin dose, enoxaparin administration history, indication for enoxaparin, reported adverse drug reactions, discharge anticoagulation plan, and place of discharge. Appropriateness of enoxaparin use will be determined based on indication, dose, and renal function. The remaining data that will be collected will be used to evaluate safety and whether appropriate monitoring and follow-up was done. Data will be analyzed using descriptive statistics (means, percentages, and ranges) to quantify hospital use based on indication, appropriateness of use, and adverse events associated with enoxaparin. This medication use evaluation received exempt status by the Institutional Review Board due to its quality assessment nature. Results of this evaluation will be presented at the meeting.

6-006

Title: Implementation of pharmacist discharge counseling to reduce heart failure readmission rates

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Purpose: The Centers for Medicare and Medicaid Services (CMS) spends an estimated $12 billion annually on hospital readmissions that are potentially preventable. Of these, heart failure is the leading condition for hospital readmissions and has the greatest potential for improvement. Recently, the Affordable Care Act established the Hospital Readmissions Reduction Program. This program reduces CMS payments for hospitals with a 30-day readmission rate higher than the national average to incentivize providing quality care. This study measures the effect of pharmacist discharge counseling on 30-day readmission rates for patients with heart failure as our primary endpoint.

Methods: This is a pre- and post-study with a 3-month control period and a 3-month intervention period. Patients admitted with a new or prior diagnosis of heart failure will be identified through the electronic medical record. The following data will be collected for analysis from the pre and post arms of the study: hospital readmission rate within 30 days, number of heart failure patients admitted and discharged from the hospital within the study periods, CMS heart failure quality measure compliance, and Memorial Hospital emergency department visit rates post-discharge in patients with heart failure at 48 hours and 30 days. The following data will be collected only during the intervention period: time spent preparing counseling, counseling, and medication class counseled. During the intervention period, pharmacists will provide counseling to heart failure patients prior to discharge. This will complement counseling provided by nursing staff. Secondary endpoints include time spent counseling, costs associated with counseling, and CMS heart failure quality measure compliance. Average pharmacist time spent counseling will be used as a program cost estimate. The results of this study will guide hospital wide implementation of pharmacist discharge counseling. This study will be submitted to the Institutional Review Board for approval.

6-007

Title: Impact of ASAP and pharmacist order review on pharmacist driven medication interventions and medication errors in the Emergency Department

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Purpose: Evaluate the impact of Epic's ASAP module and pharmacist order review on the number of pharmacy driven interventions and medication errors made in the emergency department of a community hospital.

Methods: An observational study looking at the impact of an integrated emergency department EMR and the implementation of pharmacist review for medication orders originating in the emergency department of a busy community hospital. Pharmacist driven interventions will be tracked prior to and after software implementation and analyzed accordingly. Intervention categories include those established in previous studies (adverse reactions, drug interactions, duplicate therapy, wrong drug, wrong dose, wrong frequency, wrong route, wrong time, medication indicated but not prescribed, lack of indication, medication allergy, other) plus interventions that address core measure compliance (AMI, pneumonia, CHF) as they relate to medications prescribed in the emergency department. All interventions will be assigned a potential severity by the same investigator and acceptance of interventions by prescribing physicians will be collected.

6-008

Title: Computerized prescriber order entry (CPOE): impact on the access to and usage of intravenous opiates for acute pain in the community hospital setting

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Purpose: The purpose of this study is to assess the effect of Computerized Provider Order Entry (CPOE) on the access to and the usage of intravenous (IV) opiate medications in patients with acute pain in a community hospital.

Methods: This study will be submitted to the Institutional Review Board for approval. This study will retrospectively track the turnaround times of IV opiate medication orders during a pre-CPOE and post-CPOE investigation period. In March 2014, CPOE implementation will transform the written order with pharmacist transcription model into an electronic ordering and pharmacist verification model. The primary outcome measures will be comprised of two sets of data: the time from physician order to medication availability on the patients electronic medication profile and the time from availability on the patients electronic medication profile to the first medication administration to the patient. For the secondary outcome, the number of first dose IV opiate medications acquired via override from the automated dispensing cabinet will be collected.

6-009

Title: Clinical Outcomes with Daptomycin Therapy for Bacteremia and Osteomyelitis

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Purpose: This study aims to evaluate the rates of clinical success and overall safety of patients treated with daptomycin for bacteremia or osteomyelitis

Methods: All patients at the VA St. Louis Health Care System treated with ≥ 7 days daptomycin for osteomyelitis (OM) or bacteremia between 1 January 2010 and 31 December 2012 were identified. Patients treated with vancomycin or linezolid for >7 days prior to daptomycin initiation, and those who received vancomycin, linezolid, or daptomycin in the 30 days prior to the incident infection for an unrelated infection were excluded from the analysis. Clinical success for OM was defined as the absence of the need for additional antimicrobial therapy or unplanned surgical interventions within 6 months after daptomycin discontinuation, and clinical success for bacteremia as at least 1 negative blood culture within 72 hours of daptomycin initiation and the absence of the need for additional antibiotics in the 14 days after daptomycin was initiated.

Results: .Overall, 44 patients met inclusion criteria and 52.2% (23/44) achieved clinical success. Patients culture-positive for MRSA had a success rate of 91% (10/11), while 50% (8/16) of those with VRE achieved clinical success. Forty-eight percent (12/25) of patients treated for OM and 56.3% (9/16) of patients treated for bacteremia met criteria for clinical success; 2 of 3 patients with both OM and bacteremia achieved clinical success.

Conclusion: .The results of this study suggest daptomycin may be associated with a higher rate of clinical success for bacteremia or OM associated with MRSA than VRE.

6-010

Title: Impact on antibiotic selection following implementation of an uncomplicated cellulitis and subcutaneous abscess protocol in a community hospital

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Purpose: For many skin and soft tissue infections (SSTI) the causative pathogen is unknown due to lack of cultures; however, Streptococcus pyogenes and Staphylococcus aureus are implicated as the most common pathogens. Therefore, appropriate empiric treatment indicates narrow spectrum coverage of these two organisms. The primary objective of this study is to examine prescriber adherence to a pharmacist-initiated cellulitis and subcutaneous abscess protocol regarding initial antibiotic selection, with a goal to preserve use of broad spectrum antibiotics. Secondary objectives include assessing the impact of protocol adherence on total days of therapy and antibiotic cost avoidance.

Methods: This study will be submitted to the Institutional Review Board for approval and will be conducted in two phases. The first phase will be a randomized, retrospective chart review of adult patients admitted with uncomplicated cellulitis or subcutaneous abscess, excluding patients admitted to the intensive care unit, those with complicated cellulitis, bites, diabetic ulcers and others. The initial antibiotic selection will be recorded, and the days of therapy and total antibiotic cost will be calculated to serve as a comparator group. The second phase will begin with individual education to hospitalists and providers in the emergency department, detailing the protocol and treatment recommendations. Then, a prospective, post-education assessment of antibiotic selection, days of therapy, and antibiotic cost will be conducted for a group of patients meeting the same inclusion/exclusion criteria. The outcome of this study will guide hospital wide implementation of the protocol.

6-011

Title: Medication use evaluation of long-acting, injectable antipsychotics in an urban, safety net hospital

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Purpose: Long-acting, injectable antipsychotics provide valuable treatment alternatives in patients who cannot take oral medications as they require less frequent administration and enhance compliance. However, their use is associated with additional safety and economic considerations. The objective of this medication use evaluation is to describe the usage patterns of two long-acting injectable antipsychotics, Invega Sustenna (paliperidone palmitate) and Risperdal Consta (risperidone microspheres) in our hospital.

Methods: Study objectives will be achieved through retrospective data collection. Inpatients with an order for paliperidone palmitate or risperidone microspheres placed between June 2012 and June 2013 are eligible for study inclusion. Once the population is identified, medical records will be reviewed for medication dose, frequency, start/stop date of therapy, indication and rationale for use, if the medication was initiated as an inpatient or a continuation of outpatient therapy, adverse effects, and location of discharge and follow-up care. Data will be analyzed by simple statistics. Results will help identify areas of improvement in our current practice. Subsequent actions could include formulary additions or restrictions, provider education, medication use guidelines, or no further actions if it is determined that current usage is appropriate. Additionally, the results will potentially guide formulary alignment with outpatient clinics to ensure patients are stabilized on anti-psychotic therapy with minimal interruptions. This evaluation does not meet the definition for human research and has been approved for exemption by the Institutional Review Board. Results of this evaluation will be presented at the meeting.

6-012

Title: Impact of a real-time computer surveillance monitoring system on pharmacist interventions in sepsis patients in the ICU

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Purpose: This research project aims to implement Vigilanz, a real-time computer surveillance monitoring system, to aid pharmacists in their daily evaluation of ICU patients with a primary or secondary diagnosis of sepsis. Pharmacists will utilize this tool and their clinical knowledge to make recommendations during multidisciplinary rounds regarding sepsis bundle set compliance in treatment of sepsis patients. The primary purpose of this study is to evaluate how pharmacists may impact the length of stay of ICU sepsis patients through increased bundle set compliance.

Methods: Pharmacists will be intensely educated regarding sepsis, sepsis bundle compliance, and how to utilize Vigilanz. Vigilanz has limitations in programming but can identify when patients have elevated lactate levels (≥2.2) and current antibiotic use, in addition to leukocytosis (WBC> 12,000 μL1) or leukopenia (WBC count < 4000 μL1) or neutrophil band count >10%. Also a sepsis management algorithm will be provided to pharmacists. Utilizing these resources in addition to their normal processes, pharmacists will make appropriate interventions during multidisciplinary ICU rounds in regards to the management of sepsis patients. Pharmacists will document their interventions into EPIC. This study will compare the average length of ICU stay of sepsis patients two months prior and subsequent to Vigilanz implementation, pharmacist education, and sepsis algorithm use.

6-013

Title: Achieving pain control: effects of a pharmacist initiated conversation

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Purpose: Pain is a common experience for many hospitalized patients and achieving optimal pain control is a perennial issue despite advancements in technology and treatment options. The objective of this study is to determine if a pharmacist-initiated conversation, in the community-hospital setting, will improve patients' satisfaction with their pain control.

Methods: This study will be submitted to the Institutional Review Board for approval. Patients admitted/transferred to a pre-determined Medical-Surgical Unit at a community hospital will be identified daily by a clinical pharmacist for inclusion in the study. The pharmacist will have a standardized conversation with each patient regarding his or her pain control. If the patient requires additional pain management attention following the conversation, a standardized communication form will be left in the patient's chart for the physician. Participating patients will have their profiles reviewed for age, gender, reason for admission, past medical history, pain levels, pain medications administered, length of stay, and responses to pharmacist conversation questions. Patients discharged from the same unit one year prior will be identified though medical records and their profiles will be reviewed for the same criteria. Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey scores will be collected from a random sample of discharged patients in each study population and compared.

6-014

Title: Insulin glargine dosing per pharmacy in the intensive care unit

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Purpose: Several studies have shown that basal bolus insulin dosing improves glucose control in hospitalized patients. These studies were limited in that none of them were performed in the intensive care patient population. The primary objective of this study is to modify an existing insulin glargine per pharmacy protocol to optimize glucose control in the intensive care patient population to target blood glucose values of 150 -180 mg/dl. Secondary objectives will include evaluating the number of hypoglycemic events and the number of insulin glargine doses needing to be held in order to avoid hypoglycemic episodes.

Methods: IRB approval pending. Currently, there is an insulin glargine dosing per pharmacy protocol established at Exempla Good Samaritan Medical Center in the intensive care unit (ICU). Patients receiving more than 15 units of sliding scale insulin (SSI) qualify for the dosing per pharmacy protocol. A medication use evaluation (MUE) identified that ICU pharmacists were dosing insulin glargine inconsistently. This resulted in a failure to optimize glucose control in ICU patients and glucose values remained greater than 180 mg/dl for several days. Based on the MUE, a standardized insulin glargine dosing per pharmacy protocol was created. The protocol includes the percent of insulin glargine that will be initiated based on the patients previous 24 hour SSI use. Patients will remain on SSI and the 24 hour use will be evaluated daily to determine if insulin glargine doses should be increased or decreased to obtain targeted blood glucose ranges of 150-180 mg/dl. At the conclusion of this study, patients blood glucose values will be evaluated to determine if the modified protocol achieved targeted blood glucose values, while also evaluating the number of hypoglycemic events and the number of insulin glargine doses needing to be held in order to avoid hypoglycemic episodes.

6-015

Title: Impact of a bleeding risk assessment model on the use of bivalirudin for percutaneous coronary intervention (PCI)

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Purpose: Bleeding is a common complication in patients undergoing PCI. Unfractionated heparin (UFH) has been the standard anticoagulant used for this indication. However, bivalirudin use has recently increased due to its reduced bleeding risk. To optimize bivalirudin utilization in the catheterization lab, a two-tiered bleeding risk assessment model was implemented. This model guides the selection of the appropriate anticoagulant by reserving bivalirudin for high-risk patients and UFH for low-risk patients based on a calculated bleeding risk score. The purpose of this study is to evaluate the impact this model has had on the use of bivalirudin in the catheterization lab.

Methods: Patients 18 years and older, who have undergone PCI at the main campus of a 1541 bed tertiary medical center, will be identified using the CathPCI Registry database. Data will be collected on 50 patients who underwent PCI for a three-month period prior to the implementation of the bleeding risk assessment model and 50 patients for a three-month period after its implementation. Patients will be excluded if they have a history of heparin-induced thrombocytopenia or a diagnosis of ST-segment elevated myocardial infarction (STEMI). To evaluate bleeding risk, age, renal function, comorbidities, and prior history of PCI will be collected. Adherence to the model will be determined by evaluating the bleeding risk score and dose of the selected anticoagulant. To assess bleeding outcomes, patients will be analyzed for the duration of hospitalization after catheterization, hospital readmission after the procedure, time from PCI to re-admission and the PCI-related re-admission diagnosis. The economic impact of this model on bivalirudin use will be determined by the quantity of drug used and charge captured by automatic dispensing cabinets. These data will identify bivalirudin utilization before and after the implementation of the bleeding risk assessment model at our institution.

6-016

Title: Evaluation of pharmacy admission medication reconciliation and its effect on 30-day readmission rates in heart failure patients

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Purpose: Heart failure (HF) readmissions account for significant hospital costs nationwide. In 2013, the Centers for Medicare and Medicaid implemented a pay-for-performance reimbursement model for 30-day readmission rate in high risk disease states including HF. Heart failure 30-day readmission rates at our institution are above the national average. Previous studies at our institution utilizing pharmacy-driven medication reconciliation have shown reductions in readmission rates among general medicine patients. The objective of this study is to evaluate the effect of pharmacy- driven admission medication reconciliation on 30-day readmission rates in HF patients admitted to the heart and vascular unit.

Methods: This is a retrospective cohort study that compares readmission rates among HF patients who received pharmacy-driven admission medication reconciliation versus the standard of care. Current standard of care includes medication admission reconciliation by physician; medication education and discharge medication reconciliation by a pharmacist; and finally clinical care coordinator discharge follow up phone calls. Patients age greater than 18 years admitted to the heart and vascular unit with primary or secondary HF will be included. Patients who are discharged to hospice care, leave against medical advice, or expire within the 30-days of admission will be excluded. The pharmacy admission medication reconciliation process will utilize a decentralized trained pharmacy technician to assist in gathering an accurate and validated medication history. Standard demographic data will be collected. The primary endpoint will compare 30-day readmission rates between the standard of care group and the intervention group. Secondary endpoints will analyze pharmacist intervention type and level of impact. In addition, subgroup analysis of the primary endpoint will be conducted. This study will be submitted to the Institutional Review Board for exemption.

6-017

Title: Effects of a real-time polymerase chain reaction assay on antibiotic usage and clinical outcomes in patients with suspected Clostridium difficile infection

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Purpose: Clostridium difficile infection (CDI) is a leading cause of antibiotic-associated diarrhea. While cell cytotoxicity assays are commonly utilized for the diagnosis of CDI, the long turnaround time for reporting results is not often conducive to making timely clinical decisions with regard to drug therapy. Polymerase chain reaction (PCR) assays have a similar sensitivity and specificity, but offer a rapid turnaround time of one to two hours. The objective of this study is to determine the effect of C. difficile PCR testing on antibiotic usage in patients with suspected CDI. Secondary endpoints will include use of enteric precautions and treatment outcomes.

Methods: This study is currently pending approval from the Institutional Review Board. Data will be collected using a retrospective chart review to compare antibiotic usage and duration of enteric precautions amongst patients with diarrhea and a suspected CDI, who had a stool sample ordered and collected for C. difficile, before and after implementation of real-time C. difficile PCR testing. The following data will be collected: results of all C. difficile testing obtained (cell cytoxicity assay or PCR); antibiotic regimens administered for CDI, including metronidazole (IV and PO), vancomycin (PO or rectal), fidaxomicin, and nitazoxanide; use of enteric precautions; past history of CDI; and treatment outcomes if available. All data collected will be coded and secured to protect patient identifiers. Antibiotic and enteric precaution usage and clinical outcomes data will be compared before and after PCR implementation and will be analyzed using appropriate statistical methods depending on the type of data.

6-018

Title: Impact of tranexamic acid on blood loss in total knee arthroplasty (TKA) at a community teaching hospital

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Purpose: Tranexamic acid is a lysine analog antifibrinolytic that inhibits clot degradation by preventing plasmin from cleaving fibrin. A number of promising studies have shown the efficacy of tranexamic use in orthopedic surgeries to reduce blood loss. However, its use has been limited due to the concern of venous thromboembolism (VTE) development. The objective of this study was to assess the efficacy and safety of intravenous (IV) tranexamic acid on blood loss in total knee arthroplasty (TKA).

Methods: This study has been submitted to the Institutional Review Board for approval. Medical records of adult patients who underwent a primary unilateral TKA between May 2012 and April 2013 were reviewed. Patients were excluded from the study if they had a history of hypersensitivity to tranexamic acid, VTE, or bleeding disorder. The control group was composed of patients who underwent TKA without tranexamic acid prior to the addition of tranexamic acid to formulary (May 2012-October 2012). The study group consisted of patients who underwent TKA with tranexamic acid after the addition of tranexamic acid as a formulary product (November 2012-April 2013). The primary outcome is a change in hemoglobin from baseline to the second postoperative day. Secondary outcomes include percentage of patients requiring blood transfusions, number of packed red blood cells (RBC) administered per patient, and number of patients who developed a VTE. The following data will be collected: patient age, baseline hemoglobin, second postoperative day hemoglobin level, number of packed RBC units administered, and documented VTE. Collected research data will be stored in a de-identified manner.

6-019

Title: Impact of a pharmacist bedside encounter on medication-related patient satisfaction

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Purpose: Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) is a national, standardized, publicly reported evaluation of patient satisfaction regarding a patients hospital stay that has financial implications directly related to the hospitals performance. The survey contains items that assess patient satisfaction with communication and understanding of medications. Pharmacists are well-suited to impact these metrics, which at our institution currently falls below both the state and national average. This study will evaluate whether a patient bedside encounter with a pharmacist will improve patient satisfaction scores and medication-related, patient-perceived quality of care.

Methods: This prospective, quality improvement study will follow the Plan Do Study Act model and evaluate the impact of a pharmacist encounter on patient satisfaction as measured by HCAHPS scores. All patients discharged from a general surgery unit of the hospital during October and November 2013 will be enrolled. Patients discharged to an extended care facility will be excluded. Demographic and pertinent information regarding the current hospitalization and medication use will be collected. The intervention will encompass a pharmacist bedside encounter focused on medication indication, side effects, and related quality of care. The pharmacist will engage the patient, assess the patients baseline understanding of new medications, educate the patient to augment knowledge of medications, and assess the patients pain management through open-ended discussion. Patients who demonstrate poor understanding of medications will receive a follow-up phone call post-discharge from the pharmacist to evaluate the patients transition of care and reinforce medication education. Results from HCAHPS surveys returned during the study period will be analyzed and compared with baseline HCAHPS scores. This quality improvement project is exempt from IRB approval.

6-020

Title: Warfarin transitions of care: analysis of current practice and its impact on readmission rates

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Purpose: Warfarin, a vitamin K antagonist, used for the treatment and prevention of thromboembolism requires rigorous monitoring especially during transitions of care. Warfarin is the most common drug associated with preventable hospital admissions in the elderly. The aim of this quality improvement study is to evaluate and determine gaps in current transition of care practices at one institution and its effect on outcomes related to thromboembolic and bleeding events. This project will serve as a baseline for future quality improvement initiatives.

Methods: This study will be submitted to the Institutional Review Board for approval. Patients discharged on warfarin between January 2013 - June 2013 will be identified and randomly selected through the automated dispensing cabinet withdrawal report or a billing report for warfarin. Quality indicators as published by the Anticoagulation Forum Consensus Guidelines will be assessed in those patients through a retrospective chart review. These quality indicators include appropriate overlap of therapy, patient education, scheduled follow up appointment upon discharge, referral to an appropriate outpatient provider and accurate prescriptions given prior to discharge among others. Various patient information will be collected through progress notes, consult notes, discharge summaries, discharge instructions, case management notes, laboratory parameters, and diagnostic tests as deemed necessary for management of anticoagulation. After a thorough review, outcomes such as thromboembolic events including venous thromboembolism or stroke and bleeding events including gastrointestinal bleeds and intracranial hemorrhage will be measured through hospital readmissions and emergency department visits within a 90 day period. Ultimately, this project will serve to assess the effectiveness of current transition of care practices, analyze the impact on patient outcomes, and identify opportunities for improvement.

6-021

Title: Effect of tranexamic acid on thromboembolic risk and transfusion requirements in total hip and total knee arthroplasty

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Purpose: Intravenous tranexamic acid is administered pre-operatively and/or intra-operatively to reduce blood loss and blood transfusion requirements. The objective of this study is to evaluate the use of intravenous tranexamic acid in patients undergoing total hip arthroplasty and total knee arthroplasty to determine the thromboembolic risk associated with tranexamic acid use, efficacy in reducing blood loss, volume of blood transfusions and frequency of blood transfusions.

Methods: This study is an Institutional Review Board exempt observational electronic medical chart reivew because there will be no active subjects involved and protected health information will be de-identified. Data will be collected retrospectively on patients that underwent total hip arthroplasty or total knee arthroplasty and did not receive tranexamic acid from September 2012 to December 2012. Data will be prospectively collected on patients that underwent total hip arthroplasty or total knee arthroplasty and received tranexamic acid from September 2013 to December 2013. Data will be collected on the incidence of thromboembolic events, blood pressure changes, volume of intra-operative blood loss, amount of blood transfused and drop in hemoglobin. Data collected from the tranexamic acid group and non- tranexamic acid group will be compared to determine if there are differences in the incidence of thromboembolic events and blood transfusions.

6-022

Title: Optimizing Automated Dispensing Systems

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Purpose: Timely distribution of medications is a well-established responsibility of pharmacists. The ability to optimize automated dispensing systems (ADS) is a necessary function for hospitals that rely on this technology to deliver medications. The goal of this quality initiative is to develop and implement a process to optimize ADS in order to promote timely distribution of medications.

Methods: Data collection will include the identification of ADS with the greatest negative impact markers. Negative impact markers include ADS with the following: stock out rate greater than 1%, vend:refill ratio below 12:1, and medications available to vend at the time the order is reviewed of less than 85%. Data collection will be conducted utilizing data mining tools associated with the automated dispensing system software. A team of pharmacy staff members will be trained and responsible for optimizing ADS daily. The procedures of optimization include the following: adjusting par levels, modifying standard vs. non-standard stock, identifying and replenishing medications that stock out greater than 1%, and removing medications without use greater than 90 days. All optimization procedures will be documented on a data collection tool. Data will be analyzed to identify trends and will be used to create an optimization strategy for ongoing maintenance.

6-023

Title: Effect of sodium-glucose cotransporter 2 inhibitors on blood pressure: a meta-analysis

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Purpose: Sodium-glucose cotransporter 2 (SGLT-2) inhibitors represent a new class of antidiabetic medications that block renal sodium and glucose reabsorption in the proximal convoluted tubule. It is pharmacologically plausible that increased sodium excretion could lead to reductions in systolic (SBP) and diastolic (DBP) blood pressure. The purpose of this meta-analysis was to assess the SBP and DBP lowering ability of the SGLT-2 inhibitors, both as a class and individual agents.

Methods: We searched PubMed, SCOPUS, and Cochrane Central from their inception to September 2013. Included randomized controlled trials (RCTs) had to be fully published and evaluate SGLT-2 inhibitors in adult patients with type-2 diabetes mellitus and report data on change from baseline in SBP and/or DBP in a form suitable for pooling. For studies missing the required data, the corresponding authors were contacted. The mean change in SBP and/or DBP was treated as a continuous variable, and the weighted mean difference (WMD) and accompanying 95% confidence interval (CI) were pooled using a DerSimonian and Laird random-effects model. The SGLT-2 inhibitors were first evaluated together as a class, then each individual agent was assessed. Statistical heterogeneity was assessed using the I2 statistic, where values of 25%, 50%, and 75% represent low, medium, and high degrees of heterogeneity, respectively. Additional subgroup analyses were performed for placebo-controlled trials and those with active controls. We also conducted random-effects meta-regression for each agent separately to assess whether changes in BP were related to the drug dose. Statistical analysis was performed using Comprehensive Meta-Analysis, version 2 (Biostat).

Results: We screened 139 abstracts and evaluated 39 full-text articles. A total of 27 RCTs (n=12,960 participants) met our eligibility criteria. Nine RCTs (n=5,607) evaluated canagliflozin, twelve RCTs (n=5,280) evaluated dapagliflozin, three RCTs (n=1,359) evaluated empagliflozin, two RCTs (n=679) evaluated ipragliflozin, and one RCT (n=35) evaluated remogliflozin. As a class, the SGLT-2 inhibitors significantly reduced both SBP (WMD -3.95, 95% CI -4.40 to -3.50; I2=0.99) and DBP (WMD -1.60, 95% CI -1.89 to -1.32; I2=0.99) from baseline. Each agent significantly reduced both SBP and DBP from baseline when assess separately. These effects were similar when placebo-controlled and active-controlled RCTs were analyzed separately. Upon meta-regression, only canagliflozin had a significant dose-response relationship with SBP reduction (p=0.00768).

Conclusion: Sodium-glucose cotransporter 2 inhibitors significantly reduce both SBP and DBP when used in adult patients with type 2 diabetes. Each individual agent also significantly reduced SBP and DBP, although only canagliflozin had a significant dose-response relationship with SBP.

6-024

Title: Comparative analysis of adverse drug events and associated costs in postoperative patients on opioid therapy versus multimodal analgesia

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Purpose: Determine whether intravenous acetaminophen as part of a multimodal analgesia regimen decreased adverse drug events related to opioids, hospital length of stay, and subsequent costs associated with these events. Most postoperative patients receive opioid pain management therapies. If the use of intravenous acetaminophen and other multimodal modalities can decrease the use of opioid medications in these patients, then the rates of opioid-induced adverse drug events can be decreased and possibly avoided. Decreasing overall costs to patients and institutions could also be a benefit.

Methods: Approval by the Institution Review Board is pending and will be obtained prior to commencement. A computerized database will be used to identify use of intravenous acetaminophen and opioid medications from January 1, 2011 to August 31, 2013. A retrospective chart review of patients will be performed to determine: o Pain medication utilization o Documentation of adverse drug events o Administration of medications to treat adverse drug reaction related to opioid use o Increased length of stay associated with opioid-associated adverse drug events Costs associated with pain management and opioid-associated adverse drug events will be determined by: o Drug expenditures o Increased length of stay, per day, do to opioid-associated adverse drug events

6-025

Title: Increasing medication error reporting at a VA medical center

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Purpose: According to the Institute of Medicine, nearly 100,000 people die in hospitals every year due to preventable medication errors. These errors may include wrong drug, incorrect strength, inappropriate route of administration, and mistaken patient identity. Although medication errors can be reported within the VA Connecticut Healthcare System using a hospital wide error reporting system, many errors and near-misses remain unreported. The pharmacy department will implement a non-punitive, pharmacy specific collection tool that will allow the department to use gathered data for staff education and system redesign to prevent the occurrence of preventable medication-related errors in the future.

Methods: This research is exempt from review by the institutional review board because it is being completed as a quality improvement project. This project will focus on identifying the barriers to reporting errors, developing a pharmacy specific collection tool to supplement the hospital's current reporting system, and evaluating the types of medication errors that are occurring. Data from the existing hospital-wide reporting tool will be used to evaluate the errors that are currently being reported. A survey will be used to examine the pharmacy staff's perception of barriers to reporting medication errors. Additionally, educating the pharmacy staff about medication error reporting will be aimed at increasing the reporting of errors. A tool will be implemented to facilitate the collection of medication errors for the department. The results from this tool will be used for self-improvement and will be presented on a monthly basis at the clinical pharmacy meetings. This study will evaluate whether the availability of a pharmacy specific tool will increase the number of medication errors and near-misses that are being reported.

6-026

Title: Impact of enhanced pharmacist involvement on vancomycin dosing and monitoring

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Purpose: Vancomycin pharmacokinetics warrant individualized weight based dosing, monitoring serum trough concentrations, and adjusting doses for renal insufficiency to ensure efficacy and prevent toxicity. The purpose of this study is to evaluate the impact of pharmacy directed therapeutic drug monitoring (TDM) in improving utilization of intravenous vancomycin within a Veterans Affairs hospital. Examining the impact of pharmacists performing TDM will also illustrate the value of pharmacists in providing appropriate medication therapy as members of the healthcare team. Further improvements can be made to the inpatient medication use process by evaluating the impact of enhanced pharmacy roles in dosing and monitoring vancomycin.

Methods: This study is pending Institutional Review Board exemption as a quality improvement project. Patients are eligible for inclusion in this study if they are at least 18 years of age and received at least four consecutive maintenance doses of intravenous vancomycin while admitted at a Veterans Affairs hospital during June 2010 or October 2013. Patients will be excluded from this study if they do not meet the inclusion criteria, are on dialysis, or have neutropenic fever. Sixty patients will be selected from June 2010 when dosing and monitoring vancomycin was mainly the providers responsibility; and a second sixty patients will be selected from October 2013 following increased pharmacist involvement in TDM of vancomycin. The following information will be collected retrospectively from the electronic medical record: baseline demographics, initial vancomycin dosing, administration time, timing and results of serum trough concentrations, clinical actions taken in response to measured trough, concurrent antibiotics or nephrotoxins, and documented nephrotoxicity. This study will examine if increased pharmacist involvement results in accurate weight based dosing and dose adjustments for renal insufficiency; if desired therapeutic trough levels are achieved at higher rates; and whether the incidence of vancomycin toxicity is reduced when vancomycin is managed by pharmacists.

6-027

Title: Comparison of two tissue plasminogen activator dosing strategies for management of occluded peritoneal dialysis catheters

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Purpose: Tissue plasminogen activator (TPA) is the current standard of care for management of peritoneal dialysis (PD) catheter occlusions after failure with saline flushes. However, current guidelines do not provide any specific dosing recommendations and the evidence is limited to case reports describing a range of successful doses. The objective of this study is to compare the success of 4mg and 8mg per 10mL doses of TPA and to find the most cost-effective option for treatment of occluded PD catheters.

Methods: This study will be performed using historical data from two different time periods using different dosing protocols for TPA in PD catheter occlusions. The electronic medical record system will be used to identify thirty cases of occluded PD catheters that were treated with 8mg TPA and thirty cases that were treated with 4mg TPA. The following data will be collected: age, gender, ethnicity, past medical history, medication allergies, indication and length of time on dialysis, prior history of catheter occlusions, patency attempts prior to TPA administration, TPA dose, additional doses of TPA, and any subsequent attempts at catheter patency. Information from any X-rays to determine correct catheter placement will also be collected. Data collected will then be used to compare the success rates of the dosing strategies. Success will be defined as the return of function to the catheter without the need for additional doses of TPA, subsequent attempts at mechanical clot removal and maintaining the original catheter. The results will be compared using t-tests and chi-square test.

6-028

Title: Assessment of reminder telephone calls and additional pharmacist counseling as interventions to increase patient's time in therapeutic ranges (TTRs) above 60 percent

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Purpose: Patients in whom therapeutic international normalized ratios (INRs) are not achieved more than 60 percent of the time have been shown to receive less benefit from warfarin therapy while being at an increased risk for adverse events such as bleeding, stroke, and death. The objective of this study is to evaluate the ability of appointment reminder phone calls and additional pharmacist counseling to increase patients TTRs while on warfarin therapy.

Methods: This projects primary objective is to determine whether additional interventions improve patients TTRs. This project is pending approval by the facility Research Department as a quality improvement project and is exempt from the Institutional Review Board. The facility Anticoagulation Dashboard will be used to identify patients whose TTRs are under 40 percent on Day 1 of the study and again on Day 90. The computerized patient record system (CPRS) and Anticoagulation Clinic notes will be used to obtain patient demographics, indication for warfarin, number of appointment no shows, interruptions in therapy, major drug interactions, adherence, duration of therapy, dose adjustments, number of encounters during the study, and variation in alcohol intake and diet. The identified patients will be added to a spreadsheet and called to remind them of appointments. A chart notation will identify these patients to pharmacists who will provide additional patient specific counseling at each encounter. Outcomes to be analyzed using paired T tests and chi squared tests include the number of patients whose TTR increases above 60 percent, the clinics TTR change, and any improvement in an individuals TTR.

6-029

Title: Association of potentially inappropriate medication use in the elderly and hospital-related outcomes

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Purpose: Elderly patients are a vulnerable population at particular risk for adverse drug events (ADEs). Since 1991, the Beers Criteria, supported by the American Geriatrics Society, have defined potentially inappropriate medications (PIMs) which should be avoided in patients 65 years of age and older in an effort to reduce associated ADEs. The primary objective of our study is to evaluate the association between the inpatient use of PIMs with 30‐day length of hospital stay in elderly medical patients. Secondary outcomes include hospital length of stay, 30‐day readmission and total hospital costs. This study has been approved by the Institutional Review Board.

Methods: This is a retrospective cohort study evaluating patients 65 years and older admitted to our hospital for pneumonia, heart failure, or acute myocardial infarction from May 2012 to April 2013. Intensive care unit, observation, outpatient or surgical admissions will be excluded. To determine if a PIM was prescribed during the hospital stay, the 2012 Beers Criteria will be applied to the inpatient medications prescribed. Patients with at least one PIM prescribed will be compared to those with none through univariate analyses to determine significant covariates using a p‐value of less than or equal to 0.10. Significant covariates will be entered into the final statistical models to determine adjusted odds ratios with corresponding 95 percent confidence intervals for the association of PIM use with the following outcomes: 30‐day length of hospital stay, length of index hospital stay, 30‐day readmission, and total hospital costs. We estimate 560 records are needed for adequate power with an alpha of 0.05 and power of 80 percent. Statistical analyses will be conducted with SPSS version 21 for Windows (IBM/SPSS, Inc., Chicago, IL, 2012).

6-030

Title: Assessment of pharmacist specific training for pediatric emergencies

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Purpose: The American Heart Association's pediatric advanced life support (PALS) class was designed for healthcare providers who initiate and direct basic through advanced life support. The design of the class makes it applicable to an array of healthcare providers but not specific to any provider. PALS training currently includes drug therapy, however it does not encompass the specific details of preparation, distribution systems and administration. The purpose of this study is to develop and assess the effectiveness of a standardized pharmacist targeted training program in order to provide a structured foundation of skill and competency for pharmacists responding to pediatric emergencies.

Methods: Prior to the initiation of this study, Institutional Review Board approval at each institution will be obtained. Pharmacists and pharmacy residents at three institutions will be asked to voluntarily enroll in the study, upon volunteering informed consent to participate will be obtained. Participants will attend 4 classes overall. Prior to training, pharmacists will participate in a simulated resuscitation in which performance will be evaluated through timing selected physical tasks and a confidence survey measuring comfort level of the pharmacist in preparing, calculating, obtaining and administering drugs during pediatric emergencies. The pharmacists will then attend training to include the role of the pharmacist, medication preparation, supplies, distribution system use, administration and application of the PALS algorithms. The training will also include treating the most common pediatric emergencies based on the real life experiences of our pharmacists. After attending the trainings which will consist of didactic and hands-on material the pharmacists will complete another simulated resuscitation and confidence survey. Pharmacists will serve as their own control with comparison of pre and post training assessment of confidence and performance. It is hypothesized that this course of training will improve the confidence and performance of pharmacists participating in pediatric emergencies.

6-031

Title: Mixed-treatment comparison of the acute treatment of venous thromboembolism

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Purpose: Acute venous thromboembolism (VTE) is the third most common cause of vascular disease-related deaths. Standard treatment includes initial parenteral anticoagulation followed by a vitamin K antagonist for 3 months or longer. This treatment option has limitations, including outpatient monitoring and drug and food interactions. In the recent years, several new anticoagulants, including rivaroxaban, dabigatran, and apixaban, have suggested more convenient outpatient treatment options. However all strategies have not been compared in head-to-head randomized controlled trials. The objective of this study is to conduct a systematic review and mixed-treatment comparison (MTC) meta-analysis to evaluate the efficacy of acute VTE treatment strategies.

Methods: A systematic literature search in MEDLINE and Cochrane Central databases was performed from inception through September 2013. Articles meeting the following criteria will be included: randomized controlled trials in adults, comparison of one pharmacologic treatment to a different pharmacologic treatment or placebo for acute treatment of VTE with the same duration, report at least one outcome of interest (VTE, deep vein thrombosis, pulmonary embolism, major or minor bleeding), and written in English. Two independent investigators will review citations for inclusion and extract data from included trials using a standard extraction tool. Risk of bias will be evaluated using the Cochrane Collaborations Tool. Traditional meta-analysis using a random effects model will be performed using Comprehensive Meta-Analysis version 2. Odds ratios (ORs) with 95 percent confidence intervals will be reported. Statistical heterogeneity will be evaluated using the I-squared statistic. We will conduct a MTC to compare all therapies within the network using WinBUGS version 1.4. Non-informative priors will be used and ORs with 95% credible intervals will be reported. To estimate incoherence, we will calculate the ratio of odds ratios for indirect versus direct evidence. Homogeneity and similarity will be judged subjectively by the investigators.

6-032

Title: Removal of proton pump inhibitors from pre-built order sets: impact on the rate of proton pump inhibitor use and Clostridium difficile infection

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Purpose: Proton pump inhibitors (PPIs) are prescribed in the inpatient setting for diseases of the esophagus, gastric ulcers and peptic ulcers. Hospitals commonly use pre-built computerized provider order entry (CPOE) order sets to group medication and procedure orders together to be accessed from a single source for standardization. The objective of this study is to analyze the rate of PPI use before and after their removal from pre-built order sets in a community hospital and to monitor the rate of Clostridium difficile infection in correlation with this change.

Methods: This study was determined to qualify for exempt status by the Institutional Review Board as human subjects are not involved in the study and data collection from retrospective chart reviews will be de-identified. This study is a retrospective chart review that includes inpatients 18 years of age or older that received a PPI while hospitalized from April 2011 to April 2013. Patients less than 18 years of age and allergic to PPIs will be excluded from this study. The use of PPIs before and after their removal from pre-built order sets will be compared using the defined daily dose as a statistical measurement. The correlation between the change in PPI use and Clostridium difficile infection will be monitored using medical records. The primary outcome to be analyzed is the rate of PPI use before and after their removal from pre-built order sets. The secondary outcome is rate of Clostridium difficile infection in relation to the removal of PPIs from pre-built order sets.

6-033

Title: Effectiveness of piperacillin-tazobactam in the treatment of extended spectrum beta-lactamase (ESBL) E. coli urinary tract infections

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Purpose: In light of new, revised breakpoints for third generation cephalosporins set by the Clinical and Laboratory Standards Institute (CLSI), the treatment of infections caused by ESBL isolates of E. coli requires further study. Such isolates may be susceptible to piperacillin-tazobactam, a beta-lactam-beta-lactamase inhibitor, in vitro; however clinical correlates for successful treatment have not been validated. The objective of this study is to determine effectiveness of piperacillin-tazobactam for the treatment of ESBL E. coli urinary tract infections at a large academic teaching hospital.

Methods: This retrospective medical chart review has been approved by the Institutional Review Board of Yale University. Data will be collected from the start of implementation of the revised CLSI breakpoints for treatment of ESBL E. coli to the present. Using available electronic medical record systems, patients with urinary tract infections resistant to ceftriaxone but sensitive to piperacillin-tazobactam will be identified for review. Clinical success or failure will be determined at 72 hours of treatment in patients who received a minimum of 24 hours of piperacillin-tazobactam. The following data will be collected: age, sex, presence of altered mental status, diabetes mellitus, urinary catheter use, residence at a long term care facility, hospitalization within the prior three months, previous antibiotic use within the prior 3 months, Charlson comorbidity score, and antibiotic therapy. Data will be analyzed to assess overall clinical success or failure for treatment of the ESBL E. coli urinary tract infections.

6-034

Title: Implementation of a pharmacist-driven oral chemotherapy counseling program at an academic medical center: a pilot program

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Purpose: Counseling provided by a pharmacist for every patient receiving first cycle chemotherapy is a stated clinical goal for the oncology pharmacy department. Currently, patients are seen in an outpatient oncology clinic at an academic medical center by a health care team that does not include a pharmacist. With patients utilizing outside pharmacies to fill prescriptions, institutional pharmacists are unable to identify patients receiving oral chemotherapy or provide patient education. This project was implemented to appropriately identify new patients initiated on oral chemotherapy, and serve as a pilot program for oral chemotherapy counseling by pharmacists.

Methods: This study will be submitted to the Institutional Review Board for review. The Thoracic Oncology Program (TOP) was selected to begin the six month prospective review. Patients will be identified daily by new oral chemotherapy prescriptions written in the previous 24 hours. Patients greater than 18 with an active prescription for first cycle oral chemotherapy will be enrolled. Patients receiving investigational drugs or those participating in a clinical trial will be excluded. Baseline data include: age, gender, type of malignancy, oral chemotherapy to be initiated, and potential drug interactions. Patients will be contacted via telephone approximately one week following the clinic visit in which oral chemotherapy was prescribed. Availability of counseling prior to initiation, education included, counseling provider, any issues encountered during drug acquisition, and side effects will be assessed. A pharmacist will follow up at intervals personalized to chemotherapy schedule. The primary endpoint of the study is the successful implementation of an oral chemotherapy counseling program as measured by enrollment of 75 percent of patients identified to be receiving oral chemotherapy. Patient, provider, and pharmacist satisfaction are secondary endpoints and will be assessed at a three month midpoint and at the study's conclusion.

6-035

Title: Identifying and targeting risk factors for readmission in a medical oncology unit: a two-phase investigation

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Purpose: The 30-day readmission rate in the medical oncology unit in a large academic teaching hospital is approximately 30%. Recent literature suggests that medication reconciliation may improve 30-day readmission rates. The objective of this investigation is to determine modifiable risk factors leading to readmission in oncology patients and to design an intervention involving medication reconciliation in order to improve 30-day readmission rates.

Methods: This is a two-phase study. Phase 1 of the investigation will involve the identification of patient-specific risk factors leading to avoidable readmission through retrospective data review of 550 patients admitted to the medical oncology unit from October 2012 to May 2013. Data collected to include: patient demographics, length of index admission, primary diagnosis, underlying malignancy, third-party payer, days between admission, reason for readmission, any chemotherapy administered 2 weeks prior to admission, discharge disposition, length of readmission, co-morbid conditions, oral chemotherapy upon admission, and number of medications upon discharge. Data from patients readmitted within 30 days will be directly compared to patients without readmissions. This information will determine specific risk factors leading to readmission in medical oncology patients. Phase 2 of the investigation will be the implementation of a medication reconciliation intervention on the medical oncology unit. Pharmacists will complete medication reconciliation upon admission and upon discharge. Discharge will also include counseling regarding medication changes necessitated during the hospital stay. Pharmacy driven interventions will be documented with the goal of improving 30-day readmission rates.

6-036

Title: Implementation of a nurse-driven bivalirudin dose adjustment protocol at a large academic medical center

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Purpose: Bivalirudin is the formulary direct thrombin inhibitor indicated for the treatment of heparin induced thrombocytopenia. When dosed outside therapeutic range, bivalirudin poses a risk of thrombosis or adverse bleeding. Currently, bivalirudin dose adjustments and monitoring are prescriber-driven based on institutional guidelines. The results of a 2012 medication use evaluation revealed deviations from these guidelines and prolonged time to reach goal PTT. In medical literature, nurse driven dose-adjustment protocols have demonstrated improved therapeutic and safety outcomes of anticoagulant therapy. The project objective is to improve compliance with bivalirudin guidelines and optimize patient safety through implementation of a nurse-driven dose adjustment protocol.

Methods: A nurse-driven bivalirudin dose-adjustment protocol will be developed in collaboration with hematology and nursing stakeholders and will be reviewed by the Pharmacy and Therapeutics Committee for final approval. Prior to protocol implementation, house-wide education will be conducted via in-services. Following implementation, nursing compliance with the protocol as well as efficacy and safety outcomes will be evaluated. Thirty adult patients receiving the nurse-driven bivalirudin protocol between November 1, 2013 and March 31, 2014 will be identified using electronic medical records. To assess adherence to the bivalirudin dosing protocol, the following data will be collected and analyzed: demographics, renal function, initial and subsequent infusion rate adjustments based on PTT value, time to first therapeutic PTT, and dosage adjustments according to PTT results. Measured safety outcomes will include incidence of bleeding and incidence of drug discontinuation due to bleeding. The study is a quality improvement project and therefore exempt from Institutional Review Board approval.

6-037

Title: Utilization of intravenous (IV) workflow technology to reduce medication errors in oncology

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Purpose: Several studies have been conducted assessing IV admixture error rates, showing a range in error rates from 6% to 23% for high-risk medications. There are multiple IV workflow technology systems currently utilized to increase efficiency and decrease medication errors. Despite implementation of an IV workflow management technology at Yale-New Haven Hospital (YNHH), there are still occurrence of errors. The primary goal of this project is to evaluate the effectiveness of IV workflow technology in reducing the IV admixture error rate at YNHH. The secondary objective is to employ strategies to optimize solutions for decreasing errors in the oncology IV workroom.

Methods: This retrospective study will be conducted in multiple steps. A literature search will be conducted to assess established strategies used to prevent IV admixture errors. YNHH currently utilizes an IV workflow management system that incorporates bar-coding technology and digital photography into the IV compounding process. Through process mapping, a better understanding of the IV workflow process in conjunction with the IV workflow technology will be gained in order to determine the impact of the workflow technology on medication error rates. Error rates at the multiple campuses at YNHH will be measured by performing data analysis on the IV admixture errors. Also, the percentage of orders compounded outside the workflow system will be evaluated. Once the errors are identified, a brainstorming session with pharmacists and pharmacy technicians will be conducted an effort to determine solutions for decreasing preventable errors. To implement strategies to optimize solutions for decreasing errors, a new process map with a narrowed emphasis on change to be implemented only for the oncology IV admixture workflow will be conducted. Lastly, re-evaluation of the oncology error rate will be compared to the previously recorded error rate.

6-038

Title: Geriatric pharmacy training requirements for post-graduate year 1 (PGY1) and post-graduate year 2 (PGY2) pharmacy residents: an assessment of current educational standards

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Purpose: An estimated 70 million adults are projected to be greater than 65 years old in 2030, more than double the amount in 2000. The Institute of Medicine report, Retooling for an Aging America: Building the Health Care Workforce, calls for increasing training requirements in geriatrics for health-care professionals. No requirements presently exist to include geriatric pharmacy curricula within pharmacy residency programs other than post-graduate year 2 geriatric pharmacy residencies. Therefore, determining capacity and resources for geriatric pharmacy training is needed. The objective is to establish current geriatric pharmacy training in all PGY1 and PGY2 geriatrics pharmacy residency programs.

Methods: This quality improvement project will consist of a survey of pharmacy residency program directors using SurveyMonkey. The survey will attempt to ascertain each residency programs potential capacity and resources for training in geriatric pharmacy. The survey will also serve as an opportunity for the pharmacists to express their opinions about which geriatric rotations should be required, if any, during the PGY1 and/or PGY2 residency. The final document regarding the current and potential practice settings for geriatric pharmacy training will serve to guide upcoming revisions of the American Society of Health-Systems Pharmacists Residency Standards. This project is intended for quality improvement purposes and no patient information will be collected. This abstract was submitted to the quality improvement committee for approval.

6-039

Title: Assessment of surgical care improvement project card-2 measure mortality outcomes

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Purpose: Centers for Medicare and Medicaid Services Surgical Care Improvement Project CARD2 measure requires that surgical patients on beta-blocker therapy prior to arrival receive a beta-blocker throughout the perioperative period with financial penalties for noncompliance. While our institution has been successful with this measure, the clinical outcomes in our patients have yet to be evaluated. Continuation of therapy has been shown to be beneficial in vascular and cardiac surgical procedures; however the benefit of continuation in lower risk surgical procedures is underreported. This study will assess the mortality outcomes of continuation of beta-blocker therapy in surgical patients based on surgical risk.

Methods: This retrospective, randomized, cohort study will evaluate the effect of continuation of beta-blocker therapy within the perioperative period in surgical patients who were on beta-blocker therapy prior to arrival. Patients below the age of 18 will be excluded. Risk of surgical procedures will be classified as high, intermediate, or low-risk based on the American Heart Association (AHA) guidelines for perioperative cardiac risk evaluation and risk reduction. The Charlson Comorbidity Index will be used to determine the effect of baseline comorbid conditions on patient outcomes. In stratifying patients based on cardiac risk, the cardiac risk score for each patient will be determined using the Revised Cardiac Risk Index. The primary endpoint will be the effect of continuation of beta-blocker therapy within the perioperative period on in-hospital mortality, mortality at 30 days and at 90 days after surgical procedure. Sources of patient mortality status will include electronic medical records, post-discharge follow up with outpatient providers, or public electronic mortality database. This study is seeking expedited IRB approval.

6-040

Title: Limiting the medication day supply at discharge for veterans flagged as high risk for suicide

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Purpose: This project will focus on improving medication prescribing practices for veterans at high risk for suicide at the time of discharge from the inpatient psychiatry unit from the VA Connecticut Healthcare System (VACHS). Minimizing the risk for suicide through means reduction is an important step for patients who are at high risk for medication overdose. Information about medications that were dispensed to patients at high risk for suicide at the time of discharge will be reviewed to identify challenges with the current discharge process.

Methods: A retrospective analysis of patient prescriptions at the time of discharge from the inpatient psychiatry unit during a one year period will be performed to collect information about the day supply of medications dispensed, the type of medications dispensed, the number of medications dispensed, and the copayment status of the patients dispensed medications. Patients from the inpatient psychiatry unit flagged as high risk at the time of discharge by the Suicide Prevention Team between May 1, 2012 and April 30, 2013 will be included in the chart review. Patients discharged against medical advice (AMA) without a medication reconciliation list at discharge will not be included. The current policy, that covers medication day supply limit in high-risk patients, will be revised to reflect input from a pharmacy perspective. This project will also identify a list of exempted medications when a shortened day supply is not feasible. In addition, the pharmacy staff will be educated about issues related to dispensing discharge medications to high-risk patients. This is a quality improvement project and has been granted exemption from IRB review.

6-041

Title: Evaluation of disposition of patients' own medication upon admission to a Veterans Affairs hospital

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Purpose: Transitions of care are identified as areas of vulnerability in ensuring that patients are continued on appropriate medication therapy. Currently, patients' own medications (POM) obtained in outpatient settings are collected from the patient upon inpatient admission. These medications are either mailed back to the patient or destroyed at the pharmacist's discretion. The current process demonstrates weaknesses, often with delays or omissions in returning POM after discharge. The purpose of this study is to evaluate the current policies at a Veterans Affairs hospital and identify areas of improvement in relation to patient safety and cost effectiveness.

Methods: This study is pending Institutional Review Board exemption as a quality improvement project. This project will be conducted via a retrospective chart review. Pharmacists will be surveyed to determine which factors are evaluated in determining whether POM is destroyed or returned. A recorded log of patients admitted with POM will be maintained by pharmacists, and patient charts will be reviewed to identify these medications. Upon discharge, patients' charts will be reviewed to determine if they were discharged on POM, when POM were originally due to be refilled, when POM were actually refilled, and whether the patient requested immediate pick up or a mailed refill. This will be analyzed to determine if patients' medication therapy was interrupted. A cost analysis will be conducted on refilled medications to determine the cost of product destroyed, as well as the cost to the patient as refill copays. The aggregated, deidentified data will be analyzed to create a new policy and procedure for handling POM upon admission, and a second evaluation of the same parameters will be conducted after the policy is implemented.

6-042

Title: Influenza management perceptions and practices within a healthcare facility associated with a national healthcare system

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Purpose: The Centers for Disease Control and Prevention recommend prescribing antiviral treatment in patients suspected of having influenza who are at high risk of developing complications from influenza. Prescribing patterns within a national healthcare system during the 2012-2013 influenza season (9/30/12-5/18/2013) indicate that practitioners are significantly underutilizing antiviral treatment and may be unaware of published guidelines on influenza management. The objective of this study is to determine current influenza treatment perceptions and practices among primary care practitioners and house staff at a healthcare facility within a national healthcare system and identify areas for healthcare practitioner education regarding influenza management recommendations.

Methods: This study will be reviewed by the institutional review board for approval. Primary care providers and house staff practicing within a healthcare facility associated with a national healthcare system will be surveyed on their current influenza management practices. The study will include providers identified by the facility's chief of primary care or chief of medicine as providers practicing within the healthcare system during the 2012-2013 influenza season who have a current and active institutional or academic email address. Prospective participants will be invited to participate in an online, electronic survey via email with an electronic link to the survey enclosed in the email. The survey will be conducted using an online survey tool; and data collection will occur between 11/1/2013 and 12/31/13. Data collected includes how practitioners assess, diagnose, and treat patients they suspect as having influenza. No respondent identifiers will be collected beyond their primary practice site and range of years practicing post residency training. Responses will be confidentially recorded. Survey data will be analyzed to determine if practitioner responses correlate to observed treatment practices.

6-043

Title: Optimization of micronutrient dosages in total parenteral nutrition formulations through pharmacist interventions

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Purpose: A.S.P.E.N. guidelines advocate for a uniform total parenteral nutrition (TPN) ordering process and recommend components are ordered in grams/milligrams/milliequivalents/millimoles per day. At this institution, TPN micronutrients have historically been prescribed as amount per liter and adjustments to formulations are not standardized. Guidance for TPN dosage adjustments have yet to be published. Recently, a new computerized physician order entry system has facilitated adherence to the A.S.P.E.N. guidelines for the TPN ordering process. Therefore, the impact of pharmacist interventions on TPN formulations will be evaluated and used to refine a micronutrient dosage adjustment algorithm into a guideline for standardizing interventions.

Methods: The proposed TPN micronutrient dosing adjustment algorithm will be piloted and prospectively evaluated in all adult patients 18 years of age and older receiving TPN therapy over a 60-day period. Each pharmacist staffing the TPN service will be educated to make and document interventions using the algorithm which details dosage adjustments based the patients serum electrolyte levels and acid/base status. Data collected will include: patient demographics, TPN indication, and a detailed account of the pharmacists intervention, including; the electrolyte affected, the initial serum electrolyte level, the recommended adjustment to the TPN solution, intervention acceptance or non-acceptance by the licensed independent practitioner (LIP), the serum electrolyte level drawn the morning following the implementation of the change, and the presence or absence of additional electrolyte repletion. The resulting serum electrolyte value will be compared to the institution's defined electrolyte-specific adult normal range. This study is approved by the Institutional Review Board.

6-044

Title: Evaluation of pediatric pain management in a children's hospital

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Purpose: Despite the existence of published, standardized pain management literature, many children's hospitals continue to struggle with effective pain management. Pain continues to be a highly common adverse stimulus experienced in the hospital setting. Infants and children are an especially vulnerable population, mainly due to difficulties in assessment secondary to immature cognitive and communication abilities. With recent quality and patient satisfaction concerns, a multidisciplinary team met to evaluate and optimize this practice. The objective of this study is to assess compliance with the current Pain Assessment and Management Policy in the pediatric surgical care unit within the Children's Hospital.

Methods: A retrospective chart review of all patients admitted to the pediatric surgical unit over a 30-day period will be conducted. These patients' pain management will be evaluated during the first 48 hours of admission. The following data will be collected: age, gender, reason for admission, surgical procedure, pain scale(s) utilized, frequency of pain assessments, pain management interventions, timing of reassessments following interventions, pain regimens, and utilization of pain service. Collected information will be evaluated and compared to the current Pain Assessment and Management Policy, as well as recommendations from the American Academy of Pediatrics and American Pain Society, to determine compliance and appropriateness of therapy. Results to be presented will include: patient demographics, appropriateness of pain scale utilized, time between pain assessments, time between intervention and reassessment of pain, success of intervention at attaining pain goal, and pain medications utilized. The department of pharmacy will collaborate with the pediatric pain service and nursing leadership to determine the best practices going forward based on results of this analysis. All collected data and patient specific identifiers will maintain confidentiality. This study is exempt from approval by the Investigational Review Board as it is a retrospective review for quality improvement.

6-045

Title: Implications of culture negative healthcare-associated pneumonia (HCAP) in antimicrobial de-escalation

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Purpose: Sputum cultures are frequently not ordered in hospitalized patients with healthcare-associated pneumonia (HCAP) and are not required for reimbursement by the Center for Medicare and Medicaid Services (CMS). Evidence suggests that HCAP patients with negative cultures can be de-escalated to community-acquired pneumonia (CAP) therapy eliminating antibiotics specifically for methicillin-resistant Staphylococcus aureus (MRSA) and Pseudomonas aeruginosa. This research will examine the number of days of broad spectrum empiric antibiotic therapy HCAP patients receive. The study will then estimate the number of days on these agents that could be reduced by ordering sputum cultures and de-escalating patients with negative cultures.

Methods: This study is a retrospective chart review pending approval by the Institutional Review Board. Eligible patients will be identified via International Classification of Diseases and Related Health Problems (ICD-9) codes of pneumonia. Exclusion criteria include: age < 18, not a nursing home resident, not on antimicrobial therapy for pneumonia, diagnosis of cystic fibrosis, comfort measures only (CMO) orders within 72 hours of admission, admission to a surgery service and duration of stay less than 72 hours. Demographic information will be recorded to report population characteristics. Data will be collected on the number of days of antibiotic therapy with activity against MRSA or P. aeruginosa enrolled patients receive during admission. A decision tree and model for treatment of HCAP, including culture negative patients, will be constructed to estimate the type and duration of antimicrobial therapy based on key decision points in therapy. Decision points include culture results, severity of illness, concomitant infections and immune status. One-hundred patients will be reviewed to estimate baseline utilization. Using the Wilson score method, 95% confidence intervals (CI) will be calculated.

6-046

Title: Factors related to inappropriate empiric antibiotic treatment of skin and soft tissue infections in the emergency department

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Purpose: No guidelines currently exist at our institution for managing patients who present to the emergency department (ED) with a primary diagnosis of skin and soft tissue infection (SSTI). The purpose of this study is to determine the current antibiotic prescribing practices for SSTIs in our institutions ED and to quantify the frequency of inappropriate administration of antibiotics targeting methicillin-resistant Staphylococcus aureus and/or gram negative bacterial pathogens. We hypothesize that patient and infection specific factors will be predictive of appropriate empiric antimicrobial therapy in the ED for SSTIs.

Methods: This study has been submitted to the Institutional Review Board. We will conduct a retrospective cohort study of adult patients with a primary diagnosis of SSTI who presented to the ED and were admitted for inpatient care between January 2010 and August 2013. Patient demographic and clinical data, laboratory data, microbiology cultures, and medication treatment data will be collected. Subjects will be categorized into two groups based on whether they received Appropriate or Inappropriate empiric antibiotic therapy (definitions derived from most recent guidelines for management of SSTIs and from our local antibiogram). Inferential statistics will be computed to evaluate current prescribing practices and determine patient factors associated with inappropriate empiric antibiotic therapy in the ED. Univariate analyses will be performed to examine the relationship between patient variables and inappropriate empiric therapies. All variables showing a univariate association (p0.20) will be entered into a backwards, stepwise multivariate logistic regression model. Adjusted odds ratios, 95% confidence intervals, and 2-tailed p values will be calculated for all variables retained in the multivariate regression model. We will also examine the relationship between inappropriate empiric therapy and factors such as 30-day readmission rates and unintended consequences of therapy such as subsequent Clostridium difficile infection.

6-047

Title: Implementation of bar code medication administration (BCMA) in a community hospital: barriers to compliance in critical care and telemetry units

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Purpose: Bar code medication administration (BCMA) is designed to prevent errors in the administration of medications to patients in hospitals. The objective of this study is to evaluate the incidence of unscanned or unsuccessfully scanned medication barcodes in critical care and telemetry units, why these events occur, and what steps can be taken to address them in the future.

Methods: This study has been approved by the Institutional Review Board and is exempt from review because no subjects will be actively involved and protected health information will be de-identified for the purposes of data collection. This study is a retrospective data audit that will be conducted during post-implementation of bar code medication administration (BCMA) in a community hospital. Daily medication scanning rates will be compiled from September 1, 2013 through January 31, 2014 for medical and surgical intensive care units, a cardiovascular unit, and a telemetry unit. Collected data will include: total daily medication administration events, the rates that patient and medication barcodes are scanned, the scheduled date and time of the administration event, the date and time a medication was not scanned or was unsuccessfully scanned, the nurse administering the medication, the medication order mnemonic, the alpha-numeric information read by the scanner during the event, and the alert type generated from an unsuccessful barcode scan. This data will help to illustrate trends that contribute to a medication not being scanned or being unsuccessfully scanned. These trends may include specific personnel habits, certain hospital units, the scheduled time a medication is administered, and/or certain classes of medications.

6-048

Title: Safety profile of high dose doripenem in patients with cystic fibrosis

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Purpose: The current dosing guideline at our institution includes high dose doripenem (HDD) regimens of 2000 mg, infused every eight hours, for patients with a diagnosis of cystic fibrosis (CF). This regimen is four times greater than the FDA labeled maximum dose of 500 mg infused every eight hours. Little is known about the safety of HDD regimens in CF patients. This research aims to evaluate the safety and describe the side effect profile of this HDD strategy in patients with CF.

Methods: This study will be submitted to the Institutional Review Board for approval. This study is a retrospective, observational chart review of patients who have received the HDD regimen of 2000 mg, infused every eight hours, between January 2009 and December 2012. Each patient receiving at least one dose of HDD will be included in the study. Patients without a diagnosis of CF will be excluded. For each identified patient admission, the electronic health record will be reviewed for evidence of the adverse events associated with doripenem administration listed in the package insert and identified through the FDA's MedWatch program. The adverse events being investigated include headache, phlebitis, nausea, diarrhea, anemia, pruritus, rash, hepatic enzyme elevation, oral candidiasis, anaphylaxis reactions, leukopenia, neutropenia, thrombocytopenia, seizures, Clostridium difficile-associated diarrhea, toxic epidermal necrolysis, and Stevens-Johnson Syndrome. Additionally, basic demographic information, height, weight, renal function, and duration of HDD therapy will be collected. Readmissions within thirty days will also be examined to determine if the admission could be attributed to HDD. The safety profile of this HDD regimen will be described by determining the prevalence of these known adverse events in the study population.

6-049

Title: Evaluation of enhanced involvement of clinical pharmacists on the efficacy and safety of inpatient warfarin management

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Purpose: The objective of this study is to evaluate the efficacy and safety of inpatient warfarin management with enhanced involvement of clinical pharmacists. This study will determine if enhanced involvement of clinical pharmacists will increase the percentage time of INRs in therapeutic range and decrease the incidence of adverse events. Furthermore, it will determine how often inpatient clinical pharmacists recommendations are accepted by the medical team. The results of this assessment will direct future efforts to justify pharmacy-driven inpatient warfarin dosing.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will be used to identify two cohorts of patients who were receiving warfarin as an inpatient. Cohort 1 will include patients on warfarin who were admitted from June 1, 2010 to June 30, 2010, when decentralized inpatient clinical pharmacist were not following patients on warfarin. Inpatient pharmacists now document recommendations regarding dosing and monitoring of warfarin, as well as maintain a spreadsheet to improve continuity and communication with other pharmacists. Therefore, cohort 2 will include patients on warfarin that have been followed by a decentralized inpatient clinical pharmacist during their hospital admission during November 1 to November 30, 2013. The following data will be collected: age, gender, reason for anticoagulation, INR goal, number of INRs in subtherapeutic range, number of INRs in supratherapeutic range, number of INRs in therapeutic range, patients home dose of warfarin if applicable, medications interacting with warfarin, confounding factors that may interact with warfarin, percentage of recommendations by inpatient clinical pharmacists accepted by the medical team, any reversal agents required, and any documented adverse effects related to warfarin. All data will be recorded without patient identifiers and maintained confidentially.

6-050

Title: Evaluation of a pharmacist role in medication reconciliation in the perioperative setting

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Purpose: Medication reconciliation is the process of analyzing and resolving patients' medication lists during a transition of care with the purpose of patient safety and consistency of care. An Operating Room Pharmacist position was implemented during September 2013. A quality improvement initiative of chart reviews will be conducted of the state of medication reconciliation prior to utilizing a pharmacist in the Post Anesthesia Care Unit for general surgical patients with a focus on neurosurgery and colorectal surgery. The objective is to evaluate any medication discrepancies, which will help focus on key drugs for the perioperative pharmacist.

Methods: The Institutional Review Board (IRB) determined this retrospective chart review does not meet the defined criteria for humans subject research. Adults who underwent surgery from April 1, 2013 through June 30, 2013 with a length of stay of at least two days will be included. Chart review will consist of electronic medical records and paper progress notes, including the medication reconciliation form completed by a nurse one day prior to surgery. Data points to be collected include patient demographics, type of surgery, home medications, inpatient and discharge medications, and length of stay. After data collection, discrepancies during pre- and postoperative medication reconciliation will be evaluated for maintenance drugs. The definition of a medication discrepancy is any inconsistency of a patient's documented home medication schedule, including drug omissions, dosing, and duplications. Discrepancies will be clinically validated for each patient. The outcomes data that is pertinent includes any medication discrepancies during the hospital stay and the time period it took for them to be resolved. All data will be deidentified and kept on a secure drive.

6-052

Title: Pharmacoeconomic evaluation of a pilot protocol utilizing tranexamic acid in hip and knee replacement surgeries

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Purpose: Blood loss associated with orthopedic surgeries carries substantial costs related to the management of the primary event, sequential complications, and length of stay. Recent research has shown that the use of tranexamic acid for the reduction of blood loss and blood transfusions associated with knee and hip surgery can generate a reduction in the mean direct total cost to an individual institution. The objective of this study is to evaluate the economic value of a weight-based tranexamic acid pilot protocol in elective hip and knee replacement surgeries to our community hospital and orthopedic program using a cost-benefit analysis.

Methods: This study will be submitted to Research Review Committee and the Institutional Review Board for approval; no patient consent form will be used. Electronic medical record systems will identify patients who either received no antifibrinolytic agent or tranexamic acid during elective hip and knee replacement surgeries conducted by two orthopedic surgeons. Data will be collected through retrospective and concurrent chart reviews over a six month period after the initiation of the pilot protocol and a prior equivalent period of time in which no antifibrinolytic agent was used. The following data and their associated costs will be collected: type of surgery conducted, patient age, length of stay, number of tranexamic acid vials utilized, laboratory tests, number of blood transfusions provided, and complications related to therapy. Resources that will assist in identifying additional data to collect include materials submitted to the Pharmacy and Therapeutics committee during the pilot protocol consideration process, a historical medication use evaluation, and cost reports. Data collected will be de-identified and given an identifying number with respect to the Safe Harbor method of the Health Insurance Portability and Accountability Act. Statistical analysis of the data will be completed using descriptive statistics as well as parametric and nonparametric tests.

6-053

Title: Impact of a pharmacist-driven medication reconciliation program at a tertiary care teaching institution.

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Purpose: One of The Joint Commission National Patient Safety Goals (NPSG) focuses on the risks of medication discrepancies upon admission. This patient safety goal (NPSG.03.06.01) is designed to help hospitals decrease negative outcomes related to medication errors upon admission. The objective of this study is to maintain and communicate accurate patient medication information while measuring duplications, omissions, and interactions, and the need to continue current medications during hospital stay. This study will also assess the impact of a pharmacist driven medication reconciliation program in decreasing medication discrepancies in an internal medicine unit at a tertiary care teaching institution.

Methods: The collection process of the patients home medications will be determined in order to receive an understanding of the current protocol of developing a patient medication list at the institution. Upon patient admission, the pharmacist will conduct patient medication interviews, using an original medication reconciliation tool. The following data will be collected: current medications or medication list, dosage forms, dosing frequency, past medical history, and patient allergies. In an event where a patient is unable to provide the pharmacist with the appropriate information, history will be obtained from a community pharmacy, a family member, a nursing home, or the patients primary care physician. The newly developed patient medication list would then be compared to the list that was previously obtained from the nurse or medical resident and would be analyzed for any medication errors or discrepancies. This new list, in conjunction with the patients clinical conditions, would be used to help the resident physicians continue the appropriate home medications upon admission into the internal medicine unit.

6-054

Title: Evaluating the use of trigger tools when compared to voluntary reporting systems in identifying adverse drug events

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Purpose: Adverse events (AEs) over time have been voluntarily reported by physicians or nurses to programs such as Patient Safety Networks (PSN), and Risk Management Event/Incident Entry System (RMEES). The Institute for Healthcare Improvement (IHI) developed Trigger Tools in an effort to detect a greater number of AEs compared to AEs reported. These triggers serve as an effective method for measuring level of harm in a healthcare institution. The objective of this study is evaluate the identification of AEs in a tertiary care institution by comparing the use of specific IHI trigger tools to AEs collected through a voluntary reporting system.

Methods: This study will be conducted as a prospective observational study utilizing electronic medical records (EMR) of hospitalized patients to assess the use of triggers, compared to adverse events voluntarily reported from January 2011 to January 2013 by nurses and physicians. Data will be collected within a 6-month period, October 2013 March 2014, to compare and identify AEs utilizing specific triggers. Study subjects include patients 18 years and older admitted for at least 2 days. A data collection tool adapted from (IHI) Global Trigger Tools for adverse events will be used to collect data and assess Harm Score modified by The National Coordinating Council for Medication Error Reporting and Prevention (NCC MERP) Index for categorizing errors. Independent t-test will be used to quantify AEs identified using trigger tools in comparison to adverse events voluntarily reported.

6-055

Title: Evaluation of adenovirus treatment protocol in pediatric hematopoietic stem cell transplant patients

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Purpose: Adenovirus infection is increasingly recognized as a significant, life-threatening complication of hematopoietic stem cell transplant in pediatric patients. Treatment strategies have emerged in the literature under the theory that a window of opportunity exists in which antiviral therapy may be initiated to prevent progression of infection and viremia to disseminated disease by controlling viral load while immune reconstitution occurs. The objective of this retrospective analysis is to assess our institution's current adenovirus treatment protocol and determine optimal time to initiation of antiviral pharmacotherapy to ultimately improve surveillance and treatment initiation during the first phase of immune reconstitution.

Methods: This evaluation has been exempt from review by the Institutional Review Board due to its retrospective scope and exclusion of subject identifiers. A single-center, retrospective chart review will be conducted and will include patients who are less than or equal to 18 years old, had a positive adenovirus PCR between June 1, 2006 and June 1, 2013 and underwent hematopoetic stem cell transplant at our tertiary pediatric referral center. Data collected will include patient demographics, transplant-related data (source of stem cell, type of immunosuppression and preparation regimen, donor type), disease-related data (source and type of infection, viral load, absolute neutrophil count, absolute lymphocyte count), and treatment-related data (days to initiation of antiviral therapy from time of transplant, antiviral agent, dose, duration of therapy), as well as clinical features of disease (pneumonia, gastrointestinal disease, fever) and patient outcomes (survival to 6 months and 12 months post-transplant, death and cause of death). Primary outcomes include all-cause mortality and adenovirus-related mortality, and secondary outcomes include trends relating to disease outcome and absolute lymphocyte count, type of immunosuppression, time to positive adenovirus PCR from transplant, and associated initiation of pharmacotherapy. Descriptive statistics will be used to characterize data and evaluate primary and secondary outcomes.

6-056

Title: Evaluating the use and safety of short-term propofol infusion for opioid and benzodiazepine detoxification in pediatric patients receiving continuous sedation in the pediatric intensive care unit

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Purpose: Long term use of opioids and benzodiazepines for critically ill pediatric patients generate tolerance. Therefore, in the Pediatric Intensive Care Unit (PICU) at our institution, we occasionally utilize a propofol washout to aid with opioid and benzodiazepine detoxification. Propofol washouts are loosely defined as initiating a short-term propofol infusion to sedate the patient allowing a decrease the benzodiazepine and opioid infusions by at least half. This practice is generally utilized in patients requiring high dose sedation/analgesia infusions. The purpose of this study will be to examine the safety and use of propofol washout used in the PICU.

Methods: This evaluation has been exempt from review by the Institutional Review Board as a retrospective review without subject identification. The electronic medical record system, Cerner, will be used to determine eligible patients. Patients will be included if they received continuous sedation/analgesia drips and were administered propofol by a non-anesthesia PICU provider for the use of detoxification. Patients will be excluded if their admission diagnosis is traumatic brain injury due to the complicated nature of the sedation control. The following data will be collected: patient demographics (age, gender, race, sex, weight), admitting diagnosis, previous opiate and/or benzodiazepine exposure, sedation and analgesia medications used, dosing of these medications, total time patient received sedation and analgesia prior to the initiation of the propofol washout, dosing and time of the propofol infusion, amount of decrease in sedation and analgesia infusions while receiving propofol, length of time and percentage of decrease in sedation and analgesia medications after the washout, sedation scores (MMAAS) prior to and after washout, time to achieve extubation, side effects seen from propofol, any symptoms of withdrawal, length of intubation, and total time admitted to PICU.

6-057

Title: Improving adherence to the controlled substances policy in a large tertiary care institution

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Purpose: This hospital is a multi disciplinary tertiary care facility with services in surgical care, transplant, oncology, trauma, and medicine resulting in the use of a substantial amount of controlled substances for pain management. Tight control and accountability must therefore be implemented and followed in order to remain in compliance with the regulations, and to serve our patients at the highest level of excellence. This study is to evaluate compliance with the legal regulatory requirements for the handling of controlled substances, the identification and prevention of diversion, and the evaluation of documented pain scores.

Methods: This study qualified for exemption from review by the institutional review board subject to 45 code of regulations 46.101(b). Two audit tools were developed to examine the handling of controlled substances based on the hospitals policy and regulatory standards. The first audit tool is specific for auditing all nursing units and the post anesthesia care unit (PACU). While, the second audit tool is specific for auditing procedural areas. The audits are being conducted over a twelve month period. The data collection process is a combined effort of both pharmacy and nursing through organized quarterly audits of all nursing units performed via the narcotic tracer method. Random audits are also being conducted on consistently noncompliant nursing units and the PACU. The first audit tool examines prescribers orders, documentation of waste, compliance in carrying out the order as prescribed, administration of the controlled substance within sixty minutes of withdrawal from the automated dispensing system, and the documentation of pre and post pain assessments. The procedural areas evaluated include, the cardiac catheterization lab, the electrophysiology lab, and the endoscopy suite. The procedural area audits are conducted randomly. The categories include, written or computerized prescribers orders, appropriateness of orders, and documentation of waste.

6-058

Title: Comparison of adherence to human immunodeficiency virus (HIV) antiretroviral medications among persons with mental health disorders in a Veteran patient population

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Purpose: The objective of this study is to determine whether the presence of diagnosed mental health disorders has an effect on antiretroviral medication refills and adherence indicators amongst patients infected with HIV.

Methods: This comparative retrospective chart review will be submitted to the Institutional Review Board for approval. The electronic medical record system will be used to identify a sample of patients who are infected with HIV. Of this sample, patients with diagnosed mental health disorders will be selected and medication adherence indicators will be compared. The control group will be HIV infected patients without diagnosed mental health disorders. The mental health disorders that will be included are post-traumatic stress disorder, major depressive disorder, bipolar disorder, and/or schizophrenia. The following data will be collected: patient age, gender, CD4 and viral load trends, and antiretroviral medication refill records. Data regarding the number of total medications (to include antiretroviral, psychiatric, and medications associated with other comorbid conditions) will be used to assess overall pill burden. Medication adherence will be determined by viral load (non-detectable versus measurable; peak viral load) and timeliness of antiretroviral prescription refills (actual versus expected). All data will be recorded and reported without patient identifiers, and maintained confidentially.

6-059

Title: Evaluation of anti-Xa monitoring in children receiving enoxaparin in a cardiac intensive care unit

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Purpose: According to the ACCP guidelines for antithrombotic therapy in neonates and children, a low-molecular weight heparin is recommended for treatment and secondary prophylaxis of venous thrombosis. Because of the unpredictability of enoxaparin in children, our institution protocol requires anti-Xa level monitoring for all patients on therapeutic doses of enoxaparin. The target range is 0.5 to 1.0 units/mL when obtained 4 to 6 hours after enoxaparin administration. By evaluating anti-Xa levels of patients treated with enoxaparin in the cardiac intensive care unit, we aim to determine the length of time required to achieve therapeutic levels with our current protocol.

Methods: This evaluation has been exempt from review by the Institutional Review Board as a retrospective review without subject identification. A single-center, retrospective chart review will be conducted at a tertiary pediatric referral center from July 2011 to July 2013. Patients treated with enoxaparin in the CICU with at least one anti-Xa level will be eligible. Data will be collected on patient demographics, cardiac diagnosis, anticoagulation indication, enoxaparin initial dose, enoxaparin dose required for therapeutic anti-Xa level, timing of enoxaparin doses and anti-Xa levels, anti-Xa levels, number of dose adjustments, serum creatinine, and occurrence of bleeding or thrombosis. Therapeutic anti-Xa levels will be defined as 0.5 to 1.0 units/mL. Major bleeding will be defined as bleeding into an organ or cavity or bleeding requiring transfusion. Minor bleeding will be defined as bruising, bleeding around injection or wound sites, trace blood in the urine or stool, and nosebleeds. Thrombosis will be categorized as new thrombus development and lack of resolution of current thrombus. The primary endpoint will be length of time required to achieve therapeutic anti-Xa levels in CICU patients. Secondary endpoints will include occurrence of bleeding or thrombosis, appropriateness of anti-Xa levels, and dose required to achieve therapeutic anti-Xa levels.

6-060

Title: Evaluating the use of erythromycin as a primary prokinetic agent for pediatric patients in the ICU setting at Children's National

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Purpose: The objective of this study is to evaluate the utilization of erythromycin to determine its efficacy as the primary prokinetic agent in pediatric ICU patients. The primary endpoint will be evaluated by observing for decrease in gastric residual volume(GRV). Secondary endpoint includes observing the demonstrated onset and frequency of adverse events.

Methods: A single-center, retrospective chart review will be conducted from January 2012 to June 2013. The study will review the use of erythromycin at prokinetic doses that were administered to pediatric patients in the ICU. A patient list will be generated using Discernanalytics software to determine eligible patients who qualify for inclusion in the study. Data collection will be performed via utilization of Tracks - to include Cerner and PowerChart. Observed data will include patient specific demographics, such as patient weight to be observed pre and post prokinetic therapy, diagnosis, prescribed dose, number of subsequent doses received, adverse event reports, and dates of initiation and termination of therapy. All patient identifiers are to be removed from study materials. Data collected will be compiled and analyzed in Microsoft Office Excel. Descriptive statistics will be used to report the final results and conclusion of the study. This evaluation has been exempt from review by the Institutional Review Board as a retrospective review without subject identification.

6-061

Title: Assessment and implementation of a basal-bolus insulin order set for noncritically ill patients with type 2 diabetes in a community hospital

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Purpose: Uncontrolled blood glucose is associated with negative clinical outcomes in hospitalized patients including increased risk of infection, post-surgical complications, and death. The American Diabetes Association and the American Association of Clinical Endocrinologists recommend basal-bolus subcutaneous insulin regimens for blood glucose management in noncritically ill inpatients as they more closely mimic physiological insulin release when compared to sliding scale insulin regimens. This project aims to assess the efficacy and safety of a hospital-based hyperglycemia management practice presently utilizing sliding scale insulin and to implement a basal-bolus protocol to optimize blood glucose control in noncritically ill patients with type 2 diabetes.

Methods: This study will be submitted to the Institutional Review Board for approval. In phase one of the study, electronic medical records from a two month period will be reviewed to identify noncritically ill adults with type 2 diabetes who received sliding scale insulin. Data collection will include: patient age, gender, past medical history, point-of-care glucose readings, medications, time of glucose readings and insulin dosing, and documented hyperglycemia and hypoglycemia. Rates of hyperglycemia and day-weighted mean glucose will be calculated to assess glycemic control. To assess safety, percentage of glucose readings less than 50 mg/dL and between 50 and 70 mg/dL, percentage of patients with greater than or equal to one hypoglycemic episode, and percentage of monitored days with greater than or equal to one hypoglycemic episode will be calculated. Results from the first phase will be utilized to educate healthcare providers about the benefits of a basal-bolus insulin protocol and to implement a basal-bolus protocol developed by a multidisciplinary workgroup. The completion of a third phase of the study is contingent on results from the first two phases and includes an assessment of the safety and efficacy of the newly-implemented basal-bolus protocol.

6-062

Title: Investigation of vancomycin toxicities in a tertiary care academic medical center

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Purpose: Vancomycin has been associated with nephrotoxicity, especially with longer duration of therapy, higher doses and trough concentrations, preexisting renal dysfunction, and concomitant aminoglycoside therapy, although recent studies have shown that incidence of this adverse event is less common than previously thought. Prescribers at a large tertiary care academic hospital have reported a recent increase in vancomycin-related nephrotoxicity. It is unclear if this is a real increase or the result of better awareness and monitoring. The objective of this study is to investigate the recent increase in reported toxicities and to evaluate affected patients to identify a common causative factor.

Methods: This study will be submitted to the Institutional Review Board for approval. The computer order entry system will be used to identify patients in whom possible nephrotoxicity has occurred while receiving vancomycin therapy, defined as an increase in serum creatinine of at least 0.5 mg/dL that occurs during the course of vancomycin therapy. Data collected from patients' electronic medical record will include patient age, baseline serum creatinine levels, total daily vancomycin dose, duration of vancomycin therapy, any vancomycin levels drawn during the course of therapy, and the presence of concomitant aminoglycoside therapy. All data will be collected without patient identifiers and will be maintained confidentially. Data will be analyzed to identify common characteristics of patients in whom vancomycin-related nephrotoxicity is established.

6-063

Title: Comparative cost and outcome analysis for the treatment of multi-drug resistant infections

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Purpose: Multi-drug resistant (MDR) infections are associated with higher treatment costs, extended length of hospital stay, and increased mortality. The primary objective of this study is to identify the differences in outcomes and costs between the various types of MDR infections in a United States veteran population.

Methods: This study will be submitted to the Institutional Review Board for approval. A retrospective chart review of inpatients treated for a MDR infection will be conducted upon approval. The outcomes to be examined are length of hospital stay and mortality rates. Patients will be selected from the inpatient MDR isolation roster generated in the hospital. The causative antimicrobial resistant organisms in review will include the following: Methicillin-resistant Staphylococcus aureus (MRSA), Vancomycin-resistant enterococci (VRE), Penicillin- and cephalosporin-resistant Streptococcus pneumonia, Antimicrobial-resistant Pseudomonas aeruginosa, Enterobacter species resistant to third-generation cephalosporins, Extended-spectrum b-lactamaseproducing (ESBL) Escherichia coli and Klebsiella pneumoniae. Information to be collected from the patient chart will include: race, age, sex, comorbidities, date of hospital admission, length of hospital stay, culture sensitivities, antimicrobial treatment and mortality. Mortality will be defined as a death occurring within 30 days after diagnosis of MDR. The lengths of hospital stay after infection will be defined as time from the day of culture collection until discharge from the isolation or hospital, or until death. Cost incurred for each patient will be determined by length of hospital stay and antimicrobial usage.

6-064

Title: Drug shortages: evaluating the impact on a tertiary academic medical center

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Purpose: In July 2011, the American Society of Health-System Pharmacists released the results of a survey of 353 pharmacy directors. The survey found that more than 90% of the surveyed directors agreed that drug shortages were associated increased burden and costs in 2010 compared with 2009. Labor costs associated with managing shortages were estimated at $216 million annually. However, there is little literature evaluating the impact of drug shortages on an individual hospital. For this reason, an evaluation was undertaken at a large tertiary care academic institution to determine the impact of shortages on drug costs, labor, and delays in therapy.

Methods: This analysis will look at cost data, labor data, and treatment data associated with drug shortages in order to estimate their impact on a large tertiary care academic institution and its patients. The impact of cost will be measured for several drugs, including liposomal doxorubicin and nicardipine, by comparing pre-shortage pricing to shortage pricing. The impact on labor will be measured for several batched medications, including dextrose 50% and labetolol. Additional labor figures for clinical hours associated with alternative therapy solutions and interventions will evaluated. Treatment delay will be evaluated by looking at patients registered for the doxorubicin liposomal Physician Access Program and their respective wait times. Data will be extrapolated to garner figures for fiscal year 2013. This study will be submitted to the Institutional Review Board for approval.

6-065

Title: Tolerability of boceprevir or telaprevir triple therapy in a hepatitis c veteran population

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Purpose: More than 165,000 veterans with hepatitis C virus (HCV) currently receive care within the Veterans Health Administration (VHA), of which more than 5,000 die annually. Boceprevir and telaprevir are effective in the treatment of HCV; however they bare a heavy pill burden, have many drug interactions, and when added to the backbone therapy of ribavirin and peginterferon alfa, can increase the incidence of adverse events which can ultimately lead to the discontinuation of therapy. The primary objective of this study is to determine the incidence of sustained virologic response (SVR) in a veteran HCV population.

Methods: This study is a retrospective chart review that will include hepatitis C patients at least 18 years of age or older who received triple therapy including boceprevir or telaprevir. The study duration and population sample size are to be determined. Baseline information will be collected from the patients chart and will include: race, age, sex, body weight, comorbidities, psychiatric assessments, hepatitis C virus (HCV) genotype, history of prior HCV treatment, baseline viral load, absolute neutrophil count (ANC), hemoglobin (Hgb), hematocrit (Hct), platelets (Plt), and liver function test (LFTs) results. Viral load at weeks 4, 12, 24, and 48 will be used to determine response to therapy. Adverse events will be assessed according to notable changes in baseline levels (Hgb, Hct, Plt, ANC) and reported events. Subgroup analysis will be performed comparing adverse effects and discontinuation in: treatment with boceprevir vs. treatment with telaprevir, comorbidities vs. non comorbidities, psychiatric disorders vs. non psychiatric disorders, and baby boomers vs. non baby boomers. Prior to beginning this study, it will be submitted to the Institutional Review Board for approval.

6-066

Title: Improved target vancomycin trough levels and monitoring based on vancomycin minimum inhibitory concentration (MIC) data in a pediatric hospital

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Purpose: Recent recommendations regarding the therapeutic monitoring of vancomycin suggest that if the reported vancomycin minimum inhibitory concentration (MIC) value is 1 mg/L, a vancomycin trough concentration of 15-20 mg/L should be obtained to gain the optimal AUC/MIC ratio for efficacy. The aim of this study is to assess effectiveness of vancomycin dosing and monitoring by reviewing patient specific vancomycin MIC values in comparison to the corresponding vancomycin trough levels achieved. Treatment outcomes including infection eradication and mortality will be compared between different MIC ranges and serum trough levels. Safety will be assessed with analysis of vancomycin induced nephrotoxicity.

Methods: This evaluation is exempt from review by the Institutional Review Board due to its retrospective nature without subject identification. This study will be single-center, retrospective chart review of patients admitted to a tertiary pediatric referral center from January 1, 2008-January 1, 2013. Patients will be included if 18 years old, positive microbiological cultures and received vancomycin during their admission. Vancomycin MIC values and vancomycin trough levels will both be stratified into defined MIC ranges. This analysis will investigate vancomycin MIC values as compared to the corresponding patients serum vancomycin level to determine antimicrobial efficacy. Data collection will include demographic information, concomitant medications, vital signs at initiation of vancomycin. Additional data includes microbiology cultures, MIC values, dosing information of vancomycin, serum vancomycin trough values, duration of infection and mortality information. Vancomycin safety in regard to nephrotoxicity will be assessed with serum creatinine values reported during therapy. Treatment outcomes will then be compared between the specified categories and between the contained ranges. The primary endpoint measured will be persistent infection following therapy. Secondary endpoints include duration of persistent infection and mortality within 28 days of vancomycin initiation and incidence of nephrotoxicity. Descriptive statistical methods will be used to evaluate outcomes.

6-067

Title: Ursodiol dosage and incidence of veno-occlusive disease in pediatric bone marrow transplant patients

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Purpose: Veno-occlusive disease(VOD) is a complication of hematopoietic stem cell transplantation that becomes a life threatening complication. Currently, there is no standard prophylactic regimen to prevent VOD. Ursodiol, maybe used prophylactic option, acts to suppress the immune response decreasing endothelial injury. However, the development of VOD varies depending on patient specific risk factors such as age and conditioning regimen as well. As a result, our institution has changed the VOD prophylactic regimen for HSCT patients. The objective of this study is to evaluate two different dosing regimens of Ursodiol in the prevention of VOD among pediatric patients receiving HSCT.

Methods: This evaluation has been exempt from review by the Institutional Review Board as a retrospective review without subject identification. This study will be conducted at a single center tertiary pediatric referral center as a retrospective evaluation reviewing electronic medical records to identifying patients who received a dose of Ursodiol as prophylactic treatment of VOD from July 2011 to July 2013. All patients ages eight and younger, treated with a busulfan as part of a conditioning regimen will be included in this study. Descriptive statistics will be used for the evaluation of this data. The following data will be collected on each participating patient; age; gender; admission weight: baseline liver function, bilirubin; pre-existing liver disease; diagnosis for BMT; type of transplant; type of donor; donor source; BMT conditioning regimen; graft versus host disease (GVHD) prophylaxis; GVHD status, incidence of VOD, days to diagnosed VOD after BMT.

6-068

Title: Association between serum magnesium and blood pressure in hypertensive crises patients

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Purpose: Magnesium plays an important role in numerous physiologic processes such as cardiac excitability, neuromuscular transmission, and blood pressure regulation. Observational and clinical trials have reported an inverse relationship between serum magnesium levels and blood pressure in hypertensive patients. This inverse relationship finding is inconsistent, with some studies showing a negative association, and others not showing any association. To our knowledge, there has been no study evaluating the role of serum magnesium in hypertensive crises patients. The objective of this study is to examine the relationship between serum magnesium levels and blood pressure (systolic and diastolic) in patients with hypertensive crises.

Methods: This study will be submitted to the Institutional Review Board (IRB) for approval. This is a single -center, retrospective electronic chart review of patients presenting with hypertensive crises (hypertensive emergency or urgency) documented under the ICD-9 code as Malignant Essential Hypertension (401.0). Patients identified as having Hypertensive crises based on ICD-9 code will be confirmed to have either systolic blood pressure (SBP) greater than 180 mmHg or diastolic blood pressures (DBP) greater than 120 mmHg. Patients will be included if they are 18 years of age and older and have hypertensive crises based on ICD-9 codes and confirmed with SBP and DBP values. The time period of study will be between September 1, 2012 to September 1, 2013. The following data will be collected: age, gender, race, SBP, DBP, blood pressure medications, serum magnesium, potassium, and calcium levels. The primary outcome of the study is to examine the relationship between serum magnesium levels and blood pressure. All data will be recorded without patient identifiers for confidentiality. Statistical analysis will include descriptive statistics, and simple and multiple linear regression models. Significance level will be set at alpha less than 0.05, and SPSS version 17 will be used for statistical analysis.

6-069

Title: Evaluation of the utility and impact of the electronic consult (eConsult) tool for pain management at the West Palm Beach Veterans Affairs Medical Center

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Purpose: The Pain Management electronic consult (eConsult) tool was implemented at our Medical Center to bridge the gap between primary and specialty care for veteran pain management. Prompted by the need for timely access to pain specialist advice and proper documentation of recommendations, the eConsult tool provides an avenue for providers to query pain clinical pharmacy specialists on opioid dosing conversions, tapering regimens, drug-screen interpretation, non-opioid medication options, and the state prescription drug monitoring program. The objective of this project is to evaluate the utility, impact, and satisfaction with the eConsult tool from stakeholder perspectives.

Methods: Data will be gathered by means of a retrospective review of the Computerized Patient Record System (CPRS) for all eConsults made to the pain clinic over a specified 6-month period. The following data points will be recorded: components of the tool used (tapering regimens, dosing conversions, drug screen interpretation, etc.), frequency with which each component is used, total number of recommendations made by the pain clinical pharmacy specialists, fate of such recommendations (accepted, not accepted, or accepted with modifications), reason(s) for any unaccepted recommendations, time lapse to specialist response, and type of provider entering consult (primary care, specialty care, acute care, etc.). A feedback assessment will also be employed to gauge provider satisfaction, and collect any suggestions for future tool modification. Finally, a cost analysis will be carried out as measured by adherence to our criteria for use of opioid and non-opioid pharmacologic agents. This evaluation is part of an ongoing quality assurance program approved by the local residency project committee. IRB approval was not required for the conduct of this project.

6-070

Title: Sleep aid prescribing practices at a major Veterans Affairs hospital

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Purpose: Insomnia is a notably pervasive problem among the veteran population. While many treatment options exist, standardized guidelines for pharmacologic therapy are lacking. For episodes of acute insomnia, standard practice generally dictates a sleep aid agent supply for seven to ten days until resolution of the issue. Studies suggest that intermittent use of sleep aid agents is as effective as daily use for cases of chronic of insomnia. The purpose of this medication use evaluation is to review the prescribing trends of the two most commonly prescribed sleep aids at this institution: zolpidem tartrate and temazepam.

Methods: This evaluation has been reviewed by the Office of Research and Development and has been determined to be exempt from review by an institutional review board. A retrospective search of patient records will be conducted to find all active prescriptions for zolpidem tartrate or temazepam between February 2013 and August 2013. Prescriptions for these medications will be analyzed for the quantity prescribed per 30 days and how they are prescribed to be taken. The evaluation aims to identify the number of patients who receive a daily dose of zolpidem tartrate or temazepam in contrast to those who receive a smaller supply per month. This evaluation will be used to illustrate a need for a standardized adjudication process for prescribing sleep aids. The goal of this prescribing process will be to align the institution with current good practices as defined by the Department of Veterans Affairs Pharmacy Benefits Management Service and Medical Advisory Panel.

6-071

Title: Ventilator-associated pneumonia in trauma patients: gasping for answers about contributing risk factors and the efficacy of the ventilator bundle

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Purpose: Ventilator-associated pneumonia (VAP) is a serious and common infection among trauma patients. The Institute for Healthcare Improvement (IHI) advocates for implementation of a ventilator bundle, which consists of compiled interventions intended to reduce adverse events, such as VAP, in ventilated patients. Paradoxically, one component of the bundle, stress ulcer prophylaxis (SUP), has conflicting evidence related to VAP risk. The aim of this study is to evaluate the efficacy of our institutions ventilator bundle in preventing VAP in mechanically ventilated trauma patients, with further focus on the association of VAP with SUP and antibiotics taken prior to a VAP diagnosis.

Methods: This study has received preliminary approval from the institutional Ethics Committee. A retrospective chart review will be performed from January 2010 to July 2013 on mechanically ventilated trauma patients in the surgical intensive care unit (SICU). A cohort will be used to assess the comparison of varying degrees of adherence to our institutions ventilator bundle with VAP incidence. In this analysis, we will further elucidate which components of the ventilator bundle our institution is most compliant with and how that affects the primary endpoint of incidence of VAP. VAP is determined by a trained professional from Infection Control, using the Centers for Disease Control and Prevention (CDC) definition. Furthermore, a case-control study will measure the association of SUP or prophylactic antibiotic use with VAP occurrence. Cases are patients that develop VAP while mechanically ventilated, whereas controls do not. Logistic regression will be performed to determine risk factors and preventative measures for VAP.

6-072

Title: Evaluation of educational medication tracer activities for incoming medical residents at a teaching hospital

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Purpose: Tracer activities are conducted by hospital accrediting bodies to ensure the safe, effective, appropriate, and efficient use of medications through all aspects of a facility's medication-use system. These tracers focus on medication selection, procurement, storage, prescribing, ordering, transcribing, preparing, dispensing, administering, and monitoring. In addition, medication tracers have been used for continuous process improvement measures, as they have the ability to identify potential risk points and to evaluate changes made to the system. This project will evaluate the impact of medication tracer activities when used as educational exercises for incoming medical residents within a teaching hospital.

Methods: This study will be sumbited to the Institutional Review Board for approval. The facility is conducting a monthly pharmacy tracer activity for the post-graduate year 1 (PGY1) medical residents who are currently completing a rotation on one of the four inpatient medicine teams. Two clinical pharmacy residents and the pharmacy clinical coordinator assist the Chief Medical Resident in Quality and Patient Safety (CRQS) in facilitating each meeting. Following the tracer activity, the attendees discuss the medication use process in a group setting. They are then asked to complete a survey to assess satisfaction with the tracer activity and are given the opportunity to make recommendations regarding improvement of the exercise.

6-073

Title: Exploring the Impact on Inhaler Technique Proficiency when Utilizing Multi-Media Instruction

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Purpose: In 2010 the CDC reported over 27.1 million people suffer from asthma, but a large percentage of these patients do not use their inhaler device properly; therefore, their asthma is left uncontrolled. There is a paucity of data examining effective approaches and patient education tools to provide instruction on the proper use of an inhaler device. This may result in exacerbations and unnecessary hospitalizations, especially in patients with poor health literacy. Upon this study's findings, we will be able to identify the most effective method for educating patients regarding inhaler use and help reduce the incidence of uncontrolled asthma.

Methods: After completion of written consent, participants will be asked to complete a short survey which will include: demographics, education level, health literacy level, and previous inhaler use. Participants will then be randomly assigned to one of four interventions: inhaler pamphlet instructions, Centers of Disease Control and Prevention video demonstration of inhaler, YouTube video demonstration of inhaler, or pharmacist's direct instruction. Participants will have approximately two minutes to complete the instruction portion and then will immediately demonstrate how they would administer an inhalation. During this time, the investigator will grade the participants percentage of accuracy. This accuracy percentage will be noted and then evaluated with correlation analysis between the type of intervention, health literacy level, age, ethnicity, education level, and familiarity with asthma. Participants who have asthma and already use an inhaler can participate, but this data will be kept separate from the population who does not. Their teach back assessment will include demonstration of inhaler technique and who provided them instruction on the inhaler.

6-074

Title: Evaluation of the utilization of safety surveillance software to make therapeutic interventions in patient care and maintain pharmacy services with a decreased staff

Primary Author: Alia Lynn Bakht**,** Indian River Medical Center, 1000 36th Street, Vero Beach, FL 32960; **Email:** alia.bakht@irmc.cc

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Purpose: Economically induced downsizing of pharmacy staff creates the challenge of maintaining the same pharmacy services at the same level of quality with fewer pharmacists. Hospital pharmacies must find innovative ways to improve the efficiency of patient care. Typical pharmacy services include monitoring for potential patient safety issues, including drug interactions and inappropriate drug dosing. The objective of this study is to evaluate if implementing patient safety surveillance software into the daily pharmacy workflow will allow opportunities for pharmacy interventions to be detected and resolved more efficiently, restoring the same level of service as when the pharmacy was fully staffed.

Methods: This quality initiative was developed to report changes in patient safety as a result of decreased pharmacy staff. Rules will be built into MedMined (Carefusion, San Diego CA), to survey the pharmacy database of Paragon and the laboratory databases HL7 (McKesson, San Francisco) for combinations of drugs and labs that suggest the need for pharmacist intervention. For purposes of this study, the software will identify combinations of cefepime or piperacillin/tazobactam and patient renal function as measured by creatinine clearance (CrCl). Patients will have dose adjustments made per the standard of dosing previously approved by the institutions Pharmacy and Therapeutics (P&T) Committee. The following data will be collected: antibiotic patient was receiving (cefepime or piperacillin/tazobactam) and CrCl. All data will be recorded without patient identifiers and remain confidential. Data will be collected retrospectively from January 2013 and prospectively from November 2013 and January 2014. Use of MedMined will be implemented January 1, 2014. January 2013 will be used to determine the percentage of patients appropriately dosed when the pharmacy was fully staffed, November 2013 to determine the percentage with reduced staff but no safety software and January 2014 to determine the percentage with reduced staff utilizing the safety surveillance software.

6-075

Title: Implementation of a hospital teaching certificate program for post-graduate year one (PGY-1) pharmacy practice residents

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Purpose: The American Association of Colleges of Pharmacy Academic Affairs Committee recognizes the importance of teaching certificates offered through residency programs. American Society of Health-system Pharmacists accredited programs require residents provide effective education. Teaching certificates are generally offered by colleges due to the ability of academicians to guide the growth of teaching skills, as well as to expose the teaching neophyte to various student interactions and environments. The objective of this study is to implement a hospital based multifaceted teaching certificate program involving didactic and experiential training that provides pharmacy residents the skills to be effective clinical educators.

Methods: PGY-1 residents are required to have educational experiences to complete professional expectations of the residency. A formal program for interacting with students, patients, peers and other professionals will be developed for each resident. An Institutional Review Board will review this study for approval. Residents will attend a minimum of 4 workshops, present a minimum of 3 lectures, 2 journal clubs, 2 case discussions and 2 Accreditation Council of Pharmacy Education approved lectures. Residents will be expected to co-precept a minimum of 2 experiential students during the residency year. Residents will provide passive and active learning through synchronous and asynchronous techniques to students at affiliated colleges of pharmacy. Growth and comfort as an educator will be evaluated by a pre and post self-assessment survey administered in October and April of the residency year. A rubric completed at the same time will assess resident performance in writing goals, objectives and test questions. Residents will also be assessed on their lecturing abilities, small group facilitation and precepting skills. A teaching portfolio and teaching philosophy will be developed and assessed by an independent academician. Scores from the various rubrics will be summed to provide an overall indication of growth of teaching skills.

6-076

Title: Evaluation of total parenteral nutrition utilization at a tertiary care hospital

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Purpose: Total parenteral nutrition (TPN) is essential in patients unable to obtain adequate nutrition via the gastrointestinal (GI) tract for an extended period of time. TPN can cause significant complications such as intravascular catheter-related infections, metabolic abnormalities and thrombosis. The American Society of Parenteral and Enteral Nutrition (ASPEN) guidelines serve as the standard of practice and elicit specific criteria that patients should meet before TPN is initiated in order to avoid unnecessary risk. The objective of this study is to assess TPN utilization initiated at our institution in accordance with the 2009 ASPEN guidelines.

Methods: An IRB-approved retrospective chart review will be conducted in patients who received TPN at our institution between January 2013 and July 2013. Patients less than 18 years old and patients receiving TPN prior to admission will be excluded from the analysis. The patients meeting study criteria will be stratified into critical care service and non-critical care service areas according to where the TPN was initiated. Within each stratified group, 25 patients will be selected via random number generator for inclusion into the analysis. Data to be collected will include patient demographics, indication for TPN, duration of inadequate nutrition prior to TPN initiation, functional status of the GI tract at the time of TPN initiation, duration of TPN therapy, hospital length of stay and enteral nutrition contraindications, if present, at the time of TPN initiation. The overall appropriateness of TPN utilization will be evaluated by a multi-disciplinary committee based upon criteria for initiation set forth by the ASPEN guidelines.

6-077

Title: Evaluation of the appropriate prescribing and continuation of U500 regular insulin

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Purpose: U500 regular insulin (U500) is a highly concentrated form of insulin that can be effective in patients not responding to traditional insulin regimens. It also has the potential to cause life-threatening hypoglycemia. As a result, it is prudent that patients are appropriately selected for this medication and receive it only after being provided with comprehensive education. Due to the risks and extensive patient education associated with U500, many clinics have instituted a protocol outlining the procedure for initiation and continuation of U500. The purpose of this Medication Use Evaluation is to determine the adherence to a U500 protocol.

Methods: This review has been evaluated and meets all criteria for quality assurance; therefore, it is exempt from review by an Institutional Review Board. A retrospective chart review will be performed in order to identify all patients that have had an active prescription for U500 regular insulin in their chart over the last year across the facility clinics utilizing the same U500 protocol. Patient charts will then be analyzed to determine if the protocol was followed for the initiation and continuation of U500 therapy. More specifically, charts will be analyzed to determine if patients met the criteria for U500 initiation, had clinic follow up at appropriate intervals, and received properly provided and documented patient education as outlined by the protocol. Furthermore, analysis will also focus on if these patients have concurrent prescriptions for tuberculin syringes, if the U500 prescriptions were written by authorized prescribers, and if the prescriptions were written correctly.

6-078

Title: Evaluation of the impact of IV ketorolac on the risk of bleeding following coronary artery bypass graft surgery

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Purpose: Coronary Artery Bypass Graft (CABG) surgery patients are mainly treated with opiates for pain. Opiates provide adequate pain control; however, they increase the risk of postoperative side effects. IV ketorolac has been shown to have similar efficacy as morphine as well as being safer in respect to sedation, respiratory depression, nausea and vomiting. Per the FDA, ketorolac is contraindicated in CABG patients, however previous research has studied the use of ketorolac without complications. The purpose of this study is to evaluate the impact of IV ketorolac on the risk of bleeding, as a primary objective, in patients following CABG surgery.

Methods: This study will be submitted to the R&D committee for approval. It is an operations activity designed for internal VA purposes in support of the VA mission. This is a retrospective cohort chart review study designed to evaluate the impact of IV ketorolac on the risk of bleeding compared to patients who do not receive IV ketorolac following CABG surgery. The control group will consist of cardiac surgery patients who received opiates (without IV ketorolac) following CABG surgery. A list of patients will be generated for those that underwent CABG surgery. The first 280 patients, 140 patients per group, who meet inclusion/exclusion criteria, will be included in the study. The following preoperative, intraoperative and post-operative data will be collected: age, sex, height, weight, hemoglobin, platelet count, blood loss, units transfused, drug agent /dose used, serum creatinine, creatinine clearance. Bleeding will be assessed by documented decrease in hemoglobin (hgb) from post-operative baseline (a hemoglobin drop ≥ 2g/dl will be considered significant) and/or blood transfusions (transfusions ≥2 units will be considered significant). To further analyze risk for bleeding stress ulcer prophylaxis and anticoagulants/antiplatelet agents will be recorded. Source of bleeding will be evaluated for patients with a significant drop in hgb.

6-079

Title: Review of intravenous and oral antibiotic utilization in the hospital management of infections: focus on pneumonia and skin-soft tissue

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Purpose: Evidence suggests that intravenous antibiotic treatment is a significant marker for length of hospital stay and is usually continued until definitive clinical cure can be established. Switching patients from intravenous to oral antibiotic therapy has been shown to reduce the length of hospitalization, increase patient safety and comfort, and reduce hospitalization costs without compromising quality patient care. The objective of this study is to describe the antibiotic utilization patterns and cost of care in patients transitioned from intravenous to oral antibiotics compared to those continued on intravenous antibiotics for the treatment of pneumonia and skin-soft tissue infections.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will be used to identify patients 18 years and older treated with intravenous antibiotics for pneumonia or skin-soft tissue infections January 1, 2012 through December 31, 2012 at an acute care hospital. A retrospective review will determine the following: diagnosis-related group (DRG) and international classification of diseases (ICD-9) codes, patient demographic data, residence prior to hospitalization, diagnosis, functional status, service and unit at time of admission, infection type, pre-existing comorbidities, preadmission antibiotics in past 10 days, risk factors for resistant pathogens, indwelling catheter at time of suspected or diagnosed infection, infectious disease consult, ICU admission with positive culture, severity of illness score, cultures and sensitivities, receipt of chronic wound care, surgical procedures, nosocomial acquired infections, length of stay, discharge diagnosis and disposition, readmission within 30 days for the same DRG and ICD-9 codes, empiric and targeted antimicrobial therapy characteristics, and average cost per day for a hospital bed by unit type and costs of antibiotics and drug level monitoring. The data will be transferred manually onto a scantron sheet and converted to a Microsoft Access database. Descriptive statistics will be used for reporting.

6-080

Title: Comparison of liraglutide plus U100 insulin versus U500 insulin in patients with type 2 diabetes mellitus and insulin resistance

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Purpose: Insulin resistant patients on 200 daily units or more of insulin endure large insulin volume injections, multiple daily insulin injections, weight gain, an increased risk for hypoglycemia, and increased difficulty reaching target hemoglobin A1c goal. With few treatment alternatives available, the objective of this study is to compare the efficacy of liraglutide plus U100 insulin to U500 insulin monotherapy in patients with insulin resistant type 2 diabetes mellitus.

Methods: This study will be submitted to the IRB for approval. Informed consent will be obtained from subjects. The study design is a prospective, parallel group, randomized trial over a 24 week period. Patients with type 2 diabetes mellitus on 200 daily units or more of insulin, enrolled in the endocrinology clinic, and who meet inclusion and exclusion criteria will be included in the study. Subjects will be randomized to one of two groups: U100 insulin plus liraglutide or U500 insulin regular. Subjects in the U100 insulin group plus liraglutide will continue their current insulin U100 regimen and will be started on liraglutide 0.6 mg daily, titrated to 1.2 mg daily after seven days. Subjects in the U500 insulin group will have their current U100 insulin regimen converted to U500 insulin. Follow up will occur every seven days for the first 28 days of therapy and at day 56, 126, and 168. Hemoglobin A1c, blood glucose levels, number of daily injections, and hypoglycemic episodes will be assessed. Primary endpoint is impact on hemoglobin A1c. Secondary endpoints include changes in body weight, number of insulin injections, total daily insulin dose, lipid levels, number of hypoglycemic episodes, and DM-39 Quality of Life scores.

6-081

Title: Evaluation of a clinical bedside scoring system (ATLAS) for patients with clostridium difficile-associated diarrhea and treatment regimens in a community hospital setting

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Purpose: New literature has validated a scoring system (ATLAS) using five clinical and laboratory parameters to help stratify patients with clostridium difficile-associated diarrhea (CDAD). The application of a simple bedside tool, such as ATLAS, has potential to allow more objective categorization of patients with CDAD as well as provide further guidance in optimizing therapy and outcomes. The goals of this retrospective chart review are to apply the ATLAS based scoring to patients and identify and analyze current CDAD treatment regimens and associated outcomes.

Methods: This study was approved by the Institutional Review Board. Reports obtained from the microbiology laboratory will be used to identify patients that tested positive for clostridium difficile infections. 200 consecutive patients will be included in the study as long as the patient is over 18 years of age, is positive for clostridium difficile infection, and does not have any missing data points to determine an ATLAS score. The data that will be collected are: admission date, discharge date, length of stay, positive clostridium difficile date, history of clostridium difficile infection, allergies, past medical history, temperature, age, treatment with systemic antibiotics for greater than 1 day, leukocyte count, albumin, serum creatinine, clostridium difficile treatment regimen, and whether or not the patient was readmitted for a clostridium difficile related infection within three months. All data will be recorded without patient identifiers and maintained confidentially. From this data, patients will objectively be assigned an ATLAS severity score and current treatment regimens and associated outcomes will be analyzed.

6-082

Title: Improving voluntary medication error reporting within a veterans health system

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Purpose: In To Err is Human, the Institute of Medicine recommended voluntary reporting systems for medication errors as an important part of an overall program for improving patient safety. Voluntary reporting systems focus on a broad set of errors, including those that do minimal or no harm, and help detect system weaknesses that can be fixed before causing harm. However, these systems are limited by the small percentage of total errors actually reported. This project was designed to outline current process and improvements made to a voluntary medication error reporting system within a veterans health system.

Methods: An anonymous and non-punitive medication error hotline was created for reporting by all members of the health care team. Although voluntary, it is encouraged by health system administration and viewed as a tool for patient safety and quality improvement. Hotline reports are collected by pharmacy residents with the date, location where the error occurred, and a description of the error. Reports are securely entered into an electronic database and then forwarded to the Medication Safety Committee; which is represented by members from pharmacy, nursing, medicine, and patient safety. Each error is reviewed by the committee and categorized by type and classification. Based on review of these errors, system weaknesses are detected by the committee and corrective action is taken to strengthen medication management within the health system. The Medication Safety Committee reports to the Pharmacy and Therapeutics Committee. This continuous quality improvement project does not require IRB approval. However, it has been approved by the health-system's Public Relations Officer for public presentation.

Results: Medication errors reported through the hotline have increased from 19 reports in the first quarter of fiscal year 2009 (the first quarter since its launch) to 210 reports most recently in the third quarter of fiscal year 2013. Overall, medication errors reported to the Medication Safety Committee have increased from 891 in fiscal year 2008 (before the hotline) to 1181 in fiscal year 2013. The time from when a medication error occurs to when it is received by Patient Safety has decreased from 64 days to 31 days since the beginning of electronic database entry of reports. Through voluntary medication error reporting, the committee has reviewed a broad scope of errors by type (e.g. ordering, administration, dispensing, and medication reconciliation) and by classification (e.g. omitted dose, error in documentation, wrong drug, wrong dose, and extra dose). Examples of improvements in medication management within the health system resulting from this process include patient controlled analgesia

administration and documentation, fentanyl patch administration and documentation, hydromorphone dispensing and administration, and warfarin follow-up for monitoring of drug interactions.

Conclusion: The development and implementation of a medication error hotline was associated with an increase in the number of voluntary reports submitted to the Medication Safety Committee. Medication error review by the committee was observed to be more efficient after addition of electronic database entry of reports. Changes to the voluntary medication error reporting system has resulted in improved medication management within the health system.

6-083

Title: Treatment patterns in Medicare and Medicaid patients with rheumatoid arthritis (RA) treated with a tumor necrosis factor (TNF)-alpha inhibitor

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Purpose: The 2008 and updated 2012 American College of Rheumatologys (ACR) recommendations were developed to provide guidance in the treatment of patients with RA. The treatment recommendations involve either monotherapy or a combination of synthetic disease modifying anti-rheumatic drugs (DMARDs) and newer biological therapy depending upon disease severity and prognosis. In many cases, despite treatment with multiple drug regimens, achievement of disease remission remains a challenge. A review of patients claims history sought to determine if TNF-alpha inhibitor drug therapy was compliant or noncompliant with the ACR guidelines.

Methods: The reviewers will examine WellCare claims history and identify all patients with claims for a TNF-alpha inhibitor between 1/1/2013 and 6/30/2013. Unique members with a diagnosis of RA will be identified using ICD-9/RxHCC codes and included in the study. Members who did not have at least of three months of paid claims for any medication will be excluded from the study. For the target population identified, the reviewers will utilize a retrospective study period of twelve months preceding the members latest paid claim for a TNF-alpha inhibitor (prior to 7/1/2013). The following demographic data will be collected: patient age, gender, and insurance type. Patients will be divided into three groups according to the duration of use of each TNF- inhibitor within the twelve month period (0-<3 months, 3-6 months and >6-12 months). The reviewers will identify the initial TNF-alpha inhibitor adjudicated during the study period and the subsequent switching patterns between TNF-alpha inhibitors and other medications used to treat RA. Additionally, a sub-analysis will be conducted to determine the effect of concurrent DMARD usage on treatment patterns. Data will be analyzed to determine if a patients treatment pattern is compliant with guidelines.

6-084

Title: Over-the-counter (OTC) omega-3 polyunsaturated fatty acids vs. prescription omega-3-acid ethyl esters for the management of severe hypertriglyceridemia

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Purpose: It has long been indicated that supplementation with omega-3 fatty acids can significantly reduce triglyceride levels. Currently there is only one prescription preparation of omega-3-acid ethyl esters that has been proven in clinical trials to reduce triglycerides in patients with hypertriglyceridemia when compared with placebo, but has not been compared with OTC preparations. The purpose of this study is to determine if an over-the-counter omega-3 fatty acid preparation containing similar eicosapentaenoic acid/docosahexaenoic acid (EPA/DHA) content provides equivalent triglyceride lowering in patients with severe hypertriglyceridemia as compared with the prescription preparation.

Methods: Prior to the start of the investigation, the protocol will be submitted and reviewed by the Institutional Review Board and the institutions Research and Design Committee. A retrospective chart review will be performed on 100 eligible candidates per treatment group that will be chosen at random after screening profiles between December 2004 and June 2013. Patients will be assigned nonspecific codes during data collection in order to maintain confidentiality. Profiles will be screened for those with a record of OTC omega-3 polyunsaturated fatty acid at a dose of 3 grams combined EPA/DHA daily or prescription omega-3-acid ethyl esters at a dose of 3360mg combined EPA/DHA daily. Eligible candidates for data collection will have hypertriglyceridemia (triglycerides greater than or equal to 500mg/dL) at initiation of therapy, been treated for at least six weeks, had a baseline and follow-up lipid panel at six weeks to six months following initiation of therapy. Exclusion criteria include prior use of OTC fish oil, untreated hypothyroidism, or a change in other lipid-lowering therapies between the time of the initial lipid panel and the first follow-up lipid panel. Data to be collected will include age, sex, LDL, HDL, triglycerides, total cholesterol, A1c in diabetics, and liver transaminases.

6-085

Title: Evaluation of a clinical video telehealth pain management clinic

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Purpose: Clinical Video Telehealth (CVT) uses real-time transmission of clinical video and audio in order to effectively connect a patient with a healthcare professional for care remotely. Approximately 41% of veterans live in areas of the country where they have limited access to specialty care for a variety of disease states, including complex pain management. There are many potential barriers for a veteran trying to receive specialty care, including transportation and distance issues. The purpose of this project is to evaluate patient satisfaction with the facility's CVT pain management clinic, and to assess for potential benefits associated with this CVT service.

Methods: This project was approved by the facility scientific advisory committee. IRB approval was not required. Data will be gathered from all patients enrolled in the CVT pain management clinic from July 2013 through December 2013. The following data will be collected: patient demographics, service connection percentage, months enrolled in the CVT clinic, distance from patient's home to the main VA medical center, distance from patient's home to CBOC for CVT appointment, form of transportation, travel reimbursement and/or special mode transportation costs, type of pain being treated, classes of pain medications used or failed, baseline pain scores and pain goal from first CVT visit, and follow-up pain scores in 3 month intervals. Missed opportunities for both the face-to-face and CVT pain management clinic will be collected during this time period, along with the number of patients that decline to enroll in the CVT clinic when offered the opportunity. Veterans will be asked to complete a written feedback assessment form evaluating patient satisfaction at their next CVT pain management clinic appointment, and feedback assessment forms will be administered through December 31, 2013 by CVT staff members. Data will be recorded without patient identifiers and maintained in a confidential and secured electronic file.

6-086

Title: Metabolic Support Team Quality Assurance Medication Utilization Evaluation

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Purpose: Total parenteral nutrition is an important and often life saving option in those with a non-functioning gut. In the Florida Hospital System, total parenteral nutrition (TPN) is handled by a consult service managed by the pharmacy department. In August 2012, glycemic management outside of insulin in the TPN and correctional sliding scale was expanded in the pharmacy prescriber care plan. The purpose of this medication use evaluation is to evaluate the pharmacy Metabolic Support Team services mid-point of a phased roll-out by analyzing physician utilization of TPN, preference of expanded services, nutritional support, infections and glycemic management.

Methods: A drug utilization report will be generated to identify all patients who received TPN at Florida Hospital from March 1, 2013 to September 1, 2013. A maximum of 150 patients will be randomly selected for chart review and data collection. The sample will be stratified based on campus usage to accurately reflect TPN at each location in a 2:1 fashion for campuses with MST Glycemic Management. Of the selected patients, a retrospective chart review will be conducted to identify areas of improvement in TPN utilization and management.

6-087

Title: Clinical and economic evaluation of 4-factor prothrombin complex concentrates in patients requiring urgent warfarin reversal

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Purpose: Historically, warfarin reversal was achieved with fresh frozen plasma (FFP) and intravenous vitamin-K in patients with major bleeding. However, CHEST guidelines now recommend the use of prothrombin complex concentrates (PCCs) over FFP. In April 2013, the FDA approved a 4-factor PCC (Kcentra). Prior to this approval, our institution used low-dose activated 4-factor PCC (FEIBA) outlined in the protocol by Wojcik, et al. The differences between dosing regimens of these PCCs translate to a significant cost difference. The objective of this study is to determine if low-dose activated 4-factor PCC is a cost effective alternative to 4-factor PCC for warfarin reversal.

Methods: Institutional Review Board approval will be obtained prior to data collection. A retrospective analysis will be conducted in adult patients on warfarin who required urgent reversal for major bleeding or emergent surgery and were treated with either activated 4-factor PCC or 4-factor PCC. The primary outcomes will assess efficacy (percent of patients with an INR 1.5 30 minutes after infusion) and cost (direct cost comparison of PCC). Secondary outcomes are the occurrence of thrombotic events (DVT, PE, MI, and stroke) and percent decrease in INR. Other outcomes to be evaluated include percent of patients requiring FFP, length of hospital and ICU stay, and mortality. Additional data to be collected include patient demographics, indication for warfarin, concomitant antiplatelets or anticoagulants, indication for warfarin reversal, PCC dose administered, hemoglobin, hematocrit, blood products used before and 24-hours after PCC, incidence of thrombotic events, mortality, and length of hospital and ICU stay. Numerical data will be evaluated using the Students t-test comparison.

6-088

Title: Evaluation of spironolactone use in resistant hypertension

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Purpose: Resistant hypertension is defined as blood pressure that remains uncontrolled after treatment with a diuretic and two other antihypertensive medications. A number of studies have found spironolactone to be an effective agent in treating resistant hypertension and it is often considered the fourth-line antihypertensive agent of choice. The purpose of this evaluation is to assess current use of spironolactone in patients with resistant hypertension and identify any underutilization of this antihypertensive agent.

Methods: This study does not involve direct patient contact and is exempt from evaluation by the Institutional Review Board. A retrospective chart review from July 1, 2012 to July 1, 2013 will be conducted to evaluate the use of spironolactone in patients taking five or more antihypertensive agents. Data including patient age, gender, antihypertensive regimens, pertinent laboratory parameters, most recent blood pressure and heart rate, and patients provider will be gathered. Contraindications for spironolactone use will be assessed by reviewing the patients problem list and allergies for hyperkalemia, chronic kidney disease, gynecomastia, and adverse drug reactions to spironolactone. The problem list and progress notes will also be reviewed for documented poor compliance or secondary hypertension. All data will be maintained in a secure fashion to ensure confidentiality. These data will then be analyzed to identify the number of patients with resistant hypertension that are receiving spironolactone, and the number of patients that are not receiving spironolactone and do not have contraindications for its use.

6-089

Title: A retrospective analysis to compare the effectiveness of mono-therapy versus combination therapy for the treatment of Clostridium difficile infection in a large teaching hospital

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Purpose: The only established use of combination therapy with oral vancomycin and metronidazole for the treatment of Clostridium difficile (C. difficile) are severe infections with complications (i.e. ileus, toxic megacolon, shock, or hypotension). Despite the lack of evidence supporting the use of combination therapy in uncomplicated Clostridium difficile infections (CDI), many patients are often prescribed with the assumption that combination treatment is more effective. The objective of this study is to compare the effectiveness of mono-therapy versus combination therapy for the treatment of mild, moderate and severe uncomplicated C. difficile infections.

Methods: This study has been approved by the Institutional Review Board. The electronic medical record system with the conjunction of the microbiology lab will identify patients who were diagnosed or have tested positive for C. difficile through stool samples. Data will be collected for patients who meet the following inclusion criteria: 18 years of age and older, positive with C. difficile toxin, presented with symptoms of CDI and were on antibiotics for treatment of CDI for at least 48 hours. The following will be reviewed and recorded for each patient: sex, age, weight, allergies, laboratory values on day of CDI onset (frequency of loose stools, serum creatinine, white blood cell count) severity of infection, frequency of infection, medication(s) prescribed and length of treatment. The investigator will compare the effectiveness between both therapies based on: the time to clinical cure of CDI (resolution of diarrhea for 48 hours without development of complications), clinical cure rate at day 10, length of hospital stay, recurrences within 30 days after initial symptom resolution and frequency of major complications. To protect all private health information all information will be maintained confidentially.

6-090

Title: Does the decentralized unit-based pharmacist practice model enhance clinical service quality and overall satisfaction?

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Purpose: Conventional pharmacy practice models utilize order review to identify clinical interventions. To increase pharmacists efficiency, surveillance software has been utilized to identify patients to be evaluated for potential interventions. Although considered optimal, pharmacist integrated clinical and order review services for a dedicated group of patients often require additional personnel. The value and efficiency of different pharmacy practice models have not been extensively studied. The objective of this study is to quantify clinical services and evaluate patient/practitioner satisfaction when comparing a unit-based/decentralized model to a centralized order review/surveillance pharmacy practice model.

Methods: The study will be submitted to the Institutional Review Board for approval. Two medical/surgical in-patient units serviced by different pharmacy practice models will be compared over a three month study period. In the unit serving as the control, routine services will be provided by pharmacists who process orders centrally for all the institutions patients, make interventions prompted by surveillance software, answer drug information questions, attend rounds, and provide patient education to selected patients. In the intervention arm, a pharmacist will be decentralized to provide services in a unit-based model and will be responsible only for patients from the study unit. In addition to providing routine services, the unit-based pharmacist will monitor all patients, perform in-depth chart reviews, provide patient counseling, and be integrated within the interdisciplinary environment. The following data will be collected for both models: interventions made, interventions accepted, drug information questions answered, and orders processed. Patient satisfaction will be evaluated using medication related question responses from the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey tool. Prescriber and nursing service satisfaction as well as pharmacist professional satisfaction will be evaluated using survey tools.

6-091

Title: Evaluating the appropriate utilization of albumin in a community-based hospital post-hetastarsh food and drug administration (FDA) warning

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Purpose: In June of 2012, the FDA released a warning regarding an increase in morbidity and mortality when hydroxyethyl starch is used in critically ill adult patients, including patients with sepsis and those admitted to the intensive care unit. Because overlap exists for some indications for which albumin and hydroxyethyl starch are commonly used, it is expected that many clinicians will feel compelled to use albumin in place of hetastarch. The objectives of this study are to quantify and analyze the utilization of albumin at our institution in order to determine if the warning has affected the utilization of this medication.

Methods: A retrospective electronic chart review for the months of July, August, and September of both 2012 and 2013 was conducted to identify the utilization of albumin and hydroxyethyl starch. All patients 18 years of age and older were included. Approval by the Baptist Health South Florida Institutional Review Board was obtained. Information regarding patient demographics, laboratory data, and in-hospital clinical course was collected without patient identifiers and maintained confidentially. Data collection included factors directly associated with current recommendations for the use of albumin. Based on the recommendations provided by the American Thoracic Society guidelines for the use of colloids, and the University Hospital Consortium guidelines for the use of albumin, non-protein colloids, and crystalloids, a determination will be made regarding the appropriate use of albumin at our institution. For each indication discussed in the aforementioned guidelines, the percentage of patients using hydroxyethyl starch or albumin in 2012 will be compared with the percentage observed in 2013 to determine any trends in the utilization of albumin and hydroxyethyl starch. The study investigators anticipate the hypothesis that more albumin and less hydroxyethyl starch will be used after the warning.

6-092

Title: Re-implementation of a pharmacist managed metabolic syndrome clinic in a mental health setting at the West Palm Beach Veterans Affairs Medical Center

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Purpose: Second-generation antipsychotics (SGA) are often prescribed first line for the treatment of mental health disorders due to their proposed improved tolerability compared to first-generation antipsychotics; however they are associated with metabolic complications, increasing the risk of cardiovascular disease. While current guidelines recommend monitoring of these risk factors, patients are not appropriately screened in practice. A metabolic clinic was previously established for a limited time period at a medical center in West Palm Beach, Florida, but was limited to mental health providers. The clinic will be expanded to other outpatient areas to assess the impact of a pharmacist-managed metabolic syndrome clinic.

Methods: Patients receiving SGAs at the medical center will be referred to the metabolic clinic by mental health and primary care providers via a Computerized Patient Record System clinic consult if they meet the criteria for metabolic syndrome according to the American Heart Association. The consult was previously created during the pilot implementation of this project and will be re-opened during this project. All consults for eligible patients will be reviewed by the mental health clinical pharmacists and acted upon within five business days. Patients and referring providers will be notified of the appointment date and time and any necessary lab work that is needed prior to the appointment. The pharmacist will be responsible for the ordering and monitoring of labs, patient education, blood pressure and waist circumference measurement, and any psychiatric and primary care medication adjustments based on metabolic parameters. A retrospective review will be performed to collect all relevant data, including the number of pharmacist interventions, to assess this service and its impact on patient care. This evaluation is part of our ongoing quality assurance program and was approved by the local Residency Project Committee. IRB approval was not required for this project.

6-093

Title: Medication Use Evaluation of Liposomal Bupivacaine in the Florida Hospital System

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Purpose: Clinical trials have compared the use of liposomal bupivacaine to placebo and it has been shown to decrease post-op opioid use, time to first rescue opioid, post-surgical length of stay, and overall hospitalization costs. However, studies that compare these clinical outcomes with standard post-surgical treatment are lacking. Retrospective review of liposomal bupivacaine use compared with that of standard post-surgical treatment will be conducted to determine its impact on time spent in PACU, concurrent pain medications, and hospital length of stay. Additionally, protocol compliance, prescribing patterns, and overall treatment cost will be evaluated.

Methods: The institutional review board approved this retrospective chart review. A drug utilization report will be generated to identify patients who have received liposomal bupivacaine at any Florida Hospital campus from June 1, 2013 to August 31, 2013. Additionally, patients who have received standard post-surgical treatment from February 1, 2013 to April 30, 2013 will be identified using a drug utilization report. Both study groups will be stratified by campus. For the purposes of this MUE, only patients who received a hernia repair, which is the most common, non-gender specific procedure at Florida Hospital in which liposomal bupivacaine is used, will be included. A total of 40% of patients who received liposomal bupivacaine during the study period will be included. An equal number of patients that received standard post-surgical treatment will be randomly selected. Patients medical records will be reviewed to evaluate appropriate use of liposomal bupivacaine based on approved Florida Hospital criteria and pertinent clinical outcomes.

6-094

Title: Evaluation of dofetilide home medication continuation in hospitalized patients within a community health system

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Purpose: Dofetilide is a high-risk medication under the Food and Drug Administration's Risk Evaluation and Mitigation Strategy (REMS) program. This program manages known or potential serious risks associated with a drug to ensure that benefit of the drug outweighs its risk for appropriate usage. At our institution, a protocol for initiating new start dofetilide exists; however, there is no formal protocol for monitoring patients admitted with dofetilide as a home medication. The purpose of this study was to evaluate appropriate continuation of therapy according to approved indications, dosing, and REMS compliance to assess our state of practice identifying areas for improvement.

Methods: An electronic health record retrospective review was performed on patients admitted to the health system within the past 18 months with dofetilide as a prior to admission medication since January 1, 2012. Patients 18 years of age or older admitted to any campus within the health system were included. Patients less than 18 years of age or who were newly started on dofetilide in the hospital as a first time dose were excluded. The following data was collected: reason for admission, length of stay, sex, age, major interacting medications, co-administration of other antiarrhythmics, serum creatinine, calculated creatinine clearance, potassium/magnesium level, admitting physician, name of registered prescriber of dofetilide in accordance with REMS, consult notes in regard to EKG/QTc interval, dose of dofetilide received, indication for dofetilide use, and whether dofetilide was continued at discharge. Data was recorded without patient identifiers and maintained confidentially. Statistical analysis will be performed through descriptive statistics and multivariate analysis. All clinical research performed in this project was approved by the appropriate institutional review committee.

6-095

Title: Comparison of two neonatal intensive care unit-specific vancomycin protocols in the achievement of goal pharmacokinetic concentrations in a children's hospital

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Purpose: In neonatal intensive care units (NICUs), antibiotics are prescribed for suspected or definitive infections, particularly to rule out sepsis. Immature immune systems, intravenous lines, and continuous adult contact are risk factors for infection in this population. Failure to acknowledge rapidly changing neonatal characteristics can result in medication ineffectiveness or toxicity. The purpose of this study was to compare two implemented Vancomycin NICU protocols, differentiated by dosage recommendations and goal trough concentrations. The study outcomes compared the protocols pertaining to percent of patients achieving goal trough concentrations, the duration of antibiotic therapy and the percentage experiencing serum creatinine escalations during treatment.

Methods: Using a biphasic approach, an analysis was performed on one protocol used in the NICU prior to February 2013 and an updated version implemented after February 2013 with a maximum of sixty patients per phase. Patients included in the study were admitted to the NICU who received three or more doses of vancomycin while inpatient, and received only one round of Vancomycin therapy. Patients were excluded if they received two or less Vancomycin doses or were considered special cases (Infectious Disease consults requested for patients requiring abnormally high/low trough concentrations). Lastly, any additional round of Vancomycin therapy was excluded from analysis in order to avoid duplicate data. The results will be analyzed based upon goal pharmacokinetic concentrations and antibiotic effectiveness. Statistical analysis will be performed through descriptive statistics and chi-squared testing. These methods examine patient demographics, indication of medication use, recorded trough concentrations, and protocol recommendations. A Fishers exact test will be used to determine the percentage of patients with sub/supra-therapeutic trough concentrations. All clinical research performed in this project was approved by the appropriate institutional review committee with a completed waiver of informed consent.

6-096

Title: Proton pump inhibitor-associated hypomagnesemia: a retrospective case-control study

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Purpose: In general, proton pump inhibitors (PPIs) are recognized as safe and effective drugs. However in 2011, the Food and Drug Agency (FDA) issued a safety communication outlining the risk of hypomagnesemia with prolonged PPI use. After a review of reports filed with the Adverse Event Reporting System (AERS), medical literature, and periodic safety updates, the FDA mandated that prescription PPI labels address this rare but serious side effect. The primary objective of this study is to investigate the frequency of PPI-associated hypomagnesemia amongst a veteran population in a facility where the majority of PPIs are obtained through prescription only.

Methods: This study has been submitted to the Institutional Review Board for approval. The Computerized Patient Recording System (CPRS) will identify patients with a low magnesium level (case group, <1.8 mg/dL) and those with normal magnesium levels (control group, 1.8 2.4 mg/dL). CPRS will be searched for an active order for a PPI during the same time frame the magnesium level was obtained. Other data to be collected includes indication for PPI use, specific PPI and dose, refill history, duration of therapy, as well as concomitant diuretic use. Demographic information will also be collected, including subject gender, age, and race. All data will be recorded without patient identifiers and maintained in a locked cabinet when not in use. Data collected will be reviewed by a team of clinicians and assessed to identify frequency of PPI-associated hypomagnesemia and other related clinical factors.

6-097

Title: Impact of a pharmacist led pain, agitation and delirium protocol in an intensive care unit setting in a community teaching hospital

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Purpose: The Society of Critical Care Medicine recently published a guideline update for the management of pain, agitation and delirium (PAD) in mechanically ventilated patients. These guidelines provide clinicians an evidence-based, patient centered method to promote appropriate management of sedation, analgesia and delirium. Impact of a pharmacist led approach has been shown to improve compliance and patient outcomes. Current protocol adherence of the hospital in review does not show consistency with published guidelines. Therefore, the purpose of this study is to implement an institution specific PAD protocol and evaluate the impact of pharmacist involvement in the implementation and monitoring process.

Methods: The study will consist of two phases. A retrospective analysis will be conducted from January 2012 to March 2012. All adult mechanically ventilated patients receiving continuous sedative infusions will be identified via the pharmacy computer database system. The following baseline data involving compliance with current sedation and analgesia protocol will be collected: sedative and/or analgesic agent used, sedative and/or analgesic assessment performed, duration of mechanical ventilation, ICU length of stay, overall hospital length of stay, use of restraints, daily interruption of sedation if appropriate, and number of self-extubations. The second phase will involve a revision to the current sedation and analgesia protocol and implementation of a delirium protocol with pharmacist involvement. Education in the form of live lectures and dissemination of the protocol to the medical, nursing and respiratory staff will be completed by the pharmacist to ensure compliance. A prospective evaluation comparing retrospective data will be done to evaluate compliance with revised protocol. This study has been approved by the Pharmacy & Therapeutics Committee.

6-098

Title: Safety of enoxaparin dosing regimens after cardiac ablation procedures

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Purpose: Ablation of foci within the left atrium has been shown to resolve symptoms of atrial fibrillation and atrial flutter. However, no standard has been established for anticoagulation after the procedure. Enoxaparin has been well described in the literature as a means to provide anticoagulation after a cardiac ablation procedure. The only doses previously studied were 0.5 mg/kg and 1 mg/kg, both given twice daily. The primary objective of this study was to compare the incidence of major bleeding in patients who received enoxaparin doses between 0.5 mg/kg and 1 mg/kg with patients who received 0.5 mg/kg or 1 mg/kg.

Methods: This single-center, retrospective cohort study included subjects greater than 18 years of age who received an atrial fibrillation or atrial flutter ablation procedure and at least one documented dose of enoxaparin post-ablation. Subjects were identified with an institution-specific registry of all cardiac ablation procedures. All statistical analysis was performed using GraphPad Software (La Jolla, CA). Nominal, categorical and continuous variables were compared using the ANOVA test, Kruskal-Wallis test, chi-square test or the Fisher exact test, as appropriate. Statistical significance was set at $p < 0.05$. This research was approved by the Institutional Review Board at Georgia Regents Medical Center.

Results: There were 119 subjects who satisfied the inclusion and exclusion criteria. The incidence of major bleeding in each group was similar ($p = 0.92$): enoxaparin doses greater than or equal to 1 mg/kg (1/21 or 4.8%), enoxaparin doses between 0.5 mg/kg and 1 mg/kg (2/67 or 3%) and enoxaparin doses less than or equal to 0.5 mg/kg (1/31 or 3.2%). No subjects in any group experienced a documented ischemic stroke ($p = 1$). Only the incidence of heart failure ($p = 0.03$) was different between groups at baseline.

Conclusion: There may not be a difference in the incidence of major bleeding between enoxaparin dosage ranges. Intermediate dose enoxaparin (0.5 mg/kg to 1 mg/kg) may be safe to use after cardiac ablation procedures.

6-099

Title: Pneumonia care in the community hospital setting: the causes of readmission

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Purpose: The Affordable Care Act established the Hospital Readmissions Reduction Program, which requires CMS to reduce payments to hospitals with excess readmissions, effective for discharges beginning on October 1, 2012. It has become imperative to assess the readmission rates for pneumonia and identify any opportunities to reduce the readmission rate. With an overall readmission rate of 18.75%, the health system appears to be on par with state and national readmission rates of 18.1% and 18.5% respectively; however, the flagship location was charged with a 0.11% reduction in Medicare repayment for fiscal year 2013 with another location charged with a 0.28% reduction.

Methods: Utilizing the electronic health record, we will collect data on up to 100 patients. Based on the inclusion and exclusion criteria, we will assess all patients initially admitted from October 1, 2012 to June 30, 2013 with a primary or secondary diagnosis of pneumonia that were readmitted within 30 days of discharge with a primary or secondary diagnosis of pneumonia. Identifying confounders such as admission to ICU, use of ventilator and antibiotics prescribed, we will retrospectively review trends in data to identify opportunities for improvement in the readmission rate. Key points of data collection include discharge antibiotics on initial admission, location patient was discharged to after initial admission, readmission antibiotics prescribed and any comorbid diseases documented. GraphPad software will perform descriptive statistics to analyze the data collected on Microsoft Excel. This study was approved by the institutional review board for the health system.

6-100

Title: Evaluation of hyperglycemic crises management in the emergency department

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Purpose: Literature supports the need for a standardized approach to manage diabetic ketoacidosis and hyperosmolar hyperglycemic syndrome to achieve improved patient outcomes. At our institution, prescribing patterns for these patients are inconsistent and current protocols are underutilized. The purpose of this study is to evaluate our adherence to evidence-based guidelines for the management of hyperglycemic crises in adult and pediatric patients in the emergency department (ED). Process improvement strategies will be identified and implemented in noncompliant areas.

Methods: Prior to data collection, institutional review board approval will be obtained. A retrospective chart review will be performed for patients with an initial blood glucose greater than or equal to 250 mg/dL treated in the ED from January 2013 through June 2013. Pregnant patients and patients receiving insulin for the treatment of hyperkalemia will be excluded. Data to be collected include: patient demographics, diagnosis, initial medication treatment (intravenous fluids, electrolyte replacement, and insulin), percent glucose reduction at 1, 2, 3, and 4 hours, and incidence of adverse events (hypoglycemia and hypokalemia). The primary objectives of the study are to evaluate the management of hyperglycemic crises with regards to fluid, insulin, and electrolyte replacement, and to determine the incidence of adverse events. The secondary objective of the study is to implement process improvement strategies in noncompliant areas.

6-101

Title: Evaluation of opioid consumption in postoperative open heart patients receiving IV acetaminophen

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Purpose: Pain management is an important component of postoperative care. Postoperative pain has been associated with increased complications and hospital length of stay, as well as decreased patient satisfaction. Opioids remain the agents of choice for severe postop pain control; however, they are related to a number of unwanted side effects and postoperative outcomes. Intravenous (IV) acetaminophen has been shown to be a safe non-opioid analgesic that reduces opioid consumption and related side effects in surgical patients. This study aims to determine if IV acetaminophen reduces opioid consumption in postoperative open heart patients.

Methods: A retrospective chart review will be conducted for all patients, at least 18 years of age, who had open heart surgery between March 1, 2013 and July 31, 2013. Exclusion criteria includes patients with chronic pain syndrome, history of substance abuse, chronic opioid use, or corticosteroid use within seven days prior to surgery. Patients will be divided into a control group and an intervention group. The intervention group will be patients who received at least 1 dose of IV acetaminophen during the 24-hour postop period. The primary endpoint will be the total amount of opioid consumption in oral morphine equivalents over 24 hours postop. Secondary endpoints include length of stay, time to extubation, postop nausea and vomiting, ileus development and liver function tests. Primary and secondary endpoints will be compared between the two groups to determine if IV acetaminophen reduces opioid consumption and improves patient outcomes after surgery.

6-102

Title: Evaluation of the use of three or more simultaneous antithrombotics in patients at a community health-system

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Purpose: Antithrombotic medications such as anticoagulants and antiplatelets all carry an inherent risk of bleeding. The risk of bleeding may be amplified as the number of concurrent antithrombotic agents increases. Patients may receive multiple antithrombotic medications simultaneously and in various combinations depending on indications present. The objective of this study is to analyze the use of three or more simultaneous antithrombotic agents in patients during their hospitalization as it relates to bleeding risk.

Methods: This study has been approved by the Institutional Review Committee. Waivers of informed consent and research subject authorization were accepted due to the retrospective nature of the study. Collected data will be secured and de-identified to maintain confidentiality. A report generated from the electronic medical record system will identify patients who received three or greater antithrombotic drugs simultaneously for a period greater than 24 hours. The following data will be collected: hospital, age, antithrombotics received, indications for antithrombotics, number of antithrombotics used immediately prior to admission, number of antithrombotics continued upon discharge, medical service adding the third or greater antithrombotic, presence of hemoglobin drop greater than or equal to 2 mg/dL, presence of bleeding requiring antithrombotic discontinuation, highest INR during admission, and if the patient received anticoagulant bridging therapy. As the data will be evaluated throughout a healthcare-system, patients will be stratified first by hospital campus, then by which combination of antithrombotic drugs they received. Descriptive statistics will be utilized to determine if certain combinations of three or more simultaneous antithrombotic agents expose patients to an increased risk of a bleeding event.

6-103

Title: Development and evaluation of a protocol-driven culture review service for patients discharged from the emergency department

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Purpose: Previous studies have demonstrated the benefit of a pharmacist-managed culture review service for patients discharged from the Emergency Department (ED) to ensure appropriate outpatient antimicrobial therapy. In September 2012, ED pharmacists developed and implemented a new protocol-driven culture review service at the request of the departments medical director to optimize follow-up care. The primary objective of this study is to describe the culture review service at our institution; the secondary objective is to evaluate the impact of this service.

Methods: This study will be submitted to the hospitals Institutional Review Board for approval prior to data collection. A detailed outline of the steps for establishing our culture review service will be described. An electronic chart review will be performed between September 2012 and August 2013 to identify patients with positive cultures after discharge from the ED. The primary outcome is the number and types of clinical interventions performed by the ED pharmacists. Data collected for each intervention will include: patient demographics, culture source, culture and susceptibility results, antimicrobial therapy at discharge, category, protocol use, physician involvement, and time. The secondary outcome is the economic impact associated with these pharmacist interventions.

6-104

Title: Appropriate use of ipratropium bromide and albuterol sulfate inhalers in the treatment of asthma and chronic obstructive pulmonary disease (COPD)

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Purpose: Ipratropium bromide and albuterol sulfate is a combination product used in the treatment of asthma and chronic obstructive pulmonary disease (COPD). Both drugs cause bronchodilation; albuterol via stimulation of beta 2 receptors and ipratropium antagonizes muscarinic receptors. The CFC-containing metered-dose inhaler is being replaced with a non-propellant containing formulation. The purpose of this medication use evaluation is to review the appropriate use of ipratropium bromide and albuterol sulfate primarily based on dose and indication, including the off-label indication for asthma. Additional observations will include the number of COPD exacerbations and emergency room visits.

Methods: This medication utilization review has been reviewed and meets all criteria for a quality improvement project. It has therefore been deemed exempt from an investigational review board review. A retrospective chart review of electronic records was conducted to identify patients with an active prescription for either the propellant or non-propellant ipratropium bromide and albuterol sulfate inhaler, from March 1, 2013 through September 1, 2013. Of the 1,673 patients prescribed the inhalers, 418 patient records will be examined. Patient selection was randomized by selecting every fourth patient from an alphabetical listing. Data to be collected and analyzed will include the indication for use, dosing regimen, number of emergency room visits and number of COPD exacerbations. All data collected will be kept confidential and stored without patient identifiers.

6-105

Title: Evaluation of intrathecal hydromorphone vs. intrathecal morphine for patients undergoing cesarean section: a retrospective study

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Purpose: The objective of this study is to evaluate the safety and efficacy of intrathecal hydromorphone compared to intrathecal morphine for post-operative analgesia in cesarean section patients. The results of the study will add to prior data and may provide information on the use of an alternative therapy for anesthesia prior to cesarean section in time of drug shortages of conventional therapy.

Methods: A retrospective chart review will be conducted at a large acute care facility. This study will examine 200 patients who underwent routine cesarean section between July 2011 and August 2012. The patient population will have received either intrathecal hydromorphone or preservative-free morphine for anesthesia prior to the procedure. The primary endpoint will assess efficacy by comparing the total dose of intravenous opioids administered within 24 hours post anesthesia end time. Secondary endpoints will compare the time until the first administered dose of opioids, pain score within 24 hours post anesthesia end time, and APGAR score of the newborn at 1, 5, and 10 minutes. Safety will be analyzed by a comparison of patients who experienced severe and common adverse drug reactions as well as medication used to remediate documented side effects.

6-106

Title: Patient understanding and perceptions of the albuterol/ipratropium soft mist inhaler (SMI) due to conversion from albuterol/ipratropium metered dose inhaler (MDI)

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Purpose: The phasing out of inhalers containing propellants has prompted the introduction of new oral inhalation devices to market. In 2011, the Food and Drug Administration approved the use of an albuterol/ipratropium soft mist inhaler (SMI), necessitating a conversion from the metered dose inhaler (MDI) to the SMI within the institution. The objective of this study is to assess patient understanding of the new device due to this conversion. The results will guide clinicians to improve processes to ensure patient safety and promote patient understanding and satisfaction during therapeutic conversions.

Methods: This study will be submitted to the Institutional Review Board for approval. Patients will be recruited voluntarily through posters at the institution and its outpatient clinics. Patients responding due to interest in the poster and who meet inclusion and exclusion criteria will be asked to complete a survey evaluating their understanding of the new SMI inhaler device. Patients will have the option to complete the survey by telephone or in writing. Those completing it in writing may return it in person or by mail in a prepaid envelope. Inclusion criteria are patients with a diagnosis of chronic obstructive pulmonary disease (COPD) and who were switched to the SMI from the MDI. Patients in nursing homes or requiring assistance with the administration of the inhaler as well as newly diagnosed COPD patients who did not undergo conversion will be excluded. The survey will assess patient understanding of the new SMI device based on the type of education method provided (face to face, online demonstrational video, package insert directions), their understanding of the change in directions for use, any reported side effects, the ease of use (set up and/or inhaler technique), and their perception of the impact on symptoms of COPD.

6-107

Title: Pilot quality improvement program of pharmacist-assisted medication reconciliation and regimen review following discharge to home hospice in a veteran population

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Purpose: The Joint Commission National Patient Safety Goals (NPSG) requires that medication reconciliation be performed upon any transition of care to avoid potential harm from medication discrepancies (NPST 03.06.01). Part of the role of the hospice clinical pharmacist in delivering pharmaceutical care involves performing a medication regimen review to identify medication-related problems. This project aims to improve the medication reconciliation process upon transition from inpatient units to home hospice care by identifying medication discrepancies as well as to establish and describe the role of a clinical pharmacist in identifying and resolving medication-related problems.

Methods: Patients discharged from inpatient care to home hospice services from October 2013 to March 2014 will be included. Those patients who die before medication reconciliation, are unable or unwilling to participate in medication reconciliation, unable to be reached after 2 telephone calls, or rescind home hospice care will be excluded. The pharmacist will be notified by the social worker of discharges to home hospice. Medication reconciliation will be performed by the clinical pharmacy resident via telephone with the hospice agency and patient within 2 weeks of discharge. Adverse drug reactions and allergies will be confirmed and documented. The medication regimen will be reviewed for drug-related problems. All discrepancies to the patients medication list will be documented, and the patients primary care provider will be contacted via telephone or note in the electronic medical record when medication changes are recommended. Once the 2 lists are reconciled, the computerized patient record system (CPRS) medication list will be updated with the medications that the patient is receiving from non-Veterans Affairs providers. Data will be analyzed using descriptive statistics. This evaluation is part of our ongoing quality improvement program and was approved by the local Residency Project Committee. IRB approval was not required.

6-108

Title: Impact of preferred beta blocker use on readmission rates in heart failure patients with an ejection fraction of less than or equal to 40 percent

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Purpose: The Joint Commission heart failure core measures have been established as a set of standards for healthcare systems to improve patient outcomes. These standards include discharge instructions, left ventricular systolic function evaluation, and angiotensin converting enzyme inhibitor or angiotensin II receptor blocker use. Presently, the core measures do not address beta blocker use as recommended by current guidelines. The primary objective of this study is to evaluate whether hospital readmission rates are impacted by appropriate use of a guideline recommended beta blocker in heart failure patients with an ejection fraction of less than or equal to 40 percent.

Methods: This study has been submitted to the ethics and compliance committee for approval prior to initiation. This will be a single center, retrospective study. Written informed consent is not necessary as data regarding heart failure patients and readmissions will be collected from an electronic record database from January 2011 through September 2013. Patients will be excluded from the study if they are readmitted to the hospital within 30 days for any reason other than heart failure, have an ejection fraction of greater than 40 percent, or have a contraindication to beta blocker use. The primary endpoint of this study is to determine whether a statistically and clinically significant difference exists between the percentage of heart failure patients who are discharged on a preferred beta blocker and then readmitted to the hospital within 30 days, versus the percentage of heart failure patients who are discharged on a non-preferred beta blocker or no beta blocker at all, and readmitted to the hospital within 30 days.

6-109

Title: Under-treatment of Chlamydia trachomatis infections among pregnant women in the emergency department

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Purpose: At emergency departments (ED) nationwide there is an increase in incidences of pregnant women screened for Chlamydia trachomatis (CT) on initial ED visit, but not empirically treated. Patients are often screened for CT due to asymptomatic manifestations. Untreated CT amongst pregnant women may increase the probability of premature rupture of membranes and low birth weight. Among pregnant women screened positive for CT, there is a dividend of those empirically treated with azithromycin and those untreated upon initial visit. The objective of this study is to assess whether CT is under-treated among pregnant women screened positive for CT upon initial visit.

Methods: This study has been approved by the Institutional Review Board. The International Statistical Classification (ICD-9) code system used by electronic medical records, in conjunction with the microbiology lab will identify patients that meet the inclusion criteria. Data will be collected for patients from August 1, 2012 to August 1, 2013 who meet the following inclusion criteria: 18 years of age and older, pregnant and culture positive for CT upon initial visit to the ED. The following data will be reviewed and recorded for each patient: baseline characteristics (age and medical allergies), date and time of ED visit, trimester of pregnancy, reason for visit to the ED, if empiric treatment received for CT upon initial visit, and follow-up. The investigator(s) will determine the frequency of pregnant women with CT who were untreated and those who were empirically treated upon initial visit of the ED. Furthermore, investigator(s) will quantify the number of untreated patients in the ED who were lost to follow-up. All private patient health information will be maintained confidentially.

6-110

Title: Implementation of a sepsis management protocol and sepsis education program in a community hospital

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Purpose: The 2004 Surviving Sepsis Campaign established guidelines to identify early sepsis with the focus of initiating therapy before sepsis is established for better outcome. Clinicians at Indian River Medical Center (IRMC) developed sepsis management protocol (SMP) that were not utilized due to complexity and the delay in physicians receiving patients results. New IRMC's goals were established in 2013 with the decision to implement testing and therapy given to the bedside nurse based on physiologic findings. The objective of this study is to promote and evaluate early identification of sepsis and treatment of septic patients through implementation of an evidence-based SMP.

Methods: Sepsis screening tool (SST) and sepsis treatment order set (STO) were refined by the sepsis leadership team based on the 2012 Surviving Sepsis Campaign guidelines. An education campaign including online learning modules, in-services, presentations, flyers and posters will be conducted to inform the medical staff of the protocol and the automatic interventions that will be performed based on bedside observations. IRMC nurses will be taught how to use the screening tools and initiation of therapy order forms. Implementation of the updated SMP will begin in the emergency department (ED) as a 30-day pilot trial in December 2013 with subsequent hospital-wide initiation. Identification of sepsis via the SST will activate the institutions rapid response protocol and trigger initiation of the STO. SST forms will be collected by primary investigators and stored in key-locked drawer in order to maintain confidentiality. The investigators will follow septic patient cases and record treatment and outcomes. Patient data including vital signs, lab values, active therapy, length of stay in the ED, Intensive Care Unit and hospital wards and mortality data will be collected, de-identified and put in a password-encoded spreadsheet to determine compliance with the protocol and clinical outcome compared to historical data.

6-111

Title: Atypical antipsychotic selection: aripiprazole prescribing habits at the West Palm Beach Veterans Affairs Medical Center

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Purpose: Prescribing guidelines of atypical antipsychotics (AA) at a medical center in West Palm Beach, Florida follow a hierarchal procedure of use based on aspects such as tolerability and cost. Prescribers must try risperidone, quetiapine, olanzapine, and ziprasidone before prescribing aripiprazole, unless a contraindication to therapy exists to the aforementioned medications. The purpose of this project is to quantify the amount of requests for aripiprazole, determine if aripiprazole is being prematurely requested, examine the documented reasons for switching to aripiprazole, and consider the need for a modification of the current prescribing order of antipsychotic medications.

Methods: Medication approval consults submitted for aripiprazole from January 1, 2013 through December 31, 2013 will be complied. The reason for medication approval and any additional comments will be documented. The medical chart will be reviewed to affirm adherence to current AA prescribing hierarchy. If a patient has not completed a trial with one of the earlier options, then assessment of contraindications will occur. Previous AA trials length of therapy, changes in metabolic syndrome parameters (e.g., 7% weight gain and documentation of fasting lipids, glucose, and A1C) and changes in QTc per ECG, if available will be assessed and documented. Length of therapy will be determined (in months) by the date initiated per refill record until the time of discontinuation or end of the specified time frame. Data will be analyzed to determine the need for adjustment of the current atypical antipsychotic prescribing hierarchy. This evaluation is part of our ongoing quality assurance program and was approved by the local Residency Project Committee. IRB approval was not required for this project.

6-112

Title: Quality assurance review of the conversion of rosuvastatin to atorvastatin at a Veterans Affairs medical facility

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Purpose: The purpose of this medication utilization evaluation is to assess the safety and efficacy of the institutional conversion of rosuvastatin to atorvastatin at a Veterans Affairs (VA) medical facility.

Methods: A retrospective chart review will be performed of patients who were converted from rosuvastatin to atorvastatin during the institution-wide conversion beginning October 2012. The patient records will be evaluated to determine the safety and efficacy of the institutional conversion. Demographics, lipid, liver and kidney function panels will be recorded for every patient converted. Lipid panels will be assessed both pre- and post-conversion to determine the efficacy of the institutional conversion. The safety of the conversion will be determined by the presence of any adverse drug reactions or laboratory abnormalities following the conversion. This evaluation has been reviewed by the BPVAHCS Office of Research and Development and has been determined to be exempt from review by an institutional review board.

6-113

Title: Evaluation of the significant increase in piperacillin-tazobactam utilization in a tertiary care hospital

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Purpose: In a tertiary care hospital, the average DDD (defined daily dose) of piperacillin-tazobactam increased from a monthly average of 78.2 from March 2012 through February 2013 to 100.4 in the month of March 2013. Due to the increased risk of resistance with overutilization, a significant increase (28.4%) in utilization of a broad spectrum antibiotic is concerning. The goal of this study is to compare the prescribing patterns of piperacillin-tazobactam in March 2012 and March 2013.

Methods: An IRB approved retrospective chart review will be conducted in adult patients who received one or more doses of piperacillin-tazobactam in March 2012 or March 2013. Patients who were in an intensive care unit for more than one day during their pipercillin-tazobactam regimen will be excluded. Up to 100 patients will be randomly selected by including every third patient who met inclusion criteria from a generated report containing every patient who received piperacillin-tazobactam during the study period. Data collection will include age, gender, indication, duration of therapy, length of stay, infectious disease (ID) physician involvement, culture status, streamlining after culture finalization, and days post-finalization to streamlining. Indication and duration of therapy will be categorized as appropriate or inappropriate based on current disease state, specific guidelines or recommendations from an ID physician. Days after culture finalization where a more narrow-spectrum agent was available will also be considered inappropriate. The primary endpoint will be the identification of inappropriate utilization from March 2012 compared to March 2013.

6-114

Title: Evaluation of pharmacists impact on lipid parameters associated with pharmacy telehealth program

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Purpose: Dyslipidemia is a major risk factor for coronary heart disease and atherosclerosis, and is a public health problem that consumes health care resources. Dyslipidemia may be managed by physicians, mid-level practitioners, and clinical pharmacy specialists. Patients with difficulty reaching lipid goals as recommended by national guidelines are sometimes consulted to telehealth pharmacy services for management. The objective of this study is to evaluate a pharmacists impact on patients' lipid parameters using a telehealth program.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will be used to identify patients assigned to the Leesburg and Kissimmee CBOCs who have had a cholesterol lowering medication adjusted or initiated between October 1, 2012 and October 31, 2013. One hundred patients will be included. Fifty patients who received care from the clinical pharmacist via the telehealth program will be included in the intervention cohort (IC). The remaining fifty patients who received care from a physician or mid-level practitioner will be included in the usual care (UC) cohort and will be randomly selected. Information gathered will include baseline and follow-up lipid profiles, cardiovascular risk factors, age, gender, ethnicity, and documented adverse reactions to lipid lowering medications. Data will be recorded with the patients last name and last four digits of the social security number, and will remain confidential. Both cohorts will be followed until the end of the follow up period, January 2014, or the date that LDL-C goal is attained, whichever is earlier.

6-115

Title: Effect of patient medication education delivered by student pharmacists on patient satisfaction

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Purpose: Patient satisfaction is an integral component of the health care system and is currently measured by the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS). The results of this survey are available for public review and affect reimbursement from the Center for Medicare and Medicaid Services (CMS) via value based purchasing. Several institutions have established patient medication education programs to maximize patient satisfaction, awareness, and outcomes. This study aims to evaluate the effect patient medication education delivered by student pharmacist have on patient satisfaction. It is postulated patient satisfaction will increase.

Methods: Inpatients with orders for new medications, on an anticoagulant, on a hypoglycemic agent, or on a sedative will be educated by a student pharmacist. Patients will be identified from a daily computerized report. Patients younger than eighteen, in an intensive care unit, experiencing acute mental illness, on isolation precautions, or unable to speak will be excluded. Each medication education session will consist of an introduction, purpose, description of new medications including uses and side effects, and an invitation to ask questions. In addition to verbal education, patients will receive literature listing common new medications in the hospital setting along with their uses and side effects in the form of a brochure. Upon completion of each session, students will follow-up as necessary, but will defer questions outside of their scope of practice to the appropriate health care professional. The primary outcome of this study is the difference in HCAHPS scores pertaining to medication communication after patients receive medication education from student pharmacists. Other variables to be evaluated include patients educated per student per day, percentage of eligible patients educated, time spent educating per session, percentage of sessions requiring a follow-up, and the percentage of patients satisfied with the information provided.

6-116

Title: Proton pump inhibitor utilization and implementation of a strategy to reduce use

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Purpose: The use of proton pump inhibitors (PPIs) has significantly increased during the past several years, and is now one of the most commonly prescribed classes of medications in the United States. PPI use has been associated with the development of gastric polyps, enteric infections, osteoporosis and bone fracture, hypomagnesemia, interstitial nephritis and pneumonia. Many patients on chronic or intermittent PPI therapy do not have clear indications for their use. Our aim is to assess adherence to published indications for the use of PPIs at Indian River Medical Center (IRMC) after the implementation of an institution-wide PPI prescribing protocol.

Methods: This quality initiative will be a retrospective and prospective drug utilization review to assess the use of PPIs pre- and post-intervention at Indian River Medical Center (IRMC). Patients receiving PPIs will be retrospectively identified by Paragon (McKesson, San Francisco, CA) from May to September 2013. Patient charts will be reviewed to collect the following: type and route of PPIs used, amount of doses received, admitting diagnosis, unit of stay, and indications for use of PPIs. The prescribing of PPIs will be compared to current practice guidelines, FDA-approved indications as mandated by CMS, and published literature. Guidelines for PPI use will be developed and reviewed by the P&T committee before implementation institution-wide. Adherence to guidelines will be assessed with PPI use in the month of February, 2014. Appropriate use will be defined as 1 labeled indication, 1 primary risk factor for development of stress ulcer (i.e., coagulopathy, mechanical ventilation, or history of GI bleed in last 12 months), or 2 or more secondary risk factors for development of stress ulcer (e.g., use of heparin). Adherence to appropriate use of PPIs will be assessed by comparing drug utilization data, one month pre- and post-protocol implementation, using the Pearson chi-square test.

6-117

Title: Retrospective review of the pharmacokinetic and pharmacodynamic effects of converting patients from testosterone enanthate to testosterone cypionate

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Purpose: In response to a national drug shortage of testosterone enanthate (TE), our institution converted all patients receiving TE to an equal dose of testosterone cypionate (TC). The objective of this study is to examine the effects of a 1:1 conversion from TE to TC via retrospective chart review. The goal of this project is to investigate whether these two testosterone esters may have dissimilar pharmacokinetic and/or pharmacodynamic profiles and to investigate whether dose adjustments may need to be considered when converting from TE to TC.

Methods: Prior to initiation, the study protocol will be submitted to the Institutional Review Board (IRB) for review. Once IRB approval is granted, the VA Computerized Patient Record System will be used to identify all male Veterans within our institution whose intramuscular testosterone therapy was converted from TE to TC between March and June of 2013. All patients who meet this criteria will be included in the study provided there is documentation of one serum testosterone level within the year prior to conversion while the patient was receiving TE, as well as one serum testosterone level after conversion to TC. The primary endpoint will be a change in serum testosterone level. Secondary endpoints will be changes in laboratory data which may be affected by testosterone therapy including hemoglobin (Hgb), hematocrit (Hct), international normalized ratio (INR) in patients on concomitant warfarin therapy, liver function tests (LFTs), fasting blood glucose (FBG), and blood pressure (BP), when available. The incidence and severity of adverse events possibly associated with this conversion, including reported mood changes, changes in libido, fluctuation in energy level, or hypersensitivity reactions, will also be studied.

6-118

Title: Review of high cost triptans to determine potential cost savings

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Purpose: The purpose of this medication utilization evaluation (MUE) is to determine the possible cost savings resulting from a proposed triptan conversion among those patients currently prescribed a triptan. The MUE will determine how many patients we currently have on triptan therapy and which patients would be candidates to switch from the higher cost drug therapy to the lower cost drug therapy. The estimated cost savings will be determined based on the number of possible conversion candidates.

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 retropective chart review of Veterans currently taking zolmitriptan oral tablets and rizatriptan orally disintegrating tablets will be done. Charts for those Veterans with active prescriptions through September 20, 2013 for zolmitriptan 2.5mg and 5mg oral tablets and rizatriptan 5mg and 10mg ODT will be included in the review. During the review, Veterans on other dosage forms of these triptans, Veterans concurrently taking propranolol and zolmitriptan, and Veterans who previously failed rizatriptan oral tablets will be determined to be ineligible for conversion and excluded from any further review. After the chart review, the cost of active prescriptions that meet the criteria will be calculated and extrapolated to an annual potential cost. That amount will be compared to the potential costs spent after the conversion in order to calculate an estimated annual cost savings.

6-119

Title: Development of pharmacy management computer software learning manual

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Purpose: Electronic order entry is a complex process for pharmacists to ensure correct medication administration to patients. Training staff for the most appropriate use of the software needs to be accurate, practical and complete. One of our pharmacy department's patient safety goals is to ensure accurate documentation and monitoring of clinical interventions, and competency of pharmacy personnel during order-entry processing. This project is designed to provide a reference tool in the form of a manual to assist pharmacists and pharmacy residents in utilizing the Paragon Pharmacy Management and Webstation MD Computer Systems (McKesson, San Francisco, CA).

Methods: Utilizing the available computer system applications, online tools, and an informatics pharmacist as a reference, the pharmacy resident will develop a pharmacy computer software learning manual. The manual will be designed to include several sections, each covering relevant topics, a checklist of the covered material for each section, and a brief competency exam at the end of each section. The topics will include: overview of the system applications, clinical queue description (documenting clinical interventions), order entry queue, and a review of relevant forms, protocols, and order sets. A combination of written documents, video presentations and order entry practice sets within the software practice environment will be used to educate new staff. The training program will conclude with a comprehensive knowledge test and skills related practical exam to ensure the learner meets minimum competency before being assigned order verification.

6-120

Title: Evaluation of an extended infusion piperacillin and tazobactam dosing strategy within the critical care units of a community hospital

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Purpose: An extended infusion piperacillin and tazobactam dosing strategy was implemented within the critical care units of the hospital in November 2011 with the goal of improving patient outcomes. The implementation decision was based on previous studies that demonstrated reduced length of stay and hospital mortality for critically ill patients receiving piperacillin and tazobactam as an extended infusion. The primary objective of this study is to compare critical care length of stay and hospital mortality for patients that received the traditional dosing versus the extended infusion dosing within the critical care units of the hospital.

Methods: This is a single center retrospective cohort study comparing the use of extended infusion piperacillin and tazobactam to traditional dosing for patients treated in the intensive care unit (ICU) or coronary care unit (CCU). The study has been submitted to the Ethics and Compliance Committee for approval prior to initiation. Written informed consent is not necessary since data will be collected via chart review. The traditional dosing method will be evaluated from January 1, 2010 through December 31, 2011 as a comparator to the extended infusion method, evaluated from January 1, 2012 through December 31, 2013. Patients aged 18 years and older that were admitted to the ICU or CCU within the study period, treated with piperacillin and tazobactam, and had microbial cultures positive for a gram negative organism will be included in the study. Patients that received less than 48 hours of piperacillin and tazobactam will be excluded. For the extended infusion group, patients that received greater than 24 hours of traditional dosing prior to dose conversion will also be excluded. Data collection will include patient demographics, source of infection, APACHE II score, microbiology data, unit location, critical care length of stay, hospital mortality, and cost of drug therapy.

6-121

Title: Implementation of antibiotic intravenous push protocol

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Purpose: Most intravenous antibiotics at Indian River Medical Center (IRMC) are intravenously infused. This antibiotic preparation requires use of additional diluent and equipment. A number of antibiotics may be administered as an intravenous push (IVP), requiring only the antibiotic and syringe. Administration in this manner may reduce the added labor, time and cost of equipment associated with intravenous infusions. The objective of this study is to develop and implement an antibiotic IVP administration protocol for select antibiotics to reduce the costs of antibiotic administration at IRMC. The cost effectiveness of IVP administration when appropriate according to the protocol will be assessed.

Methods: Select antibiotics will be chosen to be included in the protocol based upon approved route of administration, safety of intravenous push and the current formulary at IRMC. The protocol will include much of the safety checks, precautions and procedures as those used with other intravenously pushed medications at IRMC as well as those specific to the use of the selected antibiotics. Nurses, physicians, pharmacists and other relevant members of IRMC medical staff will be consulted in the design of the protocol. The finished protocol will then be submitted to the IRMC Pharmacotherapy and Therapeutics committee for approval. Cost comparisons will be conducted prior to and after implementation of the antibiotic IVP protocol.

6-122

Title: Medication utilization evaluation of acute headache treatment in the emergency department

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Purpose: Headaches account for over 2 million emergency department (ED) visits each year in the United States. Multiple agents including prochlorperazine, metoclopramide, and valproic acid are used in the ED for treatment of headache. Various studies have evaluated the efficacy of each of these agents; however, no trial has directly compared all three medications. Additionally, opiates are commonly used as first line agents in this setting. The purpose of this study is to assess the effectiveness of these medications as single agents for headache treatment in the ED at our institution and to define the rate of first line opiate use.

Methods: This is an IRB approved retrospective chart review. Patients will be included if they were discharged from the ED between March 2011 and May 2013 with a diagnosis related to headache, age greater than 18 years, and received IV prochlorperazine, metoclopramide, valproic acid, or an opiate. Demographics will be collected including: patient age, gender, initial drug and dose selected, rescue therapy (if provided), any documented adverse drug reactions, length of stay in the ED, and change in pain scores from the beginning to end of the patient's stay. The primary outcome is efficacy of the above medications, defined as the need for re-dosing while the patient was in the ED. The secondary outcome is change in pain scores documented while the patient was in the ED. Additionally, the frequency of opioid use for first line therapy in these patients will be reported. One-way ANOVA will be used to determine significance of the primary outcome.

6-123

Title: Differences in appropriate therapy among non-small cell lung cancer patients within the black and Hispanic populations as stratified by their biomarkers

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Purpose: Traditional treatments in advanced non-small cell lung cancer prior to 2005 involved doublet platinum therapy without regard to genomics. Identification of somatic driver mutations (biomarkers) allows for molecular targeting and the identification of effective or ineffective treatments. Treatment without regard to biomarkers leads to poorer outcomes. Studies reveal disparities in survival for black and Hispanic populations. Historically, the proposed causative factors were socio-economic. Recent studies show that biomarkers in racial/ethnic groups may be causative. This study examines appropriateness of therapy for biomarkers in outpatient non-small cell lung cancer patients, stratified by race/ethnicity to determine if treatment disparities exist.

Methods: This retrospective study will be conducted within an outpatient oncology setting after Institutional Review Board approval. Approximately 676 patients with stage IV non-small cell lung cancer and their identified biomarkers from January, 2010 to December 2013 will be included. The study population will include both genders, age 18 years or older, who received chemotherapy and/or targeted molecular therapy. Data will be collected to assess appropriateness of treatment corresponding to the biomarkers EGFR, ALK, KRAS, c-MET, ERCC1, ROS-1, PIK3CA, and HER-2. Patients will be stratified by race/ethnicity to determine if treatment disparities exist. Outcomes data as defined by overall survival will not be analyzed. The electronic medical record will be used to collect the following data: age, diagnosis, stage, histology, race/ethnicity, tobacco use, tissue quantity/quality, mutation analysis method, mutations present, absent, or unknown, regimen, regimen changes and rationale for the changes. National Comprehensive Cancer Network guidelines and FDA approved indications will be reviewed to determine appropriateness of treatment.

6-124

Title: Effectiveness of methenamine for prevention of urinary tract infections in patients with spinal cord injuries or diseases

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Purpose: SCI/D patients have an increased risk of developing UTIs, due to altered neurogenic voiding dynamics and urinary catheterization. Furthermore, mortality from urinary sepsis ranges from 10-15% in SCI/D patients. The primary objective of this study is to examine the effectiveness of methenamine in prevention of UTIs in SCI/D patients.

Methods: A retrospective chart review study designed to assess the effectiveness of methenamine in prevention of UTIs in SCI/D patients. Patients will be selected based on inclusion/exclusion criteria and generated from a list of patients who received methenamine beginning September 1st, 2003 to September 1st, 2013. According to IDSA guidelines, the diagnosis of UTI in patients with indwelling or intermittent catheterization includes two diagnostic criteria. The first criterion incorporates the signs and symptoms of UTI, including the presence of fevers, rigors, flank pain, and pelvic discomfort. Additionally, SCI/D patients can present with increase spasticity, autonomic dysreflexia or just a sense of unease. The second criteria considers bacteriuria, defined as ≥10^3 CFU/ml of ≥1 bacterial species. Data will be collected from the Department of Veterans' Affairs CPRS on patients age on initiation of methenamine, gender, spinal cord injury or diagnosis of MS, type of catheterization, urine pH, bacteriuria (≥10^3 CFU/ml), documented UTI one year prior to methenamine and one year after initiation, signs and symptoms of UTI, antibiotics prescribed for treatment, urine acidifier used, and duration of methenamine therapy. The data is collected for research purposes only and will be recorded in Microsoft Excel for statistical analysis.

6-125

Title: Revising currently employed technologies used in the dispensing of discharge medications

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Purpose: The Miami VA Healthcare System (VAHS) utilizes an advanced medication dispensing (R800) and verification system to decrease workload on pharmacy staff and reduce potential medication errors. Last year, it was found that due to rapidly changing medication availabilities and mandated manufacturer changes, discrepancies were introduced causing this technology to become less efficient. As such, effective communication between procurement personnel and pharmacy staff was determined to be paramount. This project is meant to optimize procedures that would allow for better utilization of the R800 in order to reduce medication errors and provide timely processing of medications.

Methods: Previously, the top 220 medications dispensed by the inpatient R800 system and overall for patient discharges were identified and the R800 was updated to incorporate as many of these medications as possible to ensure optimal equipment utilization. Manually filled medications, which are not filled by the R800, require scanning of the stock bottle for verification of drug image to ensure the correct drug is dispensed. For those bottles that do not scan, the pharmacist must bypass that step, leading to the potential for medication errors. We will implement procedures that were developed to minimize drug manufacturer changes and ensure advanced notice is provided to allow the system to be updated proactively. The following outcome measures will be compared to baseline after implementation of procedures: time spent performing system maintenance, frequency of accuracy scan bypass due to non-scanning barcodes, and overall utilization of the automated machine. The acquired data will be extrapolated to dollars in order to measure potential cost savings. Along with these steps there will also be the addition of updating pictures and NDC numbers of medications in the R800 in order to further reduce potential medication errors by not having to bypass critical steps in the checking process.

6-126

Title: Increase in the appropriateness of intravenous phenytoin loading doses after implementation of an electronic order set

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Purpose: Phenytoin is one of the most commonly used antiepileptic medications in the emergency department (ED). Patients are commonly given a loading dose of phenytoin 1000 mg intravenously but this may not be adequate to achieve therapeutic levels. Computerized physician order entry (CPOE) was implemented in the ED at our institution in September 2010. At that time, an electronic order set was developed for patients who present with seizures which provided guidance on phenytoin dosing. The objective of this study was to compare the appropriateness of phenytoin loading doses before and after implementation of the electronic order set.

Methods: Institutional Review Board approval was obtained prior to data collection. This study was a retrospective review of adult patients who received an intravenous phenytoin loading dose in the ED before and after implementation of the electronic order set. Exclusion criteria were patients who weighed less than 50 kg, patients who had a corrected phenytoin level greater than 4 mcg/ml, or patients who had pharmacy intervention for dosing. The appropriate loading doses were defined as follows: 1000 mg for patients weighing 50 75 kg, 1500 mg for patients weighing 76 100 kg and 2000 mg for patients who weighed greater than 100 kg.

Results: A total of 200 patients were evaluated before and after the electronic order set implementation. Significantly more patients received an appropriate phenytoin loading dose after implementation of the electronic order set (63% vs. 46%; p=0.016).

Conclusion: An electronic order set that offers guidance on dosing may be utilized to improve the appropriateness of phenytoin loading doses in the ED.

6-127

Title: Evaluation of the rates of and the reasons for no-show appointments in a Veterans Affairs Women's Clinic

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Purpose: No-show appointments are a problem in any clinic, resulting in poor continuation of care for patients and wasted time for providers. The reasons for missing appointments are often varied, and there is no consensus as to the best method of reminding patients about upcoming appointments. The women's clinic currently uses reminder letters, automated calls, and live reminder calls. The purpose of this project is to determine the rates of no-shows in the women's clinic as compared to primary care, to evaluate the reasons for the no-shows, and propose interventions that may reduce the rate of no-shows in the future.

Methods: The number of no-show appointments will be obtained for a three month period from three physician clinics, one pharmacist clinic, and three nursing clinics within the primary care section of the women's clinic. The overall rate of no-show appointments, as well as the rate for each clinic, will be calculated. Rates will also be calculated for the general primary care clinics. A list of the patients who missed appointments will be obtained and attempts will be made to each patient who meets inclusion criteria by phone. A standardized set of questions from an unvalidated assessment tool created especially for this project will then be asked. Areas assessed will include the methods used to remind the patient of the upcoming appointment and reasons for missing the appointment, such as transportation difficulty, weather, child care, provider gender preference, unforeseen circumstances, job, cost of care, and not feeling the appointment was necessary. Age and ethnicity will be obtained from medical records. Patient confidentiality will be maintained at all times. This evaluation is part of our ongoing quality assurance program and was approved by the local Residency Project Committee. IRB approval was not required for this project.

6-128

Title: Effects of Switching from Angiotensin Converting Enzyme Inhibitors or Angiotensin Receptor Blockers to Dihydropyridine Calcium Channel Blockers on Proteinuria & Renal Function

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Purpose: When an allergy or adverse reaction to a renin angiotensin aldosterone system (RAAS) inhibitor occurs, such as angioedema or hyperkalemia, patients may be converted to a dihydropyridine calcium channel blocker (CCB). The beneficial effects of angiotensin converting enzyme inhibitors (ACEIs) and angiotensin receptor blockers (ARBs) on renal function and proteinuria have been well established, but multiple studies have reported conflicting evidence regarding the impact of dihydropyridine CCBs on proteinuria and renal function. The goal of this study is to determine what impact this conversion may have on renal function and proteinuria levels.

Methods: This retrospective study will be submitted to the Institutional Review Board for review. Chronic kidney disease (CKD) patients who were converted directly from a RAAS inhibitor to a dihydropyridine CCB will be included in the study. Patients must have received at least six months of treatment from each medication class to provide a more adequate assessment of the impact each medication class has on renal function. Medication use will be determined based on prescription fill dates. Additionally, only patients with renal function monitoring within six months pre and post conversion will be included. The data collection points to be targeted include serum creatinine, blood urea nitrogen (BUN), and albuminuria levels. The data will be analyzed by statistical analysis to determine what effects each medication class has on renal function/proteinuria and potential ways to improve care in patients with CKD.

6-129

Title: Pharmacists' impact with inpatient diabetes management as part of a diabetes stewardship team

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Purpose: Glycemic control plays an important role in outcomes of hospitalized patients with diabetes and their comorbidities. Increased mortality and infections have been associated with uncontrolled levels of glucose. Many factors are involved with managing inpatient glucose levels such as glycosylated hemoglobin A1c (HgA1c) percentage, capillary blood glucose (CBG) readings, dietary intake, current disease state, and inpatient medications. This project is designed to evaluate the impact of a diabetes stewardship team (DST) composed of pharmacists, an endocrinologist, a quality outcomes coordinator, registered dietitians, and a certified Diabetic Educator (CDE) nurse for the purpose of managing inpatient diabetes at a community hospital.

Methods: This study is pending Institutional Review Board approval. A retrospective patient chart review with the use of a surveillance alert software will be comparing mean glucose levels from January 1, 2013 to July 28, 2013 with mean glucose levels from July 29, 2013 to December 31, 2013. All patients with a diagnosis of diabetes mellitus type I, diabetes mellitus II or HgA1c percentage at admission ≥ 9% without regards to age, gender, and race will be included. Patients who were admitted for ketoacidosis and pancreatic lesions will be excluded from this study. Patient demographic data, CBG, renal function laboratory results, HgA1c, and number of interventions will be examined. Mean length of stay will be measured by the time patient is admitted and discharged from the hospital. Mean glucose levels will be obtained in 3 ways for adequate representation of whole hospital data: Mean CBG at admission, mean CBG at discharge, and difference of mean CBG at admission and CBG at discharge. Data will suggest the impact of the amount of interventions relative to the difference of mean glucose levels from pre-DST and post-DST. All data will be recorded without patient identifiers to maintain confidentiality.

6-130

Title: Antimicrobial stewardship program: evaluation of the use of metronidazole alone and with broad-spectrum antibiotics in a 395-bed community hospital

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Purpose: There are no approved indications for combining metronidazole and other anti-anaerobic agents, herein referred to as double anaerobic coverage, with the exception of certain health-care associated complicated intra-abdominal infections, adult biliary infections, and Clostridium difficile infections. However, the practice of double anaerobic coverage persists without supporting evidence and guidelines. The purpose of this study is to evaluate the utilization of metronidazole alone and in combination with broad-spectrum antibiotics, specifically those with anaerobe coverage, to determine if potential benefit of double anaerobic coverage exists.

Methods: This study is under review for approval from the Institutional Review Board. The study is designed as a retrospective cohort of patients admitted from March 1st, 2013 to August 30th, 2013. Hospitalized patients whom received metronidazole during this time period will be identified through the electronic surveillance program. A patient chart review will be conducted using medical and laboratory records of the patient from the electronic medical record system. An electronic data collection form will be used to record information. Inclusion criteria are patients 18 years and older and received at least one dose of metronidazole during admission. The following data will be collected: age, gender, indication for use of metronidazole, appropriateness of dose and frequency related to the indication, other antibiotics used, resolution of infection, and reported adverse drug events. To reduce the risk of disclosure, direct patient identifiers will not used on the data collection form.

6-131

Title: Clinical assessment of the conversion of isosorbide dinitrate to isosorbide mononitrate in heart failure patients

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Purpose: In light of the recent drug shortages, innovative approaches have been implemented for continuity of patient care. Isosorbide dinitrate (ISDN) and Hydralazine are part of the arsenal for symptom control in heart failure. Unfortunately in April 2012, ISDN was placed on back order due to discontinuation by one manufacturer. Consequently, the Pharmacy and Therapeutics Committee decided in May 2012 to convert heart failure patients receiving ISDN to Isosorbide Mononitrate (ISMN) as an alternative. The purpose of this MUE is to assess any changes in clinical outcomes related to the conversion.

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 completed to assess clinical outcomes pre-conversion and post-conversion. These clinical outcomes include adjustments in diuretic use, hospital readmission due to heart failure exacerbations, development of heart failure symptoms and reported adverse effects. Information from the computerized patient record system (CPRS) will be utilized to obtain data and it will be stored without patient identifiers and maintained confidentially. Background information collected will include age, race, sex, dose of ISDN prior to conversion to ISMN, dose of ISMN to which patient was converted and date patients converted back to ISDN. Inclusion criteria include patients with either an ejection fraction less than 45% or International Classification of Disease, 9th edition (ICD-9) code 428.0 indicative of heart failure, and Isosorbide Dinitrate and Hydralazine documented in patients prescription profile. Exclusion criteria include patients with neither a documented ejection fraction nor diagnosis of heart failure, those placed on Isosorbide Dinitrate therapy for angina or coronary artery disease (CAD), and patients without a prescription history of Isosorbide Dinitrate or Hydralazine.

6-132

Title: Prevalence of opioid-induced androgen deficiency (OPIAD) in a chronic non-malignant pain management clinic

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Purpose: According to the CDC, there has been at least a ten-fold increase in the medical use of opioid painkillers during the last 20 years because of a movement toward more aggressive management of pain. While opioid therapy is effective for the treatment of pain, long-term use is associated hypogonadism. Opioid associated androgen deficiency is a clinical syndrome characterized by inappropriately low levels of gonadotropins which leads to inadequate production of sex hormones, including testosterone. Given the growing number of patients on chronic opioid therapy, OPIAD warrants further investigation to identify the prevalence in chronic non-malignant pain management clinic patients.

Methods: Patient data from the Chronic Non-Malignant Pain Management Clinic from January 2013-December 2013 will be reviewed to identify patients who had a testosterone level measured. The identified patient charts will then be reviewed in detail for data collection, which will include: patient age; patient gender; type of pain being treated; testosterone level(s) drawn; total daily morphine equivalents of opioid therapy; duration of opioid therapy; symptoms of hypogonadism; testosterone replacement therapy formulation, dose, duration; testosterone replacement therapy prescriber; symptom improvement post-replacement therapy; and labs ordered for monitoring (lipid profile, liver profile, CBC, LH/FSH, and PSA panel). Once the data have been collected, descriptive statistics will be used to analyze the data. Two graphs will be generated to review potential relationships; one graph will compare testosterone concentrations and total daily morphine equivalent doses and the other graph will compare testosterone concentrations and length of opioid therapy. Based on the results from the collected data and review of available guidelines and primary literature, a protocol will be developed to guide OPIAD monitoring and management. This evaluation is part of our ongoing quality assurance program and was approved by the local Residency Project Committee. IRB approval was not required for this project.

6-133

Title: Impact of an educational in-service on prescriber knowledge on long term and/or high dose proton pump inhibitor therapy

Primary Author: Stephanie J Riley**,** Orlando VA Medical Center, 5201 Raymond Street, Orlando, FL 32803; **Email:** stephanie.riley@va.gov

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Purpose: Proton pump inhibitors (PPI's) are highly effect agents when used for the treatment of gastroesophageal reflux disease (GERD). Current guidelines recommend the use of these agents for 4-8 weeks. For various reasons, these medications are often utilized beyond the recommended treatment interval. Guidelines emphasize that patients with symptoms beyond 8 weeks may continue maintenance therapy at the lowest effective dose. The purpose of this study is to evaluate the impact of pharmacy education on prescriber knowledge of PPI therapy.

Methods: This study will be submitted to the Institutional Review Board for review. A retrospective chart review will be conducted on approximately 50 patients receiving PPI therapy to determine current prescribing practices. Patients included in the review must have an indication for GERD, and have been on a PPI for longer than one year. Patients with an indication for Barretts esophagus, Zollinger Syndrome and any other condition requiring chronic PPI therapy will be excluded. Data collected will assess indication for long term use, current and past agents utilized, and provider documentation of continued therapy. A pre education survey will be given to providers to assess their knowledge of PPI therapy (maximum dose, recommended duration, high risk drug-drug interactions, and potential adverse effects). An educational in-service will be conducted, and a post education survey will be given.

6-134

Title: Strategies to reduce the use of split-tablet doses in a community hospital

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Purpose: Various national organizations including The Joint Commission (TJC), the American Society of Health-System Pharmacists (ASHP) and the Institute for Safe Medication Practices (ISMP) promote safe dispensing of medications. Specifically, TJC requires that the medications are dispensed and stored in patient care areas in the most ready-to-administer forms commercially available or repackaged by pharmacy or licensed repackager as per the MM.05.01.11. The purpose of this study is to improve medication safety by defining and implementing strategies to reduce the number of split-tablet dosing in a community hospital.

Methods: This study does not meet the definition of research with human subjects, therefore, is not under the purview of the IRB. During Phase I, a retrospective analysis was conducted using an IT-generated report to determine the number of prescribed split-tablet doses in our hospital during May-July 2013. The data was sorted into three categories including, split-tablet medications available on formulary, split-tablet medications commercially available but non-formulary, and split-tablet medications not commercially available. Furthermore, within each of these three categories, the top five split-tablet medications were identified. For the medications available on formulary, an educational inservice was provided to the pharmacists to increase their awareness on the availability of such dosage strengths in our formulary. Secondly, for medications commercially available but non-formulary, an approval from the health-systems Pharmacy and Therapeutics committee to add these dosage strengths to our formulary was obtained. Finally, customized charge description master (CDM) codes were created for dosage strengths not commercially available to be packaged, barcoded and dispensed from the pharmacy. During Phase II, a prospective review of the above IT- generated report will be conducted during October-December 2013 to determine if the strategies implemented reduced the number of split-tablet dosing in our hospital.

6-135

Title: Integrating and implementing a teaching certificate into the pharmacy residency program (ITEACH)

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Purpose: The current Post-Graduate Year 1 and Post-Graduate Year 2 Pharmacy Residency Program does not have a teaching certificate as an option. Incorporating an accredited teaching certificate program will assist in developing the residents into skillful clinicians who will provide advanced patient-centered care in both general and specialized areas of pharmacy practice with the experience of precepting and developing future clinical educators. The teaching certificate will also enable the residents to fulfill lecture requirements which will develop presentation, communication, and time management skills.

Methods: This project will be submitted to the Institutional Review Board for exemption. The authors will develop the teaching certificate program with the guidance of the ACCP Guidelines for Resident Teaching Experiences. The first stage is the development of the certificate program; which will include: objectives, requirements, and evaluations. Once the program is developed, it will be submitted to an accredited school of pharmacy for review, implementation, and incorporation. Once the residents have completed the program, we will submit the teaching certificate to ACCP for accreditation. The teaching certificate program will be a four week elective rotation. The residents will be responsible for lecturing pharmacy students, developing and proctoring exams, developing lesson plans, grading coursework, and precepting fourth year students on rotations. At the completion of the certificate program the residents will achieve an understanding and appreciation for academia.

6-136

Title: Effect of vancomycin AUC/MIC on length of hospital stay and re-admission rates

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Purpose: Vancomycin is a commonly utilized antibiotic in hospitalized patients. Although highly effective against infections, improper usage has given way to undesirable consequences such as increased resistance, preventable adverse drug events, and sub-optimal patient outcomes. Research has suggested that AUC/MIC is an excellent predictor of vancomycin efficacy and the Infectious Disease Society of America (IDSA) advocates an AUC/MIC target of > 400 . The objective of this study is to determine whether an AUC/MIC >400 correlates with decreased hospital length of stay and 30 day re-admission rates for patients with methicillin sensitive Staphylococcus aureus, methicillin-resistant Staphylococcus aureus, and Staphylococcus epidermidis infections.

Methods: This quality initiative will utilize Medmined (Carefusion, San Diego, CA) to identify patient data.Patients with cultures positive for Methicillin-sensitive Staphylococcus aureus, methicillin-resistant Staphylococcus aureus and Staphylococcus epidermidis will be identified and the following data will be collected: vancomycin MIC, vancomycin serum levels, daily vancomycin regimen, patient age, gender, weight, and serum creatinine at baseline (if available) during therapy and up to 3 days after discontinuation. Hospital charts will be reviewed to determine patient length of stay and any readmission within 30 days of discharge. Serum levels will be used to calculate the vancomycin volume of distribution (Vd), clearance, elimination rate constant, and half-life. AUC will be calculated for each patient as well as the AUC/MIC ratio. Length of stay and 30 day re-admission rates will be compared to AUC/MIC ratios to determine if there is a trend in better outcomes with an AUC/MIC ratio > 400. The above information will be collected retrospectively and will be recorded without patient identifiers to ensure confidentiality.

6-137

Title: Evaluation of medication reconciliation: transition of care from a long term care facility (LTCF)

Primary Author: Nicholas Scapelito**,** Orlando VA Medical Center, 5201 Raymond Street, Orlando, FL 32803; **Email:** nicholas.scapelito@va.gov

Purpose: Adverse medication events (ADEs) are the most common type of events effecting patient safety. These events frequently occur during transition of care, such as when a patient transfers from a LTCF into the community. Preventable ADEs at transitional points of care account for 46 to 56 percent of all events. Medication reconciliation is completed upon admission and prior to discharge from the LTCF as a means to decrease ADEs. The objective of this performance improvement study is to evaluate the role and value of pharmacy intervention in the medication reconciliation process upon discharge from a LTCF into the community.

Methods: This study will be submitted to the Institutional Review Board for review. The Computerized Patient Record System (CPRS) will be used to identify long term care residents who will be discharged from the LTCF. The information collected from the charts will include; residents age, gender, and ethnicity. This information will be used to evaluate the necessity for additional educational tools based on the patient population. Additional information collected will include the residents medication list upon admission and discharge, and whether a caregiver will receive counseling from a pharmacist. This study will compare the admission and discharge medication lists for discrepancies, medication errors, and counseling documentation. The pharmacists role in the medication reconciliation process will be evaluated based on interventions made that mitigated medication errors. This study will assess the impact pharmacist counseling upon discharge had on medication related events.

6-138

Title: Evaluation of medication reconciliation: transition of care from a long term care facility (LTCF)

Primary Author: Nicholas Scapelito**,** Orlando VA Medical Center, 5201 Raymond Street, Orlando, FL 32803; **Email:** nicholas.scapelito@va.gov

Additional Authors:
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Purpose: Adverse medication events (ADEs) are the most common type of events effecting patient safety. These events frequently occur during transition of care, such as when a patient transfers from a LTCF into the community. Preventable ADEs at transitional points of care account for 46 to 56 percent of all events. Medication reconciliation is completed upon admission and prior to discharge from the LTCF as a means to decrease ADEs. The objective of this performance improvement study is to evaluate the role and value of pharmacy intervention in the medication reconciliation process upon discharge from a LTCF into the community.

Methods: This study will be submitted to the Institutional Review Board for review. The Computerized Patient Record System (CPRS) will be used to identify long term care residents who will be discharged from the LTCF. The information collected from the charts will include; residents age, gender, and ethnicity. This information will be used to evaluate the necessity for additional educational tools based on the patient population. Additional information collected will include the residents medication list upon admission and discharge, and whether a caregiver will receive counseling from a pharmacist. This study will compare the admission and discharge medication lists for discrepancies, medication errors, and counseling documentation. The pharmacists role in the medication reconciliation process will be evaluated based on interventions made that mitigated medication errors. This study will assess the impact pharmacist counseling upon discharge had on medication related events.

6-139

Title: Outcomes of formulary conversion of aspirin/dipyridamole to clopidogrel

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Purpose: Aspirin/dipyridamole is a platelet inhibitor approved for use in patients with a history of thromboembolic stroke. The PROFESS trial showed that neither aspirin/dipyridamole nor clopidogrel were superior to the other in secondary stroke prevention. This trial also showed a better tolerance profile and fewer non-traumatic bleeds in patients taking clopidogrel compared to those taking aspirin/dipyridamole. In October 2012, the Pharmacy and Therapeutics committee passed a measure allowing for the conversion of all patients receiving aspirin/dipyridamole to clopidogrel. The purpose of this Medication Use Evaluation is to evaluate the frequency of adverse events following conversion of patients from aspirin/dipyridamole to clopidogrel.

Methods: This evaluation has been reviewed by the BPVAHCS 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 conducted to identify patients converted from aspirin/dipyridamole to clopidogrel following the Pharmacy and Therapeutics Committee approval of conversion in October 2012. Exceptions to conversion were: patients with a history of a previous stroke or TIA or intolerance or adverse event while previously receiving clopidogrel 75mg daily. Due to a 2009 FDA warning regarding a potential interaction with decreased levels of clopidogrel in patients taking concomitant omeprazole, providers whose patients were prescribed omeprazole and converted to clopidogrel were alerted in the electronic medical record. The provider then had the option to continue current therapy with omeprazole or switch to pantoprazole, which theoretically is less likely to reduce clopidogrel levels. Patient charts will be reviewed for appropriateness of conversion, adverse events related to conversion, provider selection of proton pump inhibitor, and adherence to therapy in patients failing clopidogrel.

6-140

Title: Medication utilization evaluation of methadone

Primary Author: Matthew M Sherman**,** Bay Pines Veterans Affairs Healthcare System, 10,000 Bay Pines Blvd., Bay Pines, FL 33744; **Email:** Matthew.Sherman2@va.gov

Purpose: The Joint Commission in 2012 published a sentinel event alert stating opioid analgesics, including methadone, rank among the drugs most frequently associated with adverse drug events. Of those opioid-related adverse drug events reported to the Joint Commission, nearly half were related to wrong dose, a third were related to improper monitoring of the patient and ten percent were related to excessive doses and drug-drug interactions. This alert suggested that high risk opioids, including methadone, warrant additional scrutiny. The objective of this study was to evaluate prescribing and monitoring trends that put patients at increased risk for serious adverse events.

Methods: This evaluative study report has been determined to be exempt from Investigational Review Board approval. Utilizing the Veterans Affairs (VA) database manager, a retrospective chart review was conducted to identify all patients that were prescribed methadone between April 1, 2013 and June 30, 2013. Patient records were analyzed for age, drug name (all formulations and strengths of methadone), quantity, day supply, average daily dose, presence of electrocardiogram within the last year and corresponding length of QTc interval (less than 450, 450-500, greater than 500), urine drug screen, opioid agreement, type of pain, admission or VA emergency department (ED) visit for methadone related serious adverse events (e.g. altered mental status) within the last year, inappropriate concurrent medications (e.g. anxiolytics, sedatives, strong CYP inhibitors, QT prolonging drugs), if the patient has complicating comorbid conditions (e.g. obesity, sleep apnea, arrhythmia, structural heart disease, syncope, liver disease, hypokalemia, substance use disorder, and chronic obstructive pulmonary disease), and which service is prescribing and monitoring.

6-141

Title: Trends in medication-related hospital admissions among oncology patients

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Purpose: Cancer patients often experience hospitalizations. There were 4.7 million cancer related hospitalizations among adults in 2009 according to Healthcare Cost and Utilization Project (HCUP). In 2009, adult patients hospitalizations principally for cancer cost $20.1 billion and hospitalizations with a secondary diagnosis of cancer (where cancer patients were hospitalized with a principal diagnosis other than cancer) cost $38.5 billion. In addition to expenditures for cancer-related hospitalizations, complications developed during hospitalization may also contribute substantially to total health care cost. By identifying trends in medication-related hospital admissions in oncology patients, current practice may be able to modify to reduce the hospitalizations.

Methods: This prospective, observational study will be submitted to the Institutional Review Board prior to starting. All patients admitted to oncology unit in a community hospital between October 1, 2013 and November 30, 2013 will be reviewed. Patients less than 18 years of age and patients admitted to oncology unit in the absence of primary or secondary diagnosis of cancer will be excluded. Data collection will include: patient demographics (age, gender, drug allergy), Chief complaint and reason for admission, cancer diagnosis, comorbid conditions (Charlson Comorbidity Index will be utilized in assessing the comorbidity), patients health Insurance status (yes or no), interval between last hospital discharge to current admission, length of time since last chemotherapy administered, medication(s) related to hospital admission, patients laboratory value at admission (e.g., comprehensive metabolic panel, magnesium level). All patients admissions will be classified into medication-related and non-medication-related admissions. Medication-related admissions will further divided into preventable and unpreventable admissions. Assessment of admissions will be performed by principal investigator and co-investigators using defined criteria. Upon completion of the data collection, all admissions data will be reviewed to identify trends in medication related admission.

6-142

Title: The implementation and creation of a new chemotherapy training program with policies and procedures specifically designed to ensure a higher level of performance

Primary Author: Josh Stoneking**,** Indian River Medical Center, 1000 36th Street, Vero Beach, FL 32960; **Email:** josh.stoneking@gmail.com

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Purpose: The state of Florida has adopted USP 797 standards for compounding sterile products. Pharmacy staff needs to be trained and assessed annually via local policies for gowning, sterile technique, and drug wastage. The compounding area must meet standards of sterility and air quality biannually as documented by certified consultants. Chemotherapy administration requires pharmacists to evaluate doses, clinical regimens and infusion techniques to protect the patient. The goal of implementing a new chemotherapy training program is to build employee confidence and knowledge to safely and effectively compound the chemotherapy agents.

Methods: Current hospital policies and procedures will need to be updated to comply with the requirements of USP 797, ASHP, and the Florida Board of Pharmacy. A comprehensive training program will be established for pharmacists, technicians, and residents. Each trainee will be required to complete a hands-on aseptic technique test in the IV hood, as well as a day of training in compounding chemotherapy agents with an experienced chemotherapy pharmacist. To assess competency, the trainee will need to pass a written exam and a visual hands on assessment demonstrating the necessary skills required to safely and successfully handle and aseptically compound these agents. A video will be created and shown to all new employees, showcasing the updates made to the hospitals current policies for the IV room. The process of reviewing orders will be standardized by providing a checklist, accessible online to pharmacists, to ensure the chemotherapy order/chart is appropriate.

6-143

Title: Preventing venous thromboembolism (VTE) in high risk patients through the implementation of a risk assessment tool

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Purpose: Venous thromboembolism is the most common preventable cause of hospital death in the United States. Proper identification and assessment of VTE risk factors in hospitalized patients is essential in preventing thrombosis and mortality. The objective of this study was to assess the screening of high risk hospitalized patients and determine whether appropriate prophylaxis, mechanical or pharmacological, was initiated accordingly.

Methods: A prospective evaluation of VTE risk assessment and appropriateness of prophylactic therapy was conducted at a teaching hospital. This evaluative study was approved by the Institutional Review Board (IRB) and appropriate committees. Thirty patients were randomly selected and observed over a period of one month. The following data was obtained: patient demographics, VTE risk factors, type of treatment (pharmacological and/or non-pharmacological), appropriateness of therapy, and contraindications were assessed. Each patients VTE risk factors, initiation of therapy, and proper documentation within 24 hours of admission were analyzed. Patients risk factors were calculated and severity of risk: low, moderate, or high was determined. Utilizing the results obtained, a new hospital protocol for VTE prophylaxis will be implemented. The Performance Improvement (PI) Committee, Information Technology (IT) department, and pharmacy will be involved in developing a computerized system for screening all patients for VTE prophylaxis upon admission.

6-144

Title: Topical compounded pain creams and pain perception: an update

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Purpose: Pain management has become an increasingly relevant discussion in todays society due to the increasing dependence and abuse of opioid medications as well as the aging population whose management of pain is complicated by the presence of comorbidities. Oral pain medications carry a multitude of side effects through systemic exposure while oftentimes targeting one specific type of pain. Topically compounded pain medications target localized pain with the advantage of incorporating multiple ingredients to target varying types of pain. The primary objective of this study is to evaluate the change of patient perception in pain, determined by the Brief Pain Inventory.

Methods: The study is a single site, prospective, observational study that is Institutional Review Board (IRB) approved. Patients between 18 and 65 years of age suffering from chronic pain and using a multiple ingredient topical compound will be evaluated for inclusion in this study. Exclusion criteria are as follows: hypersensitivity to any of the prescription ingredients, pregnant or breastfeeding women, and/or diagnosis of cancer within the last 5 years. The secondary outcome measures are the use of oral pain medications, treatment satisfaction, and changes in quality of life (using the EQ-5D-5L questionnaire). Patients will be evaluated over the telephone at baseline, 4, 8, and 12 weeks by answering the BPI and EQ-5D-5L questionnaires. Results will be analyzed using descriptive and inferential statistics as appropriate. For the primary outcome, a total sample size of at least 60 participants is sufficient to achieve ≥80% power to detect a 30% reduction in overall pain scores from baseline.

6-145

Title: Retrospective review of cisplatin induced nephrotoxicity and ototoxicity with and without concomitant mannitol administration

Primary Author: Rochelle Thompson**,** James A. Haley Veterans' Hospital, 13000 Bruce B. Downs Blvd., Tampa, FL 33612; **Email:** rochellethompson22@yahoo.com

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Purpose: Cisplatin is a chemotherapeutic agent that is useful in treating a wide range of malignancies. However, its dosing has been limited due to adverse effects, namely ototoxicity and nephrotoxicity. Historically, mannitol has been used as a renal protectant, allowing for more optimal cisplatin dose delivery. This practice has fallen out of favor at our facility. In a recent study designed to compare accuracy and ease of use of audiometric grading tools in the pediatric population, mannitol was associated with less cisplatin induced ototoxicity. Our objective is to examine the benefits of mannitol's use with cisplatin in an adult population.

Methods: This study is currently under review for approval by the affiliated institutional review board (IRB). A retrospective chart review of subjects who received cisplatin treatment between July 2008 and September 2013 will be conducted. Demographic and clinical data will be collected and compared between subjects who received mannitol with cisplatin and those who received cisplatin alone. To determine the magnitude of difference in hearing function between the two groups, pure tone audiograms measured prior to and following cisplatin therapy will be reviewed. To determine the impact of mannitol at preventing cisplatin induced nephrotoxicity, changes in serum creatinine and blood urea nitrogen from baseline will be compared between the two groups. Descriptive and statistical analysis will be used to analyze data and determine mannitol's benefit at preventing cisplatin induced ototoxicity and nephrotoxicity.

6-146

Title: Do patients diagnosed with primary psychiatric disorders and with co-occurring personality disorder diagnoses receive more psychotropic medications at higher doses?

Primary Author: Jose Valdes**,** Nova Southeastern University, 3301 College Avenue, Ft. Lauderdale, FL 33314; **Email:** josevald@nova.edu

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Jose Rey

Purpose: The purpose of this study is to retrospectively evaluate patients in a psychiatric hospital with a co-occurring Axis II diagnosis and determine if their Brief Psychiatric Rating Scale (BPRS) and Functional Assessment Rating Scale (FARS) scores; the number and type of psychotropics prescribed and their daily dosage; and the frequency of as needed medications utilized are different than those patients without an Axis II diagnosis. We will also determine if certain medications, or combinations, have been more effective in reducing incidents of aggression/property damage.

Methods: This single center, retrospective, cross-sectional analysis will utilize patient demographics, axis I and axis II diagnosis, psychotropics used, daily doses, number of as needed medications used, and BPRS/FARS scores to determine if a statistically significant difference is noted between the presence and absence of axis II disorders.

Results: Results pending at the time of abstract submission.

Conclusion: Conclusion pending at the time of abstract submission.

6-147

Title: Standardization and implementation of order sets for medical supplies and nutritional supplements at a Veterans Affairs (VA) medical center

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Purpose: Navigating through the various medical supplies and nutritional supplement products can be challenging for health care providers when writing orders upon discharge. Pharmacists provide decision support to physicians and furnish medications and supplies to patients during discharge counseling, however lack of standardized medical supplies and nutritional supplement protocols often lead to inappropriate, incomplete, or duplicate product selection. The objective of this project is to create and implement order sets for medical supplies and nutritional supplements for hospital discharge. This process will facilitate selection of the appropriate products, potentially reduce costs, readmissions, and increase quality of patient care and formulary compliance.

Methods: This project will be submitted to the Institutional Review Board for approval. The first phase of the project will include identification of medical supplies needed for specific conditions. This will include but will not be limited to supplies for wound care, drainage, ostomy, urostomy, catheters, tracheostomy, and gastrostomy site care. For the nutritional supplements, pharmacists will collaborate with the nutrition service to ensure that the supplements that are provided during the hospital stay meet the same nutritional requirements as the supplements provided by pharmacy for discharge, taking cost and formulary status into consideration. The second phase of the study will be the development of the order sets to be available for initiation for hospital discharge. The proposed order sets will be presented to the Computerized Patient Record System (CPRS) Health Informatics Service for review and approval. The third phase of the study will be the building and implementation phase which will include testing of the order sets in the medical centers computerized order system. In order to enhance acceptance, pharmacists will train physicians on the appropriate use of the order sets and on formatting for customized orders.

6-148

Title: Decreasing hospital readmission rates in a behavioral health unit by providing medications at discharge.

Primary Author: Frances Marie Varona**,** Mercy Hospital, A Campus of Plantation General Hospital, 3663 South Miami Avenue, Miami, FL 33133; **Email:** frances.varona@gmail.com

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Purpose: An analysis of Medicare hospital readmissions by the Congressional Research Service has attributed rehospitalizations in part due to inadequate transitions of care at discharge. The Medicare Payment Advisory Commission reported an annual cost of approximately $12 billion on potentially preventable readmissions. A recent study of Florida hospitals found that mental health diagnosis comorbidity was a leading cause of readmissions, implying inadequate understanding of medication therapy and or medication access issues. The purpose of our study was to enhance transition of care by providing medications at discharge to aid in preventing readmissions.

Methods: After Institutional Review Board (IRB) approval, a retrospective analysis of all patients admitted to the behavioral health unit from January through August 2013 was done; focusing on diagnosis, insurance payors, medications at discharge, and readmission rates. A transition of care program was developed to assist in providing medications upon discharge for uninsured or self-pay patients. Over a period of four months, the outpatient pharmacy supplied medications free of charge for 10 days, or until their first scheduled aftercare appointment with their behavioral health provider. Data was collected and readmission rates are pending analysis.

6-149

Title: Effects of onabotulinumtoxinA bladder injections in patients with detrusor overactivity

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Purpose: The FDA has approved onabotulinumtoxinA for the treatment of urinary incontinence due to idiopathic detrusor overactivity and detrusor overactivity associated with neurologic conditions such as spinal cord injury (SCI), multiple sclerosis (MS), and amyotrophic lateral sclerosis (ALS). The main objective of this study is to evaluate the rate of onabotulinumtoxinA discontinuation in patients with idiopathic detrusor overactivity as well as SCI, MS, and ALS associated neurogenic detrusor overactivity. This study will also evaluate the effect of onabotulinumtoxinA injections on urodynamics, renal function, anticholinergic use, urinary tract infections (UTI), surgical site infections (SSI) and treatment frequency.

Methods: This study will be submitted to the Institutional Review Board for approval. A retrospective cohort chart review will be conducted, using the computerized patient record system (CPRS), on patients with idiopathic detrusor overactivity and neurogenic detrusor overactivity due to SCI, MS, or ALS undergoing onabotulinumtoxinA bladder injections. Data will be recorded without patient identifiers and maintained confidentially. Data to be collected includes patient characteristics (age, sex, weight, race, catheter use, underlying disorder), urodynamics, onabotulinumtoxinA injection dates, anticholinergic use, SSI rates, UTI rates and bacteria type. Treatment frequency will be collected as the number of months between onabotulinumtoxinA procedures by documenting the dates on which patients received the initial and subsequent onabotulinumtoxinA injections. Discontinuation rates will be evaluated by the number of injections received and date of those injections. OnabotulinumtoxinA discontinuation after one injection will be defined as primary failure whereas discontinuation after two or more injections will be defined as secondary failure. Urinary tract infections will be defined as the presence of at least three of the following: bacteriuria greater than 100,000 CFU per mL, fever over 38 degrees Celsius, leukocyturia greater than 2 per high powered field, lower abdominal pain, malaise, and antibiotic use.

6-150

Title: Impact of a pharmacist directed medication education service for congestive heart failure (CHF) patients

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Purpose: Heart failure is among the most common causes of hospitalization and readmission among the elderly in the U.S. Appropriate medication use is an important part of CHF management in the hospital and after discharge. In order to increase the frequency and quality of communication about medicines between patients and providers, a pharmacist led medication education service will be implemented. Changes in patient satisfaction are expected to result from implementation of this intervention.

Methods: All patients with heart failure will be identified on the basis of their primary or secondary admitting diagnoses. Selected patients will receive an unscheduled visit from a pharmacist during the first three days of their hospitalization. The pharmacist will provide bedside counseling about disease management and medication use after discharge. Education will emphasize four goals of disease management: follow up with an outpatient provider shortly after discharge, early recognition and reporting of heart failure symptoms, maintenance of a low sodium diet and adherence with medications prescribed at discharge. Written materials will also be provided. Patients and caregivers will be encouraged to ask questions about their medications throughout their hospitalization and with their outpatient providers after discharge. The primary outcome will be change in Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) scores related to communication about medicines reported before and after implementation of the intervention.

6-151

Title: Evaluation of fluconazole use in oncology patients at a tertiary care hospital

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Purpose: Some cancer patients are at an increased risk of developing fungal infections. This predisposition to infection can be from either the malignancy itself or neutropenia secondary to cancer treatment. To address the risk of fungal infection, the Infectious Disease Society of America (IDSA), American Society of Clinical Oncology (ASCO), and National Comprehensive Cancer Network (NCCN) have developed guidelines for the treatment and prophylaxis of fungal infections in neutropenic cancer patients. The purpose of this study is to determine if fluconazole is being prescribed in accordance with the IDSA, ASCO and NCCN guidelines for oncology patients admitted to the hospital.

Methods: This retrospective chart review has received approval from the Institutional Review Board. The electronic medical record will be used to identify oncology patients over the age of 18 years old that were treated with fluconazole between February 1st and July 31st of 2013. The following data will be collected: patient age, gender, height, weight, temperature, heart rate, respiratory rate, blood pressure, white blood cell count, absolute neutrophil count, documented mental status change, cancer diagnosis, cancer treatment, indication for fluconazole, fluconazole dose, fluconazole route of administration, and duration of fluconazole use. This information will be used to determine if patients were treated in accordance with IDSA, ASCO and NCCN guidelines.

6-152

Title: Management of abscess/cellulitis in patients presenting to community health system emergency departments

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Purpose: To analyze the patients treated in the emergency departments at our community health system for cellulitis/abscess and their outcomes. Patients with acute bacterial skin and skin structure infections (ABSSSI) commonly present to emergency departments with a wide spectrum of disease severity.1 The treatment of ABSSSI can represent a significant burden to our healthcare system.2 The aim of this study is to describe the patient population being treated for ABSSSI at our community health system emergency departments with specific attention paid to the outcomes for patients treated with PO versus IV antimicrobials and those treated in the inpatient versus outpatient settings.

Methods: A report using ICD-9 codes for cellulitis/abscess will be generated from the months of March 2013-July 2013. Every patient presenting to the community health system emergency departments with ICD-9 codes for cellulitis/abscess will be included until 200 patients have been included. Patients will be excluded if they have any of the following: age < 18 years old, missing data, diabetic foot infections, or osteomyelitis. Data will be collected on patient baseline characteristics as well as how the patients are managed with antimicrobials (IV versus PO). Data will be followed up using our EHR system for 30 days post initial discharge to determine if there was treatment failure or recurrence of the cellulitis/abscess (either by readmission, additional ED visits, or a direct admission due to failed outpatient antibiotic therapy).

6-153

Title: Impact of a pharmacist led educational program on heart failure and chronic obstructive pulmonary disease readmission rates in a community teaching hospital

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Purpose: Heart failure (HF) and chronic obstructive pulmonary disease (COPD) are the most costly illnesses in the United States due to high rates of hospitalization. Approximately 20% of patients hospitalized with HF are readmitted within 30 days. Treatment goals are often not achieved due to the complexity of medication regimens, co-morbidities, patient understanding and compliance. In addition to HF as a readmission measure, the Centers for Medicaid and Medicare Services will be adding COPD as a core measure in 2015. The goal of this study is to reduce 30-day readmissions for these disease states by implementing a pharmacist led educational program.

Methods: The first phase of the study will be a retrospective analysis to determine HF and COPD readmissions as a baseline comparison prior to implementing a pharmacist led educational program. The data collected will encompass patient demographics, number of HF and COPD patients readmitted within 30 days from August through October 2012, average number of days in which a patient was readmitted, and their discharge medications. The second phase will be a prospective analysis from October through December 2013 to determine the impact of the pharmacist intervention on decreasing HF and COPD readmissions. Patients will be randomly selected based on primary diagnosis. Educational materials will be prepared focusing on the pharmacologic effects on disease, pathophysiology, side effects, dosing, adherence, interactions and special instructions. Lifestyle modifications will also be emphasized such as weight monitoring, diet, exercise, and smoking cessation. A clinical pharmacist will follow up with the discharged patients within 48 hours and weekly for 4 weeks. The primary outcome is to compare the number of HF and COPD readmissions within 30 days of discharge with and without pharmacist involvement. Secondary outcomes will compare average length of stay and cost savings. This study has been approved by the Pharmacy & Therapeutics Committee.

6-154

Title: Identification of barriers associated with timeliness of antibiotic administration in pediatric patients presenting to the emergency department

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Purpose: Infants under 60 days of age presenting with fever are at high risk for having serious bacterial infections (e.g. meningitis and bacteremia) and timely administration of antibiotics is vital to decrease morbidity and mortality. At our institution, physicians have noted delayed turnaround times for first-dose antibiotics administered in the emergency department (ED) despite the availability of pediatric sepsis order sets. The purpose of this study is to identify barriers associated with timely antibiotic administration in the ED to develop interventions using a multidisciplinary team approach.

Methods: A retrospective chart review will be conducted after institutional review board approval is obtained. The electronic medical records system will be used to identify all pediatric patients less than sixty days old admitted through the ED with an order for antibiotics between July 2012 and June 2013. Reasons for delayed antibiotic administration will be identified using root cause analysis. Data to be collected will include: age, gender, triage level status, vital signs, diagnostic tests (e.g. chest x-ray, lumbar puncture, urinalysis, cultures), hospital length of stay, inpatient mortality, order set utilization, and time measures (time to triage, physician assessment, physician order of antibiotics, pharmacist order verification, antibiotic preparation, and administration). General linear models will be used to evaluate the association of the barriers identified with timeliness of antibiotic administration. The primary objective of the study is to identify barriers that correlate with timely antibiotic administration. The secondary objective is to determine interventions to achieve goal targets for antibiotic administration.

6-155

Title: Retrospective chart review to compare clinical cure rate of mono versus combination therapy with colistin in multi-drug resistant organisms

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Purpose: Due to the continued rise of nosocomial infections caused by multi-drug resistant gram-negative bacteria, the use of the older antimicrobial agent colistin has risen. Colistin is routinely used as both monotherapy and dual therapy, combined with other antimicrobials that target gram-negative organisms for synergism. Colistin has historically been associated with increased rates of nephrotoxicity. The objective of this study is to compare the clinical cure rates and rate of acute kidney injury, between patients who received either mono- or dual therapy with colistin, to determine if there is a difference in efficacy and/or toxicity when a second agent is added.

Methods: This study is a retrospective chart review to compare the rates of clinical cure and acute kidney injury in patients diagnosed with a multi-drug resistant infection treated with colistin. Data will be collected from August 2013 to November 2013. Patients will be screened based on pharmacy dispensing records of colistin. Patients will then be included in the study if they were diagnosed with an active infection, received colistin therapy for greater than seventy-two hours and had a positive culture (for Klebsiella pneumonia, Acinetobacter baumannii, Escherichia Coli, or Pseudomonas aeruginosa). Patients will be excluded from the study if they are: <18 years of age, discharged before reaching a clinical cure, pregnant, breastfeeding, or incarcerated at time of treatment. Patients will then be divided into two groups, monotherapy vs. combination therapy with colistin. Clinical cure will be defined as having a negative re-culture of the previously infected site or resolution of presenting signs and symptoms of infection by the end of colistin therapy, along with discharge from the hospital. Acute kidney injury will be defined as an increase in serum creatinine of 0.3mg/dL within two days of initiating colistin, or an increase in serum creatinine of 50% within seven days.

6-156

Title: Appropriate administration of pneumococcal conjugate vaccine (PCV13) in specialized high-risk population at a community health-system

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Purpose: In January 2012, Centers for Medicare and Medicaid Services mandated reporting on 23-valent pneumococcal polysaccharide vaccine (PPSV23) compliance in all hospitalized adult patients. As a result, a pharmacist screening protocol was implemented to improve PPSV23 administration. In October 2012, Advisory Committee on Immunization Practices (ACIP) recommended 13-valent pneumococcal conjugate vaccine (PCV13) for a specialized group at highest risk for developing an invasive pneumococcal infection. The Centers for Disease Control and Prevention added PCV13 to the immunization schedule in response to ACIP recommendation. The objective of this evaluation is to determine baseline appropriate administration rate of PCV13 in high-risk adult patients.

Methods: A retrospective chart review was obtained from a query of electronic health records for all inpatient admissions from April 1, 2013 through June 30, 2013 based on ICD-9 discharge diagnosis codes. This evaluation is exempt from the Institutional Review Board as data collected will be utilized as quality improvement within the health-system. Indication for PVC13, contraindications to vaccine, and patient demographics were collected. Patients greater than 19 years of age were included if the patient had the following immunocompromised conditions: HIV infection, chronic renal failure or nephrotic syndrome, had functional or anatomic asplenia defined as sickle cell disease or other hemoglobinopathies, congenital or acquired asplenia, splenic dysfunction or splenectomy, or were immunocompetent, high risk patients defined as cerebrospinal fluid leaks or cochlear implants. The primary indicator will be baseline rate of appropriate PCV13 vaccination defined as percentage of patients who were indicated and received PCV13 vaccine based on ACIP recommendations. Secondary indicators are as follows: percent of patients receiving PPSV23 but were indicated for PCV13 and percent of patients indicated for PCV13 but did not receive any pneumococcal vaccination. Univariate descriptive statistical methodology will be assessed using data collected.

6-157

Title: Pharmacist Involvement in the Medication Management of an Acute Care of Elderly (ACE) Unit

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Purpose: The inappropriate use of medications in the elderly population can lead to confusion, falls, and even delirium. This in turn puts their health at an increased risk as well as their mortality rate. A multi-disciplinary approach of elderly patient care in an Acute Care of Elderly (ACE) Unit will work to decrease adverse events, shorten the length of stay, and decrease mortality rates. A pharmacist will be an integral part of this team, overseeing the medication management of the patients. The primary expected outcome is that there will be an overall decrease in all adverse events on the ACE unit.

Methods: This study is pending Institutional Review Board (IRB) approval. A guideline will be set in place outlining potentially inappropriate medications and the appropriate therapeutic alternative based on BEERS criteria. The BEERS criteria are a guide of safer therapeutic alternatives for health professionals. Education of pharmacy and nursing staff on safe medication use in the elderly will be developed in conjunction with the geriatricians. After the guideline and education is in place, all patients in the ACE unit will be monitored prospectively for falls, adverse medication events, and code whites.

6-158

Title: Evaluation of appropriate retiming and administration of previously held intravenous antimicrobial doses

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Purpose: Missed dose errors have been associated with adverse events in hospitalized patients for many years. The consequences of missing antimicrobial doses include treatment failure, increased length of stay, and increased cost to the healthcare system. Carruthers et al found a range of 0.3 percent to 4.6 percent of total antimicrobial doses prescribed were missed for clinically acceptable reasons; therefore, the authors suggest an acceptable level of missed antimicrobial doses should be approximately 5 percent of the total number of doses intended. This review will evaluate the appropriate rescheduling and administration of missed, held, or cancelled doses of intravenous (IV) antimicrobials.

Methods: This evaluation is exempt from Institutional Review Board review because the primary goal is to assess for quality assurance. Patients admitted from April 1, 2013 to June 30, 2013 with an IV antimicrobial order will be included. Exclusion criteria are as follows: antimicrobials given by any route other than IV, antimicrobials that were not verified by a pharmacist, IV antimicrobial orders for the operating room, and IV antimicrobials given in the emergency department. The following parameters will be collected from the electronic medical record: patient identifiers; nursing shift; name of IV antimicrobial; dosing regimen or interval of IV antimicrobial; charted reason for missed, held, or cancelled dose, if available; and time elapsed. Dose administrations will be evaluated based on the time elapsed. Doses administered within the predetermined time allotment based on dosing interval will receive one point. Doses administered outside the predetermined time allotment will receive zero points. The total number of points will be divided by the total number of intended dose administrations to determine the percentage of appropriately administered IV antimicrobials. A total of 115 dose administrations need to be reviewed for a 95 percent confidence interval with a 4 percent margin of error.

6-159

Title: Evaluating the Effectiveness of Probiotics in Preventing Antibiotic-Associated Diarrhea: A Retrospective Review

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Purpose: Antibiotic-associated diarrhea continues to be problematic for healthcare providers with a reported incidence of 5-39%. Prophylactic treatment with probiotics has been utilized to help prevent this severe adverse effect associated with antibiotics. The purpose of this retrospective review is to evaluate the effect of a hospital probiotic protocol on the incidence of antibiotic-associated diarrhea by comparing the effectiveness of lactobacillus acidophilus and saccharomyces boulardii over a 10 month period.

Methods: After receiving Institutional Review Board approval a retrospective electronic medical record (EMR) review of patients administered either saccharomyces boulardii, lactobacillus acidophilus, or no probiotic was evaluated for the incidence of antibiotic-associated diarrhea. The study included patients hospitalized from November 1st, 2012 to August 31st, 2013. At the beginning of the study period, the preferred agent for probiotic prophylaxis was saccharomyces boulardii. In April 2013, a probiotic protocol was implemented converting the preferred probiotic agent to lactobacillus acidophilus. Patients identified for evaluation included those at least 65 years of age and who received antibiotic therapy for at least two consecutive days. The primary outcome measured was the documented incidence of diarrhea as defined as two or more liquid stools within 24 hours. Secondary outcomes evaluated were orders and results of c. difficile toxin tests, antibiotic selection, and length of probiotic therapy.

6-160

Title: A retrospective analysis of vancomycin dosing and monitoring in patients on hemodialysis

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Purpose: Hemodialysis-catheter associated bloodstream infections are a frequent issue for hemodialysis patients. Generally vancomycin is empirically used to treat these infections. At this institution it has been observed that there is great variability in the ordering of both vancomycin doses and levels. The purpose of this study is to examine and document current practice with the intention of identifying areas that need improvement and ultimately developing a standardized protocol for the management of vancomycin in hemodialysis. This protocol would be utilized to help to standardize the process and reduce the number of unnecessary random vancomycin levels.

Methods: This study was exempted by the Institutional Review Board as a drug utilization evaluation for quality improvement. This retrospective chart review will examine the medical records of patients who were admitted between 11/13 and 9/13 with a history of end stage renal disease who had orders for hemodialysis and vancomycin concurrently. Patients will be excluded if they are less than 18 years old, have acute kidney injury or only received one dose of vancomycin. The indication, dose, time administered, target levels, time of hemodialysis, length of stay, duration of vancomycin therapy, value and total number of vancomycin levels and times drawn will be recorded for each patient. This data will be reviewed to determine the appropriateness of levels drawn and doses administered in relation to dialysis. In addition, the data will be reviewed to determine the median number of doses and levels per treatment duration. The aggregate data will be analyzed and reported the nephrology team. An evidence-based, standardized vancomycin algorithm will be proposed and discussed with nephrology. Once approved by the P&T Committee, the protocol will be implemented hospital wide.

6-161

Title: Outcomes associated with time to antibiotic administration among patients with febrile neutropenia in the emergency department

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Purpose: Febrile neutropenia (FN) is a medical emergency requiring timely antibiotic administration. National guidelines for the management of FN recommend initiation of antibiotics within 2 hours of presentation, however few studies have specifically identified an optimal time to initiation of antibiotics. Limited studies in adult and pediatric FN patients have found an association between a delay in initial antimicrobial therapy and adverse clinical outcomes, while others found no association with prolonged LOS or mortality. The aim of this study is to assess outcomes associated with delayed time to antibiotic administration among patients with FN presenting to the emergency department (ED).

Methods: A retrospective chart review over a 24-month period will be conducted of adult patients admitted to the ED of our urban teaching hospital with the diagnosis of FN. This study will be submitted to the Institutional Review Board for approval. Patients with a diagnosis of FN (based on ICD9 codes) will be included if having received at least one dose of cefepime, meropenem, piperacillin/tazobactam, and/or aztreonam within 24 hours of admission to the ED. The primary objective is to determine whether a delay in the time to antibiotic administration (TTA) from the time of presentation to the ED is associated with the composite primary endpoint of all-cause in-hospital mortality and/or admission to the intensive care unit (ICU) within 24 hours of presentation to the ED. Secondary endpoints will include length of hospital stay, admission to ICU within 24 hours of hospital presentation, all-cause in-hospital mortality, and requirement of vasopressors within 24 hrs of admission. Association between TTA and proposed outcomes will be determined using a Student t-test or Wilcoxon rank sum. Time intervals (e.g. <60 min, 60-120 min, >120 min) will be assessed for association with the clinical outcomes of interest using a chi-square or Fisher exact test.

6-162

Title: Evaluation of dabigatran dosing with renal function monitoring in the outpatient and inpatient setting at a community health system

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Purpose: Dabigatran is a newer oral anticoagulant agent with minimal laboratory monitoring and less drug/food interactions compared to warfarin. Recently, reports of an increased rate of bleeding have been documented with dabigatran use when it is not renally dose adjusted. This evaluation is currently being completed at a community health system that has guidelines in place to aid physicians in prescribing dabigatran. The purpose of this evaluation is to determine if physicians are assessing renal function prior to prescribing initial doses of dabigatran in the outpatient and inpatient setting of a community health system.

Methods: This evaluation is considered to be a quality improvement project by the Institutional Review Board (IRB), and therefore, does not require IRB review. A retrospective chart review will be performed in adult patients who receive an initial prescription of dabigatran in the outpatient or inpatient setting. Data will be collected from July 1, 2010 to June 30, 2013. The following data will be evaluated: serum creatinine, creatinine clearance using the Cockcroft-Gault formula with the measured serum creatinine and rounded serum creatinine in patients greater than 65 years old, prescribed dabigatran dose and frequency, prescribing physician, and physicians specialty. Patients will be excluded if a physician outside the health system initially prescribed dabigatran. A random sample of 213 charts is required for a power of 80% to detect an error rate of 2% in prescribing of dabigatran with renal function assessment within a community health system.

6-163

Title: Evaluation of the impact of a patient scoring tool on inpatient hematology/oncology pain management in opioid-tolerant patients at an academic medical center

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Purpose: Pain remains largely under-treated in the hematology/oncology population despite pain management guidelines. A recent study of adherence to National Comprehensive Cancer Network (NCCN) pain management guidelines at our institution identified the following predictors for inadequate pain management: opioid tolerance, severe pain on admission, and fewer pain assessments. Based on these results, an electronic patient scoring tool was developed to assist pharmacists in evaluating patients at risk for inadequate pain management. The objective of this study is to determine if implementation of the patient scoring tool will improve analgesia rates in the adult hematology/oncology population.

Methods: In this retrospective chart review, inpatient data will be collected prior to and following the implementation of an electronic patient scoring tool focused on pain management. Following Institutional Review Board approval, opioid-tolerant patients (defined as patients taking an equivalent of 60 mg oral morphine per day for a least a week) will be identified and screened for a pain score greater than or equal to 4 on admission. The primary outcome, attainment of analgesia (defined as a pain score less than or equal to 4 or a 50 percent reduction in pain from baseline) at 24 hours after initiation of opioid therapy, will be compared between pre- and post-implementation groups. Secondary endpoints will include mean pain score, time to analgesia, mean frequency of pharmacist interventions, opioid-associated adverse events and percent of patients with regimens adherent to NCCN guidelines.

6-164

Title: Evaluation of stratified correction dose insulin on dysglycemias in hospitalized diabetic adults

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Purpose: Correction dose insulin (CDI), also known as sliding scale insulin, is recommended by the American Diabetes Association (ADA) and the American Association of Clinical Endocrinologists (AACE) to correct hyperglycemia in hospitalized patients. Frequently, CDI is dosed without consideration for diabetes type, or any other surrogates for insulin sensitivity that could influence the blood glucose response to CDI. Since 2010, our institution has recommended a stratified CDI dosing strategy based on protocol defined markers of insulin sensitivity. The objective of this study is to estimate potential benefits of this stratified CDI dosing strategy on outcomes of glycemic control.

Methods: This study has been submitted to the Institutional Review Board for approval. The electronic medical record will be used to identify adult diabetic patients who were admitted to the medicine services at University of Illinois Hospital and Health Sciences System (UIHHSS) between August 2012 and July 2013 and received an order for correction dose insulin (insulin aspart). Data to be collected include medical record number (MRN), demographic data (age, sex, date of birth, and ethnicity), reason for admission, date of admission/discharge, past medical history, home and inpatient anti-diabetic medications, insulin dose, corticosteroid use, kidney function, estimated insulin sensitivity (determined by investigator per UIHHSS clinical care guideline), baseline HbA1C, hypoglycemic events, hyperglycemia events, and the type of correction dose insulin ordered. The incidence of hypoglycemia and hyperglycemia will then be compared between groups that received CDI dosing per protocol and those received CDI that were not consistent with their insulin sensitivity.

6-165

Title: Evaluation of dexmedetomidine infusion utilization in the adult intensive care unit

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Purpose: Dexmedetomidine (DEX) is a centrally acting alpha-2 agonist that was originally FDA approved for sedating patients in the intensive care unit (ICU). The FDA labeling for DEX limits its use to 24 hours at a maximum infusion rate of 0.7 mcg/kg/hr, with an optional loading dose of 1 mcg/kg. It has sedative, analgesic/opioid sparing, and sympatholytic properties. Emerging studies have evaluated alternative uses for the drug, including higher doses, longer durations, and expanded indications. The purpose of this chart review is to evaluate the evolving prescribing patterns of DEX within a four hospital health system.

Methods: A descriptive, retrospective chart review will be conducted for adults who received DEX in the medical/surgical ICU between June 01, 2012 and June 30, 2013. This chart review is exempt from review by the Institutional Review Board because the primary goal is to assess for quality assurance. Exclusion criteria include use outside of the ICU and use for procedural sedation or shivering. Furthermore, patients were excluded if Richmond Agitation and Sedation Scale (RASS) scores for ventilated patients and Clinical Institute Withdrawal Assessment (CIWA) scores for alcohol withdrawal were not documented upon initiation and discontinuation. A patient list will be generated using the electronic medical health record system. For each patient in which DEX was ordered the following data will be collected: patient demographics, initial indication, peak infusion rate (mcg/kg/hr), duration of infusion (hrs), number of bags of DEX dispensed, if a bolus was given, RASS/CIWA scores at initiation and discontinuation, and reason for discontinuation. From the data collected, prescribing trends will be identified.

6-166

Title: Assessment of a pharmacy-driven warfarin dosing protocol comparing pharmacist to physician dosing in an institutional setting

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Purpose: The primary objective of this study is to compare pharmacist-dosed warfarin and physician-dosed warfarin. The primary endpoint is time-to-therapeutic international normalized ratio (INR). Secondary outcomes of the study include quantity of bleeding events and major vs. minor bleeding, comparison of current practice to clinical guideline recommendations, and costs averted.

Methods: Institutional Review Board approval will be obtained prior to the start of research. A retrospective chart review will be completed to assess outcomes in 3 groups: patients who received pharmacist-driven warfarin dosing, patients who received physician-driven warfarin dosing, and patients who received pharmacist-driven warfarin dosing post-implementation of a revised warfarin protocol. Inclusion criteria are warfarin-nave patients with a diagnosis of atrial fibrillation, deep vein thrombosis, or pulmonary embolism who are initiated on warfarin while inpatient. Exclusion criteria are patients managed by cardiologists or cardiothoracic surgeons and have a length of stay on warfarin therapy less than 72 hours. Data to be collected are patient demographics; indication for warfarin; physician or pharmacist-dosing; days of supratherapeutic, subtherapeutic, therapeutic INR; days of heparin or enoxaparin use; appropriate bridging per guideline recommendations; utilization of reversal agents; incidence of major or minor bleeding; labs pertinent to safety and efficacy; medication interactions; diet; comorbidities; total length of stay; and total days on warfarin while inpatient. The current pharmacist-driven warfarin protocol will be revised following review of outcomes from this study, new guideline recommendations, and pharmacist and physician feedback. The third study group will consist of patients who received pharmacist-driven warfarin dosing post-implementation.

6-167

Title: Evaluating the clinical impact of a computerized physician order entry (CPOE) sepsis bundle order set

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Purpose: Sepsis accounts for approximately 10 percent of all intensive care unit admissions. The key to reducing sepsis mortality is early recognition of the onset of sepsis and prompt initiation of goal-directed therapy. The objective of this research is to evaluate the impact of an updated CPOE sepsis bundle order set reflective of best practice sepsis treatment on clinical outcomes.

Methods: This study is currently under review by the institutional review board. Data will be collected pre-implementation of the evidence-based sepsis order set and post-implementation to allow a comparison of outcomes. Patients included in the study will be identified by a documented positive sepsis screen, indicating the presence of sepsis, severe sepsis, or septic shock. Patient data will be collected from the electronic medical record and maintained without patient identifiers. Data collected will include: patient age, sex, source of infection, ICU length of stay, inpatient medications, time to receive and appropriateness of antibiotics, vital signs, serum lactate levels, complete blood count (CBC) values, complete metabolic panel (CMP) values. Primary endpoints to be evaluated will be ICU length of stay and percentage of patients who met sepsis bundle treatment goals including serum lactate measurement within three hours, antibiotics given within three hours, cultures drawn before administration of antibiotics, and central venous pressure (CVP) measurement within six hours.

6-168

Title: Impact of pharmacist discharge counseling on medication adherence and readmission rates

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Purpose: According to the New England Healthcare Institute (NEHI), the U.S. health care system spends approximately $290 billion annually on medication non-adherence, while another $25 billion is spent on preventable hospital readmissions. The primary objective of this study is to evaluate whether discharge medication reconciliation and counseling by pharmacists can increase a patients medication adherence and reduce hospital readmission rates. Secondary objective of this study is to assess and compare the patients medication adherence 1-2 weeks vs. 30-45 days post-discharge.

Methods: This study has been submitted to the Institutional Review Board for review. This prospective study will include patients admitted with congestive heart failure (CHF) and/or chronic obstructive pulmonary disease (COPD). Within a 45-day recruitment period, patients who agreed to participate and signed the consent form will be separated into two groups: intervention and control. The intervention group will receive pharmacist discharge counseling prior to discharge and the control group will undergo the standard non-pharmacist involved discharge process. Patients in both groups will be contacted via phone for follow-up interviews 1-2 weeks post-discharge and again at 30-45 days post-discharge. During the first follow-up phone interview the patients medication compliance will be assessed using the Morisky Medication Adherence Scale (MMAS) questionnaire. During the second follow-up phone interview the patient will be asked whether he/she was readmitted to any hospital within 30 days post-discharge and the patients medication compliance will be reassessed using the MMAS questionnaire.

6-169

Title: Prescriptions and perceptions after the implementation of a tobacco free campus

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Purpose: A Midwestern university and academic medical center initiated a tobacco free campus policy on July 1st, 2013. The primary objective of this study is to analyze the number of over-the-counter and prescription medications filled at this campus for smoking cessation between July 1st, 2012 and October 1st, 2012 and between July 1st, 2013 and October 1st, 2013. The secondary objectives are to study the institutions employees and students perceptions of the tobacco free campus policy and motivation to abstain from tobacco after the implementation of the policy.

Methods: Tobacco treatment prescription fill reports and purchasing reports for OTC products will be collected from seven campus pharmacies. Reports will be collected between July 1st, 2012 and October 1st, 2012 and between July 1st, 2013 and October 1st, 2013. The medications that will be quantified include nicotine gum, nicotine patches, nicotine lozenges, nicotine inhalers, nicotine nasal spray, and Varenicline. Bupropion will be excluded because of its approval for other uses. The employee and student survey will be addressing the following: selection of pharmacy location and reasoning, perceptions of smoking cessation treatment efficacy and safety, purchasing smoking cessation products from campus pharmacies, the influence of the new ban on use of smoking cessation products and barriers to using these products. In addition, the survey will address the participants thoughts on quitting tobacco and their opinions on the ban. Lastly, general questions will be asked to differentiate whether the participant is a student or employee of the institution, whether or not they are a tobacco user and the amount of tobacco used each day. Descriptive statistics will be used to analyze the data. This study will be submitted to the Institutional Review Board for approval.

6-170

Title: Pharmacists' role in emergency airway responses

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Purpose: The objective of this study is to assess the implementation of pharmacist response and participation as a member of the emergency airway response team at a large, academic, teaching hospital. This study will evaluate pharmacists involvement and interventions during airway response and rapid sequence intubation, and the perceptions of other healthcare providers regarding pharmacists involvement.

Methods: The study was approved by the institutional review board. A pharmacy clinical surveillance system was utilized for data collection. Intubation parameters and details were added to the electronic medical database as a data collection form to allow pharmacists to document their participation in each intubation. These parameters included: response time, whether medications were given prior to arrival of pharmacy, arrival of pharmacist in comparison to respiratory care, whether anesthesia was alerted prior to pharmacy, time spent at the airway, pharmacist-driven interventions, and whether the intubation was deemed unsuccessful or progressed to a cardiac arrest. Additionally, if an intervention was made, the quality and type of intervention was documented. This documented information was gathered and assessed by the authors. A survey was also constructed and distributed to relevant healthcare providers to evaluate their perceptions of pharmacy participation.

6-171

Title: Evaluation of the time of administration of zolpidem orders with an as needed frequency

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Purpose: In response to reports in medical literature of zolpidem usage being linked to increased risk of falls, hospitals should evaluate the use of this hypnotic agent in the inpatient setting. It was hypothesized that an early time of administration could indicate unnecessary utilization of this medication when it was ordered with an as needed (PRN) frequency. Concern that PRN zolpidem orders may be administered more frequently than is necessary led to this evaluation of the time of administration of zolpidem PRN orders at four community hospitals.

Methods: A report was generated from the electronic health record system containing information regarding all administrations of zolpidem at four community hospitals between January 1, 2013 and June 30, 2013. This report was then filtered to include only data for administrations from orders with a PRN frequency. The results were further filtered and analyzed by hospital, unit, and administration time.

Results: In the six months analyzed, the highest concentration of zolpidem PRN order administrations occurred between 21:00 and 22:30. Hospital units that were found to have the highest amount of administrations included an outpatient dialysis unit and an inpatient adult psychiatry unit. Differences in the number and timing of administrations were seen between hospital sites and nursing units.

Conclusion: It appears that zolpidem PRN orders are frequently administered at a time that is too early to determine if a patient is truly suffering from sleep disturbances or insomnia. This premature administration of a hypnotic agent could place patients at an increased risk of falls without allowing them to fall asleep without pharmacologic intervention. These results were brought to nursing leadership and will be brought to the attention of the nursing staff via internal newsletters and meetings.

6-172

Title: Efficiency of pharmacist-operated clinics in reaching diabetes mellitus and hyperlipidemia treatment goals: a quality improvement analysis in a veteran population

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Purpose: Clinical Pharmacy Specialists (CPS) play a unique role within patient aligned care teams (PACT) by utilizing a scope of practice to independently manage disease states, such as diabetes mellitus and hyperlipidemia. Previous literature indicates that these services are valuable and effective in producing positive outcomes for patients. The primary objective of this quality improvement analysis is to determine the efficiency of PACT CPS in producing a significant LDL and A1C reduction in veterans enrolled in Disease State Management clinics.

Methods: This analysis was approved as a quality improvement project by a local review committee. A retrospective quality improvement chart review will be performed to retrieve data. Study subjects will act as their own controls. Efficacy of pharmacist intervention will be determined by change in A1C and LDL from baseline to measurement time of primary endpoints. Demographic data collected will include: sex, age, race, weight, and diagnosis of diabetes mellitus or hyperlipidemia. Classes of medications used, total cholesterol (TC), LDL, HDL, TG, and A1C will also be collected in conjunction with Framingham risk score, treatment goals, and time frame of clinic enrollment, if available. All data will remain confidential throughout the process of this analysis. The primary endpoint for diabetic patients will be a change from baseline LDL to first LDL drawn between six and nine months after enrollment. For dyslipidemia patients, the primary endpoint assessed will be a change from baseline A1C to first A1C drawn between nine and twelve months after enrollment. Secondary outcomes will include change from baseline clinic enrollment in HDL, TG, and TC to the first values within six to nine months after enrollment. Percent reduction in efficacy endpoints will be calculated by the primary author.

6-173

Title: Bisphosphonates and the risk of Clostridium difficile infection (CDI)

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Purpose: Clostridium difficile infection (CDI) has increased in incidence and severity in recent years, and is most commonly associated with antibiotic use. Recent studies have suggested higher risk of CDI with non-antimicrobial exposure, including proton pump inhibitors and antidepressants. Preliminary evaluation of the FDA Adverse Effect Reporting System (FAERS) database has shown a disproportionately high number of CDI with alendronate use. With no literature currently exploring this potential cause, further evaluation of a potential link is warranted. This study will analyze the possible association between bisphosphonate use and CDI by examining the risk of infection among subjects exposed to bisphosphonates.

Methods: This study has been submitted to and approved by the Institutional Review Board. This is a single-center, retrospective study of hospitalized patients with CDI and concomitant osteoporosis agent between January 1, 2007 and December 31, 2012 at the University of Illinois Hospital & Health Sciences System. The electronic medical record system will identify patients who have been tested for CDI, have had diarrhea, and have used any bisphosphonate agent concomitantly. Patients who do not present with diarrhea or have documented non-adherence to their bisphosphonate agent will be excluded. The following data will be collected: demographics, admission and discharge dates, date of CDI test, number of CDI tests, temperature, medications within the last three months, antibiotic use within the last three months, antibiotics used for the treatment of CDI, CDI outcome, CDI recurrence (defined as recurrence within three months of the current episode), serum creatinine, white blood cell count, albumin, admission source (community versus long-term care facility versus outside hospital), comorbidities, recent hospitalizations within the last three months, and recent travel history. An odds-ratio of CDI and bisphosphonate use will be estimated, and the rates of CDI by each bisphosphonate arm will be compared using the chi-squared test.

6-174

Title: Clinical Pharmacist intervention on the error rates of antiretroviral and opportunisitic infection prophylaxis medications in the inpatient setting

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Purpose: Based on a retrospective study performed at our institution last year, a 38% medication error rate was found in HIV inpatients for their antiretroviral (ARV) and opportunistic infection (OI) medications. Although these lifesaving medications have increased the lifespan of those living with HIV/AIDS, these medication errors place HIV infected individuals at significant risk for adverse events, clinically significant drug-drug interactions, and failure of antiretroviral therapy (ART). There is data linking ARV therapy and OI agents with inpatient medication errors; however, there is very little about the clinical pharmacists ability to decrease ARV and OI errors.

Methods: All HIV inpatients over the age of 18 years and currently on ARVs admitted to our institution between October 1, 2013 and June 30, 2013 will be included in this prospective quality improvement study. Pregnant women and children under the age of 18 will be excluded. A clinical alert through the electronic medical charting system will be sent notifying the investigators that an HIV patient has been admitted. The investigators will then evaluate if a medication error occurred and was corrected by the clinical pharmacist within the first 24 hours of admission. Data to be collected includes: demographic information, hospital stay information including medical service and total number of medication errors, clinical pharmacist intervention analysis including the type of medication error corrected and whether the recommendation was appropriate, and medication specifics to include in-house versus at home regimen and any drug-drug interactions. Other interventions are to include inpatient ARV formulary changes, pharmacist education, and a drug reference card for each clinical pharmacist. Multi-variate logistical regression models will then be used to find out what impact different interventions had on the overall error rate.

6-175

Title: Evaluation of patient own medication usage at a large academic medical center

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Purpose: Patient own medication (POM) usage in an inpatient setting is a common practice due to formulary restrictions, medication unavailability, and patient preferences. While POM usage in hospitalized settings provides a valuable patient service, it can create logistical challenges that disrupt pharmacy workflow and bypass medication use system safeguards. The objective of this study was to evaluate current POM utilization relative to institutional policies at a large academic medical center and to assess its impact on pharmacy workflow efficiency.

Methods: This was a retrospective, single center evaluation of POM orders from July 1 to July 31, 2013. After receiving approval from the institutional review board, the electronic medical record was used to identify POM orders generated (n=506) during the study period. POM data collected included order entry method, dosage form, FDA approval status, legend status, controlled substance status, chemotherapy status, drug formulary status, acquisition cost, and billing method. Patient demographic data included age, gender, institutional location, admission status, and payer status. Pharmacist documentation of POM identification according to policy was also assessed. If available, documented reasons for POM usage were recorded. These data will be used to qualitatively assess POM utilization at a large academic medical center, and to gauge compliance with institutional policies pertaining to this practice. A staff survey will be conducted to approximate the time needed to process POMs, allowing for estimation of pharmacy workflow inefficiencies and tabulation of opportunity costs associated with this practice. Finally, a University HealthSystem Consortium (UHC) survey will be conducted to compare and contrast POM usage patterns at similar institutions.

6-176

Title: Evaluation of pain assessment and analgesia utilization in mechanically ventilated post-operative patients in the ICU post implementation of a nonverbal pain scale

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Purpose: The 2012 Society of Critical Care Medicine (SCCM) pain, sedation, and delirium guidelines recognize the importance of treating and evaluating pain in mechanically ventilated patients. In 2011, an audit across a four hospital health system was completed assessing the use of analgesia in patients in the intensive care unit (ICU). The objective of this review is to assess the effect the implementation of a nonverbal pain scale has had on the timeliness and consistency of pain control in post-operative mechanically ventilated patients.

Methods: This analysis is exempt from review from the Institutional Review Board because it meets criteria for quality improvement processes. A retrospective chart review will be conducted on post-operative, mechanically ventilated patients greater than or equal to 18 years old admitted to the ICU between January 1, 2012 and December 31, 2012. Patients undergoing gynecological or urological procedures, or who participated in a clinical trial evaluating acetaminophen use post-craniotomy, will be excluded from this review. A patient list will be generated using the electronic health record and will be randomized. Data to be collected includes patient weight, age, surgery type, pain scale use, time to first analgesic dose, and analgesic agent, dose, route, and frequency used. A one group Chi-square test will be utilized to assess the data and 50 patients are needed to meet 80% power. The primary endpoint is the percent of mechanically ventilated post-operative ICU patients with documented pain assessments meeting institutional protocol. The secondary endpoints are percent of mechanically ventilated post-operative ICU patients with scheduled or PRN analgesia ordered within the first 24 hours following surgery and percent of mechanically ventilated post-operative ICU patients receiving expected analgesic agents within the first 24 hours postoperatively.

6-177

Title: Evaluation of an institution specific cellulitis antimicrobial guideline

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Purpose: Cellulitis, a common skin and soft tissue infection, results in a significant amount of hospitalizations and office visits each year with occurrences increasing annually. Current guidelines provide empiric treatment but contain limited information on recommending initial antibiotic treatment according to infection severity. By assessing the current antibiotic prescribing practice at this institution and preparing an antimicrobial guideline, it may be possible to recommend a more appropriate initial cellulitis antibiotic regimen. The primary objective of this study is to evaluate whether an institution specific cellulitis antimicrobial guideline will result in a decreased length of stay.

Methods: Currently under review by the Institutional Review Board at this institution, this study will be a single-center evaluation of outcomes both pre-and post-cellulitis antimicrobial guideline implementation. A list of patients diagnosed with cellulitis as designated by an ICD-9 code will be obtained from the institution's Midas program. Patients from June to August 2013 will be evaluated prior to implementation of the guideline, as well as patients post-guideline implementation from December 2013 to February 2014. Electronic medical records will be utilized to determine patient demographics, length of stay, and initial antibiotic regimen. The guideline will be developed using the institution's antibiogram and commonly suspected organisms, in addition to published guidelines and previous studies. Both physicians and pharmacists at this institution will receive education on proper utilization of the guideline. A comparison of data between pre-and post-guideline implementation will be used to determine whether an institution specific cellulitis antimicrobial guideline has a positive effect on initial antibiotic regimen and length of stay.

6-178

Title: Development and implementation of a pharmacist run oral chemotherapy clinic in an outpatient oncology setting

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Purpose: The use of oral chemotherapy has become increasingly common, accounting for 78% of newly approved oncology agents in 2013. Although orally administered chemotherapy seems more convenient, there are many challenges, including the difficulty of assessing adherence and timely management of adverse events (ADE). A clinic where a pharmacist manages a patients oral chemotherapy under the auspices of a physician might overcome these challenges. The purpose of this project is to establish a pharmacist-run oral chemotherapy clinic, bill for the service, and impact adherence and timely management of ADE.

Methods: This evaluation has been exempt from review by the Investigational Review Board because the primary goal is quality improvement. A list of oral chemotherapy agents most associated with adherence issues and ADE will be compiled. A report generated from the electronic health record (EHR) will be utilized to estimate the volume of patients with active prescriptions for oral chemotherapy agents to be included in the clinic. A tool will be developed for the EHR and will be utilized to consistently identify adherence issues and ADE. Said tool will be vetted through pharmacy, nursing, and physicians. Patients with an active prescription for the oral chemotherapy agents identified will be eligible to be seen in the clinic. During clinic visits the pharmacist will interview the patient and collect pertinent information regarding adherence and ADE as well as provide education.

6-179

Title: Pharmacist-led development of a pain management team within a palliative care group

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Purpose: Poor management of pain is linked to reduced quality of life and decreased patient satisfaction. In a community hospital setting, there is still a need to focus on adequate and appropriate analgesic therapy. The ideal approach to pain management in an inpatient setting includes the utilization of an interdisciplinary pain team. Currently, pharmacists have a limited role in most hospital pain management teams. The objective of this study is to determine if pharmacist participation in the development of a pain team can improve pain management therapy for patients resulting in better pain control and increased patient satisfaction.

Methods: The pain management pharmacist will work within a multidisciplinary team to assess and monitor patients and identify their existing pain therapy needs. To detect areas needing improvement, patient surveys, medical charts, and the hospital database will be used to collect information. The data will be collected at designated time intervals while a search of the electronic medical records will identify different pain assessment tools currently in use. Additional data for executing changes in therapy will be collected by using surveys including the Numeric Rating Scale, Behavioral Pain Scale, Behavioral Pain Scale Non-intubated, and Multidimensional Post Surgical Pain Scale. Patient costs and length of stay will be determined using hospital bills, charges from the revenue center and cost department, hospital-specific Medicare cost reports, use of billing codes and cost assignments based on Medicare fee schedules. Patients undergoing initial assessment by the pharmacist regarding their pain and effectiveness of current therapy will also undergo follow-up surveys post-discharge to assess their pain management and satisfaction during their stay. The clinical pharmacist will work with other healthcare staff to improve current pain management protocols or establish new protocols to meet the needs of the patients while facilitating the necessary interventions for improving patient outcomes.

6-180

Title: Vancomycin versus daptomycin in methicillin-resistant Staphylococcus aureus with vancomycin minimum inhibitory concentration greater than 1 mcg/mL in complicated skin and soft tissue infections

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Purpose: Studies that have examined early daptomycin therapy in patients with methicillin-resistant Staphylococcus aureus (MRSA) bacteremia or prosthetic joint infections have found that daptomycin resulted in improved outcomes when the minimum inhibitory concentration (MIC) was greater than 1 mcg/mL. However, there is little data regarding complicated skin and soft tissue infections (cSSTIs). Due to the unknown benefit of early daptomycin therapy in this patient population, we will conduct a retrospective analysis of vancomycin versus daptomycin in cSSTIs. The primary purpose is to determine if daptomycin therapy in MRSA cSSTIs with vancomycin MICs greater than 1 mcg/mL results in improved patient outcomes.

Methods: This study will be submitted to the Institutional Review Board for approval. This is a retrospective case-control study at a single-center tertiary care hospital. Data collection spans July 2011 to July 2013. Patients will be included if they meet the Infectious Disease Society of America cSSTI definition of deep soft tissue infection, surgical/trauma wound infection, major abscess, cellulitis, infected ulcer or burn. Patient demographics will be matched at baseline and cSSTI severity will be determined using the Clinical Resource Efficiency Support Team (CREST) criteria. Conventional therapy is defined as vancomycin at antibiotic start, and early switch is defined as a change to daptomycin within 36 hours of MIC reporting. The primary endpoint is clinical failure, defined as no clinical improvement within 72 hours of start of therapy; this will be determined by less than 20 percent decrease in white blood cell count, temperature greater than or equal to 38 degrees Celsius, lack of clinical improvement at the site of infection as stated by physician documentation and mortality. The secondary safety endpoints will evaluate reported adverse drug events, nephrotoxicity, ototoxicity and elevated creatine phosphokinase.

6-181

Title: Relationship between patient falls and concurrent lorazepam or chemotherapy use in an oncology population

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Purpose: Falls are a dilemma in inpatient practice, increasing overall healthcare system utilization. 70,000 to 100,000 inpatient falls occur yearly, a third of which are preventable. Oncology patients have a potentially heightened risk for falling due to chemotherapy and related supportive medications. Benzodiazepines are considered a high fall risk drug class. Lorazepam is recommended within oncology practice guidelines as an adjunctive antiemetic agent, however, it is not recommended for all patients. At this institution, an analysis of hematology/oncology patient falls was conducted to determine specific fall risk factors and to further define the role of lorazepam in these occurrences.

Methods: A retrospective review of electronic medical record at this institution for fiscal year 2012 through July 2013 was conducted to identify patients who experienced a fall while in the hospital. Sixty-one patients that were admitted to one of three hematology/oncology units that administer chemotherapy were included. Patients were then further identified for inclusion if they received lorazepam and/or chemotherapy during that admission. The primary endpoint of this study is to describe the relationship between falls and lorazepam or chemotherapy. The secondary endpoint is to assess appropriate utilization of lorazepam as an antiemetic in patients receiving chemotherapy. Data collection points include patient demographics (age, sex), fall event details (date, time, location), length of stay, altered mental status, history of falls, receipt and type of chemotherapy, and emetic potential of chemotherapy. Also, the timing, dose, duration, and frequency of lorazepam administration are included for analysis to determine its relation to chemotherapy regimens.

6-182

Title: Impact of pharmacist led discharge counseling on 30-day readmissions and emergency department visits

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Purpose: Many medication errors occur at discharge from inconsistencies between home and hospital medication regimens. A major factor leading to readmissions is a lack of patient knowledge about their medication therapy. Studies have demonstrated that pharmacist led discharge counseling reduces readmission and emergency department (ED) visit rates by educating patients on their new regimens. Despite the evidence that counseling by a pharmacist offers significant benefits to patients, discharge counseling is not currently pharmacy driven at this community hospital. The primary objective of this study is to assess whether discharge counseling by a pharmacist will decrease 30-day hospital readmissions and ED visits.

Methods: This study is awaiting approval from the Institutional Review Board at the hospital. It will be a single center, randomized, prospective study. Discharge counseling will be conducted on one unit where patients will be randomized into two study groups. In the intervention group, the pharmacist will provide counseling, while the control group will continue to receive the current standard where the nurse will provide medication counseling. After receiving counseling, each patients knowledge base will be assessed using the Discharge Knowledge Assessment Tool by the Agency of Healthcare Research and Quality (AHRQ). After a 30-day period, electronic medical records will be used to identify whether patients in either control or intervention group were readmitted to the hospital or emergency department. Patients will also be contacted by telephone at 31 days to assess the primary objective.

6-183

Title: Safety of extended infusion pipercillin-tazobactam plus vancomycin versus standard infusion pipercillin-tazobactam plus vancomycin in general medicine patients with a diagnosis of healthcare associated pneumonia

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Purpose: Vancomycin and pipercillin-tazobactam both present concern for acute kidney injury (AKI). Safety data regarding extended infusion combination therapy has not been fully evaluated. The objective of this study is to assess the safety of extended infusion pipercillin-tazobactam and vancomycin therapy versus standard infusion pipercillin-tazobactam and vancomycin in general medicine patients, and to evaluate if one treatment modality predisposes patients to a greater risk of nephrotoxicity.

Methods: This study will be submitted to the Institutional Review Board for approval. Data from an academic medical center will be analyzed over a 3 month period pre and post implementation of extended infusion pipercillin-tazobactam protocol. A retrospective analysis will be conducted comparing patients admitted to the hospital with a diagnosis of healthcare associated pneumonia (HCAP) who received extended-infusion pipercillin-tazobactam plus vancomycin versus standard infusion pipercillin-tazobactam plus vancomycin. Adult hospitalized patients on combination therapy with two or more serum creatinine (SCr) measurements will be included. Patients will be excluded if they are less than 18 years of age or if they are on any form of dialysis including continuous renal replacement therapy. The primary safety objective is AKI, defined as an increase in serum creatinine of at least 0.5 mg/dL or a 50% increase in serum creatinine from baseline at any time during antibiotic therapy. Safety outcomes will be compared between the two treatment groups and contributing factors for developing AKI will be assessed.

6-184

Title: Implementation of a pharmacist-delivered tobacco intervention program in an ambulatory oncology clinic

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Purpose: According to the American Cancer Society, tobacco use is associated with 30% of all cancer deaths and 87% of all lung cancer deaths. Tobacco abstinence is imperative for helping to prevent the progression of disease, decrease complications from therapy, and improve cancer outcomes in oncology patients. These benefits are in addition to the health benefits that tobacco cessation yields for all smokers. The goal of this study is to describe the implementation and feasibility of a tobacco intervention program in an ambulatory oncology clinic and determine the effectiveness of pharmacist-delivered services in this setting.

Methods: This is a prospective, randomized pilot study that will be submitted to the Institutional Review Board for approval. After obtaining informed consent, patients will be assigned in a 1:1 ratio to either the pharmacist intervention or usual care group. Patients in the pharmacist intervention group will receive behavioral counseling by a pharmacist during their chemotherapy sessions or in conjunction with other clinic appointments. If indicated, pharmacists will recommend pharmacological interventions to help patients quit their use of tobacco. Patients in the usual care group will receive tobacco dependence therapy at the discretion of their primary care and oncology physicians. The primary outcomes of this study are the number of patients recruited to participate in the tobacco dependence program and the number of successfully completed pharmacist meetings. Secondary outcome measures include patient self-reported satisfaction and impact of pharmacist-delivered behavioral counseling and pharmacological interventions on smoking cessation confirmed by carbon monoxide breath tests. All data collected from this study will be analyzed utilizing simple descriptive and comparator statistics.

6-185

Title: Oral sodium bicarbonate vs intravenous sodium bicarbonate for urinary alkalinization in patients receiving high-dose methotrexate

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Purpose: High- dose methotrexate (HD-MTX) is defined as ≥ 1 g/m2 and is active in the treatment of hematological malignancies such as acute lymphoblastic leukemia and CNS lymphoma. The safe use of HD-MTX requires adequate renal clearance to prevent toxicity. Ensuring adequate clearance requires appropriate hydration and urinary alkalinization. MTX is poorly soluble at acidic pH levels and solubility is increased when urine pH is maintained above seven. Intravenous fluids with sodium bicarbonate or sodium acetate have been utilized to ensure urine alkalinization during MTX administration. Additionally, oral sodium bicarbonate has been utilized for urinary alkalinization for patients prior to HDMTX.

Methods: The aim of this study will be to determine if oral sodium bicarbonate is as effective as intravenous sodium bicarbonate at equivalent dosing for maintaining urine alkalinzation (pH>7) in patients receiving HDMXT (≥1 g/m2/day). The method for data collection will be a retrospective chart review via our electronic health record. The inclusion criteria for this study will be adult patients who received HDMTX for either the DeAngelis protocol or HyperCVAD-B and received either oral sodium bicarbonate or intravenous sodium bicarbonate for urinary alkalinization. The primary outcome measure will be the incidence of urine pH>7 of intravenous compared to oral sodium bicarbonate in patients receiving HDMTX. Secondary measures to assess safety and efficacy include time to MTX clearance (<0.05 mol/L), average urinary pH, incidence of nephrotoxicity, and average length of hospital stay.

6-186

Title: Evaluation of the use of risk assessment tools for the veteran population starting triple oral antithrombotic therapy

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Purpose: Triple oral antithrombotic therapy (TOAT), which consists of warfarin, clopidogrel or prasugrel, and aspirin, has shown to be beneficial for patients on chronic anticoagulation who undergo percutaneous coronary intervention (PCI). The available guidelines and literature suggest thorough risk assessment of recurrent stroke and bleed prior to starting TOAT. The objective of this study is to determine if the guidance from CHADS2, CHA2DS2-VASc, and HAS-BLED scores leads to appropriate therapy and fewer complications by providing objective patient-specific measures to evaluate whether to initiate or withhold TOAT in patients with atrial fibrillation status-post PCI.

Methods: This study has been submitted to the Institutional Review Board for approval. Those patients with atrial fibrillation or flutter status-post percutaneous coronary intervention will be enrolled in the study and subject to Computerized Patient Record System chart review. The following information will be collected: antithrombotic and/or antiplatelet therapy at the time of discharge; age; gender; past medical history for calculation of CHADS2, CHA2DS2-VASc, and HAS-BLED scores; documented scores if available; INR values at follow-up visits; length of therapy for each agent; types of stents placed; baseline hemoglobin values; and documented complications during 1 year follow up. Complications will be defined as having any episode of bleeding defined by the CURE criteria, recurrent ischemic stroke, or death. The collected data will be saved under a private network and patient confidentiality will be protected. The calculated scores will be used to determine whether inappropriate initiation or withholding of TOAT existed, and if so, whether more complications arose from inappropriate therapy.

6-187

Title: Clinical factors affecting time to target INR in genotype-guided warfarin dosing of inpatients

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Purpose: Warfarin dosing is challenging because of its narrow therapeutic range and wide interpatient variability in anticoagulation response. Pharmacogenetic and clinical factors account for 30-50 percent of the dose variability. Warfarin dosing algorithms were derived from outpatient cohorts and warfarin pharmacogenetic trials often excluded patients with serious comorbidities. In the real-world setting, warfarin is often initiated under clinically unstable inpatient conditions. This study aims to determine the clinical factors affecting time to achieve target international-normalized-ratio (INR) by the first outpatient Antithrombosis Clinic (ATC) versus those who achieve it at subsequent ATC visits, in genotype-guided warfarin dosing of inpatients.

Methods: This was a prospective study of adults admitted from August 2012 to September 2013 at UI-Health who were newly started on warfarin. These patients underwent CYP2C9 and VKORC1 genotyping with a pharmacogenetic consult team providing daily dose recommendations until two consecutive target INRs were achieved. Most patients were then followed-up at ATC. Clinical data collected include age, ethnicity, renal function, time to target INR, interacting inpatient medications such as amiodarone. Patients were stratified into those who achieved target INR by the first ATC visit (early target INR group) versus those who achieved target INR in subsequent ATC visits (late target INR group).

Results: A total of 110 patients were analyzed, with 78 in the early target INR group and 32 in the late target INR group. The time to target INR was shorter in the early versus late target INR groups (4.9 plus/minus 3.9 days versus 14.5 plus/minus 13.4 days, P less than 0.05). The early target INR group had a mean age of 52 plus/minus 17 years, 64 percent were female and mean eGFR 85.7 plus/minus 41.6 ml per min. There was a significantly larger proportion of patients with a lower target INR goal of 1.8 to 2.5 in the early versus late target INR group (24 percent versus 6 percent, P less than 0.05). There was no significant difference in the smoking status, age-adjusted comorbidity index or number of interacting medications between both groups. There was a similar percentage of African-Americans in the early and late target INR groups (50 percent versus 53 percent), but there were more Hispanics in the late versus early target INR group (34 percent versus 15 percent, P less than 0.05). There was no significant difference in genotype distribution between both groups.

Conclusion: A lower INR goal was associated with earlier achievement of target INR. Although there was a larger proportion of Hispanics in the late target INR group, this difference could not be attributed to their genotype. This strength of this study was that it was conducted in the inpatient setting with a large minority group of African-American and Hispanics. However, it was limited by its small sample size and the data from a single medical center only.

6-188

Title: Implementation and evaluation of a modified therapeutic hypothermia protocol in a community hospital

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Purpose: More than two-thirds of resuscitated patients from cardiac arrest die before hospital discharge due to post-resuscitation brain and myocardial dysfunction. Therapeutic hypothermia (TH) has been shown to reduce the severity of post-resuscitation brain injury and improve survival in patients who remain comatose after resuscitation. TH is now the standard of care for all comatose survivors after out-of-hospital cardiac arrest (OHCA) due to ventricular ﬁbrillation or pulseless ventricular tachycardia. The objective of this study is to compare mortality and favorable outcomes at hospital discharge in patients who underwent TH post cardiac arrest before and after implementation of a revised TH protocol.

Methods: This study will be submitted to the hospitals Institutional Review Board for approval. It will be a prospective, observational study with historical controls assessing mortality rates of patients resuscitated from OHCA and in-hospital cardiac arrest (IHCA). The historical control group will consist of patients treated during the preceding 12 months, prior to implementation of the revised TH protocol. Those patients will be identified by using the Hospital Information System database. Patients in the prospective arm will be eligible for treatment with TH if they meet protocol inclusion and exclusion criteria. The data to be collected will include patient demographics (gender, age), medical history, cause of cardiac arrest, arrest location, initial arrest heart rhythm, survival to hospital discharge, place of discharge, and time to target core temperature. The primary outcome will be morality at discharge, while the secondary outcomes will include favorable outcome, time to target core temperature, and impact of pharmacist involvement in protocol initiation. The data collected will be compared and analyzed using appropriate statistical tests.

6-189

Title: Incidence of cytomegalovirus viremia and pharmacoeconomic analysis of delayed initiation, low dose valganciclovir in moderate risk kidney transplant patients

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Purpose: Although many studies have evaluated the use of valganciclovir for cytomegalovirus (CMV) prophylaxis, none have specifically addressed delayed initiation prophylaxis and the impact it may have on the incidence of CMV and on health care costs. At our institution, a cost savings initiative was implemented that delays initiation of valganciclovir in moderate serological risk kidney transplant recipients. This study aims to determine if delayed initiation of CMV prophylaxis could potentially be an appropriate and cost saving strategy without compromising patient outcomes.

Methods: This study will be submitted to the Institutional Review Board for approval and informed consent will be obtained for all subjects. The electronic medical record will be used to identify patients receiving a kidney transplant at moderate serological risk for CMV, defined as donor negative/recipient positive or donor positive/recipient positive, during the study period. The study group will consist of kidney transplant recipients who received CMV prophylaxis per the delayed initiation protocol. The study participants will be compared to a historical control group that will consist of patients matched by demographics from the calendar year prior to instituting the delayed initiation protocol. Both the historical control group and the study group will be followed for 6 months of CMV prophylaxis followed by 6 months of follow up and observation. The data being collected will include: baseline characteristics (age, gender, ethnicity, comorbidities, and pretransplant diagnosis); date of renal transplant; donor and recipient CMV serology, date valganciclovir was initiated; valganciclovir dose adjustments and reason for adjustment; compliance; CMV PCR results; and pharmacoeconomic data. Data will be maintained confidentially. Data will be analyzed for the incidence of CMV viremia in both groups and henceforth compared. Cost savings will be quantified as well.

6-190

Title: Evaluation of estimated weight and the impact on weight-based medication dosing

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Purpose: Appropriate dosing of weight based medications relies upon a recorded patient weight. Estimated weights may be used in acute settings to prevent delay in patient care. However, literature has shown poor reliability in obtaining an accurate estimated weight. If a large difference between an estimated and actual weight occurs, the dosing of weight based medications may be affected. Data from a community health system will be evaluated to characterize the potential or actual difference in medication dosing caused by a change in recorded weight by greater than 10 percent. Based on the results, changes to clinical practice may be recommended.

Methods: This evaluation is considered quality improvement and is exempt from full Institutional Review Board review. A retrospective electronic chart review of a random sample of patients with a documented change in weight of greater than ten percent from July 1, 2012 through June 20, 2013 will be conducted. Data will be limited to patients who were prescribed any of the following weight based medications: tissue plasminogen activator, heparin, enoxaparin, argatroban, vancomycin, gentamicin, tobramycin, daptomycin, voriconazole, phenytoin, and fosphenytoin. Data will be limited to records that have the weight based medication ordered with an estimated weight from the emergency department and a scaled weight from a medical unit. The following data will be collected: patient demographics, documented weights, and prescribed dosages of weight based medications. The prescribed medications will be analyzed for changes in the ordered dose based upon the specific weight used. Descriptive statistics will be used to evaluate the data.

6-191

Title: Evaluating the use of proton pump inhibitors and histamine two receptor antagonists for gastrointestinal prophylaxis in patients receiving dual antiplatelet therapy

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Purpose: Dual antiplatelet therapy (DAT) administered post percutaneous coronary intervention (PCI) with stent placement has been shown to be superior to aspirin monotherapy in preventing death due to cardiovascular causes. One of the concerns with DAT is the risk of gastrointestinal bleeding. A guideline at a community health system recommends the initiation of stress ulcer prophylaxis (SUP) in patients receiving DAT. The objective of this medication use evaluation is to evaluate current prescribing habits of proton pump inhibitors (PPI) and histamine two receptor antagonists (H2RA) in patients receiving DAT and assess compliance with the current institutional guideline.

Methods: This medication use evaluation will not require Institutional Review Board approval since it is a quality improvement project. A retrospective chart review will be performed of inpatients that received a PCI with stent placement between July 1, 2012 and June 30, 2013 and were prescribed DAT. The following data will be collected: patient demographics, admitting diagnosis, selection of thienopyridines, PPIs, H2RAs, aspirin, warfarin, dabigatran, rivaroxaban, and apixaban. Two hundred seventy nine patient charts are required to achieve a margin of error equal to 0.05 with a 95 percent confidence interval. Selection of patient charts will be determined by assigning a unique number to each patient chart and selecting charts based on random assignment. Patients in the intensive care unit requiring mechanical ventilation, patients taking PPIs, H2RAs, thienopyridines or parenteral anticoagulants prior to admission, patients who received fibrinolytic therapy within 24 hours of PCI or patients who received heparin, abciximab, eptifibatide, tirofiban or bivalirudin after PCI will be excluded from patient selection.

6-192

Title: Evaluation of glycemic management in non-critically ill diabetic inpatients

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Purpose: Given the morbidity and mortality along with the resulting healthcare costs associated with managing diabetes, blood glucose monitoring and control are topics of great interest. In an effort to improve inpatient glycemic management at a community health system, a review will be conducted on non-critically ill adult diabetic inpatients to compare glycemic control according to physician specialty prior to implementation of an enhanced glucose monitoring tool.

Methods: A retrospective electronic chart review will be conducted on non-critically ill adult diabetic inpatients receiving insulin treatment admitted between January 1 and June 30, 2013 prior to implementation of the monitoring tool. This review will be conducted for quality purposes and therefore will be exempt from review by the Institutional Review Board. The primary objective is to measure the percent of bedside blood glucose values ranging from 70 to 180 mg/dL between hospitalist, surgery, endocrine, and other physician groups. The secondary objective is to measure the number of bedside blood glucose values below 70 mg/dL per patient day between physician groups. Patients will be excluded if pregnant, receiving hospice care, palliative care or diagnosed with diabetic ketoacidosis or hyperosmolar hyperglycemia during admission. Treatment with intravenous insulin or glucose readings obtained less than three hours of one another will also be excluded. In order to achieve a power of eighty percent and detect a five percent difference between hospitalists and the three physician groups, 915 random bedside blood glucose values per physician group will be reviewed for the primary objective.

6-193

Title: Evaluating the rates of glucose monitoring during atypical antipsychotic initiation and follow-up

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Purpose: In 2004, the American Diabetes Association and the American Psychiatric Association introduced glucose monitoring guidelines for patients taking atypical antipsychotic medications. The recommendations are to obtain a baseline fasting blood glucose or hemoglobin A1c (HbA1c) reading upon initiation of an atypical antipsychotic followed by a fasting blood glucose reading or HbA1c at twelve weeks and at one year due to the increased risk of hyperglycemia with atypical antipsychotics. Given the serious consequences that can occur with hyperglycemia and diabetes, the rates of glucose monitoring in patients taking atypical antipsychotics will be evaluated.

Methods: This review will be exempt from Institutional Review Board review because the primary goal is to assess for quality assurance. A review of the electronic health record will be conducted for patients presenting to a NorthShore University HealthSystem outpatient clinic between January 2nd, 2010 and June 29th, 2013 and meet the following criteria: 18 years of age or older and receiving a new 30-day prescription for aripiprazole, asenapine, clozapine, iloperidone, lurasidone, olanzapine, paliperidone, quetiapine, risperidone, or ziprasidone. Patients who meet any of the following criteria will be excluded: patients with a pre-existing diagnosis of diabetes or were prescribed anti-diabetic medications prior to initiation of atypical antipsychotic, pregnancy, or as needed or prn antipsychotic prescriptions. The primary objective is to evaluate whether appropriate baseline and follow-up monitoring of blood glucose and/or hemoglobin HbA1c is completed in patients started on atypical antipsychotics. The secondary objective is to evaluate if there is an increased rate of new-onset diabetes and/or initiation of diabetes medication in patients started on atypical antipsychotics. A sample size of 144 patients will be needed to achieve 80% power to detect a difference in glucose testing rates.

6-194

Title: Intravenous batched medication waste management: a retrospective efficiency review

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Purpose: The batch production of IV medications, while contributing to efficiency, has the potential to result in excessive medication waste. Efficient and accurate reporting along with timely monitoring of waste resulting from the batch production process allows appropriate adjustments in production to be made to ensure cost-effective operations. In order to improve the accuracy and efficiency of our batch waste monitoring process, we analyzed a waste monitoring system that utilizes the EMR and batch production records. These results produce reports that enable rapid adjustment of production quantities.

Methods: The electronic medical record (EMR) and batch production records were utilized to calculate an anticipated waste level. For this process, waste was defined as the difference between the total number of units manufactured and the total number of units charged to patients over a defined time period. Due to a large discrepancy between our current methods of batch waste monitoring as compared to the EMR method, it was decided to implement a one-month pilot study to validate the accuracy of this process. This employed intensive retrieval of expired batched medications to compare to our calculated amount. Pharmacy personnel working within the different satellite pharmacies throughout our institution were given a designated container to collect all expired or adulterated batched intravenous medications. One of the investigators then rounded throughout the hospital to collect and count these medications and log them within a spreadsheet. At the end of the one-month collection period, all data will be totaled and then compared to the EMR method. Ultimately, the absolute error will be calculated to assess the validity of using an electronically-based monitoring process as compared to actual collection. These findings will be reported on our poster in December.

6-195

Title: Evaluation of initial rivaroxaban dosing for hospitalized and ambulatory patients

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Purpose: Rivaroxaban is an oral Factor Xa inhibitor approved by the FDA in 2011 for deep vein thrombosis (DVT) and pulmonary embolism (PE) treatment, DVT/PE prophylaxis, and non-valvular atrial fibrillation. Rivaroxaban requires dose adjustments based on indication, renal and hepatic function, and location of ones feeding tube. The objective of this evaluation is to determine if initial rivaroxaban orders for inpatients and outpatients are dosed appropriately based on an internal drug use guideline, modeled after the FDA dosing recommendations.

Methods: The evaluation of rivaroxaban dosing is a quality assurance project and is exempt from review by the Institutional Review Board. Data will be collected via retrospective chart review to evaluate a random sample of initial rivaroxaban orders for inpatients and outpatients. The data points for evaluation are: patient age, weight, height, inpatient versus outpatient status, serum creatinine, indication for rivaroxaban, sex, date of initial prescription, dose of rivaroxaban prescribed, location of feeding tube if present, presence of ascites or encephalopathy, most recent albumin, bilirubin, creatinine, INR and liver function tests prior to the prescribed rivaroxaban dose. The inclusion criteria are initial rivaroxaban orders between November 2011 and June 2013. The exclusion criterion is patients less than 18 years of age. The primary endpoint is the percentage of initial rivaroxaban orders dosed appropriately for inpatients and outpatients. The secondary endpoints are the percentage of prescriptions with appropriate dosing based on rivaroxaban indication, renal function based on the Cockroft-Gault equation, and if the order was for an inpatient or outpatient. A minimum of 213 charts will be reviewed to achieve 80% power to detect a 2% error rate in the percent of orders dosed appropriately.

6-196

Title: Evaluation of safety and efficacy of first-line antiretroviral single tablet regimens (STR) in the correctional setting: is one tablet once daily the best option?

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Purpose: During incarceration, patients are in a controlled environment and do not encounter the same struggles as when they are not incarcerated. Many inmates start on antiretroviral therapy (ARVT) and are successful in achieving virologic suppression and immunologic improvement. Data does not exist regarding prescribing habits of ARVT in the correctional setting. Although studies demonstrate a decreased pill burden is associated with increased medication adherence, it is unknown whether a single tablet regimen (STR) given once daily is more efficacious and achieves higher rates of virologic suppression in those incarcerated in the Department of Corrections (DOC) compared to other first-line regimens.

Methods: The study will be a retrospective, electronic chart review of Human Immunodeficiency Virus (HIV) patients in Illinois Department of Corrections (IDOC) receiving care through telemedicine at University of Illinois - Chicago (UIC) from July 11, 2010 to July 1, 2013. Enrolled patients will be HIV (+) prisoners incarcerated in IDOC, over 18 years of age, have a medical record in University of Illinois Hospital and Health Sciences System, and receiving a STR (Atripla, Complera, or Stribild) or a first-line regimen according to Department of Health and Human Services (DHHS) guidelines (Truvada with atazanavir/ritonavir, darunavir/ritonavir, or raltegravir). Patients younger than 18 years and those not receiving one of the mentioned regimens will be excluded. Treatment nave and experienced patients are eligible. The primary endpoints include evaluating ARVT prescribing habits in IDOC and safety, efficacy, and adherence of first-line ARVT compared to STR. Safety will be evaluated on patient and laboratory reported side effects. Efficacy will be determined with viral load, CD4 counts, CD4%, and any developed resistance. Adherence will be assessed by patient reported and documented refill history. After data collection and analysis, it is expected that multiple tablet regimens are as safe and effective as STRs in the correctional setting.

6-197

Title: Warfarin as an independent risk factor for readmission within 30 days of hospital discharge

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Purpose: In the United States, it is estimated that 20% of hospitalized patients are re-admitted within 30 days of their discharge date. Adverse drug events are a common reason for re- hospitalizations, with nearly 20% of discharged patients experiencing an adverse drug event within 3 weeks of discharge. Warfarin, as an anticoagulant, is considered a high-risk medication with a possible associated risk of adverse effects, especially following discharge from a hospital. The purpose of this study is to assess the impact of warfarin as an independent risk factor for 30-day hospital readmission.

Methods: This study will be submitted to the Institutional Review Board for approval. The study will utilize a matched retrospective cohort comparing patients 18 years and older who are discharged home on warfarin from the medicine and cardiology services between August 2011 and August 2013. The rates of readmission within 30 days of discharge will be reviewed between the two study arms. Demographics, admitting diagnoses, indication for anticoagulation, lab values, time between readmissions and plan for warfarin management at discharge will be collected for the study population. Patients with a left ventricular assist device, those on warfarin for venous thromboembolism prophylaxis for orthopedic surgery, patients actively receiving inpatient chemotherapy or discharged on oral anticoagulants other than warfarin will be excluded. The primary outcome is to compare rates of 30-day readmissions among patients who are discharged on warfarin verses patients who are not discharged on warfarin. Secondary outcomes include rate and time between readmissions specifically for bleeding, venous thromboembolism or stroke, number of patients who require INR reversal during their re-hospitalization and, number of patients who experience a delay in hospital discharge due to supratherapeutic INR.

6-198

Title: Implementation of a pharmacy driven tranexamic acid protocol in a Level 1 Trauma Center and its effect on mortality in trauma induced hemorrhage

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Purpose: The World Health Organization (WHO) currently recommends institutions keep a ready supply of tranexamic acid (TXA) on hand for trauma induced hemorrhage. Multiple trials have shown that TXA effectively and safely reduces mortality in the trauma population. Unfortunately, many institutions have yet to implement TXA as part of their trauma protocols because some clinicians are skeptical of the data from previous trials. The objective of this study is to determine if the implementation of a pharmacy driven protocol could increase the usage of TXA and decrease mortality at a Level 1 Trauma Center.

Methods: This study will be submitted to the institutional review board for approval. A protocol for TXA use developed by pharmacy, in coordination with the trauma medical director, will be implemented in the emergency department and trauma operating room. Using the electronic medical record, patient outcomes will be evaluated prior to TXA formulary approval and compared to both pre- and post-implementation of the pharmacist driven TXA protocol. Patient demographics, initial vital signs, mechanism/type of injury, estimated blood loss, Glasgow Coma Score (GCS), injury severity score, need for surgical procedure, and level of patient dependence will be collected. Thromboembolic events, transfusion requirements, and length of stay will be evaluated as secondary outcomes. Patients who develop hemorrhage due to surgical complications will be excluded. All patient data will remain confidential.

6-199

Title: Evaluation of medication costs for a palliative care service at a multi-hospital health system

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Purpose: Use of palliative care services have been associated with costs savings to hospitals. However, to date, there has been little research done to assess palliative care services effect specifically on medication costs and on the number of medications administered to patients while admitted to a hospital. The objective of this study is to evaluate medication costs to a health system for patients admitted to a hospital that have received a documented palliative care consult.

Methods: This study has been submitted to the Institutional Review Board for approval. A list of all patients that have a documented Palliative Care Service consult will be generated using the electronic medical record. A retrospective random sample of patients collected by the electronic medical record will be evaluated. Individual medication administration records of each retrospectively reviewed chart for each calendar day will be analyzed. Cost information will be collected for all medications that are administered to the patient to generate a cost total for each day for a period of three days before and three days after a documented Palliative Care Service consult. After each patients daily total costs for medications has been calculated, an average medication cost figure will be calculated for each of the three days before and three days after the Palliative Care Service consult. The average before consult costs will be compared with the after consult costs. A separate concurrent analysis will be conducted for the average number of medications administered to admitted patients for the three days before and three days after a Palliative Care Service consult is documented.

6-200

Title: Comparative effectiveness of oral naltrexone, long-acting depot naltrexone, and acamprosate in improving outcomes in alcohol dependence treatment

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Purpose: Alcohol dependence effects about 2.5% of the population within the United States. The Veterans Health Administration (VHA) supports the use of pharmacotherapies to improve outcomes for patients receiving alcohol addiction treatment in its treatment guidelines. A number of studies have demonstrated the efficacy of oral naltrexone, depot naltrexone injections, and acamprosate in preventing relapse and reducing the amount of alcohol consumed. Limited data exists directly comparing these medications in alcohol treatment. The objective of this study is to evaluate the comparative effectiveness of oral naltrexone, depot naltrexone injections, and acamprosate in preventing relapse.

Methods: This study will be submitted to the Institutional Review Board for approval. The study is a retrospective cohort study, with three matched patient groups: those taking oral naltrexone, long-acting depot naltrexone, and acamprosate. Patients will be matched based upon gender and enrollment in a treatment program within the 3 months of observation. The primary endpoint will be the number of patients who relapse as indicated by a detectable blood alcohol level or a health care encounter reporting alcohol consumption. Secondary outcomes include time to relapse, time until medication discontinuation, and relapse rate based on level of care (inpatient/outpatient) at medication initiation. Patients 18 years and older with documented alcohol dependence who receive at least one dose of naltrexone, long-acting depot naltrexone, or acamprosate for alcohol dependence will be included. Patients who die or hospitalized >30 days during the study will be excluded. The primary endpoint will be the percentage of patients who have indication of relapse and will be evaluated using a Chi-squared test of association and the Mantel-Haenszel tests. Secondary endpoints including time to discontinuation of medication and time to relapse will be assessed using a paired t-test. Inpatient and outpatient prescribing will be compared using the Chi-squared test.

6-201

Title: Optimizing medication order configuration for complex order entry scenarios to improve the medication use process

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Purpose: Each component of the medication use process can be streamlined to reduce variation and optimize the process. Medications with complicated ordering processes can be confusing for clinicians during computerized provider order entry (CPOE) and often pose a patient-safety risk. Configuration of medication order entry and order appearance on the medication administration record (MAR) can affect rates of medication error. Additionally, inadequate configuration of medication order entry can result in an increase in manual manipulation by the pharmacist. This project was designed to address issues in medication order configuration for medications with complex order entry to minimize medication errors.

Methods: Medications were identified for improvement utilizing requests from pharmacists, nurses, and physicians, data from the error reporting system, and data on changes to medication orders made during pharmacist review. A team consisting of pharmacists and health-information technology personnel were tasked in streamlining the ordering of medications with complex order entry. New functionality within the electronic health record allowed for additional features to be utilized. Medication Safety personnel were consulted on the medication order configuration. Nursing personnel were consulted on the medications appearance in the MAR. Baseline medication error rates and data on changes made during pharmacist review were available to allow comparison of pre- and post-implementation results.

6-202

Title: Glycemic control in polycystic ovary syndrome (PCOS) at an urban VA medical center

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Purpose: Polycystic ovary syndrome (PCOS) is characterized by hyperandrogenism, ovulatory dysfunction, and polycystic ovaries. PCOS places women at increased risk for insulin resistance and its associated conditions. Insulin sensitizers are recommended for PCOS in order to control diabetes and the increased androgen production of the ovaries that is caused by hyperinsulinemia. The purpose of this study was to evaluate glycemic control in women with PCOS while also investigating diabetic screening, proper medication and disease follow-up, low density lipoprotein over time, change in glycemic control over time, fertility outcomes, racial disparities, and development of mood disorders/depression throughout the disease progression.

Methods: This was a retrospective, electronic chart review of patients aged 18 years and older with an ICD-9 diagnosis code of PCOS and/or type 2 diabetes (DM) at the Jesse Brown VA Medical Center. Patients were followed for a minimum of 6 months up to 83 months, from 10/01/2005 until 09/01/2012. Study patients included: 1)PCOS patients, with/without DM or 2)female Non-PCOS patients with DM as a control group. There were 4 patients that had a diagnosis of PCOS and DM (PCOS+DM) and an additional 34 patients that had a PCOS diagnosis, but no DM (PCOS). There were 507 female patients that had DM, but no PCOS (Non-PCOS+DM) and were randomly selected to 34 to match the number of PCOS patients. The primary endpoint was the change in hemoglobin A1c (A1c) or serum glucose change over the study period by medication regimen (insulin sensitizer) in each study group. Secondary endpoints were designed to evaluate additional outcomes of PCOS and consisted of the change in LDL, frequency of follow-up and DM screening, medication regimen and side effects, racial disparities in serum glucose, fertility outcomes, and mood disorders. This primary endpoint was statistically evaluated using a student t-test with significance corresponding to $p<0.05$.

Results: In the PCOS+DM group, metformin showed mean decrease in glucose of 78.7mg/dL and decrease in A1c of 1.1% (statistics not completed as no comparator group). In the PCOS group, individuals on metformin showed mean decrease in glucose of 10.75mg/dL compared to mean increase in glucose of 4.82mg/dL for those not on an insulin sensitizer ($p=0.0008$). There was no difference in A1c change among metformin patients and those not on an insulin sensitizer, with a decrease of 0.1% ($p=1.0000$). In the Non-PCOS+DM group, there was a mean decrease in both glucose (by 13.2mg/dL) and A1c (by 0.7%) for the metformin patients and an increase in both glucose (by 27mg/dL) and A1c (by 0.4%) in the patients that did not receive an insulin sensitizer; however, $p=0.5263$ and $p=0.2007$,

respectively. Noteworthy secondary endpoints included a large disparity in fertility; PCOS+DM group had one miscarriage and no live births; the PCOS group had 11 miscarriages among seven patients, 15 live births, and two patients that underwent fertility treatment; and the Non-PCOS+DM group had 18 miscarriages, but 63 live births. The frequency of mood disorders was largest in the PCOS+DM group (75%), followed by the PCOS group (41.2%) and lastly the Non-PCOS+DM group (38.2%).

Conclusion: Although the study was small, it did demonstrate that metformin improved serum glucose in PCOS patients not having a diagnosis of diabetes. The study also showed that there was twice as high a miscarriage rate among PCOS patients versus non-PCOS patients and nearly half of the PCOS patients had a mood disorder.

6-203

Title: Evaluation of the accuracy and completeness of nurse driven admission medication histories after modifications to current practice.

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Purpose: Medication errors made during the admission and discharge process account for approximately 46% of all errors during a patients hospital stay. A baseline study at our institution also demonstrated the need for process improvement in admission medication histories (AMH). This study ultimately aims to reduce errors and omissions by utilizing a standardized process when obtaining the medication histories for newly admitted patients.

Methods: Research will be approved by the ethics committee and institutional review board for our institution. Baseline data was collected to evaluate current practice. This study will measure the effects of two distinct interventions focused on reducing the percentage of errors during AMH. The first intervention will be deletion of existing home medication histories from the electronic health record, therefore preventing the flow of incorrect data from previous admissions. The second intervention will be implementation of an algorithm and scripting for nurses to utilize when completing AMH. Patients will be randomly selected and each AMH reviewed for accuracy (no later than admission day one). This will involve follow-up and repeat AMH by a pharmacist using a standardized procedure. Data will be evaluated at each interval and data sets will be compared to baseline data.

6-204

Title: Management of sickle cell crisis in an urban teaching hospital

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Purpose: Sickle cell disease is one of the most common genetic disorders. Although the underlying causes of the disease have been extensively studied, medical therapy targeting the specific physiology of this condition have not been adequately developed. As a result, clinical management of the disease is still evolving and variable. This study will evaluate the appropriateness of pain management in patients admitted with sickle cell crisis, with a focus on pain control. The primary objective is to identify opportunities for improvement in the analgesic management of patients with sickle cell in areas including analgesic selection, dose appropriateness, pain assessment and responses.

Methods: This study was exempt by the Institutional Review Board as a medication use evaluation for quality improvement. In this retrospective study, medical records of a minimum of 30 admissions for sickle cell pain crisis within the past year will be reviewed. Data points to be collected are: the analgesic order, time to first pain assessment on unit, initial pain score on unit, time to analgesic order entry, time to first analgesic administration, and time to pain re-assessment after analgesic administration. The number of analgesic administrations and pain reassessments in the first 48 hours of admission will also be recorded. The data will then be analyzed in aggregate to determine the appropriateness of initial analgesic, dose and frequency; the average time to pain assessment and then reassessment after dose; and to identify potential issues, trends, and omissions in the care of sickle cell crisis patients.

6-205

Title: Evaluation of apixaban dosing within inpatient and ambulatory care settings

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Purpose: Apixaban is an oral factor Xa inhibitor approved for the prevention of stroke and systemic embolism in patients with atrial fibrillation, the most recent anticoagulant approved for this indication. Although a major advantage to apixaban is lack of routine monitoring, apixaban does require dose reduction for certain patients based on creatinine clearance, body weight and age. A community health system has developed guidelines to assist in appropriate dose adjustment. The objective of this evaluation is to measure compliance with these guidelines both in the inpatient and outpatient setting.

Methods: This evaluation is exempt from Institutional Review Board evaluation because the primary goal is to assess for quality assurance. This retrospective chart review will evaluate all first-prescriptions and first-administrations of apixaban in any of the health systems hospitals and medical offices between February 1, 2013 and July 31, 2013. A patient list will be generated using the health systems electronic medical record. The following data will be reported: inpatient versus outpatient status, actual weight, ideal weight, age, sex, date of initial prescription, hospital or clinic site, serum creatinine, date serum creatinine was drawn and creatinine clearance. Patient identifiers will be removed from the data collected and confidentiality will be maintained. The primary author will evaluate the data for compliance with dosing recommended in the health-systems guidelines. Estimating a two percent non-compliance rate, this evaluation requires 213 prescriptions or administrations of apixaban to achieve 80 percent power, however only 143 charts were available for review.

6-206

Title: Safety and tolerability of rituximab infusions for rheumatoid arthritis and transplant indications in the alternate treatment setting

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Purpose: The incidence of Rituximab infusion reactions in alternate treatment settings (ATS) is not well documented. The occurrence of reactions stems from differences in Rituximabs side effect profile with different indications. Hodgkins lymphoma is associated with higher B-cell burden compared to rheumatoid arthritis (RA) or transplant indications causing more frequent reactions. The unpredictability for reactions has skewed the safety perception of Rituximab, limiting the administration of Rituximab in ATS. The purpose of this study was to determine the safety and tolerability of Rituximab for RA or transplant patients in the ATS, and to report lower reaction rates than documented in literature.

Methods: A retrospective chart review of patients receiving Rituximab between Jan 2012 and July 2013 was conducted by a national home infusion provider. Patients were identified using dispensing records of individual doses. A total of 198 patients comprising 764 doses dispensed were identified, of which 101 patients had RA or transplant indications. Inclusion criteria were patients having received the infusion in local ambulatory infusion suites for RA or transplant indications. Patients with incomplete records or having received the infusion in hospitals or physicians office were excluded. Forty of these patients were randomly chosen for a full chart audit to determine baseline characteristics, first dose status, administration of pre-medications, occurrence and type of infusion reaction, maximum rate of infusion, and management of reaction if necessary. Nursing and pharmacist progress notes, prescriptions, and dispensing records from the online medical records and dispensing system were used to gather information. Among the 40 patients retrospectively reviewed, 34 had RA and 6 had transplant indications comprising a total of 95 infusions. 33 patients had a second infusion, 11 had a third, 8 had a fourth, and 3 went on to have a fifth.

Results: A total of nine reactions (9.5% total infusions) between eight patients (20% among patients) were identified during the study period. Seven reactions were mild, two moderate, and none were considered severe. One incidence each of a mild and moderate reaction prevented the completion of the infusion despite nursing interventions, which included rate reduction and administration of rescue drugs. Of the six patients who experienced reactions with the first dose during the study period, three received a second (2 without complications, 1 mild). 24 of the 40 patients received their first lifetime dose of rituximab of which five had an infusion reaction (4 mild, 1 moderate) despite pre-medications. Of these five, two went on to have a second dose. 15% of all patients had a reaction on their initial

infusion and 9% on the second infusion. In patients having 3 -5 infusions, no reactions occurred. 80% of patients achieved the max infusion rate of 400mg/hr with the first dose, 88% with the second, 100% with the third, 88% with fourth, and 67% with the fifth. Among the reactions that were documented, two events occurred when only one pre-medication was administered, one occurred with two, and six events occurred with three pre-medications.

Conclusion: There was a lack of evidence demonstrating the safety and tolerability of rituximab in alternate treatment settings. The package insert indicates a first dose reaction rate of 32% with RA and 77% with NHL, significantly higher than placebo; however reports mixed results among the placebo and rituximab groups in patients with multiple infusion cycles. This review determined a 20% first dose reaction rate among patients, and 9.5% among all infusions, with no serious reactions. By ensuring appropriate pre-medications and proper nurse training to manage reactions, rituximab can be given safely in the ATS or home with few reactions.

6-207

Title: Impact of a pharmacist-driven antibiotic stewardship educational intervention on urinary tract infection treatment in the emergency department

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Purpose: The Infectious Diseases Society of America (IDSA) published updated guidelines for empiric treatment of acute uncomplicated cystitis and pyelonephritis in 2011. The guidelines place a large focus on the importance of local resistance patterns to help determine the best empiric treatment of patients with urinary tract infections (UTI) commonly treated in the emergency department (ED). The objective of this study is to determine if an antibiotic stewardship intervention in the ED increases compliance with IDSA guidelines for the treatment of acute uncomplicated cystitis and pyelonephritis based on local resistance patterns.

Methods: ED pharmacists and physicians will be educated about institution-specific empiric treatment guidelines. These guidelines will be based on local resistance patterns and IDSA recommendations. Patients will be included if they were seen and discharged home from the ED during the specified time periods with a urinary tract infection. Provider-specific audit and feedback regarding compliance to the guidelines will occur every two months during the four month study period. Adherence to the guidelines will be assessed by comparing a pre- and post-implementation group. In addition, agreement between empiric antibiotics and isolated pathogen susceptibilities will be compared. The following data will be collected: baseline characteristics, antimicrobial regimen prescribed, and urine culture and susceptibility results. All data will be recorded without patient identifiers and remain confidential. Prior to research, this study will be submitted to the Institutional Review Board.

6-208

Title: Transitioning lead pharmacy technicians into a supervisor role

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Purpose: Recent literature had advocated that organizational success is reliant upon active leadership and strategy. Strategic vision first establishes then directs department goals. One preeminent objective within strategic thinking is the identification of development potential of employees. Molding leaders through skills and behavior training can instill self-worth while also providing a better management framework and distribution of responsibilities. The purpose of this survey is to identify leadership qualities most valued by staff and supervisors in order to design a directed training curriculum for lead technicians aiming to elevate their accountability and role within the pharmacy department.

Methods: This survey is exempt from Institutional Review Board review as it is for quality assurance purposes. Current pharmacy lead technicians are invited to participate in the role expansion. All other technicians are excluded unless the position is forfeited by the lead technician. Information to be determined includes leadership training necessary, job description adjustments with added responsibilities, points of accountability with new role, and supervision credibility with the staff. Pharmacy leadership discussions on role ownership and liability will be held while distributing a survey to lead pharmacy technicians, technician supervisor, and staff technicians. The survey will collect data on the following leadership attributes: building alliances, leading change, driving results, and personnel management. The survey will consist of leadership statements with an ordinal evaluation scale. The collected data will be analyzed with descriptive statistics using Microsoft Excel 2010 in order to determine the differences in self and employee responses across a transition timeframe of one year.

6-209

Title: Improvement of medication delivery through the use of decentralized pharmacy technicians

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Purpose: Timely and safe medication administration is the backbone of pharmacy practice. Clerical errors and unclear communication between nursing and pharmacy lead to unnecessary medication requests. To minimize inefficiencies, the use of decentralized pharmacy technicians was investigated. Technicians were responsible for procuring missing medications, preparing scheduled doses, and responding to medication administration issues. The primary outcome measured was differences in the number of medication requests before and during the intervention period. Secondary outcomes included the number of late or missed medication administrations and the difference in nursing satisfaction with pharmacy services before and at the end of the study period.

Methods: This was a two week prospective study that took place between September 9th and September 20th, 2013. Two pharmacy students took on the role of decentralized pharmacy technicians and were placed on a general medicine floor consisting of 30 patient-beds. The students were present from Monday through Friday, 8am to 4pm. Each student was responsible for the medication administration for 15 patients. General responsibilities included procurement of medications necessary for each patient, retrieval and delivery of narcotics, preparing medications for administration, and administering vaccinations. Baseline nursing satisfaction was surveyed from August 26th to August 28th, 2013. The control unit was a general medicine unit with a patient population, census, and nursing staff comparable to the intervention unit. Medication requests during the study period for both the intervention and control unit were recorded. Two patients were randomly selected before and during the intervention period to assess the amount of medications administered late or missed entirely. A post intervention survey was provided to nursing staff on the intervention unit at the completion of the study period.

6-210

Title: Effect of joint pharmacy and respiratory therapy intervention on 30 day readmission rates for patients with chronic obstructive pulmonary disease (COPD)

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Purpose: Patients with Chronic Obstructive Pulmonary Disease (COPD) often experience repeated readmissions to the hospital due to acute exacerbations. The objective of this study is to demonstrate a reduction in 30 day readmission rates for patients with COPD and improve their level of care through joint pharmacy and respiratory therapy interventions.

Methods: Prior to commencement, this study will be submitted to the Institutional Review Board for approval. If appropriate, informed consent will be obtained for all subjects. Control data on 30 day readmission rates will be retrospectively collected from the hospital electronic medical record (EMR). The health system EMR will be used daily to identify patients who are in the hospital with a diagnosis of COPD. Data will be collected on each patient including age, gender, co-morbidities, current medications, vaccination status, smoking status, and provider documentation. Patient medications will be reviewed and any recommendations for changes will be made by the clinical pharmacist. Each patient will also be educated by respiratory therapy on correct inhaler technique and evaluated for pulmonary rehab as appropriate. Prospective data will be collected on patients during the intervention period. The results of the study will be used to evaluate the effectiveness of the pharmacy and respiratory therapy interventions on the reduction in 30 day readmission rates in COPD patients.

6-211

Title: Outcomes of Hispanic kidney transplant recipients under a cyclosporine versus tacrolimus based immunosuppression protocol

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Purpose: A previous study at our institution showed a higher incidence of post transplant diabetes mellitus (PTDM) in our Hispanic kidney transplant recipients on tacrolimus. As a result of this finding, we implemented a steroid avoidance program and changed our maintenance immunosuppression to a cyclosporine based regimen in our Hispanic recipients. The objective of this study is to compare the renal function, graft and patient survival of Hispanic kidney transplant recipients who received cyclosporine to Hispanics on a tacrolimus based regimen at 1, 3, and 5 years post transplant. Additionally, we will assess the incidence of PTDM in this population.

Methods: The study was submitted to the Institutional Review Board and approval is pending. This will be a retrospective review of electronic medical records of all adult Hispanic patients (age 18 years old at transplantation) that received a renal transplant from January 2004 to September 5, 2013. Hispanics who have received multiple organ transplants, who are ABO incompatible or with a positive cross-match will be excluded from this study. The following variables will be collected for every patient in the study: date of transplantation, age of recipient at transplantation, type of donor (cadaveric vs. living), gender, ethnicity, body mass index, etiology of end stage renal disease, pre-transplant DM, Hepatitis C infection, length of hospital stay, concomitant medications, and induction and maintenance immunosuppressant regimen. Additionally, following variables will be collected for every patient at 3 months, 6 months, 1 year, 3 years and 5 years post transplant: serum creatinine, glomerular filtration rate, A1C, initiation of medications for diabetes, type of rejection, grade of rejection, date of biopsy and treatments for rejection. All data will be recorded without patient identifiers and maintained confidentially. Comparisons between continuous and categorical variables will be done using the Students t-test or Chi-square analysis, respectively.

6-212

Title: Outcomes in total hip and total knee arthroplasty using tranexamic acid: a retrospective sequential cohort

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Purpose: Tranexamic acid (TXA) has been recognized as an effective agent in reducing surgical bleeding. The purpose of this study is to determine the safety and efficacy of TXA in patients undergoing total hip arthroplasty (THA) or total knee arthroplasty (TKA) at a 539-bed regional teaching hospital. A secondary purpose is to perform a cost-benefit analysis of TXA compared to placebo.

Methods: This study will be submitted to the Institutional Review Board for approval. There will be three study groups in which all patients included underwent a THA or TKA; Group 1 (the control group) will be patients who did not receive TXA between October 1, 2012 and March 31, 2013, Group 2 (the intervention group) will be patients who received TXA between April 1, 2013 and September 30, 2013 , and Group 3 (an additional intervention group with utilization of TXA protocol) will be patients who received TXA after implementation of a TXA protocol between October 1, 2013 and March 31, 2014. Safety data to be collected will include incidence of deep vein thrombosis, pulmonary embolism, stroke, myocardial infarction or death within 30 days of surgical procedure. Efficacy data to be collected will include volume of intraoperative blood loss, total calculated blood loss, total quantity of blood transfusions or packed red blood cell units and number of fresh frozen plasma units required, and change in hemoglobin over hospital stay. Other data to be collected include medications pre- and post-procedure, patient demographics, orthopedic surgery type, American Society of Anesthesiologists score, length of inpatient hospital stay and treatment costs.

6-213

Title: Evaluation of a pharmacist-driven clostridium difficile treatment protocol in a community hospital

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Purpose: Clostridium difficile infection (CDI) is the most common cause of infectious diarrhea in healthcare facilities and is associated with excess lengths of stay and increased healthcare costs. Appropriate antibiotic selection can play a role in the risk of CDI treatment failure and infection reoccurrence. The objective of this study is to evaluate the length of stay, time to symptom improvement or worsening, and time to initiation of treatment from presentation with diarrhea in hospital patients receiving therapy for an initial occurrence of CDI in a retrospective analysis and following the implementation of a pharmacist-driven Clostridium difficile standardized treatment protocol.

Methods: This study will be submitted to the Institutional Review Board for approval. Charts of all patients with an ICD-9-CM diagnosis code for clostridium difficile between January 2013 and June 2013 will be identified by the Health Information Management database. The following data will be collected: patient age, intensive care unit admission, white blood cell (WBC) count, serum creatinine, serum albumin, temperature, blood pressure, length of stay, date stool sample was collected, results of abdominal CT scans (if applicable), and date of documented symptom improvement or worsening. Severity of clostridium difficile will be evaluated based on the IDSA guidelines and patient-specific risk factors and appropriateness of treatment will be determined. An evidence-based treatment protocol will be developed and implemented by clinical pharmacy staff beginning in January 2014 for all patients with suspected CDI as determined by laboratory orders for toxigenic clostridium difficile stool cultures. Results will be evaluated and conclusions will be drawn comparing outcomes in patients prior to implementation of protocol and after implementation of protocol. Outcomes evaluated will include length of stay, time to initiation of treatment, 30-day overall readmission rate, incidence of worsening symptoms and incidence of treatment failure.

6-214

Title: The impact of a decentralized emergency department pharmacist on time to initiation of antibiotic and tissue plasminogen activator (tPA) for stroke

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Purpose: Emergency departments (EDs) have been identified to experience crowding that has affected patient care. Longer length of stays in the EDs are linked to lower hospital survival rates in critically ill patients, poorer outcomes in critically ill stroke patients, and pneumonia in intubated blunt trauma patients. The objective of this study is to determine if the institution of a decentralized pharmacist in the ED would decrease the time to first antibiotic administration and tPA initiation for stroke in adult patients.

Methods: This study will be submitted to the Institutional Review Board for approval. To describe the ED pharmacists service at this 313 bed community hospital this study will collect types of clinical interventions and time spent on attending codes, orders processed and consults. All data described in the study will be collected for three months starting the week after the pharmacist services were introduced and will be compared to the same time period last year. All adult patients who were ordered an antibiotic or tPA for the treatment of stroke in the ED will be included. Parameters collected for patients receiving antibiotics: age, gender, antibiotic type, order time, administration start time, ESI (emergency severity index), site of infection, time of ED arrival and transfer/discharge. Parameters collected for patients receiving tPA: age, gender, tPA order time, initiation time, indication, time of finalization of CT results, ESI, time of ED arrival and transfer/discharge. The primary outcomes will be time from order to administration of first antibiotic or tPA. The secondary outcome will be length of stay in ED. All data will be collected without patient identifiers and will be stored and destroyed in compliance with hospital policy and procedure regarding patient information.

6-215

Title: Evaluation of prescribing trends and use of hydroxyethyl starch 130/0.4 within a hospital system

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Purpose: Hydroxyethyl Starch 130/0.4 (HES 130/0.4) is a synthetic colloid used for volume and plasma expansion in hypotensive patients. HES 130/0.4 was added to the health-system formulary due to the potential benefits of decreased incidence of renal impairment and coagulopathy compared to other hydroxyethyl starches. In June 2013, the U.S. Food and Drug Administration issued a new black box warning for HES 130/0.4 due to increased mortality in critically ill patients, increased renal injury/failure, and increased bleeding risk in cardiac surgery patients, indicating that risks are similar to other hydroxyethyl starches. This analysis will evaluate the trends in prescribing and use.

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 all adult patients who received HES 130/0.4 between October 2012 and June 2013. A patient list will be generated of all patients who received HES 130/0.4, and the following data will be collected: indication, procedure type, whether administration was intraoperative or postoperative, the ordering prescriber, surgery service, total volume of HES 130/0.4 administered, and documentation of any crystalloids used prior to administration of HES 130/0.4, including total volume administered. If use was intraoperative, total crystalloid volume will also be recorded. All patient data will be de-identified and maintained confidentially. Descriptive statistics will be used for analysis of this evaluation.

6-216

Title: Procalcitonin guided early cessation of antibiotic treatment in COPD exacerbations

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Purpose: Patients that present with acute exacerbations of chronic obstructive pulmonary disease (AECOPD) have multiple factors that can cause their symptoms. In bronchoscopic studies done on AECOPD patients, approximately 50% of patients had infections (bacterial or viral) in their lower respiratory tract. One way to assess bacterial infections is through the use of procalcitonin. Procalcitonin levels are specifically elevated (>0.25 μg/L) in the presence of bacterial endotoxins. This study aims to utilize procalcitonin as a distinguishing marker, in addition to signs and symptoms of infection, between bacterial and viral etiology to aide in early cessation of antibiotic therapy.

Methods: This study has been submitted to the Institutional Review Board for review. This prospective study will include adult patients admitted with a diagnosis of AECOPD. Those patients hospitalized with AECOPD will have a baseline procalcitonin level and a second procalcitonin level drawn within approximately 24 hours of their initial level. The control group will consist of patients who will be continued on antibiotic therapy after two procalcitonin levels ≤0.25 μg/L and the study group will consist of patients for whom the physician agreed to discontinue antibiotic therapy after two procalcitonin levels ≤0.25 μg/L. The primary outcome will measure and compare length of antibiotic treatment. The secondary outcome will evaluate the length of hospital stay as well as the accuracy of the procalcitonin test by assessing antibiotic therapy restart rate in the study group.

6-217

Title: Pharmacy facilitation of glycemic control: expansion of basal bolus protocol

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Purpose: Proper glycemic control has been shown to decrease length of stay, mortality, and wound healing time. In anticipation of core measures tracking glycemic control, Ingalls Memorial Hospital has expanded its basal bolus insulin protocol to comprise all diabetic surgical patients requiring a planned overnight stay. The objective of this study will be to evaluate the safety and efficacy of the basal bolus protocol in this patient population.

Methods: This study will be exempt from the Institutional Review Board. All diabetic patients who undergo surgery requiring a planned overnight stay at Ingalls Memorial Hospital after October 13th will have pharmacist initiated and managed basal bolus insulin protocol started to achieve recommended glycemic control. Eligible patient lists will be generated by workflow one to two days prior to surgery. At this time, selected patients will receive a phone call from a pharmacist explaining the protocol, as well as to discuss which of the patients diabetic medications should be taken or held prior to admission. The dose appropriateness as ordered by pharmacy, the amount of time spent by pharmacy, the number of 0600 blood glucose measurements on post-operative day 1 and 2 in range, and the post-operative infection rate will be assessed.

6-218

Title: Clinical outcomes following implementation of an updated adult critical care sedation protocol including the use of dexmedetomidine and daily sedation interruption

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Purpose: Critically ill patients frequently require mechanical ventilation and sedation. Recent research demonstrates a therapeutic benefit from sedation interruption and the use of non-benzodiazepines, such as dexmedetomidine, for sedation. Despite this, critical care sedation protocols may not be updated due to uncertainty about appropriate patient selection, medication use, or sedation interruption. Following implementation of a standardized, updated critical care sedation protocol, data will be collected and analyzed to determine associations with critical care and hospital length of stay, duration of mechanical ventilation, or protocol adherence. Findings may improve understanding of the therapeutic and practical value of introducing an updated sedation protocol.

Methods: This project has been submitted to the Institutional Review Board for review. A retrospective chart review will be conducted pre and post sedation protocol implementation. Patients will be included who are 18 years and older, admitted to the ICU/IMCU during the periods of 11/2012-12/2012 (pre) and 11/2013-12/2013 (post), and have been on mechanical ventilation over 24 hours. Patients will be excluded if they are pregnant, have a severe neurologic condition, are admitted for CABG, treated for substance withdrawal, transferred from a different institution, are moribund, or expired during the admission. A revised and updated critical care sedation protocol using propofol, dexmedetomidine, lorazepam, and midazolam was developed and will be implemented through in-services of ICU/IMCU providers. Primary outcomes of duration of mechanical ventilation, ICU/IMCU length of stay, hospital length of stay, and protocol adherence based on completion of daily sedation interruption will be measured. Cost of the four sedatives will be measured as a secondary outcome. Patients' charts from a computerized database will be accessed to obtain admission, discharge, ventilation, protocol adherence, and medication data. A statistical analysis will be performed to determine any relationship of outcomes before and after the intervention.

6-219

Title: Pharmacist-led initiative to reduce hospitalizations and length of stay in the treatment of venous thromboembolism (VTE)

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Purpose: Traditionally, treatment of venous thromboembolism (VTE) required hospitalization and bridging from a parenteral anticoagulant to therapeutic warfarin. Inpatient bridging therapy for VTE contributes to long hospitalizations and high medical costs. Current evidence-based guidelines recommend outpatient therapy rather than hospital admission, when appropriate, for the treatment of VTE. Standard practice is slowly transitioning to outpatient-based treatment for eligible patients, but the burden of self-administering injectable agents and frequent monitoring remains an obstacle for many. The objective of this study is to determine the effectiveness of a VTE protocol in reducing length of stay and hospitalizations.

Methods: This study will be submitted to the Institutional Review Board for approval. Pharmacy services will be responsible for establishing and implementing a VTE protocol for patients being treated at home and in the hospital. The emergency department staff will use the protocol to determine the most appropriate treatment and disposition for patients presenting with VTE. Rivaroxaban will be recommended as first line therapy for patients who meet listed criteria. In patients ineligible for treatment with rivaroxaban, combination therapy with a parenteral anticoagulant and warfarin will remain an appropriate alternative. Patients will receive their first dose in the emergency department prior to being discharged home or admitted to the hospital. Effectiveness of the protocol will be evaluated by monitoring admissions, length of stay and hospital costs. All data collected will be maintained confidentially and recorded without patient identifiers.

6-220

Title: Prescribing practices and lipid control after the Food and Drug Administration (FDA) safety announcement regarding simvastatin and gemfibrozil

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Purpose: Dyslipidemia is a major risk factor for developing coronary heart disease. The 3-hydroxy-3-methlglutaryl coenzyme A reductase inhibitors, or statins, are first-line agents proven to decrease the risk of cardiovascular morbidity and mortality. Statins alone are generally well-tolerated but serious side effects, such as rhabdomyolysis, can occur. The potential for rhabdomyolysis is increased when statins and fibric acid derivatives are taken concomitantly. In June 2011, the FDA announced that the use of simvastatin with gemfibrozil is contraindicated. The purpose of this study is to evaluate the effect on lipid control and the prescribing practices after the FDA safety announcement.

Methods: This study is an Institutional Review Board and VA Research and Development Committee approved retrospective, electronic chart review of patients 18 years and older with active concomitant prescriptions for simvastatin and gemfibrozil at the time of the FDA safety announcement on June 8, 2011. Patients were evaluated until the end of the study period, on September 1, 2012. Patients were excluded if receiving other lipid lowering agents, prescribed lipid lowering agents by providers outside of the VA and/or have outside labs, taking concomitant therapy for less than 2 months and/or without a documented lipid panel. Patients were categorized into the intervention or no intervention group. The intervention group was defined as any change in concomitant use of simvastatin and gemfibrozil. The no intervention group was defined as no change in concomitant use of simvastatin and gemfibrozil. The primary outcome is the prescribing practice after the FDA safety announcement and the effect on low-density lipoprotein (LDL), triglycerides (TG), and high-density lipoprotein (HDL). The secondary endpoints included documented adverse events, risk factors for myopathy, reason for initiation of concomitant treatment, reason for no intervention in concomitant treatment, medication compliance, and type of provider making an intervention or no intervention.

Results: Overall, the majority of patients had an intervention in concurrent therapy (54.4%) after the FDA safety announcement. In the intervention group, there was a significant decrease in HDL concentrations (p=0.002) post intervention in those patients who were previously at goal. In the no intervention group, there was a significant worsening in TG control at the end of the study period (p=0.014) in those who were not previously at goal. No additional significant changes in lipid control were discovered in either group. Discontinuation of gemfibrozil (61.2%) accounted for the majority of

interventions. The majority of patients had an intervention occur within 6 months (61.2%) after the FDA safety announcement. In both groups, the majority of patients were started on concomitant therapy to optimize TG and/or HDL control, at 62% and 51%, respectively. Four patients had an adverse event that triggered an intervention in therapy (elevated liver function tests, myalgia, and rhabdomyolysis). No adverse events were identified in the no intervention group. The risk factors for myopathy were low in both groups with the majority of patients having 1 risk factor (58.9%), and no patients having more than 2 risk factors.

Conclusion: This study demonstrated that prescribing practices at the Jesse Brown VA Medical Center were affected by the FDA safety announcement regarding the concomitant use of gemfibrozil and simvastatin. No significant differences in LDL and TG control post intervention were noted; however, a significant decrease in HDL did occur in 30% of the patients who were previously at goal. Patient centered care should always be at the forefront of practice and the possible benefits of strict lipid control needs to be balanced with the potential risks involved in obtaining that control.

6-221

Title: Characterization of treatment selected for patients upon diagnosis of distal deep vein thrombosis (DVT)

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Purpose: There is controversy in the literature regarding the clinical significance and preferred treatment of isolated distal DVT. Prior to 2012, the community health-system was not capable of electronically capturing cases of isolated distal DVT. A manual workflow was introduced to allow for selection of isolated distal DVT cases. The objective of this study is to systematically characterize the treatment options selected for inpatients and outpatients diagnosed within the community health-system.

Methods: This review is exempt from Institutional Review Board review because the primary goal is to assess for quality assurance. A retrospective chart review of all subjects diagnosed with isolated distal DVT between May 2012 and August 2013 will be conducted. Electronic health records will be utilized to identify the treatment modalities selected in these subjects. The following data will be collected: age; height; weight; body mass index; and, if available, assess whether subject was symptomatic at time of isolated DVT diagnosis; results of diagnostic or follow up ultrasounds; results of any diagnostic tests performed for work-up of pulmonary embolus (PE); affected vein location; medications prior to admission to assess for history of recent anticoagulant use; and initial treatment selected for isolated distal DVT: serial ultrasound, prophylactic regimen, or therapeutic regimen. Subjects in the following categories will be excluded: current or recent (less than three months) proximal DVT or current or recent (less than six months) PE , patients on prophylactic or therapeutic anticoagulation for alternate indications. Descriptive statistics will be used to characterize treatments selected.

6-222

Title: Enhancement of an established antimicrobial stewardship program with the implementation of a novel extended-spectrum beta lactam use report

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Purpose: Infectious Diseases Society of America (IDSA) recognizes that prolonged use of empiric broad-spectrum antibiotics contributes to increasing bacterial resistance trends worldwide. The objective of this study is to determine the effects of post-prescription pharmacist review of cefepime and piperacillin-tazobactam orders on duration of treatment.

Methods: Patients receiving empiric cefepime or piperacillin-tazobactam for more than 48 continuous hours will be identified using a daily report. Subjects will consist of a control group and active study group. Patients meeting inclusion criteria will be reviewed via electronic medical record for pertinent information such as: patient age, gender, ethnicity, indication for antibiotics, Infectious Disease consult, total treatment days, total antibiotic days, length of stay, use of ventilator, presence of foley catheter, presence of central intravenous line, re-initiation of antibiotics within 72 hours, and clostridium difficile or ESBL bacteria within 30 days after completion of empiric therapy. After post-prescription review is complete, the active study group will receive intervention, if warranted, in the form of a pharmacist recommendation to the primary care team. The recommendation will be to de-escalate to narrower spectrum antibiotics, discontinue antibiotics altogether, or continue current antibiotics if appropriate. The pharmacist will use an evidence-based algorithm to guide treatment recommendations and to help formalize the post-prescription review process. The algorithm simulates the decision-making process that is currently used by Infectious Disease physicians and pharmacists to make interventions regarding antibiotic therapy. The institutional review board granted this study expedited approval.

6-223

Title: Evaluation of adherence to dofetilide protocol at a community health system

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Purpose: Dofetilide should be reserved for highly symptomatic patients with atrial fibrillation and flutter because of potential for life-threatening ventricular arrhythmias. Our institution has a protocol, which is in compliance with the manufacturers imposed regulations, for initiation of dofetilide, but the adherence to this protocol is currently unknown. Due to shift changes of multiple healthcare professionals, such as nurses, and the potential for dofetilide to cause serious adverse effects, adherence to this protocol is important to ensure patient safety. The purpose of this evaluation is to assess the adherence to this protocol at a community health system at baseline.

Methods: This evaluation is considered a quality improvement project, and is therefore exempt from review by the Institutional Review Board. A retrospective chart review of electronic health records will be conducted from July 2010 to June 2013 for all adult patients who were hospitalized at a community health system for the initiation of dofetilide. There are no exclusion criteria. If any step of the protocol is not followed, then it will be counted as non-compliant except when rationale for deviation is noted in any of the progress notes by a licensed independent practitioner or physician. The following data will be collected: patients age, weight, baseline electrocardiogram (ECG), baseline creatinine clearance calculated by the Cockcroft-Gault equation using actual body weight, baseline magnesium, baseline potassium, follow-up ECG, total number of dofetilide doses, and doses adjusted based on creatinine clearance. Collected data will be analyzed with descriptive statistics to determine the percentage of adherence to the dofetilide protocol.

6-224

Title: Evaluation of dexamethasone use prior to first dose of empiric antibiotic administration for patients with community-acquired meningitis

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Purpose: The Infectious Disease Society of America (IDSA) bacterial meningitis guidelines from 2004 recommend that all adult patients with suspected or proven pneumococcal meningitis should receive adjunctive dexamethasone 10 to 20 minutes before, or at least concomitant with, the first dose of antimicrobial therapy. This project will collect descriptive data to evaluate the timing of adjunctive dexamethasone administration with regards to the first dose of antibiotics in rule out bacterial meningitis in adults. Additionally, this evaluation will identify if additional education is required for health care professionals and where these efforts should be directed.

Methods: This quality assurance project is exempt from review by the Institutional Review Board. Electronic data will be collected as a retrospective chart review and organized with descriptive statistics. Admissions from May 2008 to May 2013 will be included from a community health system that consists of four hospital sites. In order to be included, patients must have received a single lumbar puncture, and had orders placed for both cerebral spinal fluid gram stain and culture. Patient will be excluded if under the age of 18, have a history of anaphylaxis with corticosteroids, previous antibiotics during the same hospitalization, recent neurosurgery, or placement of a cerebral spinal fluid shunt or prosthetic device into the central nervous system. Data to be collected will include whether the patient received dexamethasone, timing of dexamethasone administration, if dexamethasone was given in the emergency room or on a hospital floor, if the first dose of antibiotics was given in the emergency room or on a hospital floor in patients who did not receive dexamethasone. The timing of dexamethasone administration will be broken down by those receiving dexamethasone more than 20 minutes before, 0 to 20 minutes before, or after the first dose of antibiotics.

6-225

Title: Getting down to the nuts and bolts of establishing an outpatient pharmacy

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Purpose: This paper will be an approach to initiating a new healthcare service line in the form of an outpatient pharmacy integrated into a hospital. The addition of this pharmacy can create multiple different outcomes that will benefit both the hospital as well as the clientele. While it is easy to focus on the potential gains that this pharmacy can bring, it is a daunting task to initiate such a project. This study presents the decisions an organization would have to consider when deciding to move forward with such a project.

Methods: Considerations include specific circumstances the hospital may be in, the necessity for expansion, advantages the pharmacy could bring to the organization as a whole, and unique opportunities it presents. These unique opportunities will be such things as a source for self-infusion products, a chance to provide pharmacist driven interventions and counseling services, and an aid in maintaining formulary compliance. The paper also will detail a pro forma that describes the financial resources necessary to establish an outpatient pharmacy as well as providing information on how the pharmacy will produce a significant revenue stream back into the organization. Finally, this study will demonstrate how the pharmacy will have a direct impact on hospital services that are already implemented and how its integration into the hospital can help these services grow themselves.

6-226

Title: Evaluation of safety outcomes and cost savings by optimization of batch processes and modification of the technician medication delivery model

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Purpose: Efficient pharmacy operations are an integral part of safe patient care and cost reductions. Maximizing batch timing, batch frequency, and the technician medication delivery model will decrease medication turnaround time. The objectives of this study are to optimize the technician medication delivery model and batch processes for improving patient safety, minimizing waste, reducing cost, and reducing errors.

Methods: Initial data will be collected related to the volume of medication returns, pharmacy errors, refill requests, missing medications, and associated labor costs. A new protocol will then be developed to optimize the technician medication delivery model and batch processes. Both intravenous and oral processes will be assessed. Data will be compared pre and post intervention.

6-227

Title: A quality improvement analysis of adherence rates during the transition from oral to long acting injectable antipsychotic therapy within a veteran population.

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Purpose: Treatment with typical and atypical antipsychotics represents a crucial aspect of care in schizophrenia, schizoaffective disorder, and schizophreniform disorder. The long acting injectable (LAI) antipsychotics play a role in addressing the barriers to care especially in terms of medication adherence. Reported medication adherence is highly variable in the literature. The primary objective of this quality improvement analysis is to determine if the use of LAI antipsychotic treatment improves medication adherence rates within a closed health care system and to identify best practices.

Methods: This analysis has been reviewed by the local review committee and approved as a quality improvement project. A retrospective chart review will identify patients with first time use of formulary LAI antipsychotic during inpatient psychiatric hospitalization. The following demographic data will be collected from electronic medical record system: gender, age, race, allergies, mental health diagnosis, and current medications. If available, medication refill records, medication administration notes, and previous oral antipsychotics within 12 months, discharge documentation will be collected. Patient identification will be encoded, with the project participants having sole access to the patient-specific information. Encoding process will be kept separately from de-identified data and confidentiality will be maintained. Adherence rates, days of treatment, and discontinuation rates will be calculated and reviewed by the authors. Adherence rates to oral antipsychotics in the year prior to treatment with LAI antipsychotics will be compared to adherence rates for up to a year following initiation of LAI antipsychotic as the primary endpoint. Secondarily, days of inpatient mental health treatment, cumulative cost of LAI antipsychotics therapy, and discontinuation rates of LAI antipsychotics will be evaluated.

6-228

Title: Current emergency department (ED) alcohol withdrawal treatment strategies

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Purpose: Excess alcohol use accounts for approximately 1.2 million emergency department (ED) visits in the United States. In the military, the number of heavy drinkers (8.8 percent) and binge drinkers (33.3 percent) exceeds that of their civilian counterparts (5.1 percent and 28.3 percent, respectively). The Department of Veterans Affairs (VA) and the Department of Defense (DoD) have established clinical practice guidelines for the management of substance abuse. Reportedly, these guidelines are not routinely followed. The primary objective of this study is to determine the extent to which current alcohol withdrawal treatment in the ED adheres to evidence-based practice guidelines.

Methods: This study will be submitted to the Institutional Review Board for Approval. The electronic medical record system will identify patients who are veterans or active duty personnel aged 18 years of age or older treated in the emergency department (ED) for alcohol intoxication, alcohol withdrawal, delirium tremens, or seizures related to alcohol withdrawal, received a banana bag or the individual contents of a banana bag (multivitamin, folate, dextrose, thiamine) for alcohol withdrawal, or received a blood alcohol level (BAL). The following data will be collected: patient age, gender, last 4 digits of social security number, ethnicity, housing status, marital status, ED admission and discharge dates, present alcohol use, duration, time since last use, past alcohol use, other substance use (present and past), alcohol treatment history, present medical problems, psychiatric issues, withdrawal management in the ED to include medications used (including vitamins administered), clinical institute withdrawal assessment for alcohol revised (CIWA-Ar), physical exam, mental status exam, and labs drawn (BAL, complete blood count, electrolytes, liver function tests, and carbohydrate deficient transferrin). Provider documentation will be reviewed to determine if reasons for not following guidelines are documented. All data will be recorded without patient identifiers and maintained confidentially.

6-229

Title: Evaluation of perioperative administration of intravenous acetaminophen and its effectiveness in postoperative pain management: a retrospective review

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Purpose: Intravenous acetaminophen may be administered perioperatively to assist in management of pain after the procedure. The purpose of this retrospective chart review is a medication utilization evaluation of the perioperative administration of a single one gram dose of intravenous acetaminophen and its effectiveness in controlling postoperative pain.

Methods: After receiving approval from the Institutional Review Board, a retrospective electronic medical record (EMR) review was conducted to compare patients administered intravenous (IV) acetaminophen during surgical procedures to those individuals receiving standard perioperative therapy between November 2012 and June 2013. De-identified patient data and medication information obtained from the EMR was used to identify patients administered IV acetaminophen along with matched controls of those not given IV acetaminophen. The following data was evaluated: age, gender, body mass index, history of drug use, respiratory conditions, procedure length and type, amount of medications administered affecting pain (e.g. opioids, steroids, NSAIDs) during and 24 hours post-procedure, average pain scores for 24 hours post-procedure, evidence of postoperative ileus if occurred, and length of stay. The data was analyzed to determine if the average pain scores for 24 hours post-procedure were lower in patients given IV acetaminophen. Subanalyses of the data were reviewed to determine whether the timing of IV acetaminophen administration with respect to start and stop time of surgery also played a role in postoperative pain control, and whether it reduced the risk of developing postoperative ileus.

6-230

Title: Impact of pharmacist utilization of the Clinical Pulmonary Infection Score (CPIS) on the rate of prolonged empiric antibiotic therapy (PEAT) for pneumonia

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Purpose: The Clinical Pulmonary Infection Score (CPIS) is a structured assessment that has been studied to help guide the diagnosis and use of antibiotics for mechanically ventilated patients in the intensive care unit (ICU) with suspected pneumonia. Use of this score has been associated with decreases in unnecessary antibiotic use. The purpose of this study is to determine the effectiveness of a pharmacist-driven CPIS protocol in decreasing the rate of prolonged empiric antibiotic therapy (PEAT, characterized as regimens continued for at least 72 hours) in mechanically-ventilated patients with suspected pneumonia.

Methods: We will conduct a prospective pre- and post- implementation cohort study analyzing mechanically-ventilated patients initiated on empiric antibiotic therapy for suspected pneumonia in the ICU. A CPIS score utilizing temperature, white blood cell count, tracheal secretions, ratio of arterial oxygen pressure to fraction of inspired oxygen (PaO2/FiO2), pulmonary radiography, progression of pulmonary infiltrate, and culture of tracheal aspirate will be calculated by a pharmacist on days 1 and 3. If the CPIS is less than or equal to 6 on days 1 and 3, the pharmacist will recommend discontinuation of antibiotic treatment for pneumonia. Mechanically-ventilated patients empirically treated in the ICU for pneumonia prior to CPIS protocol implementation will be compared with patients post implementation. Additional data collection will include demographic information, Acute Physiology and Chronic Health Evaluation II (APACHE II) scores, indications for ICU admission and mechanical ventilation, duration of mechanical ventilation, residence prior to ICU admission, medical or surgical admission, primary medical service, culture results, and antibiotic/infection parameters. The primary outcomes of this study are rate of PEAT, length of ICU stay, mortality, and total antibiotic days. Secondary outcomes are rate of resuming antibiotics and antibiotic resistance. This study has been approved by the Institutional Review Board.

6-231

Title: Adherence to intravenous acetaminophen hospital specific guidelines: a retrospective drug utilization review

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Purpose: Purpose: Intravenous (IV) Acetaminophen is indicated for the management of mild to moderate pain; and the management of moderate to severe pain with adjunctive opioid analgesics. At Sinai health system IV acetaminophen was approved for analgesia but restricted to prevent excessive use and unnecessary costs. The restriction criteria were implemented in the prescriber order entry system in accordance with the hospital specific guidelines. The primary objective of this study is to determine the adherence of IV acetaminophen use to institution guidelines. Additionally a literature review will be conducted to ensure that IV acetaminophen guidelines are consistent with recent studies.

Methods: Methods: The study is designed to be a retrospective medical record review of patients who received IV acetaminophen from May 2012 to July 2013. The study was exempt from approval by IRB as a drug utilization review for quality improvement. A hospital wide report generated from the hospital information system resulted in 93 patients. Patients were included in this study if they had received at least one dose of IV acetaminophen. The following data was recorded: age and weight of patient, presence of hepatic dysfunction, dose and number of doses administered, documented NSAID intolerance, oral intake status, and if rectal route was contraindicated. The results will be used to evaluate IV acetaminophen use patterns and adherence to the institution guidelines. Additionally, in conjunction with the results of the study, the conclusions from the review of recent literature on the topic will be utilized to evaluate the existing guidelines and potentially update the institutional guidelines. Education and automated alerts will be used to detail the study results and to convey best practice.

6-232

Title: Intrapartum group B streptococcal antibiotic prophylaxis in penicillin allergic patients

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Purpose: The Centers for Disease Control (CDC) 2010 Guideline for the Prevention of Perinatal Group B Streptococcal Diseases provides recommendations for the selection of antibiotics in the intrapartum period for women who are confirmed to be positive or whose Group B Streptococcal (GBS) status is unknown. In particular, the CDC provides antibiotic recommendations for patients with penicillin or cephalosporin allergies. This review will evaluate compliance with the CDC guidelines, specifically to determine whether prescribers are making appropriate antibiotic selections for women with reported penicillin and/or cephalosporin allergies.

Methods: A retrospective, single-center, single cohort patient chart review will be conducted of women who presented for labor and delivery between January 2011 and June 2013 who meet all of the following criteria: 1) tested positive for Group B Streptococcus before hospitalization or on admission prior to delivery or whose GBS status is unknown, 2) have a documented penicillin or cephalosporin allergy, and 3) received antibiotics for GBS prophylaxis during the admission. This review will be conducted for quality purposes only and is exempt from Investigational Review Board (IRB) review. Patients will be excluded if they had a cesarean section performed before labor onset and if the amniotic fluid or sac was intact. The following data will be collected: demographics, date and time of delivery, gestational age at the time of delivery, type of delivery, allergy profile, GBS culture results (if any) including sensitivities, and antibiotics received. All data will be recorded and maintained confidentially. Statistical analysis will be descriptive in nature.

6-233

Title: Evaluation of the rate and implications of vancomycin troughs drawn earlier than current guidelines in hospitalized patients

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Purpose: Current Infectious Diseases Society of America (IDSA) guidelines recommend the use of trough measurements to monitor intravenous vancomycin treatment. Troughs should be obtained in steady state conditions, usually just prior to the next dose. It was shown that vancomycin trough levels are often drawn early leading to increased frequencies of regimen changes and repeat trough level orders. The primary objective of this study is to measure the rate of early trough measurements and their effect on changes in vancomycin regimens. Secondarily, it will examine the rate of repeat vancomycin trough level orders in early versus correctly timed samples.

Methods: This study has been submitted to the Institutional Review Board for approval. Patients will be identified through a Computerized Patient Records Systems (CPRS) search for laboratory vancomycin level measurements between July 1, 2009 and July 1, 2013. The following information will be gathered from CPRS: age, gender, type of clinical infection and desired trough level, sample collection time, vancomycin administration time, clinical actions taken during the dosing interval immediately following sample collection (continued same dose, held dose, decreased dose, or discontinued dose), repeat vancomycin trough level orders, and observations. Clinical actions taken following a trough reading and repeat vancomycin trough orders will be compared between early and correctly timed trough measurements.

6-234

Title: Impact of a pharmacist based educational intervention in the emergency department for treatment of urinary tract infections

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Purpose: The objective of this study is to evaluate whether a pharmacy based educational intervention can have an impact on the following: prescribing adherence to IDSA guidelines for the treatment of urinary tract infections (UTIs), reducing medication cost, and to see if there is a difference in the number of return visits to the emergency department.

Methods: Prior to beginning this study, Institutional Review Board approval will be obtained. There will be a pre- and post-intervention phase to the study. The pre-intervention phase will include retrospective data collection of patients age, sex, type of UTI, antibiotic treatment regimens, and return visits within 14 days. Analysis of the information collected will be presented to emergency department physicians and physician assistants. A presentation postulating the results of the pre-intervention phase, with emphasis on prescribing patterns, facility antibiogram specific for UTIs and recommendations will be presented. Once the pre-intervention data phase is complete, the pharmacist intervention will be implemented, and data collection will continue to document an impact of the intervention. Statistical analysis will identify any differences in the rate of emergency department return visits, adherence to guideline-based prescribing patterns, and medication costs. Urine cultures will be used to identify patients who were diagnosed with a UTI after presenting to the emergency department. Inclusion criteria includes patients over 18 years of age who presented to the emergency department with a positive urine culture indicative of UTI and were prescribed outpatient medication regimens, without requiring further admission to the hospital. Exclusion criteria includes: catheter-related urinary tract infections and pregnant women.

6-235

Title: Awareness, knowledge, and perception of the human papillomavirus (HPV) infection and its vaccination among first-year pharmacy students

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Purpose: Healthy People 2020's goal for HPV vaccination coverage for girls aged 13-15 years is 80%. Yet, HPV vaccination among adolescent girls has only increased from 53% in 2011 to 53.8% in 2012. According to the CDC, healthcare professionals, including pharmacists, must consistently promote HPV vaccination in order to achieve this goal. As future healthcare professionals, pharmacy students should be aware of their role in recommending the HPV vaccine. The purpose of this study is to assess the awareness, knowledge and perception of HPV infection and its associated vaccine among first-year pharmacy students before and after a pharmacist educational intervention.

Methods: The study population will be first-year pharmacy students for this pre- and post-intervention study. A questionnaire instrument will be used to evaluate participants on awareness, knowledge and perception of HPV infection and its associated vaccine. The questionnaire items consist of HPV-related awareness, knowledge, and attitude/belief questions and demographics. The pre-intervention survey will be administered in a first-year pharmacy introduction class followed by a brief 15-20 minute pharmacist-delivered educational intervention. The educational intervention is a PowerPoint presentation on: the etiology of HPV; its mode of transmission; conditions associated with HPV infection; and the following information relative to HPV vaccinations: where it can be received, its cost and insurance coverage. The post-intervention survey will be administered one month post intervention. Institutional Review Board approval will be sought prior to the conduct of the study. Participant confidentiality will be maintained in accordance with HIPAA regulations and they will all be assigned a unique identifier (ID). Paired t-tests and the McNemars tests will be used respectively to assess continuous and categorical changes in overall awareness, knowledge, and perception. All significance testing will be at an alpha ≤ 0.05. SPSS version 17 will be used to conduct all statistical analysis.

6-236

Title: Linking and re-linking HIV patients to care through a pharmacist-driven continuity of care program at hospital discharge in Baton Rouge, Louisiana

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Purpose: The US HIV/AIDS Care Continuum data show that rates of patient linkage to and retention in care are suboptimal. Patients often fall out of care during the inpatient to outpatient transition. Little data demonstrate the role of a pharmacist in continuity of care for HIV patients. This pilot project aims to assess the influence of a pharmacist-driven continuity of care program for HIV patients compared to current practice within a large teaching hospital and also assess program impact on 30-day readmission and emergency room (ER) visit rates.

Methods: This study will be submitted to the Institutional Review Board for approval. The health system's electronic medical record will be used to identify adult patients with HIV for retrospective data collection (June to September 2013; Phase 1). Patients already established in primary HIV care outside of the hospital's free clinic and patients ineligible for clinic enrollment will be excluded. Data collection will include: age, gender, medication list, clinic attendance history, admit diagnosis, discharge date, scheduled clinic appointment date, and follow-up collection including clinic appointment attendance, 30-day readmission, 30-day ER visits, and reason for readmit/visit. From November 2013 to February 2014 (Phase 2), patients will receive discharge counseling by a clinical pharmacist, including medication education, instructions for outpatient clinic appointment, guidance on proper ER versus clinic use per institutional guidelines, and a reminder call prior to clinic appointment. Hospital and clinic pharmacists will communicate to facilitate the patient's transition. Data will be collected retrospectively for Phase 2 and compared to Phase 1. Analyses will include the first thirty to fifty patients in each group. All data will be recorded without patient identifiers and maintained confidentially. Descriptive statistics will be used to summarize results.

6-237

Title: Outcomes of simultaneous pancreas-kidney (SPK) transplants in patients with type II diabetes mellitus compared with type I diabetes mellitus

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Purpose: Outcomes of simultaneous pancreas-kidney (SPK) tranplants are well-described in end-stage renal disease patients with type I diabetes mellitus (T1DM). Although a somewhat controversial option, due to the presumed etiology of type 2 diabetes mellitus (T2DM), SPK has recently become more common in the management of T2DM; the International Pancreas Transplant Registry reports that up to 10% of SPK transplants are performed in patients with T2DM. SPK outcomes are not as well-defined in this patient population. The objective of this study is to compare outcomes of SPK in patients with T1DM and T2DM.

Methods: This study will be submitted to the Institutional Review Board at Ochnser Medical Center (OMC) for approval. This will be a retrospective review of selected patient data extracted from OMC medical records including outpatient medical charts and electronic medical records. Patients who recieved a SPK transplant at OMC between September 1998 and September 2012 will be included. Primary outcomes will include 1-year mortality, rejection rate, graft failure, change in hemoglobin A1c, and length of stay. Change in weight (from baseline to 1 year posttransplant) and causes of graft failure will be evaluated as secondary outcomes. A computerized spreadsheet will be used to store the data; patient-specific information will be removed to protect patient privacy. Only study investigators will have access to the database.

6-238

Title: Comparison of response rates in relapsed and refractory induction regimens for acute myeloid leukemia

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Purpose: Acute myeloid leukemia (AML) is the most common form of acute leukemia among adults and accounts for the largest number of annual deaths from leukemias in the United States. There are numerous chemotherapy regimens that have been used for patients with resistant or relapsed disease. To date, there have been minimal studies that directly compare intensive regimens utilized in relapsed/refractory AML. The goal of this study is to determine which induction regimen has the best response rate in relapsed/refractory AML patients.

Methods: Institutional Review Board approval has been applied for prior to initiation of this retrospective analysis. All adult patients (≥ 18 years of age) who received induction therapy for relapsed or refractory AML from June 1990 to June 2013 will be included. Data collection will include date of data collection, patient demographics, cytogenetics and molecular abnormalities, treatment regimen received prior to relapse/refractoriness, treatment regimen instituted after relapse/refractoriness, length of remission if achieved either before or after relapse/refractoriness, white blood cell count, absolute neutrophil count, and blast percentages prior to and after treatment. Data regarding the following toxicities will be collected: mucositis, bone marrow suppression, cardiac toxicity, hepatotoxicity, and renal impairment. Grading of adverse events will follow the Common Terminology Criteria for Adverse Events (CTCAE) Version 4.03. Descriptive and comparative statistics will be used to identify the differences in characteristics between induction regimens.

6-239

Title: The early administration of filgrastim following autologous peripheral blood progenitor cell transplantation (PBPC) for lymphoma and multiple myeloma

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Purpose: Administration of G-CSF in autologous peripheral blood progenitor cell transplantation (PBPC) allows for the amplification of neutrophils, reduction in transit time of the release of mature cells into the circulation, and enhancing neutrophil function and survival. Patients administered with G-CSF benefit from a decrease in neutropenic fever, time to antibiotic use, and time to ANC>500. Timing of G-CSF administration must be evaluated in order to assess the optimal efficacy for patients. This study will examine the effects of early (day +3) versus late (day +8) administration of growth colony stimulating factors (G-CSF) on patient outcomes and drug cost.

Methods: This project will be submitted to the Institutional Review Board (IRB) at Ochsner Medical Center. This study is a retrospective review comparing the outcomes of patients receiving late administration of G-CSF versus early administration. Patient data will be analyzed utilizing patient charts and electronic medical records. Data points will include time to ANC>500, days of G-CSF administration, length of stay, days of fever, intravenous antibiotic usage, and days of mucositis. Patients included in this study have received an autologous stem cell transplant for lymphoma or multiple myeloma. Data will be collected starting January 2011 to February 2014.

6-240

Title: The role of adjuvant dexmedetomidine in the treatment of alcohol withdrawal in the ICU

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Purpose: Alcohol withdrawal is a familiar condition in the medical setting. Dexmedetomidine is a centrally acting 2 agonist which decreases the release of norepinephrine and may mitigate the adrenergic and sympathetic symptoms of withdrawal. Very little data is available on the use of dexmedetomidine as treatment for alcohol withdrawal and is limited to small retrospective studies and case reports. The purpose of this study is to assess the role and benefit of dexmedetomidine within the first 24 hours of initiation when used as adjuvant therapy for treatment of alcohol withdrawal symptoms in the intensive care unit (ICU).

Methods: This is a single center, retrospective trial including adult patients admitted to the ICU for alcohol withdrawal from November 1, 2011 until June 30, 2013. ICD9 codes will be used to identify patients. Patients will be excluded if they are intubated at initiation of dexmedetomidine, have any CNS trauma, epilepsy, sepsis, metastatic cancer, or any another indication for dexmedetomidine. The following data will be collected on all patients: age, gender, race/ethnicity, past medical history (specifically arrhythmias, respiratory disease, and any psychiatric disorders), serum ethanol level, ICU length of stay, and ICU mortality. The following medication administrations will be recorded: dexmedetomidine, benzodiazepines, antipsychotics, beta blockers, anti-convulsants, clonidine, narcotics, and gabapentin. Blood pressure, heart rate, and Richmond Agitation Sedation Scale (RASS) scores will be recorded hourly. The primary outcome is to compare patient hemodynamics, adjuvant medication doses, and RASS scores 24 hours before the initiation of dexmedetomidine to values after the first 24 hours of dexemedetomidine therapy. Hemodynamic values and adjuvant medication doses will be compared using a paired t-test. A Wilcoxan signed rank test will be used to compare RASS scores. This study has been approved by the Institutional Review Board.

6-241

Title: Retrospective analysis of dexmedetomidine withdrawal in the trauma intensive care unit

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Purpose: Managing agitation in the intensive care unit is challenging, as it requires continuous monitoring and careful measures for appropriate treatment. Iatrogenic causes of agitation can occur as medications that reduce agitation may exacerbate the condition upon discontinuation. Dexmedetomidine, a centrally acting alpha 2 agonist, is becoming a mainstay therapy for ICU sedation because of its sedative and anxiolytic properties. Its potential to cause withdrawal symptoms and exacerbate agitation have not been fully defined in clinical literature. The study objective is to evaluate the incidence of dexmedetomidine withdrawal in trauma ICU patients and review pharmacologic measures taken to control its presentation.

Methods: Prior to commencement, this study will be submitted to the Institutional Review Board for approval. This is a retrospective observational study reviewing trauma patients who received dexmedetomidine in the trauma intensive care unit over a 12 month period using the hospitals electronic medical record system. Primary outcome measures are signs of withdrawal such as hypertension, tachycardia, and agitation which will be assessed by collecting blood pressure, heart rate, and Richmond Agitation Assessment Scale (RASS) patient data 24 to 72 hours before and after the discontinuation of dexmedetomidine. Secondary outcome measures are dosing and prescribing patterns of medications used to treat withdrawal symptoms (antihypertensives, sedatives, and antipsychotics) which will also be reviewed 24 to 72 hours before and after the discontinuation of dexmedetomidine. Data from patients with a documented past medical history of psychotic disorders prior to the trauma ICU admission will be excluded.

6-242

Title: Cytomegalovirus infection in liver transplant recipients after protocol change to universal prophylaxis

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Purpose: Cytomegalovirus (CMV) is one of the most prevalent opportunistic infections in solid organ transplant. Prevention strategies include universal prophylaxis or preemptive therapy, both are considered acceptable strategies for preventing CMV. In September 2010, our institution changed the CMV prevention protocol to universal prophylaxis for patients who are at moderate risk (CMV positive recipients; R+) for this infection. The purpose of this study is to evaluate the effects of the protocol change on the prevalence and severity of CMV infections.

Methods: The institutional review board approved this single-center, retrospective chart review to determine effects of our protocol change in liver transplant recipients. Prior to the protocol change, prophylaxis was only provided for high-risk patients (CMV positive donor/CMV negative recipient (D+/R-) or patients who had received lymphocyte depleting induction), with the prevalence of CMV infection being 11.5%. Pre-protocol change patients were transplanted from September 1, 2007 to August 31, 2009, and post-protocol patients were transplanted from January 1, 2011 to January 1, 2012. All patients were followed for one year from the date of their transplant. Data was collected from the outpatient chart and electronic medical record. The primary outcome was the prevalence CMV infection, as well as comparing mortality and readmission rates due to CMV infection. Secondary outcomes included the rates of drug-induced neutropenia and evaluation of the pharmacoeconomic considerations of the protocol change. CMV infection was defined as a positive PCR or biopsy result with treatment. Tissue-invasive disease was defined as biopsy with positive CMV stains with treatment. Drug-induced neutropenia was defined by filgrastim administration while on valganciclovir.

Results: A total of 199 pre-protocol and 127 post-protocol patients were included in this analysis. A total of 23 pre-protocol and seven post-protocol patients developed CMV (11.5% vs. 5.5%; p=0.0676). However, our patients classified as moderate risk (R+) had a statistically significant decrease in CMV infection (11.3% vs. 1.1%; p=0.033). No statistically significant difference seen based on readmissions to the hospital due to CMV between the groups (3.5% vs. 3.2%). One patient died prior to the protocol change due to CMV; there were no deaths due to CMV post-protocol change. Two patients (1.6%) from the post-protocol group required filgrastim for valganciclovir-associated neutropenia. The pharmacoeconomic considerations are pending.

Conclusion: Valganciclovir was effective in preventing CMV infection in liver transplant recipients. The rates of CMV infection decreased significantly after protocol change to universal prophylaxis in the targeted patient population. However, more patients in our low-risk (D-/R-) population developed CMV than anticipated. Pharmacoeconomic considerations are pending.

6-243

Title: Evaluation of the impact of liposomal bupivacaine on post-operative opioid consumption and length of stay in patients undergoing unilateral knee replacement surgery

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Purpose: Optimal post-operative pain management contributes to early ambulation, decreased length of stay, and reduced healthcare costs. Local infiltration, femoral nerve blocks, patient-controlled opioid analgesia, and rescue opioids are commonly used methods of pain management at this institution. Opioids can cause sedation, nausea, and vomiting hindering participation in physical therapy and prolong length of stay. A single dose of liposomal bupivacaine administered intraoperatively can provide analgesia for up to 72 hours. The objective of this study is to determine if intraoperative administration of liposomal bupivicaine reduces cumulative post-operative opioid consumption and length of stay in patients undergoing knee replacement surgery.

Methods: This study will be submitted to the Institutional Review Board for approval. The hospitals electronic medication administration record and financial records will be used to identify patients who underwent unilateral knee replacement surgery. Liposomal bupivicaine was added to hospital formulary for use in knee replacement surgery in September of 2013. Therefore, patients discharged between October 1, 2012 and January 31, 2013 (pre-liposomal bupivacaine) will be compared to patients discharged between October 1, 2013 and January 31, 2014 (those receiving liposomal bupivacaine). The following data will be collected: patient age, gender, height, weight, blood pressure, American Society of Anesthesiologist (ASA) physical status score, medications, reported adverse events, liver function tests, serum creatinine, range of motion, total hospital charges, and length of stay. All patient data will be de-identified and stored in a secure location.

6-244

Title: Prescribing patterns of metformin in high risk prediabetic patients

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Purpose: The 2013 American Diabetes Association (ADA) Standards of Care recommends metformin for prediabetic patients, especially in patients less than 60 years of age, with a BMI greater than or equal to 35 kg/m2, or women with a history of gestational diabetes mellitus (GDM). The primary objective will examine the rates of metformin prescribing in these patients. Secondary objectives include: 1) examination of the time from diagnosis of prediabetes to the initiation of metformin and 2) if metformin initiation status and length of time correlates to the patient having any other additional diabetes mellitus (DM) risk factors.

Methods: This single center retrospective cohort study will be submitted to the institutional review board for approval. Study sample will be recruited from an electronic chart review of adult, prediabetic patients defined as having hemoglobin A1c (HbA1c) of 5.7 through 6.4 percent. Patients will be recruited from January to December 2012. However, data will be reviewed from January 2012 to September 2013 to allow for adequate time to assess length of time for initiation of metformin. Patients diagnosed with diabetes or with HbA1c less than 5.7 percent will be excluded from the study. The following information will be included in data collection: HbA1c, BMI, age, history of GDM, race, gender, history of type 2 diabetes, use of current or previous antidiabetic medications, history of lifestyle intervention for treatment of prediabetes, specialty of prescriber, and additional DM risk factors (ﬁrst degree relative with diabetes, hypertension, low HDL cholesterol, high triglyceride level, women with polycystic ovary syndrome, and history of CVD). Patient confidentiality will be maintained in accordance with HIPAA regulations and all patient information will be recorded without identifiers.

6-245

Title: Predictability of procralcitonin (PCT) for diagnosing infections in a medical intensive care unit

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Purpose: Procalcitonin (PCT) is an acute phase reactant that is elevated in infection and inflammation. It is commonly used in the intensive care unit as a diagnostic tool for determining when to start empiric antibiotics. PCT has been studied over the past 20 years to determine its validity for diagnosing infections. PCT has a low sensitivity, 67-80%, for diagnosing infections, but a higher specificity than previously used markers. Data is also favorable in using PCT to determine when to discontinue antibiotics. The objective of this study is to evaluate whether PCT levels are being utilized appropriately.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify patients who have been admitted to the MICU and had PCT levels drawn. The following data will be collected: patient age, gender, PCT levels, microbiology results, and days of antibiotic therapy. Researchers will review provider documentation to determine reasons for antibiotic treatment without microbiology results. All data will be recorded without patient identifiers and maintained confidentially. PCT levels, days of antibiotics, antibiotics without microbiologic evidence of infections, type of infection (UTI, pneumonia, bacteremia, skin and soft tissue, and sepsis), and days of therapy after return to normal PCT levels will be recorded. PCT levels < 0.5 ng/mL will be considered to be normal, 0.5-1.9 ng/mL will be considered to have a low probability of infection, and values > 1.9 ng/mL will represent a high probability of infection. The reviewers will evaluate patients for appropriate treatment based on PCT levels and evidence of infection based on microbiologic results.

6-247

Title: Establishing a transitions of care service for patients with congestive heart failure in a 250-bed community hospital

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Purpose: Congestive heart failure (CHF) patients are often discharged from the hospital with changes to their home medication regimens. Changes to home medications can contribute to medication non-adherence, medication discrepancies, adverse drug events, increased readmission rates, and increased healthcare cost. Pharmacists have the knowledge to assist in improving medication management during transitions of care program. This service will provide medication counseling for patients with a primary diagnosis of CHF.

Methods: The electronic medical record will be used to identify patients diagnosed with CHF. Patient demographics, length of stay, and readmission rate will be collected. Inclusion criteria will be diagnosis and the therapeutic management of CHF. Exclusion criteria will consist of the inability to communicate, patients no longer receiving medical management, and residents of a long term care facility. A discharge counseling session will be provided within 2-3 days after admission. Medical records will be reviewed to determine potential discharge medications. Counseling will be done on these medications and patients will be provided with drug information monographs. A satisfaction survey will be provided after the discharge counseling session. Within 48-72 hours after discharge, a telephone follow up call will done to assess medication adherence, ensure appropriate physician follow up, answer additional medication related questions and reinforce key points discussed during the discharge counseling session.

6-248

Title: Comparison of hydroxyurea-erythropoietin stimulating agents combination therapy to hydroxyurea monotherapy in the treatment of sickle cell crises in homozygous sickle cell anemia patients

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Purpose: Hydroxyurea has been evidently proven to significantly reduce morbidity in sickle cell anemia. In addition, an NIH publication by Little et al summarized published reports of 39 patients from 1990 - 1996, which showed that the use of hydroxyurea in combination with erythropoietin stimulating agent (ESA) allowed more aggressive dosing of hydroxyurea with reduced complications and improved fetal hemoglobin response in comparison to hydroxyurea monotherapy. The objective of this study is to evaluate the difference in the amount of sickle cell crises among patients utilizing hydroxyurea-ESA combination as compared to patients receiving hydroxyurea alone.

Methods: This study is a retrospective chart review analysis of patients attending a sickle cell clinic within a metropolitan teaching hospital. It is designed to determine whether a decrease in morbidity, measured by the amount of sickle cell crises, hospital admissions, and complications, exists when hydroxyurea is used in combination with erythropoiesis stimulating agent as compared to when hydroxyurea is used alone in homozygous sickle cell anemia patients. Patients from the clinic will be selected based on hydroxyurea adherence, which will be assessed with elevated MCV values, and any available fetal hemoglobin (HbF) concentration, as clinically appropriate. Information on hospital admissions, documented number of sickle cell crises, self-reported sickle cell crises, and sickle complications is evaluated for each selected medical record, and compared between both treatment groups. All records are de-identified and confidentiality maintained. Study protocol was submitted for IRB approval prior to the initiation of the study.

6-249

Title: Chronic Obstructive Pulmonary Disease: Evaluation of Prescribing Patterns and Healthcare Utilization in a Veteran population

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Purpose: Chronic obstructive pulmonary disease (COPD) is associated with significant morbidity, mortality and economic burden in the United States. It has been previously demonstrated that only 40% of patients received stage appropriate medications as recommended by the GOLD Report. It is unknown whether similar trends are present within our Veterans Affairs Healthcare System. The primary objective is to evaluate prescribing patterns in accordance to the 2010 GOLD Report within a Veterans Affairs hospitals primary care clinics from January 2011 to December 2012. The secondary objective is to evaluate COPD-related healthcare utilization at a Veterans Affairs hospital.

Methods: This study, a retrospective chart review, will be submitted to the Institutional Review Board and a Veterans Affairs hospitals Research and Design Committee for approval. Patients will be included if they have a pulmonary function test (PFT) between January 2011 to December 2012, have a diagnosis of COPD, are followed in a Veterans Affairs hospitals primary care clinics, and have a primary care visit during the study period that falls within 6 months after the PFT was obtained. Patients will be excluded if they are less than 18 years of age, followed by a non-VA primary care provider, have an inpatient PFT, or have asthma. The following data will be collected at baseline: patients age, sex, race, PFT results, smoking history, and COPD-related adverse drug reactions. The 2010 GOLD Report will be utilized to stage patients COPD and evaluate prescribing patterns for COPD regimens. Visits to emergency care services with or without admission, urgent care visits, hospital admissions, and length of stay of admission will be collected to evaluate health-care utilization within a Veterans Affairs hospital. Descriptive statistics will be used to report primary objective and demographic data, and a student t-test will be used for the secondary objective.

6-250

Title: Medication use evaluation of tolvaptan in a community hospital

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Purpose: Tolvaptan is an orally active, selective vasopressin V2 receptor antagonist which is indicated for the treatment of hypervolemic or euvolemic hyponatremia in patients with heart failure (HF) or syndrome of inappropriate antiduretic hormone (SIADH). By reason of the cost and lack of evidence demonstrating the non-inferiority of tolvaptan compared to traditional therapy in the treatment of euvolemic or hypervolemic hyponatremia in patients with HF or SIADH, the purpose of the medication use evaluation is to assess the use of tolvaptan and its impact on patient outcomes at a community hospital.

Methods: The study is a retrospective chart review of patients who were admitted to a community hospital between October 1, 2012 and October 1, 2013. Patients will be identified by searching the electronic medical records system for tolvaptan medication orders. Patients will be included who were greater than 18 years of age at the time of admission and who received at least 1 dose of tolvaptan during admission. The following will be collected to assess the appropriate use of tolvaptan and resulting patient outcomes: past medical history; serum sodium concentration; volume status; tolvaptan dose, frequency, duration; medication history; prescribing physician; serum potassium concentration; dietary orders; serum blood glucose concentration; alkaline phosphatase level; aspartate aminotransferase level; alanine aminotransferase level. Change in serum sodium concentration per day will be calculated. Prescriber specialization and provider documentation will be reviewed to determine compliance with the hospital Formulary restrictions. All data will be recorded without patient identifiers and will be maintained confidentially. The study will be exempt from approval from the Institutional Review Board as it is involves the collection and study of existing data, which will be deidentified, thereby creating no risk or impact for patients included.

6-251

Title: Standardization of medication delivery: a pilot project on medicine units

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Purpose: Prompt delivery of medications is critical to patient care. There are many contributing factors that result in a delay in medication therapy. Limiting the various locations a medication is delivered to within a patient care unit may reduce delays in medication administration to the patient and may reduce the time pharmacy and nursing staff spends on problems due to missing doses. The primary objective of this study was to determine if standardizing the way medications are delivered would improve the medication delivery process.

Methods: An implementation of a STAT label printer along with a standardized medication request and delivery process was implemented on the internal medicine units at a community teaching hospital. For situations when the nurse determined that a patient's dose was missing from the unit, nursing staff was instructed to call the pharmacy. The pharmacist or pharmacy technician answering the phone call was instructed to follow an outlined speech to determine the urgency of the drug. Determination of a STAT or non-STAT medication was based on the nurse's judgment. For STAT medications, pharmacy staff was instructed to print a designated STAT label and send the medication to the unit's tube station. For non-STAT medications, pharmacy staff was instructed to send the medication on the hourly delivery to a designated "Medication Request Bin" in the unit's Pyxis station. A pre and post survey was distributed to nursing and pharmacy staff to assess the existing non-standardized medication delivery system and the standardized medication delivery system, respectively. Survey responses were assessed using the Likert Scale.

Results: Nursing staff pre-surveys (n=18) and post-surveys (n=24) were collected. After implementation of the pilot, responses showed a 27% increase in the number of nurses that agreed STAT medications were being delivered in a timely manner. The pilot process had a positive correlation with reduction in nurse time to call the pharmacy for missing medications. Pharmacy staff pre-surveys (n=29) and post surveys (n=18) were collected. After the pilot, there was a 27% increase in pharmacy staff who agreed that the standardized process resulted in reduced time delivering requested medications. Furthermore, the study showed that there was a 22% decrease in pharmacy staff who strongly agreed that the medication delivery process results in medication waste.

Conclusion: The process of standardizing medication delivery is perceived to benefit both the nursing and pharmacy staff. Our findings identify some areas that may be targeted to improve compliance to the standardized medication delivery process. Adhering to a standardized medication delivery protocol will improve delivery of medications in a timely manner to specific locations on the unit in order to help prevent delays in patient care.

6-252

Title: Evaluation of a pharmacist-monitored antipsychotic dose reduction program in a Veterans Affairs Community Living Center

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Purpose: Approximately a quarter of veterans living in Veterans Affairs (VA) Community Living Centers (CLCs) are receiving an antipsychotic (AP) medication, of which only sixty percent are diagnosed with an appropriate indication per Centers for Medicare and Medicaid Services (CMS) guidelines. CMS initiated guidelines in early 2012 to reduce percent of nursing home residents on APs. The purpose of this study is to evaluate the impact of an AP pharmacist monitoring program on AP dosing in a VA CLC.

Methods: This research proposal, a retrospective chart review, will be submitted to the Institutional Review Board and Research and Development Committee for approval. A computerized patient record system will be searched to identify patients who were prescribed an AP medication following initiation of the institution's drug reduction program (DRP). CLC residents on APs three months before and six months after initiation of the DRP will be evaluated. Baseline characteristics to be collected include age, sex, race, Charlson Comorbidity Index, dementia diagnosis, and length of stay. The primary objective is to evaluate the effects of the AP DRP on dose reduction. We will evaluate the number of residents with an AP dose reduction, number of APs, documentation of diagnosis, number of dose reduction attempts, and discontinuations. The secondary objective of this study is to determine the effect of AP dose reduction on patient-specific outcomes, including falls, activities of daily living, and death. A Students t-test and chi-square test will be used to determine statistical significance, which will be considered p less than 0.05. Medication characteristics will also be collected for each AP prescription and reviewers will assess compliance to CMS guidelines and patient-specific AP appropriateness, including indication, efficacy, and safety.

6-253

Title: Delayed clearance of high-dose methotrexate and urine pH: a retrospective analysis of pediatric oncology patients

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Purpose: Methotrexate, a folic acid antagonist, is commonly utilized at high doses (HDMTX) in many pediatric malignancies, including leukemia and osteosarcoma. Unfortunately, HDMTX poses a risk of nephrotoxicity due to its precipitation. While data exists to support urine alkalization to enhance the elimination of MTX, thereby preventing toxic crystallization in the kidneys, little data is available regarding clinically relevant consequences of not doing so. What remains debatable is the clinical relevance of aggressive urine alkalinization. The objective is to determine the clinical benefit behind maintaining an alkaline pH and elucidate its impact on patient outcomes in the pediatric oncology population.

Methods: A four-year retrospective record review between January 1, 2008 and December 31, 2012, will be conducted to assess the incidence of acute kidney injury and its correlation with urine pH during the course of HDMTX treatments in inpatient pediatric oncology patients aged 21 years and younger. This study was submitted to the Institutional Review Board for exempt review. HDMTX will be defined as a dose of at least 1 g/m2 and patients need to have received at least one dose to be considered for inclusion. Patients with renal dysfunction at baseline, defined by a creatinine clearance < 60mL/min, will be excluded, as well as those currently on concomitant medications known to delay the clearance of methotrexate such as trimethoprim-sulfamethoxazole and NSAIDs. Data will be obtained from existing medical records and a standard collection form will be used for all patients. Urine pH values will be recorded for each administered dose and adverse events will be evaluated using the National Cancer Institute Criteria. Delays in treatment and dose adjustments will also be analyzed. Descriptive statistics will be used to analyze baseline patient characteristics and parametric statistics will be used to compare patients with urine pH values below 7 and above 7.

6-254

Title: Abnormal urine oxycodone immunoassay results in a veteran population: prevalence, patterns, and provider response

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Purpose: Urine drug tests are utilized to monitor patients for appropriate use of oxycodone. The primary objective of this study is to determine the prevalence of abnormal urine oxycodone immunoassay results in outpatients at a veteran institution. Secondary objectives include characterizing provider response to abnormal results, determining the extent of urine oxycodone immunoassay use, and determining the extent of discrepancy between urine oxycodone immunoassay and urine opiate assay results.

Methods: The study will be submitted to the Institutional Review Board for approval. The study will be a retrospective chart review using the electronic medical record system to identify outpatients with urine oxycodone immunoassay results within a six-month period. The following data will be collected: age, gender, ordering provider, provider specialty, prescription opioids, opioid strengths, opioid prescription dates, quantity of opioid dispensed, and duration of opioid therapy. For urine oxycodone immunoassays, urine opiate assays, gas chromatography/mass spectrometry, and liquid chromatography/mass spectrometry, the following data will be collected: results, date of collection, ordering provider, provider specialty, urine creatinine concentration, and date of collection of urine creatinine concentration, when available. A urine oxycodone immunoassay result will be categorized as abnormal if it is negative for a patient with a concurrent oxycodone prescription; is positive for a patient without a concurrent oxycodone prescription; or has a urine creatinine concentration less than 10mg/dL. All data will be maintained confidentially and recorded without patient identifiers. Data from patients with an abnormal urine oxycodone immunoassay result will be reviewed to characterize provider response. Descriptive statistics will be used to evaluate primary objectives, secondary objectives, and patient baseline characteristics. Univariate analyses will also be utilized for baseline characteristics.

6-255

Title: Transition of Care: pharmacy's role in filling in the gaps

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Purpose: U.S. healthcare is often rushed, responsibility for patient care is fragmented and communication across care settings is limited. Thus, the U.S. healthcare system often fails to meet the needs of patients transitioning across care settings. In response to this concern, Peninsula Regional Medical Center, a tertiary care hospital in Salisbury, Maryland initiated a pharmacy-based Transition of Care program (TOC) in February 2012. In conjunction with several other hospital initiatives focused on care transitions, the main objective of our TOC program is to reduce readmission rates in high risk patients and to improve communication and patient satisfaction with their healthcare.

Methods: Our program operates Monday through Friday and consists of 1.5 full time pharmacists. These pharmacists perform daily screening for patients at high risk for readmission, determined by readmission history, disease states, medication profiles and through a consult service available to providers. Identified patients will receive a face-to-face visit from a pharmacist who identifies barriers to compliance and provides education on management of disease state and medication regimen. The pharmacist documents pertinent information in the patients chart for other providers to review. After discharge, the pharmacist follows up with the patient within 72 hours via telephone. The call offers additional education, identifies any barriers facing the patient and also encourages compliance. We collected data on all patients screened and counseled by our TOC program. Data collected included the initial diagnosis, date admitted, date readmitted if within 30 days, and reason for readmission. Results from Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) surveys were collected before and during the use of the pharmacy TOC program for both the entire hospital and for the specific patients seen by our service.

Results: We collected data from 15 months of the TOC program. During that time, approximately 10,600 patients were screened and 3,888 were counseled. An average of 285 patients were seen each month. About 1.5% of patients seen were identified by consult. The rate of readmission within 30 days for the patients visited by our transition of care program averaged 12.18%. The hospital-wide readmission rate was 11.0% in fiscal year 2011, 10.2% in 2012 and 9.6% in 2013. There was some evidence to suggest that as the program progressed and became established, an inverse correlation existed between quantity of patients seen and re-admittance rates. The top diagnoses for readmissions hospital-wide were septicemia, heart failure, renal failure, COPD, and pneumonia. The top admitting diagnoses of the patients counseled by our TOC program were respiratory distress, infection, chest pain and heart failure. Positive responses regarding communication about medications, discharge information and overall hospital rating from HCAHPS surveys hospital wide increased from 2011 to 2013.

Conclusion: After over a year of implementation, there seems to be a positive trend in communication about medications and overall hospital rating. Since our TOC program targets patients most at risk for complications and readmission, the elevated readmission rates among TOC patients compared to hospital rates is expected. Some barriers identified include underutilization of TOC consults, a time-consuming screening process and limited resources to assist patients. While it is evident that pharmacists are making an impact, the significance is difficult to quantify given the lack of direct measurements or control data and the addition of other initiatives outside of pharmacys efforts.

6-256

Title: Risk factors associated with greater than expected weight-based vancomycin dosing in neurosurgical critically-ill patients: a case-controlled study

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Purpose: Critically ill patients may require larger doses of vancomycin due to variations in extracellular fluid and renal clearance. Neurosurgical critically ill patients may be especially at risk due to the liberal use of fluids and vasopressors in order to maintain cerebral perfusion pressure. The objective of this study is to identify characteristics of neurosurgical critical care patients who require greater than expected weight-based dosing of vancomycin when dosed for a trough of 15-20 mcg/mL. This study will serve as a pilot for a prospective pharmacokinetic analysis within the at-risk population in order to optimize dosing strategies in the future.

Methods: This study will be submitted to the Institutional Review Board for approval. Adult patients who received vancomycin during admission to the neurosurgical intensive care unit will be identified for inclusion in this study. Patients will be further divided into cases, those who received greater than 30 mg/kg/day of vancomycin; and controls, those who received less than or equal to 30 mg/kg/day of vancomycin and achieved a therapeutic trough. The electronic medical record will be used to collect baseline characteristics (age, gender, weight, height, clinical diagnosis, and indication for vancomycin) and other potential risk factors for use of high dose vancomycin including temperature, mean arterial pressure, fluid balance, vasopressor use, diuretic use, serum albumin, liver function tests, need for mechanical ventilation, and need for total parenteral nutrition. Simple logistic regression will be used to estimate the unadjusted odds ratio of high dose vancomycin among the covariates of interest. A multivariate logistic regression analysis with stepwise selection of covariates will be used to identify the model with the lowest Akaike information criterion score; therefore selecting for a set of risk factors that are significantly associated with the use of high dose vancomycin.

6-257

Title: Identification of Urinary Isolate Susceptibility Patterns in Uncomplicated Urinary Tract Infection Patients in an Urban, Academic Medical Center Emergency Department

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Purpose: The 2010 Infectious Diseases Society of America (IDSA) guidelines for the treatment of uncomplicated cystitis and pyelonephritis state that susceptibilities reported in hospital antibiograms are often skewed by samples obtained from a more critically ill inpatient population and may not be indicative of resistance rates in women presenting with uncomplicated, community-acquired urinary tract infections (uUTI). The purpose of this study is to evaluate the susceptibility patterns to ciprofloxacin, levofloxacin, and trimethoprim-sulfamethoxazole of Escherichia coli (E. coli) from positive urine cultures from otherwise healthy women who present to the University of Maryland Medical Center (UMMC) Emergency Department (ED) with an uUTI.

Methods: Approval from the Institutional Review Board is in progress. The study design is a prospective, observational study. Written consent will be obtained by providing information about the study verbally and through a printed information sheet. The following constitute the inclusion criteria: female, at least 19 years of age, premenopausal, suspected symptomatic uUTI or pyelonephritis with a positive urinalysis (WBC 10/hpf). The following patients will be excluded: males, current pregnancy, known urological abnormalities or comorbidities, structural urinary tract abnormality, indwelling Foley catheter, Foley catheter removed within previous 14 days, known history of kidney stones, diagnosed diabetes mellitus, known immune compromised state, unacceptable specimen sent to microbiology laboratory, does not speak English. Samples identified as E. coli will be included in the final analysis. Urine cultures will be performed by the standard microbiology laboratory procedure with susceptibilities performed via Vitek2. A sample size of 71 was calculated based upon an estimated incidence of 85% of uUTIs being caused by E. coli, a ciprofloxacin resistance rate of 42% per the 2012 UMMC ED antibiogram, and a desired effect size of 50% decrease in resistance rate .

6-258

Title: Effects of prescriber education on the use of phytonadione for international normalized ratio (INR) reversal in the emergency department

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Purpose: For reversal of elevated international normalized ratio (INR), the American College of Chest Physicians (CHEST) recommends administering phytonadione only when a patient presents with an INR greater than 10 or when a patient presents with signs or symptoms of major bleeding. Phytonadione was frequently administered outside of these guidelines in the emergency department (ED) of our hospital. The objective of this study is to determine the effect of ED prescriber and nursing education on phytonadione use for INR reversal and the resulting clinical outcomes of any changes in prescribing practices.

Methods: This study will be submitted to the Institutional Review Board for approval. Education on recommended dosing of phytonadione for INR reversal based on the 2012 CHEST guidelines update will be provided to ED prescribers and nursing during August 2013. Retrospective patient chart reviews will be performed for the months of July through August 2013 and September through October 2013, before and after prescriber and nursing education, to determine changes in prescribing practices and any clinical results of those changes. The hospital's electronic medical record system will be used to identify patients 18 years of age and older who were administered phytonadione in the ED. The following data will be collected: patient age, gender, blood pressure, pertinent physical exam findings, pertinent laboratory findings and admission information. All data will be de-identified and maintained in a confidential manner. Outcomes to be measured include percentage of phytonadione administrations consistent with recommended guidelines and INR data, if admitted, after receiving phytonadione.

6-259

Title: Effect of automated dispensing cabinets (ADCs) upgrade and expansion on missing medication incidents and pharmacist productivity

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Purpose: Increased complexity of automation in pharmacy has become necessary in order to decrease the potential for medication errors and enable pharmacists more time to dedicate to clinical interventions. At this 336-bed hospital, a project to upgrade ADCs with software that provides increased functionality has been initiated. The objective of this study is to determine the effect of the project on missing medication incidents and productivity of pharmacists.

Methods: Study protocol will be submitted to the Institutional Review Board (IRB) for approval. Data on missing medication incidents will be collected by accessing a system of archived scanned medication orders. A unique designation exists for missing medication incidents among other scanned medication orders to enable filtering. The data collection period chosen will be one month prior to and one month after ADCs implementation to determine any changes from baseline. Criteria for missing medication incidents will be established and used to stratify data collected. Date and time of missing medication requests, medication(s) requested, any clarification notes by nurses, and reason for missing medication request will be collected. Productivity of pharmacists will be measured by the total number of daily orders that were processed through analytic reports derived from the electronic medical record system. The collection period for pharmacist productivity data will be one month prior and one month after project execution. Surveys will be distributed to nurses, pharmacy technicians, and pharmacists one week prior and one week after ADCs implementation. Questions asked will consider confounding variables affecting missing medications. All data will be collected with the security and confidentiality of the patients and staff in mind.

6-260

Title: Implementing Pharmacist Participation During Code Blue Emergencies at a Large Community Hospital

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Purpose: Meritus Medical Center is a 272 bed large community hospital located in Western Maryland. The hospital is a level III trauma center, wound center and has a cardiac catheterization lab. The hospital has averaged 87 Code Blue events annually since 2011 on the inpatient floors. Currently, decentralized pharmacists only respond to codes in the emergency room and critical care unit. Leape et al. (1999) demonstrated that pharmacist involvement during codes can lessen adverse drug events and improve patient outcomes. The director of clinical pharmacy services aims to implement a pharmacist involved Code Blue response for all inpatient units.

Methods: We will survey nurses, physicians, respiratory therapists and pharmacists that are involved with the Code Blue team at Meritus Medical Center to gather baseline information about the current Code Blue response process. In October 2013, five pharmacists will begin responding to Code Blue events on the inpatient floors. All pharmacists are Basic Life Support (BLS), and Advanced Cardiac Life Support (ACLS) trained. One pharmacist with Pediatric Advanced Life Support (PALS) will be responding to pediatric codes. Pharmacists will respond to Code Blue events from 8:00 AM to 5:00 PM, seven days a week. After each Code Blue event, the pharmacist will document details about the code in the pharmacy documentation software (Sentri-7). This data will be used to show how the pharmacists role during the code was useful and what training and workflow development points were learned. A follow up survey will be given to non-pharmacy Code Blue response team members in late November 2013 that will see how responses have changed since the baseline survey. Meta-analysis will be used to compare our data with other hospital pharmacies. The study will be presented and approved by institutional review board before dissemination. The study will continue through April 2013.

Results: This is a research in progress poster. Specific results will be determined as the study is to begin October 2013. Data from both the baseline and follow-up surveys will be displayed. We will discuss the observations with tables and graphical analysis. Details from the Sentri-7 documentations after the Code Blue events will be displayed. Specific information found that can be helpful for future training and workflow development will be shown.

Conclusion: The primary questions we will conclude from this study are: 1. Is this a process that should be implemented for pharmacists in the future at Meritus Medical Center? 2. How is implementing pharmacists in code blue responses improving patient care at Meritus Medical? 3. What is the best west to involve the pharmacist in the code blue process such that it provides the most benefit to the other code blue team members?

6-261

Title: Impact of a HIV clinical pharmacist on HIV care

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Purpose: Antiretroviral therapy adherence for a human immunodeficiency virus (HIV) positive patient can be decreased due to many factors such as financial burden, forgetfulness or tolerability issues. A clinical pharmacy service was initiated in January 2013 for HIV infected patients with adherence issues. For this service, the HIV clinical pharmacist provides education on HIV and related therapy, addresses potential barriers to adherence, implements a plan to overcome barriers and periodically assesses the effectiveness of the plan. The goal of the proposed study is to look at the impact the HIV clinical pharmacist has on the care of these patients.

Methods: This observational, retrospective study has been submitted to the Institutional Review Board for approval. Patients, who were nonadherent to antiretroviral therapy (ART), were identified by the HIV clinical pharmacist or referred by an Infectious Diseases (ID) physician. For the primary objective, we will investigate proportion of patients who achieved undetectable HIV viral load before and after HIV clinical pharmacist intervention. Secondary endpoints will compare the change in CD4 count, adherence to ID office visits, and the proportion of days covered (PDC) with 90 percent or greater antiretroviral adherence with at least two fills in the three to six months leading up to intervention and three to six months after intervention. HIV positive patients on ART, greater than 18 years old, referred by HIV clinical pharmacist or ID providers and documented or suspected nonadherence are the selected population. The following data will be collected via electronic health records database: pharmacy encounters, age, race, gender, refill data, labs (including HIV viral load, CD4 count), ID physician encounters, primary ID physician, ID medical office building (MOB), and ART. This retrospective study received an exemption for patient informed consent.

6-262

Title: Characterization of bronchoalveolar lavage cultures and post-transplant pneumonia in lung transplant recipients

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Purpose: Bacterial pneumonia remains the most common infectious complication after lung transplantation, contributing to significant morbidity and mortality. While routine antimicrobial prophylaxis has reportedly decreased the rate of bacterial pneumonia from 35% to 10% within the first 2 weeks post-lung transplant, there is no consensus prophylaxis regimen or duration of therapy. Since 2006, University of Maryland Medical Center (UMMC) has used a 5-day treatment of vancomycin and piperacillin/tazobactam for prophylaxis in lung transplant recipients post-transplantation. The purpose of this study is to evaluate the appropriateness of this regimen for antibiotic prophylaxis in lung transplant patients based on culture and infection patterns.

Methods: This study has been submitted to the Institutional Review Board for approval. This retrospective chart review will include patients 18 years of age or older who received a lung transplant at UMMC from January 1, 2006 to December 31, 2013. Eligible patients will be identified using the electronic medical record system. Patients who received a heart-lung transplant will be excluded. The following data will be collected: demographic information, donor and recipient bronchoalveolar lavage (BAL) culture results at the time of transplant, recipient BAL and bloodstream culture results in the first 14 days post-transplant, occurrence of pneumonia and/or bloodstream infections in the first 14 days post-transplant surgery, and antibiotic therapy and duration of treatment for pneumonia or bloodstream infections. Duration of ECMO before transplant, intubation before and after transplant, ICU length of stay, and hospital length of stay post-transplant will also be collected. The presence of comorbid immunosuppressive conditions and use of induction immunosuppressants will also be recorded. All data will be collected without patient identifiers and maintained confidentially. Descriptive statistics, multivariate analysis, and Kaplan-Meier analysis will be used to analyze the collected data.

6-263

Title: Administration of tranexamic acid to patients undergoing elective or traumatic joint replacement surgery to reduce blood transfusions

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Purpose: Patients undergoing joint replacement surgery are at risk for blood loss. Significant blood loss may put a person at risk for adverse events. Blood transfusions are used to decrease the risk of adverse events, however are associated with an increased cost, slight increase in risk of infection, and immunologic reaction. Methods to decrease blood transfusions should be utilized in order to prevent potential adverse events and optimize patient care. The purpose of this study is to evaluate if the use of one intravenous dose of one gram of tranexamic acid given will decrease the number of blood transfusions.

Methods: Patients undergoing joint replacement surgery will be retrospectively analyzed from April 2013 through June 2013 as a control group. Patients undergoing joint replacement surgery that received tranexamic acid intraoperatively will be retrospectively analyzed from July 2013 through September 2013. There will be an estimated 60 patient profiles included in this analysis with 30 in the tranexamic acid group and 30 in the control group. The data collection will include the following information: patient procedure, pertinent labs, medication list and number of transfusions.

Results: Data collection will evaluate patients who have received tranexamic acid intraoperatively for joint replacement surgery during the time period of July 2013 through September 2013. Patients who did not receive a dose of tranexamic acid intraoperatively for joint replacement surgery will be evaluated during the time period of April 2013 through June 2013. The tranexamic acid group will then be compared to the control group in order to assess changes in transfusion use. This project was approved by IRB on September 10, 2013.

Conclusion: Anticipated results from this study will demonstrate that administration of tranexamic acid will lead to a decrease in the amount of blood transfusions at Suburban Hospital for the study population.

6-264

Title: Evaluating vancomycin therapy and associated risk factors in patients with high MICs in a tertiary care hospital in Washington DC

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Purpose: Nosocomial Methicillin Resistant Staphylococcus aeurus (MRSA) infections are on the rise and thus resistance rates to vancomycin are also increasing (Lodise et al). The Minimum Inhibitory Concentration (MIC) creep phenomenon (more than 1.5 mg/L) has been seen in many regions worldwide and is becoming a global concern limiting the use of vancomycin and leading towards use of alternative therapies (Sakoulas et al). The objective of this study is to evaluate risk factors affecting vancomycin therapy to determine if the MIC creep phenomenon correlates with failure and applies to the region of this tertiary-care teaching hospital

Methods: This will be a retrospective case-control study conducted at a tertiary-care hospital in Washington DC. A retrospective analysis of cases which consist of patients with high MIC values will be performed to determine possible presence of risk factors for failure .Utilizing Novius, a microbiology data system, all patients above 18 years of age who had a MRSA MIC to vancomycin of at least 1 mg/L between January 1st 2010 and June 30th 2013 will be collected and evaluated to assess vancomycin failure. A uniform data collection tool will be used to review charts in order to collect data. The data collection tool will include: gender, age, source of specimen, vancomycin dose and trough levels, cirrhosis, renal function, type of infection, ICU admission and labs to evaluate clinical status of patients as a whole. Predefined criteria for failure will also be defined and will include death, persistent positive cultures, recurrence of MRSA, new or worsening symptoms or switching to new antibiotics. The data will be analyzed for descriptive statistics and conditional logistic regression. Study outcomes will be to differentiate specific risk factors associated with vancomycin failure and its corresponding MICs at our tertiary care hospital

6-265

Title: Risk assessment of bleeding complications from percutaneous renal biopsy

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Purpose: Decreased renal size has been correlated with advanced kidney disease. Kidneys with advanced disease may be at an increased risk of post-biopsy bleeding and are less likely to respond to pharmaceutical treatments. The purpose of this retrospective review is to investigate whether a combined kidney length of <20 centimeters is a risk factor for post-biopsy bleeding and to compare the incidence of treatable and untreatable renal disease processes in the small versus large kidney groups.

Methods: This is a single-center, retrospective cohort study of approximately 300 in-patients who received a percutaneous native kidney biopsy from January 1, 1990 to May 31, 2013. Data collection includes the following: age, gender, race, height, weight, body-mass index (BMI), serum albumin, systolic and diastolic blood pressure, serum creatinine, blood urea nitrogen (BUN), prothrombin time (PT), activated partial thromboplastin time (aPTT), hemoglobin, hematocrit, platelet count, kidney size, medications prior to biopsy, indication for renal biopsy, number of passes with biopsy needle, presence or absence of post-biopsy bleeding complications, post-biopsy diagnosis, and post-biopsy treatments. Chi square test will be used to compare the percent of patients who develop bleeding complications between groups. T-tests will be used to compare continuous variables, and a multivariate regression analysis will be used to determine the factors that increase or decrease risk of bleeding complications.

6-266

Title: Initiation of pharmacist-led medication reconciliation for elderly patients in the seniors emergency center

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Purpose: Maintaining and communicating accurate patient medication information through medication reconciliation is a National Patient Safety Goal. Senior patients often present to the emergency department with multiple comorbidities and medications. Obtaining accurate medication histories and communicating this information is key, especially upon admission to the hospital. The pharmacy department performs senior polypharmacy consults for patients over 65 taking 5 or more medications. The emergency department has an 81 percent reconciliation completion rate, however, 46 percent of medications documented require further clarification. Medication history and reconciliation performed by pharmacists in senior patients may increase patient safety and reduce potential adverse drug events.

Methods: Prior to beginning the study, this project will be submitted to the Institutional Review Board for approval. A retrospective review of medication reconciliation data will be performed to identify reconciliation discrepancies prior to implementation of a pharmacist's review in the seniors emergency center. This will be followed by a prospective collection of medication histories and pharmacist-performed medication reconciliation for patients 65 years or older. Following a medication history intake or reconciliation by a nurse or physician, the pharmacist will elicit a best possible medication history to identify, correct, and document medication discrepancies based upon the following criteria: incorrect medication, dose, route, or frequency, omission, or therapeutic duplication. Medication reconciliation and medication history discrepancies will be compared at baseline and after pharmacist review. Discrepancies will be categorized according to potential for adverse drug event occurrence based upon risk stratification criteria.

6-267

Title: Impact of pharmacist-led medication therapy management on readmission rates of uninsured high-risk patients

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Purpose: Patients are at high risk of being readmitted to the hospital due to medication therapy nonadherence, which may be explained by complexity of the treatment plan, incomplete understanding of directions, or inability to afford medications. Medication therapy management (MTM) is a group of services that optimize patient therapeutic objectives. MTM has a positive impact on patient outcomes, reduces total healthcare costs, increases adherence, and improves clinical endpoints. In institutions that offer MTM, pharmacists are leading service providers. Implementing a MTM service may reduce direct and indirect medical costs, increase patient satisfaction scores, and decrease readmission rates and adverse drug events.

Methods: This study will be submitted to the Institutional Review Board for approval prior to initiation. A portion of uninsured patients who are discharged from the hospital and referred to the local ambulatory clinic will be randomized into two groups. One group will receive an initial pharmacist-led MTM session, first fill of their medications prior to discharge, and weekly follow-up MTM sessions at the ambulatory clinic. The other group will not receive any MTM sessions. The following data will be collected: patient age, gender, ethnicity, past medical history, current medications, readmission rate, and adverse drug events. All data will be recorded from the electronic medical record system without patient identifiers and confidentially maintained. Readmission rates within 30 days will be tracked and statistically analyzed. Adverse drug events will be recorded, quantified, and stratified into categories. The information collected will be compared between the two groups for statistical significance.

6-268

Title: Implementation of a pharmacist managed chronic obstructive pulmonary disease (COPD) education group clinic

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Purpose: Chronic obstructive pulmonary disease (COPD) is the third leading cause of death in the United States. Inhalers are commonly used in COPD treatment. An estimated ninety percent of patients use inhalers incorrectly, and are often unaware of errors in their technique. Physical demonstration of proper use has been shown to improve technique, and repeated instruction has been shown to improve adherence. Pharmacists have a unique position as medication experts to help patients learn about COPD medications and acquire proper inhaler technique. The purpose of this project is to describe the implementation of a pharmacist managed COPD education group clinic.

Methods: An ambulatory care pharmacy resident will work with clinical pharmacy specialists in ambulatory care to pilot a pharmacist managed COPD education group clinic in a primary care setting. Patients participating in the clinic will have a documented diagnosis of COPD and a recent prescription for any COPD medication. Each group will include up to ten patients, and will meet for a series of three monthly, two hour visits. Each visit will be conducted by the pharmacy resident with the support of a clinical pharmacy specialist. Through participation in the group clinic, patients will have the opportunity to learn about COPD pathophysiology, the medications used to treat COPD, and how to recognize and manage COPD exacerbations. The benefits of smoking cessation and recommended vaccinations will also be discussed. Additionally, at every clinic visit, a pharmacist will meet with each patient individually to evaluate and correct the patient's inhaler technique. A voluntary patient survey will be administered to assess patient satisfaction and identify strengths and weaknesses of the clinic. Review by an institutional review board will not be required for this descriptive report in progress.

6-269

Title: Retrospective review of dexmedetomidine use in critically ill patients experiencing alcohol withdrawal syndrome (AWS)

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Purpose: Data from past studies has suggested dexmedetomidine may be beneficial in the management of patients with acute alcohol withdrawal syndrome. The objective of this study is to determine the safety and efficacy of DMT in managing alcohol withdrawal syndrome in patients who have been admitted to a critical care unit.

Methods: This study will be submitted to the Institutional Review Board. Study will be a retrospective review of 10 patients admitted between January 2012 and March 2013. Patients included those over the age of 18 years admitted to the medical ICU with an ICD-9/DRG code of AWS who received dexmedetomidine for a minimum of eight hours. Excluded patients included pregnant females, less than 18 years of age, dexmedetomidine received for any indication other than AWS or dexmedetomidine administration for less than eight hours. Patient data collected will include: demographics, CIWA scores, RASS scores, heart rate, blood pressure, respiratory rate, admission alcohol level, ICU/hospital length of stay, use of mechanical ventilation, duration of dexmedetomidine use, median hourly dose and cumulative daily doses of dexmedetomidine and benzodiazepines, and use of adjunct medications. Patient data will be evaluated 24 hours before and after dexmedetomidine administration. Assessments of benzodiazepine usage before and after dexmedetomidine initiation will be made during the study. The impact of dexmedetomidine on hemodynamic factors and CIWA scores will be assessed as well. Data will be analyzed using Microsoft Excel 2007 and will be collected without patient identifiers and maintained confidentially.

6-270

Title: Evaluation of nursing education and revision of regular insulin drip orders for achieving goal blood glucose levels in critical care patients at a community hospital

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Purpose: Poor glycemic control in postoperative cardiac and critically ill patients has been associated with an increase in morbidity and mortality. Blood glucose levels that are controlled at six oclock in the morning for cardiac surgery patients is one of the Joint Commissions Accountability Measures for improved patient outcomes. This study is designed to evaluate if a modified regular insulin drip order set along with education of nurses can achieve glycemic control in intensive care unit (ICU) patients. This study will analyze nursing compliance to the dosing protocol and determine if glycemic control is met using the protocol.

Methods: Education of ICU nurses on the modified regular insulin drip orders took place in August 2013. A retrospective analysis will compare patients receiving an insulin drip in the ICU prior to the order set education from March 2013 through May 2013 to patients receiving an insulin drip in the ICU from September 2013 through October 2013. The data collection will include the following information about each patient: age, weight, sex, hospital admission diagnosis, reason for ICU stay, a previous diagnosis of diabetes mellitus, home diabetes medications, concurrent use of corticosteroids or vasopressors, blood glucose readings for first 48 hours while on insulin drip, total amount of insulin received (basal rate and boluses), and nursing compliance to the dosing protocol. This study received institutional review board approval on September 3, 2013.

6-271

Title: A multi-center evaluation of inpatient carbidopa-levodopa therapy in Parkinson's Disease (PD) patients

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Purpose: Prior studies have identified specific risks in PD patients admitted to the hospital. Best practice recommendations advise that Anti-Parkinson medications be administered on the patients home schedule to maintain therapeutic blood levels and prevent PD exacerbation. Dopamine blocking agents, though commonly used in the hospital, should be avoided in these patients. The National Parkinson Foundation estimates that up to 75% of PD patients do not receive appropriate drug therapy during hospitalization. This study seeks to assess the quality of medication therapy in hospitalized PD patients receiving oral carbidopa-levodopa and its contribution to patient outcomes.

Methods: Protocol submitted and approved by Institutional Review Board prior to study commencement. Three months of oral carbidopa-levodopa administration charges from five hospitals will be captured. Retrospective chart review will determine whether included patients received carbidopa-levodopa according to their home administration schedule, as well as any anti-dopaminergic agents. Identified events will be further examined to determine whether these patients experienced any PD-related sequelae. Medication reconciliation quality will also be analyzed. A panel of pharmacists will independently assess if the identified sequelae was attributed to a deviation from the home medication schedule. The accuracy and quality of medication reconciliation will also be analyzed. Additional baseline demographic information including patient age, length of stay, presence of a consulting neurologist or gerontologist, and reason for admission will be evaluated. Primary cause for admission will be further stratified into three categories: PD-related, indirect complication of PD, and non-PD related. Co-morbid conditions, cognitive changes and sleep disorders data will be collected as these conditions place patients at a higher risk of PD exacerbation. Opportunities identified will improve medication-use practices in hospitalized PD patients.

6-272

Title: Implementation of medication rounds in a large community hospital

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Purpose: Medication rounds is a new pharmacy initiative implemented by the pharmacy staff in June 2013 to improve on patient education. Medication rounds is defined as any type of patient education provided by the pharmacist throughout the day. Pharmacists are trained in AIDET (Acknowledge, Introduce, Duration, Explanation, and Thank You) to provide effective communication with patients. In addition, each pharmacist has a goal to complete 3 medication rounds daily with patients. Implementation of medication rounds will provide opportunities for pharmacists to interact with the patients, provide medication counseling, and medication therapy management, as part of a multi-disciplinary approach.

Methods: Pharmacists who complete medication rounds document their interventions in Sentri 7, the pharmacy's Clinical Surveillance and Performance Reporting System. Sentri 7 will be utilized to identify medication rounds completed after implementation of the new pharmacy service. Data collected will be from August 2013 to December 2013. The total number of medication rounds, average number of medication rounds per pharmacist, and costs analysis will be reviewed.

6-273

Title: Implementation of an antimicrobial stewardship program in a community hospital setting

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Purpose: Antimicrobial stewardship is an important area of medicine due to increasing resistance patterns to currently available antibiotics, the limited production of new antimicrobial agents and the high cost of these agents. Guidelines have been developed to provide recommendations on forming antimicrobial stewardship programs but this is difficult to implement in a community hospital with limited resources. The goal of this project is to establish an antimicrobial stewardship program in a community hospital using its existing resources.

Methods: Looking at our hospitals current antibiotic use, we have identified ten high cost and broad spectrum antimicrobial agents that will be focused on for this project. The pharmacy resident will generate a list that identifies patients on these targeted antimicrobial agents. The pharmacy resident will then analyze the patients available cultures and susceptibility data and will consult with the infectious disease team to streamline the patients antibiotic therapy. The pharmacy will assist the infectious disease team to communicate these recommendations to the patients attending physician. All interactions with the ordering physician will be documented to assess the providers response to the antimicrobial stewardship program. Additional data collected will be the pharmacy residents interventions, outcomes of the recommendation, patient demographics, indication for antibiotic therapy, susceptibilities for the microorganisms, length of stay and cost savings, if applicable.

6-274

Title: Utilization of alteplase (Cathflo) at an academic medical center

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Purpose: Alteplase (Cathflo) is a recombinant tissue plasminogen activator indicated for the restoration of function to central venous access devices as assessed by the ability to withdraw blood. The purpose of this medication use evaluation (MUE) is to describe and assess the appropriateness of alteplase (Cathflo) utilization, administration, and dosage at our institution.

Methods: Institutional Review Board exempt approval will be requested for this quality improvement project. A report will be generated from the electronic medical record system to identify patients who received alteplase (Cathflo) from January to June 2013. The following data will be collected: patient age, gender, length of stay, number and strength (mg) of alteplase injection doses, time of administration, route of administration, and the specialty of the attending physician. If available, the number of central venous catheters billed and the indication for the use of alteplase will be gathered. A paper chart review will also be conducted to gather additional data helpful to assess the utilization of the medication. Further information will be collected through anonymously identified interviews with hospital staff members, including pharmacists, pharmacy technicians, and nurses. Data from this patient population will be reviewed by a team of pharmacists and will be used to describe and evaluate the utilization of alteplase (Cathflo) at our institution.

6-275

Title: Medication use evaluation of fosphenytoin in a community hospital

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Purpose: Fosphenytoin, a prodrug of phenytoin, is indicated for the control of generalized convulsive status epilepticus and prevention of seizures during neurosurgery when phenytoin administration is unavailable, inappropriate, or deemed less advantageous. Although multiple authors have suggested various advantages of fosphenytoin use, studies have found no significant difference in patient outcomes or tolerability between phenytoin and fosphenytoin when both are administered correctly at an appropriate rate. Furthermore, a significant cost difference exists between the two agents. Thus, the purpose of performing this medication use evaluation is to evaluate the appropriateness of fosphenytoin usage over phenytoin based on current available evidence.

Methods: A retrospective review of fosphenytoin will analyze its hospital-wide usage from September 1, 2012 to September 1, 2013. The patient sample will be collected through a generic drug search for fosphenytoin using the hospitals electronic medical record system. The evaluation will comprise at least 30 patients age 18 years or older who have received at least 1 dose of fosphenytoin. Data collected for each patient will include age, seizure history, fosphenytoin dose and duration, infusion rates, vein type, access, and gauge, and any documented past phenytoin usage that resulted in patient intolerability. Patient monitoring parameters collected will include blood pressures, electrocardiograms, respiratory rates, plasma phenytoin concentrations, serum creatinine, and albumin. Adverse reactions data collected will include hypotension (defined as a 20 percent decrease or greater in baseline systolic blood pressure from admission), arrhythmias, and any of the following if documented: purple glove syndrome, paresthesias, or pruritus. Fosphenytoin usage will be considered appropriate if patients have status epilepticus with repetitive seizing requiring loading doses via intramuscular injection, have no pre-existing central catheter and poor (i.e. smaller than atecubital fossa vein or less than 20-gauge) or no intravenous access, or have a history of pain intolerance or infusion-related adverse reactions to phenytoin.

6-276

Title: Evaluation of a therapeutic interchange from fluticasone/salmeterol to mometasone/formoterol in patients with chronic obstructive pulmonary disease

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Purpose: The objective of this study is to evaluate the impact of a therapeutic interchange from non-formulary fluticasone/salmeterol to formulary mometasone/formoterol on health outcomes in patients with chronic obstructive pulmonary disease (COPD). While evidence suggests that mometasone/formoterol may improve lung function and is well tolerated in patients with moderate to very severe COPD, it does not currently have a labeled indication for COPD. This study will provide further data regarding the use of mometasone/formoterol for this unlabeled indication and determine if there was a difference in COPD exacerbations before and after this conversion.

Methods: The Institutional Review Board has approved this retrospective cohort study in which all data will be maintained confidentially without patient identifiers. Patients who were at least 18 years old, had a COPD diagnosis, and had an active prescription for fluticasone/salmeterol that was subsequently converted to mometasone/formoterol between March 6, 2012 to March 6, 2013 will be considered for inclusion. Those on low dose fluticasone/salmeterol 100/50 mcg, for which there is no equivalent dose of mometasone/formoterol, and patients who did not have a fluticasone/salmeterol prescription for at least 6 months prior to conversion will be excluded. These criteria will be applied to 782 potential patients involved in this initiative. The investigators will retrospectively review the charts of eligible patients to determine the primary endpoint of whether there was any difference in the occurrence of any COPD exacerbation 6 months before and 6 months after conversion. Other secondary outcomes that will be assessed include whether patients experienced any difference in the occurrence of non routine clinic, urgent care, or emergency department visits; hospitalizations; or intensive care unit admissions for COPD 6 months before and 6 months after conversion. Patients will serve as their own controls to compare any differences in outcomes.

6-277

Title: Pharmacist-managed INR patient self-testing is associated with increased time in therapeutic range in patients with left ventricular assist devices at a single academic medical center

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Purpose: Patients with left ventricular assist devices (LVAD) are at increased risk of both bleeding and thrombotic complications. Warfarin therapy can be particularly challenging in these patients. Patient self-testing (PST) using point-of-care (POC) INR devices has previously been shown to yield favorable outcomes in other populations, but the use of PST in LVAD patients has not been well described. The purpose of this study was to evaluate the effectiveness of pharmacist-managed INR PST versus usual care (UC) in patients with LVADs at a single center.

Methods: We performed a retrospective cohort study of patients (in a 1:4 ratio PST vs. UC) aged 35-65 implanted with an LVAD (Heartmate II or HeartWare) treated with warfarin from 1/1/07 to 1/31/12. We reviewed all INRs and bleeding/thrombotic events in LVAD patients whose anticoagulation was managed by anticoagulation clinic pharmacists via INR PST vs. UC. We calculated a percent time in therapeutic range (%TTR) using the Rosendaal method.

Results: There were fifty-five patients studied. Most demographic data were similar between the two cohorts. However, patients in the UC group had a significantly longer ($p<0.001$) duration of warfarin therapy and less frequent INRs ($p<0.001$). Mean %TTR was significantly higher in the PST cohort vs. UC (44.4% vs. 30.6%, $p=0.026$). There were no differences in rates per patient year of bleeding events (0.23 vs. 0.33, $p=0.55$) or thrombotic events (0.12 vs. 0.13, $p=0.88$).

Conclusion: Pharmacist-managed INR PST is associated with increased %TTR in patients with LVADs. There was no difference in bleeding and thrombotic events between the two cohorts.

6-278

Title: Evaluation of sotalol renal dosing and monitoring practices at a large academic medical center

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Purpose: The purpose of this medication use evaluation was to assess adherence to the manufacturers recommendations for sotalol initiation and continuation at our institution. The primary objective was to determine the length of stay and frequency of electrocardiogram (ECG) monitoring for those initiated on sotalol and to assess adherence to renal dosing recommendations. The secondary objectives were to determine the frequency of ECG monitoring for those patients maintained on their home regimen of sotalol upon admission and to assess adherence to renal dosing recommendation for those patients maintained on their home regimen.

Methods: Adults patients admitted our institution between 09/30/2010 09/30/2012 who received at least one dose sotalol were be considered for inclusion. Patients were identified through pharmacy charge records. Individuals were excluded from our study if they were ordered sotalol but a dose was not documented as being administered in their electronic medical record. Baseline demographics (age, gender, weight, and height) were collected from the electronic patient database. Additional data collected included the patients serum creatinine on the date therapy was initiated, indication for therapy, initial sotalol dose (mg) and frequency of administration, , and frequency of ECG monitoring. For those initiated on therapy, the length of stay post sotalol initiation was determined. Appropriate ECG monitoring was defined as at least one daily ECG for those newly initiated on therapy and at least one ECG during the index admission for those continued on their home regimen. This retrospective study was approved by the local Institutional Review Board.

Results: During the study period a total of 175 patients were prescribed sotalol and were considered for inclusion. A total of 164 patients received at least one dose of therapy and were included. Of the 164 patients, 49 (29.9%) patients were initiated on sotalol during their admission, while 115 received sotalol as a continuation of previous treatment. 111 (67.7%) of patients received sotalol for atrial fibrillation, 19 (11.6%) for ventricular tachycardia, and 5 (3.00%) for atrial flutter. For those initiated on therapy, 45 (91.8%) were monitored with a daily ECG for at least 3 days and 32 (65.3%) received an appropriate dose of sotalol based on their renal function. All patients initiated on sotalol had a serum creatinine lab value on the day therapy was initiated. For the 115 continued on their home dose of sotalol, 106 (92.2%) received at least one ECG during their admission and , 44 (38.3%) received an inappropriate sotalol dose based on their renal function.

Conclusion: Renal dose adjustments for sotalol, and the importance of appropriate dose reductions, needs to be re-enforced among prescribers and pharmacists. An electronic alert was created to notify prescribers and pharmacist of these recommendations. The effectiveness of the alert will be re-evaluated in the future. The data indicated there is room for improvement in ECG monitoring after initiation and that the duration of monitoring post initiation of sotalol can be improved.

6-279

Title: Preventing the reoccurrence of chronic obstructive pulmonary disease (COPD) exacerbations through pharmacist intervention

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Purpose: COPD is the 4th leading cause of death in the United States, accounting for 1.5 million emergency department visits and 700,000 hospitalizations annually. COPD is associated with a significant economic burden and results in the greatest proportion of total COPD burden on the healthcare system. COPD is considered one of the top 5 diseases that contribute to hospital readmissions. A large percentage of unplanned rehospitalizations appear to be related to poorly coordinated transition of care. Pharmacists may help reduce readmissions related to COPD exacerbations by proper counseling and being a crucial part in the transition of care before discharge.

Methods: A prospective study will be performed and will be sent to the Institutional Review Board for full review in October. The study will encompass pharmacists being integrated in the transition of care of high-risk COPD patients before discharge from the hospital. Before the patient gets discharged, a pharmacist will offer to counsel the patient. The pharmacist tasks will be to review all of the medications that pertain to COPD to make sure everything is correct and based on the GOLD Guidelines of COPD. Also, the pharmacist will help counsel the patients on proper use of the medications, especially with the inhalers that cause the most problems in COPD patients. After discharge, the pharmacist will follow up with the patients biweekly throughout the month on the patients overall health status. The patient will be able to call the pharmacy at any time outside the biweekly meetings if they have any questions or concerns. Study will compare readmission rates between patients who receive counseling and others who did not. The primary objective is to reduce the overall 30-day readmission rate of recurrent COPD exacerbations. The secondary objective is to prevent adverse drug events for patients who are taking COPD medications.

6-280

Title: Transitions of care model for skilled nursing facility patients: following patients all the way home

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Purpose: Initiatives promoting safe medication use are lacking for patients transitioning from a skilled nursing facility (SNF) to home. The purpose of this study is to initiate and assess a Transitions of Care Model to meet the medication related needs of patients discharging from a SNF to home. The primary objective is to evaluate the Models impact on hospitalizations, emergency department usage, and primary care provider (PCP) follow up thirty days after SNF discharge. Additionally, drug therapy problems (DTPs) in the SNF patient population prior to discharge and once the patient has transitioned home will be identified.

Methods: Institutional Review Board approval has been obtained from one of the two institutions involved in this study. Approval from the second institution is pending. The Model involves a pharmacist reconciling medications and providing medication therapy management (MTM) to patients prior to their discharge from the SNF. Collaborating with SNF providers, the pharmacist ensures that all discharge medications are appropriate. One week after SNF discharge, the pharmacist provides in home MTM to ensure a safe transition from SNF to home and to facilitate follow up with PCPs. The effectiveness of the Model will be evaluated by comparing emergency room visit and hospitalization rates within 30 days of SNF discharge and primary care provider (PCP) follow up rates between those patients who receive care from the Model and a comparison group selected to control for clinical comorbidities. DTPs from these interventions will be assessed retrospectively and categorized by type (indication, safety, efficacy, or compliance). Patient confidentiality will be maintained and all identifying information will be removed.

6-281

Title: Evaluation of a multidisciplinary effort at reducing chemotherapy surface exposure

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Purpose: Although the Occupational Safety and Health Administration (OSHA) has not established permissible exposure limits for specific chemotherapy agents, alerts and guidelines have been issued for handling chemotherapy drugs. The OSHA advises that exposures should be controlled to the lowest achievable levels. The purpose of this study is to evaluate the effectiveness of a multimodal approach in reducing chemotherapy surface contamination.

Methods: Chemotherapy surface sampling was completed in the pharmacy, ambulatory infusion center and in the oncology units of the hospital on October 29, 2012 to measure potential employee exposures to chemotherapy drugs. Samples were analyzed for the chemotherapy agents, paclitaxel, fluorouracil, oxaliplatin and cisplatin. An interdisciplinary team worked to establish a multifaceted approach to address the concerns highlighted in the first report. This included a new cleaning procedure and implementation of a closed system transfer device. A reevaluation of surface contamination is scheduled for collection in November 2013. This study is exempt because it does not involve human research participants.

6-282

Title: Retrospective evaluation of the timing and administration of carbidopa-levodopa to patients with Parkinson's disease during transitions of care between home and hospital

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Purpose: Carbidopa-levodopa is a first line medication for the treatment of Parkinson's disease. It is critical to maintain consistency in daily dosing and administration times to prevent fluctuations in motor symptoms. During transitions of care from home to hospital stay, there is a high potential for errors in the administration of carbidopa-levodopa, exposure to inappropriate antipsychotics and/or antinausea medications that adversely affect Parkinson's disease, and patient distress. The objective of this study is to review antipsychotics and antinausea medications prescribed to patients with Parkinson's disease and evaluate the timing and administering of carbidopa-levodopa when these patients are admitted to the hospital.

Methods: This study constitutes quality improvement only and is exempt from IRB review. The electronic medical record system will identify patients admitted to the hospital from June-August 2013. Only patients with carbidopa-levodopa on the prior to admission medication list and a diagnosis of Parkinson's disease will be evaluated. The following background data will be collected: age, gender, and time and date of admission. Notes will be reviewed to determine which profession, if any, performed medication reconciliation upon admission and to find the outpatient carbidopa-levodopa tablet strength, dose, form, frequency, and specific administration times. The medication administration record will be examined for inconsistencies between the prior to admission and inpatient carbidopa-levodopa orders and for any discrepancies in administration time from the inpatient medication order. Other documentation will include if a neurology consult was ordered, the presence of adverse events such as confusion or motor fluctuations, and if antinausea and antipsychotic medications were administered during the hospital stay. Data collected will be stored on a secure file to protect patient confidentiality. Average time of medication administration discrepancy and order verification error rate will be calculated. Patient outcomes and the number of antipsychotics and antinausea medications prescribed per patient will be identified and tallied.

6-283

Title: Implementation of procalcitonin testing and the effects on antibacterial prescribing patterns in medical intensive care unit (MICU) patients

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Purpose: Unnecessary use of antibiotics leads to increased antibiotic resistance, cost, and adverse effects. Procalcitonin is a biologic marker which has been shown to be a potential indicator of bacterial infections. Increased levels are detectable within two to four hours and have a half life of about 24 hours, providing a real time indicator of infection progression. Evaluation of procalcitonin levels may provide guidance in discontinuing antibiotics in patients with suspected bacterial infections. The goal for data collection is to assess whether antibiotic usage in the MICU decreased or remained unchanged after implementation of procalcitonin labs.

Methods: This project was designated as a quality improvement study by the Institutional Review Board and therefore exempt from formal review. Serial procalcitonin levels will be obtained for patients suspected of having a bacterial infection who are initiated on antibiotics. These levels will be used to assist with decisions regarding continuation of antibiotic therapy. The MICU team will address procalcitonin labs and subsequent antibiotic decisions daily. Patients excluded from this project include: patients with a proven bacterial infection, patients not suspected of a bacterial infection, patients receiving antibiotics for 24 hours prior to procalcitonin lab draw, and patients with conditions known to cause elevated procalcitonin levels. Data will be collected one year prospectively and one year retrospectively from implementation of procalcitonin monitoring. Primary outcomes include the change in average number of days per patient on oral or intravenous antibiotic therapy and change in average patient MICU length of stay. Secondary outcomes include the change in average patient hospital length of stay, change in antibiotic duration for specific antibiotic indications, change in antibiotic class usage, change in time to intravenous to oral switch, and a cost analysis.

6-285

Title: Differences in the prevalence of health service deficits among US and Canadian adults with at least one chronic illness (COPD, asthma, arthritis, and/or diabetes)

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Purpose: With the implementation of the Affordable Care Act in the US, we hypothesize there will be a reduction in health service deficits (HSDs) among those covered. HSDs are defined as no routine medical exam, primary care provider, health insurance, and/or deference of medical care because of cost, within the past year. Canada has provided elements of universal health insurance since the early 1950s. In the US, Medicare is the sole universal health insurance and is routinely available only to adults >65 years. This study compared the prevalence of HSDs among US and Canadian adults with at least one chronic illness.

Methods: The research question for this study was: Are there differences between the US and Canada in the prevalence of HSD for adults (>18 years of age) with at least one of the chronic illnesses of COPD, asthma, arthritis, and/or diabetes? Bivariate and multivariate techniques were used to answer the research question by analyzing 2010 Behavioral Risk Factor Surveillance System (BRFSS) and 2010 Canadian Community Health Survey (CCHS) data. BRFSS and CCHS are population-based surveillance systems. These telephone-based survey systems collect information from non-institutionalized respondents on demographics, health risk behaviors, preventive health practices, and health care access primarily related to chronic disease and injury. BRFSS includes only adults (>18 years of age), whereas CCHS includes those >12 years of age. Both BRFSS and CCHS are constituted of core questions that must be asked of every survey participant and optional modules that may be chosen by individual states or provinces and asked only of the survey respondents from the participating jurisdictions. These surveys use complex multi-stage sampling approaches and subsequently a weighting factor is calculated for application to the data in order to ensure that they are representative of their respective populations.

Results: The study population: US and Canadian adults with specified chronic conditions The dependent variable: Health Service Deficits (no routine medical exam, no primary care provider, no health insurance, and/or a deference of medical care because of cost, all within the last 12 months) The covariates or independent variables: Chronic disease index (diabetes, arthritis, asthma, COPD) Race/Ethnicity Sex Age Geographic locale (rural vs. non-rural) Household income Education attainment Self-reported health status Immigrant status Employment status

6-286

Title: Cross-sectional study examining differences in the prevalence of depression as measured by PHQ-8 between rural and non-rural US military veterans

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Purpose: There is a documented increase in depression and suicide among US military veterans. Higher proportions of military veterans have come from rural communities than non-rural ones. Involvement in multiple wars over the past decade has increased the number of returning war veterans. Access to care can be a problem for military veterans, especially those in rural communities. The Veterans Administration has expanded rural services; however, this has not led to increased service utilization. This study examined the prevalence of depression and associated health service deficits (HSDs) for rural versus non-rural US military veterans.

Methods: HSDs, an evolving concept, is a computed variable composed of the following: no routine medical exam, primary care provider, health insurance, and/or deference of medical care because of cost, within the past year. The presence of current depressive symptoms was measured using the PHQ-8, while lifetime depression was measured by respondents answer to the following question: has a doctor or other health care provider ever told you that you have a depressive disorder? These variables were essential to answer the research question. Bivariate and multivariate techniques were used to analyze 2006 Behavioral Risk Factor Surveillance System (BRFSS) data. BRFSS is a population-based telephone surveillance system that collects information from non-institutionalized adult respondents on demographics, health risk behaviors, preventive health practices, and health care access primarily related to chronic disease and injury. BRFSS is constituted of core questions that must be asked of every survey participant and optional modules that may be chosen by individual states and asked only of the survey respondents from the participating jurisdictions. BRFFS uses complex multi-stage sampling approaches and subsequently a weighting factor is calculated for application to the data in order to ensure that they are a representative sample of the US population.

Results: The study population: US military veterans (>18 years of age). The dependent variable: Depression as measured by PHQ-8. The covariates or independent variables: geographic locale (rural vs. non-rural), sex, age, race/ethnicity, socioeconomic status (SES), health service deficits (HSDs), employment status, and marital status.

6-287

Title: Vancomycin medication use evaluation in two Minnesota community hospitals

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Purpose: Effectiveness of vancomycin in treating susceptible bacterial infections is highly dependent on achievement of therapeutic drug concentrations in a patients plasma. Institutions typically have unique protocols for initiating vancomycin in patients, but no single method has been shown to be clearly superior over any other. The objective of this study is to evaluate the dosing patterns of vancomycin in two community hospitals to determine if current dosing conforms to the institutions vancomycin policy, to see if these practices are providing therapeutic trough plasma concentrations, and evaluate if the vancomycin policy needs to be modified to ensure adequate vancomycin troughs.

Methods: This study will be submitted to the Institutional Review Board for expedited review. The electronic medical record system will be used to find all patients who received at least one dose of vancomycin and had at least one plasma concentration measured between April 1st and June 30th, 2013. Information obtained will include patient age, height, weight, serum creatinine, vancomycin dose and frequency, plasma concentration, indication for antibiotics, and goal trough range. The entire population will be evaluated for conformity to the vancomycin policy with regards to initial maintenance dose selection based on actual or dosing body weight. A subset of this population will then be evaluated to determine if regimens based on the institutions policy were more likely to provide therapeutic trough concentrations than alternative regimens that were outside of the recommendations of the policy.

6-288

Title: Retrospective review of intravenous acetaminophen utilization at Abbott Northwestern Hospital

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Purpose: Intravenous acetaminophen use is a controversial topic within Abbott Northwestern Hospital due to the lack of data surrounding efficacy, appropriateness, and cost. Often it is ordered despite the patients ability to utilize other routes of administration and formulations that might be significantly less expensive for both patient and hospital alike, and with less risk associated. The objective of this review is to assess IV acetaminophen utilization, and to determine if the use is associated with better patient satisfaction scores and less opiate medications utilized.

Methods: Given the retrospective quality assurance nature of this analysis, it will be exempted from institutional review board approval. The health systems electronic medical record will be used to identify patients who received intravenous acetaminophen between the time period of January 1st, 2013 and August 31st, 2013. The following data will be collected: patient age, gender, height, weight, documented IV acetaminophen administration, duration of therapy, timing of IV to PO transition, patient satisfaction scores, pain scores (if available), concomitant opiate use, any documented respiratory depression events and if naloxone was administered, and the current dietary status. All data will be recorded without patient identifiers and maintained confidentially. Collected data will be assessed to determine if IV acetaminophen is appropriately used at Abbott Northwestern Hospital, and if it does lead to higher patient satisfaction scores and less opiate usage.

6-289

Title: Differences in the prevalence of appropriate prescribing of IDSA recommended antibiotics for the empiric treatment of Staphylococcus aureus infection in US rural versus non-rural adults

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Purpose: Inappropriate prescribing of antibiotics for the empiric treatment of Staphylococcus aureus (SA) can be problematic for many reasons. Identifying the appropriate empiric treatment may include following the Infectious Disease Society of America (IDSA) guidelines. Additionally, recent research has demonstrated disparities in health and health care between rural and non-rural residents in the US. This study examined the differences in prescribing patterns for rural versus non-rural patients for the empiric treatment of infections likely caused by SA. The results of this study fill an important epidemiological knowledge gap that could provide guidance to both the practice of medicine and public health.

Methods: To answer the research question a cross-sectional analysis was completed using 2010 National Ambulatory Medical Care Survey (NAMCS) data. NAMCS is a national survey designed to collect objective, reliable information about the provision and use of ambulatory medical care services in the United States. The data are collected from a sample of visits to non-federally employed office-based physicians who are primarily engaged in direct patient care. Data are collected from physicians, rather than from patients. Each physician is randomly assigned to a one-week reporting period. During this period, data for a systematic, random sample of visits are recorded by the physician or office staff on an encounter form provided for that purpose. Data are obtained on patients' symptoms, physicians' diagnoses, and medications ordered or provided. The survey also collects data on demographic characteristics of patients. In our analysis, SA was considered to be the likely causative organism in diagnoses of a variety of skin and soft tissue infections (SSTI) broken down by ICD-9 codes.

Results: The study population: US adults (>18 years of age) treated for a probable SA infection. The dependent variable: Appropriate prescribing of IDSA recommended antibiotics for empiric treatment of a SA infection. The covariates or independent variables: geographic locale (rural vs. non-rural, sex, age, race/ethnicity, median annual household income (of patient zip code), education attainment (average in patient zip code), insurance status, and provider type.

6-290

Title: Impact of a pharmacist run metabolic clinic in patients with serious mental illness

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Purpose: Patients with serious mental illness (SMI) have increased cardiovascular risk and decreased life expectancy compared to the general patient population. Second generation antipsychotics and mood stabilizers are often first line therapy in patients with SMI. However, the use of these medications may result in metabolic complications. According to the literature, monitoring and treatment of these complications has historically been poor, resulting in a decreased quality of care and poor treatment outcomes for this patient population. The purpose of this project is to facilitate appropriate monitoring and treatment of metabolic syndrome in patients with SMI.

Methods: This project was submitted to the Institutional Review Board for approval as a quality improvement project. A report will be used to identify SMI patients receiving second generation antipsychotics or mood stabilizers who also meet one or more criteria for metabolic syndrome as defined by the American Heart Association. The pharmacists will be responsible for ensuring appropriate laboratory monitoring, medication management, and counseling on nonpharmacologic lifestyle interventions regarding metabolic syndrome. Patients will be managed in accordance with Adult Treatment Panel III; the Consensus Statement on Antipsychotic Drugs and Obesity and Diabetes drafted jointly by the American Diabetes Association and the American Psychiatric Association; Veterans Affairs and Department of Defense guidelines; and primary care physician input. Baseline data will include demographics, hemoglobin A1c, blood pressure, lipid panel, and weight. Measured quality improvement outcomes will include number of medication interventions, intrapatient changes in components of metabolic syndrome, and provider satisfaction.

6-291

Title: Propofol and dexmedetomidine for sedation in adult intensive care unit (ICU) patients: medication use evaluation

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Purpose: The 2012 Clinical Practice Guidelines for the Management of Pain, Agitation, and Delirium in Adult Patients in the Intensive Care Unit discusses appropriate use of propofol and dexmedetomidine for sedation. The objective of this study was to determine our hospitals compliance with guideline recommendations and to identify opportunities for improvement, specifically related to dosing recommendations, duration of therapy, monitoring, and adverse effects. In addition, the cost of therapy for propofol and dexmedetomidine will be evaluated and compared.

Methods: This study will be submitted to the Institutional Review Board for approval. Data from the hospitals electronic medical record system, Epic, will be used to identify adult ICU patients who received propofol or dexmedetomidine for sedation with or without mechanical ventilation during June and July 2013. Patients receiving concomitant paralytics and/or boluses of propofol or dexmedetomidine for procedural conscious sedation were excluded. The following data will be collected for both agents: indication for sedation, initial and maximum infusion rates, duration of therapy, and number of sedation vacations attempted prior to extubation. If available, laboratory results for triglyceride levels and anion gap measurements will be collected for propofol infusions and the value recorded if outside the upper limit of normal. Any history of alcohol or drug abuse, and the concomitant use of analgesics and/or benzodiazepines will be collected. A cost analysis for propofol and dexmedetomidine will be performed through multiplying the cost per unit for each agent by the number of new bags administered. All data will be recorded without the use of patient identifiers and maintained confidentially. Data collected will be compared to the guideline recommendations to determine our hospitals compliance with the 2012 Clinical Practice Guidelines.

6-292

Title: Differences in the prevalence of health service deficits among US adults with at least one chronic illness the decade before and after Medicare eligibility

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Purpose: With implementation of the Affordable Care Act in the US, we hypothesize a reduction in health service deficits (HSDs) would occur among those covered. HSDs are defined as no routine medical exam, primary care provider, health insurance, and/or deference of medical care because of cost, within the past year. In the US, Medicare is the sole universal health insurance and is routinely available only to adults >65 years. This study sought to determine differences in the prevalence of HSDs in US adults with at least one chronic illness (COPD, asthma, arthritis, and/or diabetes) the decade before and after Medicare eligibility.

Methods: To test the hypothesis, we chose to use the US Medicare population as a proxy for a universally insured population. Two cohorts were established for analytic purposes. The age range for the first cohort was 55 through 64 years while the second cohort was 65 through 74 years. 2011 Behavioral Risk Factor Surveillance System (BRFSS) data were analyzed using bivariate and multivariate techniques. BRFSS is a population-based telephone surveillance system that collects information from non-institutionalized adult respondents on demographics, health risk behaviors, preventive health practices, and health care access primarily related to chronic disease and injury. BRFSS is constituted of core questions that must be asked of every survey participant and optional modules that may be chosen by individual states and asked only of the survey respondents from the participating jurisdictions. BRFFS uses complex multi-stage sampling approaches and subsequently a weighting factor is calculated for application to the data in order to ensure that they are a representative sample of the US population.

Results: The study population: US adults 55-74 years of age with at least one chronic illness (COPD, asthma, arthritis, and/or diabetes). The dependent variable: Health Service Deficits (no routine medical exam, no primary care provider, no health insurance, and/or a deference of medical care because of cost, all within the last 12 months). The covariates or independent variables: geographic locale (rural vs. non-rural), sex, age, race/ethnicity, socioeconomic status (SES), and chronic disease index (diabetes, asthma, arthritis, COPD).

6-293

Title: Fibrate use in an ambulatory care setting: a patient centric approach to deprescribing of potentially inappropriate use of fibrate therapy

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Purpose: Pharmacological treatment of moderate hypertriglyceridemia to prevent cardiovascular events or pancreatitis is not supported with direct evidence. Addition of a fibrate to statin therapy to lower triglyceride levels has not been proven to be beneficial. When deprescribing medications, a patient centric process should be used involving collaboration and continued monitoring and review, while paralleling the prescribing process. The objective of this project is to measure the percent reduction of inappropriately prescribed fibrates.

Methods: This project was submitted to the Institutional Review Board for approval as quality improvement. Patients will be identified as receiving fibrate medications from both a rural and urban panel of patients. The following data was collected: lipid lowering medications; most recent low density lipoprotein (LDL) cholesterol, high density lipoprotein cholesterol, and triglyceride level; diabetes diagnosis; and history of pancreatitis. Pharmacy and Therapeutics approved local criteria for use for fibrates will be presented to the interdisciplinary clinic teams. An independent pharmacist scope of practice will be utilized to deprescribe inappropriate fibrates. Follow up visits will be conducted at six to eight weeks after deprescribing with analysis of fasting lipid panel. Care referrals will be made as needed. The primary end point will be percent reduction of fibrate use in each clinic panel. Secondary end points will include patient satisfaction, changes in triglycerides and LDL, and change or addition of statin therapy.

6-294

Title: Retrospective review of dexmedetomidine use for the treatment of delirium in neurological intensive care unit patients

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Purpose: The American College of Critical Care Medicine guidelines provide recommendations for the prevention and treatment of delirium. However, there is inconclusive evidence surrounding the use of dexmedetomidine over other agents for the prevention and treatment of delirium in adult intensive care unit (ICU) patients. The objective of this review is to evaluate the use of dexmedetomidine in delirium on an adult neurological ICU.

Methods: Given the retrospective quality assurance nature of this analysis, it will be exempt from institutional review board approval. The health systems electronic medical record system will be used to identify patients who were admitted to the neurological ICU from January 2013 to July 2013, received continuous infusion dexmedetomidine, and were diagnosed with delirium. The following data will be collected: patient age, gender, height, weight, primary diagnosis upon ICU admission, length of ICU stay, total ventilator days, maximum daily dose and dosing range of dexmedetomidine, and use of vasopressors. Collected data will be analyzed to determine if there is a clinical use for dexmedetomidine in the prevention and/or treatment of delirium in an adult ICU.

6-295

Title: Retrospective review of piperacillin/tazobactam usage at Abbott Northwestern Hospital

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Purpose: Compared to 2012, piperacillin/tazobactam usage at Abbott Northwestern Hospital increased by 22% through August 2013. The use of broad-spectrum antibiotics such as piperacillin/tazobactam has been associated with the development of resistant organisms, higher rates of Clostridium difficile infections, and increased healthcare costs. Several guidelines published by the Infectious Disease Society of America (IDSA) provide recommendations for appropriate uses of piperacillin/tazobactam. The objective of this review is to determine if current prescribing of piperacillin/tazobactam is consistent with these guidelines.

Methods: Prior to data collection, this review was submitted to the institutional review board. The electronic medical record of this institution will be used to identify patients who have received piperacillin/tazobactam during January August 2013. Criteria for appropriate piperacillin/tazobactam usage will be written based on current IDSA practice guidelines and be approved by the hospitals infectious diseases (ID) physicians. The following data will be collected: age, gender, antibiotic indication, culture results and sensitivities, whether criteria were met and which, intensive care unit (ICU) or non-ICU, whether ID provider is consulted, provider type and service ordering the medication, duration of use, allergies to antibiotics, whether an order set was used and which one, and whether the antibiotic was started in the emergency department. Patients who only receive a single dose will be excluded from analysis. All data will be recorded without patient identifiers and maintained confidentially. Collected data will be assessed to determine if prescribers are appropriately selecting piperacillin/tazobactam based on current IDSA guidelines.

6-296

Title: Evaluation of nurse driven medication indication and side effect teaching during medication administration

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Purpose: Patient education on medication indications and possible side effects is a critical component to patient care during hospitalization. Patients who understand medication indications are more likely to continue to take them correctly once they are discharged from the hospital. The objective of this study is to evaluate the effectiveness of nurse driven bedside medication indication and side effect teaching.

Methods: In an effort to enhance and formalize medication indication and side effect teaching, a 6-month pilot was initiated on several units of a level-one trauma center and affiliated community hospital. Following bedside barcode scanning, nurses are prompted with a scripted alert within EPIC indicating the drug name, indication, and common side effects that is triggered every 48 hours a medication is administered. The scripted alert includes over 30 classes of medications and was developed by pharmacists based on the medication class. The alert states: "This is your medication (A), it is for (B). Possible side effects include (X, Y, and Z). Would you like to receive additional information on this medication?" The primary objective of the study is an evaluation of changes seen in HCAHPS scores related to medications administered in the hospital. Secondary outcomes include an assessment of patients baseline knowledge about medications taken prior to admission and nursing survey results related to satisfaction and education. This study has been submitted to the North Memorial Medical Center Institutional Review Board for approval.

6-297

Title: Performance of pharmacy vancomycin dosing before and after pharmacokinetics guideline revision

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Purpose: Within our institution, vancomycin is one of the most common medications that the pharmacy department is responsible for dosing and monitoring. The primary objective of this study is to evaluate the performance of the pharmacy department in dosing vancomycin prior to updating the institutions current vancomycin pharmacokinetics guideline and to re-evaluate performance after updating the current guideline to reflect improvements identified by pre-update data and current literature. The secondary objectives of this study are to evaluate vancomycin dosing in specific patient populations including obesity, renal impairment, elderly with normal renal function, younger patients, and average adult patients.

Methods: This study will be submitted to our Institutional Review Board for approval and is a retrospective cohort analysis of adult patients within our institution that received IV vancomycin dosed by a pharmacist from March 2011 through April 2013 and have at least one vancomycin serum trough level. An information-technology report from the electronic medical record will be used to generate a list of patients for the pre- and post-update comparison. The frequency of first trough concentrations that achieve our institution's goal of 10-15 mcg/ml will be used to compare pharmacy dosing of vancomycin in adult patients before and after updating the vancomycin guideline. Further subgroup analysis will be performed to evaluate dosing performance in specific patient populations before and after guideline revisions. The same endpoint, frequency of first therapeutic trough concentrations within goal, will be utilized to evaluate dosing in obese patients (body mass index greater than or equal to 30), elderly with normal kidney function (age greater than 65 and serum creatinine less than 1.2 mg/dL), young patients (age 18-30 years), patients with impaired renal function (creatinine clearance less than 40 ml/min), and average, non-obese adult patients less than 50 years old with serum creatinine less than 1.2 mg/dL.

6-298

Title: Evaluation of the appropriateness of ertapenem usage at a large Minneapolis hospital

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Purpose: Ertapenem is a broad-spectrum antibacterial agent commonly used as empiric therapy in hospitalized patients. This drug effectively treats infections caused by gram-negative, extended spectrum beta-lactamase (ESBL)-producing organisms, but lacks activity against potentially dangerous organisms such as Pseudomonas aeruginosa and methicillin-resistant Staphylococcus aureus. Given its lack of coverage of these primarily nosocomial organisms, ertapenem is not always an appropriate antibiotic choice when broad-spectrum coverage is needed for empiric therapy. The purpose of this study is to evaluate whether or not the use of ertapenem falls within defined appropriate-use criteria in a large metropolitan hospital.

Methods: Due to the quality assurance nature of this study and the retrospective data collection, it will be exempted from institutional review board approval. Using the facility's electronic medical record, patients who received ertapenem during their hospitalization between March and August 2013 will be randomly selected. Specific data points that will be collected for each patient include: age, gender, intensive care unit (ICU) or non-ICU, whether an infectious diseases (ID) provider was consulted and who, provider type and service ordering ertapenem, indication, culture results and susceptibilities, history of infection with an ESBL-producing organism, antibiotic use within 90 days prior to admission for infection, antibiotic allergies and allergic response, and duration of ertapenem therapy for both inpatient and outpatient use. Data gathered will then be used to evaluate appropriate use of ertapenem based on a defined set of criteria developed in conjunction with the facility's ID providers using current practice guidelines, such as those developed by the Infectious Diseases Society of America (IDSA).

6-299

Title: Retrospective assessment of guideline-based dosing practices in heart failure patients seen in an outpatient heart and vascular center

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Purpose: Several clinical trials have proven that select doses of angiotensin-converting enzyme inhibitors (ACEI), angiotensin receptor blockers (ARB), and beta receptor blockers (BB) decrease mortality in patients with heart failure (HF). Thus, the American College of Cardiology Foundation along with the American Heart Association have recommended, in the 2013 guidelines for the management of heart failure, that goal doses of ACEIs, ARBs, and BBs should be met, if possible. This study aims to determine what percentage of a sample group of patients with HF are meeting the goal doses and to evaluate the medical reasons why the goals are not met.

Methods: This study is exempt from review by the Institutional Review Board because it does not meet the definition of research under the applicable human subjects protections regulations. The population to be studied will include men and women with HF treated in the outpatient setting. The electronic medical record will be utilized to identify HF patients seen in the Heart and Vascular Center, with a goal number of 200 patients to be studied. A chart review will be completed for each patient with the following data to be collected: patient age, gender, study medications currently being taken, renal function, stage and class of heart failure, ejection fraction, blood pressure, pulse, documented signs of intolerance to a study medication such as decrease in renal function, heart rate, hypotension including orthostatic hypotension, dyspnea including paroxysmal nocturnal dyspnea (PND), and edema, dates of dosage changes of study medications and whether or not adjustment was tolerated as per charting. Data will then be reviewed by a team of pharmacists and physicians. The number of patients at the goal dose for each study medication will be summated and then divided by the total number of patients taking that medication to find the percentage at goal.

6-300

Title: Evaluation of intravenous fosphenytoin monitoring in trauma and surgical patients

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Purpose: The purpose of this study is to describe current practice and evaluate the utility of post load phenytoin level monitoring in patients in trauma or surgical care units when intravenous fosphenytoin is used to initiate therapy as a loading dose. Secondary outcomes include evaluating the number of post load phenytoin levels ordered and the number within therapeutic range; effect of post load phenytoin levels on maintenance regimens; effect of indication, age, and weight on post load phenytoin serum levels; timeliness of laboratory evaluation; incidence of adverse effects with intravenous fosphenytoin; and cost of post load phenytoin serum monitoring.

Methods: All clinical research represented in the abstract is approved by the Institutional Review Board at the Minneapolis Medical Research Foundation. The institutions electronic medical record system will be used to identify patients in trauma or surgical care areas who have received at least one loading dose of intravenous fosphenytoin between May 1st, 2013 and August 30th, 2013. The trauma and surgical care areas include the emergency department, surgery/trauma/neurology units, and surgical intensive care units. Patients who received oral phenytoin, intravenous phenytoin, or intravenous fosphenytoin outside the specified timeframe will be excluded from review. The following data will be collected on the aforementioned patients: age, gender, height, weight, diagnoses, concurrent medications, fosphenytoin dose, indication for use, access for medication administration, timing and dosages of subsequent fosphenytoin doses, serum phenytoin concentration, free fraction phenytoin serum values, albumin studies, and adverse effect reports of fosphenytoin. Patient confidentiality will be maintained and all identifying information will be removed.

6-301

Title: Experience with three percent hypertonic saline for the management of sodium level in head injury or hemorrhagic stroke.

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Purpose: The use of hypertonic saline in the management of increased intracranial pressure (ICP) after neurologic injury is fast becoming the standard of care yet its use has challenges to consider. Infusion titration based on goal sodium levels is not well-defined. In addition, hypertonic saline is a high-risk drug associated with increased risk for adverse effects (e.g. thrombophlebitis, hypernatremia, acid-base abnormalities). There is currently no protocol for the use of three percent hypertonic saline at our institution. We therefore set out to safely use three percent hypertonic saline in our institution through implementation of a protocol.

Methods: The primary objective of this study is to review the use of three percent hypertonic saline and develop a protocol for monitoring serum sodium levels and adjusting the rates of infusion appropriately based on the levels. This study will be submitted to the Institutional Review Board for approval. Data will be reviewed retrospectively using our electronic medical record. All patients who received three percent hypertonic saline from July 1, 2012 to July 31, 2013 will be analyzed. Patients receiving three percent hypertonic saline for non-neurologic injury will be excluded. The charts of these patients will be reviewed for the rate of infusion, duration of infusion, indication for use, target serum sodium level, frequency of monitoring of the sodium levels and any signs of adverse effects. The results of this study in combination with other published literature will be used to develop a protocol for attaining goal serum sodium levels for ICP management using three percent hypertonic saline.

6-302

Title: Effectiveness of a pharmacist led hypnotic medication taper in conjunction with cognitive behavioral therapy for insomnia (CBTI) in primary care patients

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Purpose: Hypnotics have demonstrated effectiveness in treating insomnia, but are known to cause a number of adverse effects and their long term safety and efficacy is not well studied. A significant body of evidence suggests that CBTI is an effective treatment for insomnia and that improvements in sleep are maintained over time. The objective of this investigation is to measure the effectiveness of a multidisciplinary approach to treating insomnia in reducing hypnotic use and improving sleep quality.

Methods: This project will be submitted to the Institutional Review Board for approval. The electronic medical record will provide information on the prevalence of long term hypnotic use. Hypnotic use in this investigation will refer exclusively to temazepam, zolpidem, zolpidem extended release, eszopiclone, and zaleplon. Patients who meet criteria for long term hypnotic use with no documented history of CBTI in the past two years will be targeted for evaluation in our investigation. CBTI sessions will consist of three, 90 minute weekly group sessions with a psychologist. CBTI sessions will be consistent with previously validated methods to include sleep restriction, stimulus control, relaxation, cognitive strategies, and education about sleep hygiene. Efforts to target medication tapering will be made at the conclusion of CBTI. The primary outcome will be amount of hypnotic use, measured by prescription fills and pill counts. The secondary outcome will be sleep quality, measured by using the insomnia severity index.

6-303

Title: Implementing a pilot multidisciplinary bundle for the treatment of diabetic foot infections (DFI) in the emergency department (ED)

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Purpose: DFIs remain a major cause of morbidity and mortality with lower extremity amputations resulting in poorer quality of life, increased medical costs, and increased 5-year mortality. Recent Infectious Disease Society of America (IDSA) guidelines recommend a multi-faceted approach to the management of DFI. This study will develop and implement a multidisciplinary bundle for ED practitioners which address the overall management of DFI patients. The primary outcome is to assess compliance with bundle components before and after development and education. Secondary outcomes will look at the impact of the care bundle on hospital length of stay and 30 day readmission rates.

Methods: This study will be submitted to the Investigational Review Board for approval. A DFI bundle will be developed for ED practitioners to utilize in prescribing therapy for patients presenting with DFI. The bundle will consist of: (1) appropriate empiric antibiotic therapy, (2) debridement, (3) culture sampling, (4) consultation, and (5) wound care. After development of the bundle education to the emergency department staff will be performed. Data collection will compare two cohorts: patients with DFI before and after implementation and education of the bundle. Patients included in the study will be those with an ICD-9 diagnosis of diabetes and the documented presence of new or existing foot infections. Exclusion criteria are age less than 18 years, patients receiving antibiotic therapy for other disease states, and/or patients with documented sources of infection other than DFI. Data collection will include: patient demographics, comorbid conditions, antibiotic therapy, allergies, surgical intervention, microbiological data, consultations entered, and wound care. The key metrics analyzed will be the rate of compliance to the individual components of the bundle and the impact of this on secondary outcomes.

6-304

Title: Continuity of antibiotic prescribing patterns between the emergency department and inpatient care units in patients with community acquired and health care associated pneumonia

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Purpose: Optimization of antibiotic prescribing patterns has been shown to elicit a beneficial effect on the emergence of resistant bacterial strains and may lead to decreased hospital costs. The purpose of this study is to compare antibiotic prescribing habits of emergency room physicians to prescribing habits of inpatient admitting physicians across the continuum of care for patients who are empirically treated for pneumonia. By evaluating differences in prescribing patterns, the goal of this study is to further improve antibiotic stewardship through streamlining new order sets and promoting physician education that is consistent with current antibacterial guidelines for patients diagnosed with pneumonia.

Methods: This study is awaiting institutional review board approval, and will be performed at Essentia Health St. Josephs Medical Center, a 162-bed community based hospital. This study will be conducted using both retrospective and prospective patient data obtained through the hospitals electronic database. Those who are eligible for this study include patients who are prescribed antibiotics in both the emergency department and on the inpatient care units, who also have a diagnosis of pneumonia, including hospital or health system acquired pneumonia, community acquired pneumonia, and aspiration pneumonia. Those who are excluded from this study include patients who are not admitted to the hospital, pregnant women, and patients less than 18 years of age. The primary end points include cost savings, consistency of prescribing patterns, and adherence to current antibiotic guidelines. A statistical analysis will be performed, once the appropriate data has been collected.

6-305

Title: Differences in the prevalence of self-reported depression among US military veterans aged 18-45 years between two different periods in time --- 2000 and 2012

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Purpose: In the early 1990s, the US engaged in the first Gulf War and in the early 2000s, the US invaded Afghanistan and Iraq. As a result, there has been a documented increase in depression, post-traumatic stress disorder (PTSD), alcohol and substance abuse, and suicide among US military veterans. Consequently, greater attention has been paid to veterans mental health issues as a result of their military involvement. The research question was: were there differences in the prevalence of self-reported depression among US military veterans aged 18-45 years at two different periods in time --- 2000 and 2012?

Methods: 2000 and 2012 Behavioral Risk Factor Surveillance System (BRFSS) data were analyzed using bivariate and multivariate techniques. The 2000 cohort represents those individuals that may have served 1990-1995 while the 2012 cohort represents veterans who may have served from 2001 to present. BRFSS is a random digit telephone survey that is a collaborative project of the CDC and all US states and territories. The survey measures several behavioral risk factors and disease states in the non-institutionalized US adult population aged 18 through 99 years. BRFSS collects information from individuals on health risk behaviors, preventive health practices, and health care access primarily related to chronic disease and injury. BRFSS is constituted of core questions that must be asked of every survey participant and optional modules that may be chosen by individual states and asked only of the survey respondents from the participating state(s). A complex multi-stage sampling approach is used by BRFSS and subsequently a weighting factor is calculated for application to the data in order to ensure that they are representative of the US population based on the most recent census data.

Results: The study population: US military veterans 18-45 years The dependent variable: self-reported depression The covariates or independent variables: Geographic locale (rural vs. non-rural) Sex Age Race/Ethnicity Socioeconomic status (SES) Health service deficits (HSD) Employment status Marital status

6-306

Title: Safety concerns of high-dose ascorbic acid in patients with burn injury

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Purpose: Purpose: High-dose ascorbic acid may benefit burn patients due to its proposed free-radical scavenging ability and antioxidant properties but is used scarcely due to safety concerns. The purpose of this study will be to evaluate the safety of high dose ascorbic acid infusions in burn patients.

Methods: Methods: A retrospective review of patients between 01/03/2010 and 06/15/2013 with burn injuries covering greater than 20% of total body surface area (TBSA) will be performed using the health system electronic medical record. Patients will be included if they meet the following criteria: 18 years of age or older and patients with burn injuries covering greater than 20% of total body surface area. Patients that did not receive high-dose ascorbic acid infusion (66mg/kg/hour) will be compared to those burn patients who did receive the high-dose infusion. The primary objective will be to identify prevalence of acute kidney injury (AKI) and hyperglycemia within 48 hours of ascorbic acid infusion initiation. AKI and hyperglycemia will be defined as an increase in serum creatinine of 0.3mg/dL or 50 percent from baseline and a blood glucose reading greater than 140 mg/dL. Secondary objectives will be comparing mortality. Fluid requirements and medications known to cause AKI and hyperglycemia will also be assessed. This study will be incorporating data from a previous study within the same institution.

6-307

Title: Evaluation of alteplase efficacy for restoration of patency in occluded peripherally inserted central catheter (PICC) lines at a long-term acute care hospital (LTACH).

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Purpose: Peripherally inserted central catheter (PICC) lines are an essential component of intravenous therapy, however thrombotic occlusion is a relatively common complication. Alteplase is a fibrinolytic agent with an indication for the restoration of patency to central venous access devices as assessed by the ability to withdraw blood. The purpose of this research is to evaluate the efficacy of standard-dose (2 mg/2 mL) alteplase for the restoration of patency in partially and totally occluded single, double, and triple lumen PICC lines in a long-term acute care hospital (LTACH) patient population.

Methods: An Institutional Review Board approved retrospective chart review will be performed on all patients administered alteplase for the restoration of patency in partially or totally occluded PICC lines from August 1st to October 31st, 2013 at a long-term acute care hospital in St. Paul, MN. Patients will be identified from a daily report listing all doses of 2 mg/2 mL alteplase administered in the past 24 hours. The following data will be collected: date of PICC placement; number of PICC line lumens; number of lumens occluded; total mg of alteplase administered; date/time occlusion noticed; type of occlusion; date/time first and second (if necessary) doses of alteplase administered; date/time occlusion noted resolved; time from noticed occlusion to alteplase administration; time from alteplase administration to restoration of patency; time from line placed to first occlusion; date/time of previous occlusions; time to reocclusion; demographic information including age, sex, race, weight, allergies, current/past medical history, and current use of anticoagulants. All data will be recorded without patient identifiers and maintained confidentially. The primary efficacy endpoint will be cumulative restored patency after a maximum of two doses of alteplase. Secondary efficacy endpoints will include restored patency after one dose of alteplase and reocclusion rate.

6-308

Title: A healthcare team approach to decreasing COPD hospital readmissions: a retrospective chart review

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Purpose: Chronic Obstructive Pulmonary Disease (COPD), one of the most common causes of morbidity and mortality throughout the world. Optimizing therapy can decrease COPD exacerbations; reducing exacerbations will result in a decreased number of COPD-related hospital admissions. The objective of this study will be to evaluate current practice for COPD treatment at our two institutions, from an interprofessional perspective, with the goal of improving practice in our health-system and reducing COPD-related readmissions.

Methods: This study will be submitted to our health-systems IRB for approval. Our two institutions are 220- and 271-bed community hospitals, with over 100,000 emergency department visits each year. In general, the majority of our COPD patients are readmitted through the emergency department. COPD is the top reason for readmission at one of our institutions and among the top five reasons for readmission at our second institution. A retrospective chart review of medical electronic record charts will be performed as part of a multi-disciplinary strategy to decrease COPD associated hospital readmissions. All patients at our institutions with an initial admission coded for COPD (APRDRG 140) who were readmitted within 30 days of their initial admission, between February 1 and May 31, 2013 will be included in this review. Excluded will be patients that did not meet the above criteria. A pharmacist will review each patients chart upon admission and readmission, including the evaluation of our inhaler-related auto-substitutions. Data to be collected will include: COPD medication education documentation; outpatient pharmacy utilization; charting of recent spirometry values; complete and accurate medication reconciliation; influenza and pneumonia vaccine status; and whether therapy was optimized per GOLD guidelines. Data collection and analysis are currently underway.

6-309

Title: Clinical value associated with a post-operative bariatric surgery pharmacy consult

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Purpose: Bariatric surgery is an intervention that requires comprehensive medication management during the perioperative period to ensure each medication is safe, effective, and convenient for the patient. The literature suggests that pharmacist recommendations regarding bariatric surgery may result in improved patient-centered care. The purpose of this study is to assess the extent of clinical value associated with a post-operative medication review. The findings of this study are important because they will either validate the need to continue this pharmacy service or provide insights as to how the service may be modified to optimize patient care and pharmacy resources.

Methods: This prospective chart review will gather data on all patients undergoing bariatric surgery from October 1, 2013 to April 1, 2014 who also received a medication review by a pharmacist. The primary objective of the study will be to assess clinical value added by a pharmacist, which will be distinguished by the number and type of drug therapy problems that are discovered. A secondary objective will be to evaluate the medical complexity of bariatric surgery patients in terms of their comorbid conditions and number of associated medications. The final secondary objective will be to assess the acceptance of pharmacist recommendations by the bariatric surgical team as noted in their discharge instructions. Prior to collecting patient data, IRB approval will be obtained.

6-310

Title: Pharmacist's role in reducing psychiatric readmission by performing medication cost-saving interventions

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Purpose: In October 2012, hospitals began receiving reduced payments from Centers for Medicare and Medicaid Services (CMS) for excess readmissions. The purpose of this study is to determine if pharmacist involvement in psychiatric discharge planning may decrease 30-day readmission rates by facilitating the medication prior authorization process and providing assistance in finding avenues for medication affordability. Secondary objectives are to determine the number of medication recommendations accepted by prescribing physicians and the average savings per patient. One suspected reason for psychiatric readmission is poor medication adherence due to lack of access to affordable medications.

Methods: This study was accepted by the Institutional Review Board and is a quasi-experimental study that compares 30-day psychiatric readmission rates pre-intervention versus post-intervention. Retrospective analysis will determine the pre-intervention 30-day readmission rate. The electronic medical record will identify patients admitted to the institution's psychiatric unit for greater than 24 hours who are greater than 18 years of age and are initiated on a scheduled psychiatric medication for both groups. Upon implementation of pharmacy services, the following will be collected: patient's identification number, age, gender, admission date, primary psychiatric diagnosis, scheduled psychiatric medications, insurance/drug benefit plan, primary pharmacy, interventions, potential cost-savings, need for prior authorization, and coupons or patient assistance programs that exist for specific medications. Patients will be excluded if their sole diagnosis is substance abuse or if they cannot provide informed consent. Pharmacists will make recommendations on less expensive medication alternatives and alert the physician if a medication requires prior authorization. If a patient lacks health insurance, the pharmacist will help enroll the patient in patient assistance programs and provide them with prescription coupons. Data will be analyzed to determine whether pharmacist interventions impact the institution's psychiatric readmission rates and reduce financial burden for patients.

6-311

Title: Metformin use in kidney transplant recipients in the United States

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Purpose: According to the United States Renal Data System (USRDS) 2013 Atlas of Chronic Kidney Disease (CKD) and End Stage Renal Disease (ESRD), diabetes is the leading cause of ESRD in the United States.1 Moreover, non-diabetic recipients can develop diabetes after transplantation.2 Metformin is an oral antihyperglycemic mediation indicated for the management of type 2 diabetes.3 Metformin use is contraindicated in patients with renal dysfunction (serum creatinine ≥1.5 mg/dL in males or ≥1.4 mg/dL in females) due to increased risk of lactic acidosis.3 Metformin use among kidney transplant recipients in the Unites States is unknown.

Methods: We linked Scientific Registry of Transplant Recipients (SRTR) data for all incident kidney transplants occurring between 2001 and 2012 with national pharmacy claims from a database constructed by IMS Health. We then excluded records that were inconsistent between the two databases based on gender, date of birth or state of residence; and required at least one pharmacy claim post-transplant. The two groups compared were kidney transplant recipients with at least one pharmacy claim for metformin or a metformin containing product versus kidney transplant recipients without any claims for metformin or metformin containing products, but with at least one claim for another diabetes medication. The final dataset included 46,914 kidney transplant recipients. Chi-Square and Mann-Whitney U were used to statistically compare the two groups.

Results: In the final dataset, 4,609 kidney transplant recipients had at least one claim for metformin or a metformin containing product, while 42,305 recipients had a claim for a non-metformin containing diabetes medication. Our results show a statistically significant difference in the distribution of ages among the two groups (P<0.0001). Metformin users tended to be younger (34.7% were age <50 versus 31.4% of non-metformin users). A significant difference was seen between the two groups in primary cause of renal disease (P<0.0001). Diabetes was listed as the cause of ESRD in 53.8% of patients in the non-metformin group versus 29.1% in the metformin group. All other causes of ESRD were seen more frequently in the metformin group. There was a statistically significant difference in the median time from first transplant to first diabetic medication claim (P<0.0001). The metformin group had a median of 289 days to first metformin claim while the non-metformin group had a median of 63 days (P<0.0001) to first diabetes medication claim. The median creatinine prior to first diabetic medication claim was

significantly lower in the metformin group than the non-metformin group [1.3 (Interquartile range or IQR 1.0-1.7) vs. 1.6 (1.2-2.5) respectively; P<0.0001]

Conclusion: Our results describe the national use of metformin in kidney transplant recipients. It is interesting to note that despite the contraindication to use of metformin with regard to serum creatinine levels, patients are using metformin as an antihyperglycemic agent. Further analysis can be done to examine if use of metformin is associated with adverse event rates including hospitalizations and patient/graft survival.

6-312

Title: Differences between rural and non-rural US adults with diabetes in the prevalence of achieving ADA goal values for HbA1c, blood pressure, and lipid panel

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Purpose: Previous research has identified a difference in the adequacy of diabetes care for rural versus non-rural US adults. Our research question was: Are there differences between rural and non-rural US adults with diabetes in the prevalence of achieving American Diabetes Association goal values of three key indicators of diabetes management: hemoglobin A1c, blood pressure, and lipid panel values? Since earlier research revealed that rural adults with diabetes experienced health disparities regarding adequate diabetes care, we hypothesized that our analysis would yield a similar disparity regarding achievement of goal levels of the listed, measured indicators.

Methods: To answer the research question a cross-sectional analysis was completed using 2010 National Ambulatory Medical Care Survey (NAMCS) data. NAMCS is a national survey designed to collect objective, reliable information about the provision and use of ambulatory medical care services in the United States. The data are collected from a sample of visits to non-federal employed office-based physicians who are primarily engaged in direct patient care. Data are collected from physicians, rather than from patients. Each physician is randomly assigned to a one-week reporting period. During this period, data for a systematic random sample of visits are recorded by the physician or office staff on an encounter form provided for that purpose. Data are obtained on patients' symptoms, physicians' diagnoses, and medications ordered or provided. The survey also collects data on demographic characteristics of patients. The 2010 NAMCS survey B form contained additional questions on lab values including the three key American Diabetes Association indicators analyzed in this study.

Results: The study population: US adults >18 years of age with diabetes The dependent variable: Achievement of the American Diabetes Association goal values for HbA1c (<7%), blood pressure (<140/80 mmHg), and lipid panel (LDL <100 mg/dL, HDL >40 mg/dL for men, >50 mg/dL for women, triglycerides <150 mg/dL) The covariates or independent variables: Geographic locale (rural vs. non-rural) Sex Age Race/Ethnicity Socioeconomic status (level of education attained and annual median household income as determined by zip code of patient) Health insurance status

6-313

Title: Retrospective review of the appropriateness of vasopressor use in sepsis and septic shock intensive care unit patients at Abbott Northwestern Hospital in comparison with the 2012 Surviving Sepsis guidelines

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Purpose: In the fall of 2012, the Surviving Sepsis Campaign provided an update to their guidelines published in 2008 on the management of severe sepsis and septic shock patients. The update reaffirmed using norepinephrine (NE) as the initial agent, recommended using dopamine as an alternative to NE only in highly selected patients, and recommended against using phenylephrine except in certain circumstances. The objective of this review is to assess the appropriateness of vasopressor use in sepsis and septic shock critically ill patients in comparison with the 2012 Surviving Sepsis guidelines.

Methods: This retrospective chart review will evaluate vasopressor use in 59 sepsis and septic shock intensive care unit (ICU) patients at Abbott Northwestern Hospital from May through August 2013. The cohort of patients was randomly selected based on either sepsis or septic shock initial diagnosis-related group (DRG) code documented in Excellian. A review of the appropriateness of use will depend on multiple factors including: order of vasopressor use and maximum doses used before add-on therapy. Additionally, the study will review the clinical situations in which the non-preferred agents, phenylephrine and dopamine, were used and compare them to guideline recommendations.

6-314

Title: Population-based management to improve guideline-directed antithrombotic therapy in a veteran population: A focus on concomitant anticoagulant and antiplatelet therapies

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Purpose: Although the most recent American College of Chest Physicians (ACCP) Antithrombotic Guidelines were published in early 2012, healthcare professionals may be unaware of many of the updates. Consequently, patients may continue to receive outdated therapies. Patients may be receiving multiple modalities of antithrombotic therapy, despite guidelines discouraging this practice in most clinical situations. This places patients at undue risk of bleeding events. Inconsistencies between guidelines and actual therapy often go unnoticed. A proactive approach to identify such discrepancies in the veteran population would likely result in a significant reduction in major bleeding events in this at-risk demographic.

Methods: This is a quality improvement project aimed at improving standards of care and institutional review board acknowledgement of its non-research status will be requested. Utilizing a computerized patient medical record system and associated population management software, a report will be created that will automatically identify patients with an active prescription for an antiplatelet and an anticoagulant agent. Next, the report will filter these patients using disease classification codes and CHADS2 scores to exclude patients who would be appropriate for concomitant antiplatelet and anticoagulant therapy according to guidelines. After filtering, a report will be generated to identify patients who have an active prescription for concomitant antiplatelet and anticoagulant agents but do not meet the parameters of guideline recommendations allowing for this combination therapy. For each patient identified in the report, a pharmacist will undergo a comprehensive review to determine if the therapy is appropriate given the overall clinical picture. If current therapy is deemed inappropriate, a pharmacotherapy recommendation will be made to the applicable provider. To determine the effect on patient outcomes, bleeding and thrombotic event rates will be tracked, as well as the number of recommendations implemented.

6-315

Title: Evaluating the effectiveness of concentrated (U-500) regular insulin in diabetic patients

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Purpose: Concentrated regular insulin (Humulin R U-500) may be useful for insulin resistant patients requiring more than 200 units of insulin per day. Patients may benefit with the use of U-500 due to smaller injection volumes and fewer injections required per dose. The primary objective of this study is to evaluate the effectiveness of U-500 on HbA1c in patients injecting more than 200 units of insulin per day. The secondary objective is to evaluate patient compliance with the use of U-500. The overall goal of this study is to improve patient health by controlling blood glucose levels and increasing patient compliance.

Methods: This study has been submitted to the Institutional Review Board for approval. The retrospective study will review electronic medical records of patients who have been on insulin U-500 for at least three months, dated from October 1, 2012, to September 30, 2013. Data collection will include: patient name, social security number, gender, age, type of previous insulin therapy, dose of previous insulin therapy including total daily dose and frequency, U-500 dose including total daily dose and frequency, HbA1c, plasma glucose, and U-500 refill history. Data will be evaluated to determine if blood glucose levels decreased and if patient compliance increased with the use of U-500. HbA1c, plasma glucose and total daily insulin dose will be presented as continuous data. T-test statistics will be used to determine any changes in glucose levels and total daily insulin dose.

6-316

Title: Standardization of antibiotic prescribing for empiric therapy in medical and cardiac intensive care units

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Purpose: The 2012 Surviving Sepsis Campaign guidelines recognize that in the presence of septic shock, each hour delay in achieving administration of effective antibiotics is associated with a measurable increase in mortality. The objective of this study is to optimize the current process for selection and initiation of empiric antibiotic therapy to critically ill patients admitted to the medical intensive care unit and cardiac intensive care unit.

Methods: This study has been submitted to the Institutional Review Board for approval. Reports will be generated using our electronic medical record to identify patients admitted to the medical or cardiac intensive care unit for suspected or documented infection. Exclusion criteria includes patients less than 18 years of age or pregnant. The following data will be collected: diagnosis of primary source or site of infection, weight, height, organ system dysfunction, drug allergies, initial antibiotic regimens, time to first antibiotic administration, and any complications affecting provision of empiric antibiotics. All patient specific data will be recorded without patient identifiers and maintained confidentially. Data will then be analyzed to identify aspects within the current process that can be improved, including standardization of empiric antibiotic prescribing and delivery. Based on these results, development of order sets for empiric antibiotic regimens based on site, severity, environment, and previous antibiotic exposure will be created, presented to involved process committees for approval, and implemented. A post implementation analysis will then be completed. Data collection, selection process, inclusion and exclusion criteria, and methods of analysis will be consistent with the pre-implementation analysis. Comparisons between pre-implementation and post-implementation data will be performed to assess the impact of applied interventions.

6-317

Title: Development of a pharmacy post graduate year two (PGY2) geriatric residency program

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Purpose: Studies have proven the value of implementing pharmacy services throughout different healthcare fields many times over throughout the past decade, in terms of both patient safety, improvement in outcomes, and cost savings. With the increase in the older adult population comes an increased demand for professionals specially trained to understand and manage the complexities of geriatric care. This project is designed to develop a pharmacy post graduate year two (PGY2) geriatric program which will prepare and equip pharmacists with the necessary skills and training to address many of the difficulties that arise in pharmaceutical care for the elderly.

Methods: This is a quality improvement project for a specific practice site and will be submitted to the Institutional Review Board for approval of its non-research status. A pharmacy resident will work with a pharmacist preceptor to establish a purpose and mission statement for a pharmacy PGY2 residency program. The resident will work to verify and document that the program meets all practice requirements set forth by the American Society of Health-Systems Pharmacists (ASHP) to be eligible for accreditation. The resident will also submit a summary of planned experiences and projects designed to help the participant meet all educational outcomes set by ASHP. The pharmacy resident, under the guidance of the pharmacist preceptor, shall use the ASHP residency accreditation guidelines to explore and identify potential preceptors, rotation sites, and potential areas of pharmacy service expansion in the field of geriatrics. Barriers to the development of this new program will be examined and the resident will define viable department options and alternatives to meet program purposes and goals. The resident, in collaboration with preceptors, will develop or define evaluation tools and quality improvement strategies for each rotation as well as the residency itself.

6-318

Title: Enzalutamide use following abiraterone failure in veterans with castration-resistant prostate cancer

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Purpose: Abiraterone and enzalutamide are recently approved oral medications with differing mechanisms affecting testosterone that are utilized in patients with castration-resistant prostate cancer. While both drugs are considered standard of practice, there is little clinical trial evidence regarding risk and benefit of sequential use of these agents. However, oncologists nationwide and throughout the VA have trialed these medications sequentially off-label after progression, with the hope that their varying mechanisms of action will result in a therapeutic response. The purpose of this project is to assess enzalutamide efficacy and tolerability in veterans with castration-resistant prostate cancer who have failed abiraterone.

Methods: Prior to commencement this project will be submitted to the Institutional Review Board for approval as a quality improvement project. The results of this analysis will be used primarily to provide guidance to VA oncologists for efficacious and safe use of these drugs at minimal cost burden. Data for this project originates from the electronic medical record that has been transferred, as part of routine VA procedure, to a central data warehouse. Utilizing queries written within SQL Server Management Studio, the data will be extracted and compiled from this database. The design of this project is a retrospective cohort of all veterans who received enzalutamide after being treated with abiraterone with or without prior taxane use. Information regarding efficacy, including PSA levels, duration of therapies, previous therapies, radiology reports, morphine equivalent use, and pain scores will be collected, as will indicators of toxicity such as LFTs. Laboratory values will be correlated with medication initiation and discontinuation. Median time to progression, percent decline in PSAs, clinical response, and overall survival will be calculated and assessed for significance. Subgroups will be compared based on the data collected to assess for indicators of variable response.

6-319

Title: Development of a risk assessment tool to identify patients with Clostridium difficile diarrhea that may benefit from initial therapy with fidaxomicin versus conventional therapy

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Purpose: Conventional treatment of Clostridium difficile diarrhea includes metronidazole or oral vancomycin. A third agent, fidaxomicin, is now available for treatment. Despite similar cure rates and lower rates of recurrence compared to conventional therapy, fidaxomicin is not a viable first line treatment in most patients due to cost. However, the financial burden may be justified if patients with high risk of recurrence could be prospectively identified and treated with fidaxomicin. The purpose of this study is to develop a risk assessment tool to identify patients with the highest risk of recurrence.

Methods: This retrospective chart review is pending institutional review board approval. It will include patients 18 years or older that required hospitalization with acute onset diarrhea and tested positive for a Clostridium difficile by PCR from January 2012 to January 2013. Patients presenting with severe-complicated disease, had surgical intervention within 3 days of admission, or died within 3 days of admission will be excluded. Medical records will be reviewed for demographics, comorbidities, location prior to admission, antibiotic therapy, use of gastric acid suppression, length of stay, location of discharge, and clinical and laboratory studies. Using the data collected a risk assessment tool will be developed that predicts patients with highest risk of recurrence. A pharmacoeconomic analysis will be performed to determine if there is a cost-benefit to using fidaxomicin in the population with the highest risk of recurrence. The risk assessment tool will also be evaluated to determine if it predicts readmission, clinical failure, admission to intensive care, ileus, need for surgical intervention, and death. Students T-test and Mann-Whitney U test will be used to analyze continuous variables and Chi-squared test to analyze categorical variables. A p-value less than 0.05 will be considered statistically significant.

6-320

Title: Evaluating prescribing patterns of testosterone replacement therapy

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Purpose: Since the early 1990s, there has been an increase in testosterone replacement therapy and a further escalation recently as many new products have become available. The primary objective of this study is to evaluate the prescribing patterns of testosterone replacement therapy by assessing its indication for use and monitoring parameters.

Methods: The electronic medical record will be used to identify patients with initial or refilled testosterone prescriptions between January 1, 2013 and June 30, 2013. One thousand five hundred patients will be screened and stratified into either primary or specialty care groups. From each group, 150 patients will be randomly selected for enrollment into the study. This study aims to determine whether patients receiving initial testosterone prescriptions had pre-treatment labs prior to therapy and follow up labs drawn within 3 to 6 months after the start of therapy. It also will verify whether patients with maintenance testosterone prescriptions had follow up labs drawn. These outcomes will be evaluated to assess compliance with Endocrine Society guidelines. For those patients receiving their first testosterone replacement prescription, the pre-treatment labs that will be reviewed are testosterone level, CBC, PSA, LH, FSH and prolactin. The labs to be reviewed for follow up therapeutic and safety monitoring of testosterone replacement therapy include testosterone level, PSA, and CBC. In addition to the labs suggested by the Endocrine Society guidelines, this study will also describe whether patients received a baseline or follow up lipid panel.

6-321

Title: Evaluating the management of cardiovascular disease risk factors in rheumatoid arthritis patients

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Purpose: Cardiovascular disease (CVD) is one of the major causes of death in rheumatoid arthritis (RA) patients. The primary objective of this study is to evaluate the frequency that providers are identifying CVD risk factors in RA patients. This study will also evaluate whether RA patients received appropriate monitoring of risk factors within the last 12 months of receiving RA medications. Furthermore, the study will assess treatment of risk factors according to goals set forth by the institution. The secondary objective will compare the results from Primary Care versus Rheumatology Clinics to determine whether location of treatment affects quality of care.

Methods: This study has been submitted to the Institutional Review Board for approval. This study reviews patient medical records to evaluate the frequency of diagnosis and treatment of CVD risk factors in RA patients. Those included in the study will be actively enrolled at the institution for at least 1 year, have an active diagnosis of RA, and maintained on at least one RA treatment medication. Depending on the prescriber of the RA medication, these patients will be separated into Primary Care and Rheumatology Clinics. Those excluded are patients who have expired, refused pharmacological treatment, have diabetes mellitus type I, or enrolled at the institution for less than 1 year. Data collection includes patient name, social security number, gender, age, presence or diagnoses of CVD risk factors, appropriate monitoring of CVD risk factors performed at least once within the past 12 months or 6 months after of receiving RA prescription, and CVD risk factor goals. Appropriate monitoring of CVD risk factors are blood pressure for hypertension, lipid panel for dyslipidemia, fasting blood glucose or HgbA1c for diabetes, BMI for obesity, and consultative interventions for smoking cessation.

6-322

Title: Systematic review of patients eligible for conversion from warfarin to the new target specific oral anticoagulants based on select health factors

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Purpose: Poor international normalized ratio (INR) control with warfarin therapy, defined as a time in therapeutic range (TTR) less than 60%, was associated with worse outcomes. The new target specific oral anticoagulants (TSOACs), dabigatran; rivaroxaban; and apixaban indicated for non-valvular atrial fibrillation and venous thromboembolisms (rivaroxaban), provide additional options for poorly controlled patients on warfarin. The purpose of this project was to develop a systematic approach to review patients eligible for conversion from warfarin to a TSOACs based on a combination of data derived from the Veterans Affairs Integrated Service Network (VISN) 21 Clinical Dashboards and patient chart reviews.

Methods: The Veterans Affairs Sierra Nevada Healthcare System (VASNHCS) manages approximately 900 patients on warfarin therapy. By developing and utilizing an automated report to compile patient specific information derived from the clinical warehouse in VISN21 that contains the electronic medical records, we identified 220 patients at VASNHCS with a TTR less than 60%. The automated report pulled active, interacting medications with the TSOACs, renal function, calculation of TTR at 3 and 6 months using a modified Rosendaal method, calculation of time in supratherapeutic range (supraTTR) and time in subtherapeutic range (subTTR) at 3 and 6 months, CHADS2 score, oncological status, patients age and weight. CHADS2 scores were used to determine appropriateness of anticoagulation therapy. Considerations to use TSOACs were dependent on the patients health factors and combination of 3 and 6 month TTRs. A retrospective chart review was conducted to evaluate the patients adherence to warfarin and provide validation of the automated report. The data will be analyzed using basic statistical operations within Excel to determine the appropriateness of the recommendations made by the automated reports. Secondary outcomes will be described as a percentage of patients eligible for conversion, change in health outcomes, and cost impact according to pivotal trial data.

6-323

Title: Retrospective chart review of appropriate indication and duration of therapy for warfarin use in venous thromboembolism (VTE) and pulmonary embolism (PE) treatment

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Purpose: CHEST Guidelines recommend the use of warfarin for treating patients who develop a VTE or PE, and indicate the duration of anticoagulant therapy based on the cause and the patients medical history. The primary objective for this study will be determining if patients on warfarin are indicated to receive the medication for the treatment of VTE or PE, and if the patients receive the medication for the appropriate duration of therapy. The secondary objective will be evaluating the effectiveness of pharmacist interventions by consulting the physicians and/or specialist of patients still on warfarin but have completed the recommended duration.

Methods: This study has been submitted to the Institutional Review Board for approval. Patients who receive warfarin for treatment or prevention of VTE or PE through the anticoagulation (AC) Clinic will be evaluated. Inclusion criteria will be patients who are 18 years or older, and are currently enrolled in the AC clinic for treatment of VTE or PE for a limited duration of 12 months or less. Exclusion criteria will be patients who receive warfarin for any other indication, and patients receiving the medication for longer than 12 months. Data collection will include: patients name, social security number, age, gender, diagnosis for anticoagulation initiation, date warfarin started, duration of treatment, and anticoagulation clinic consults. Data will be evaluated to determine the percentage of patients who are appropriately receiving warfarin and the appropriate duration of therapy according to CHEST guidelines. This study will also examine the percentage of effective pharmacy interventions by consulting patients PCPs and/or appropriate specialist, who are on warfarin and have completed the recommended duration of therapy to see if they will be reevaluated.

6-324

Title: Assessment of a current pharmacy practice model for appropriateness of implementing a post graduate year 2 (PGY2) psychiatric pharmacy residency program

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Purpose: Post graduate year 2 (PGY2) psychiatric pharmacy residency programs are implemented to provide the resident with the tools and resources to build upon the first year experience and gain clinical expertise and leadership within the specialty area of psychiatric pharmacy. Although many healthcare institutions may be interested in establishing this program, not all may possess a pharmacy practice model appropriate for adapting this multifaceted experience. This project was designed to assess the current pharmacy practice model of a Veterans Affairs healthcare facility for appropriateness of implementing a PGY2 psychiatric pharmacy residency program.

Methods: In order to assess if an appropriate environment exists for a psychiatric pharmacy resident to effectively practice and learn, background research on the facility's current pharmacy practice model was performed to understand the roles and outcomes of the pharmacy department. In addition, background research on the current state of mental health care provided to veterans was performed to determine if there is a need for the facility to expand mental health pharmacy practice to include a PGY2 residency program. A complete review of the American Society of Health-System Pharmacy (ASHP) accreditation requirements was conducted to evaluate whether the facility is capable of meeting the standards required for program accreditation. In addition, a post graduate year 1 (PGY1) pharmacy resident was assigned a residency project of assisting in the establishment of the PGY2 psychiatric pharmacy residency program. This resident participated in the PGY1 mental health rotations in order to evaluate the experience for appropriateness as core rotations for a PGY2 program.

Results: The facility's current pharmacy practice model was found to be unique and progressive with mental health integration in primary-care, advanced inpatient clinic involvement, and structured inpatient to outpatient transition of care. This would serve as an ideal learning environment for a PGY2 psychiatric pharmacy resident as pharmacists are utilized as independent practitioners providing high-quality and cost effective healthcare. Clinical pharmacists are under a scope of practice to provide direct patient care and serve as non-physician providers to initiate, modify, extend or discontinue medication therapy. The facility also utilizes the VISN Dashboard which allows for population management with several aspects focused directly on mental health patient safety. Established inpatient and outpatient mental health pharmacy services are in place to serve as potential core rotation sites for a PGY2 resident. Physician acceptance of pharmacy recommendations and interventions is very evident. The

mental health clinics also offer clerkships to pharmacy students which allows for precepting opportunities for residents. The experience of the PGY1 pharmacy resident in the mental health rotations was found to provide the resident with chronic disease state and psychotropic medication management experience, including clozapine monitoring and medications use to treat substance abuse disorders.

Conclusion: The current pharmacy practice model of the facility is appropriate for implementation of a PGY2 psychiatric pharmacy residency program. The model incorporates a wide variety of pharmacist involvement and autonomy. This would allow for ease of necessary expansion of the current inpatient and outpatient mental health pharmacy clinics to incorporate potential learning sites within areas such as long-term management, psychiatric consultation, specialty clinics, and community outreach in order to meet the specific ASHP required outcomes, goals, and objectives. This proposed PGY2 in psychiatric pharmacy should produce well-equipped psychiatric pharmacy specialists capable of practicing within a variety of healthcare settings

6-325

Title: Comparison between chronic anticoagulation therapies utilizing dabigatran, rivaroxaban, and warfarin with respect to the incidence of hemorrhagic complications: a retrospective review

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Purpose: The prevalence of anticoagulation management with novel target specific oral anticoagulants, dabigatran and rivaroxaban has increased secondary to obtaining new indications for use, increased physician familiarity, and the relative ease of therapy in comparison to warfarin. Debate in regards to the comparative safety of the target specific agents continues to be fueled by the absence of reliable monitoring parameters and reversal agents. The purpose of this study is to compare the overall incidence of hemorrhagic complications resulting in hospital admission or readmission with chronic dabigatran, rivaroxaban, or warfarin therapy for any FDA approved indication.

Methods: This retrospective study is approved by Institutional Review Board. Patients with any dose of dabigatran, rivaroxaban, or warfarin documented within their medication reconciliation record upon admission between January 2012 and December 2012 have been identified via electronic medical record system. Patients will be stratified according to admitting diagnosis: hemorrhagic event or systemic embolism. Diagnosis of hemorrhage and systemic embolism will be further classified by specific event. The following data will be collected in order to determine the presence of trends in specific patient populations: prescribed anticoagulant and dose, indication for treatment, objective diagnostic data, significant drug interactions, age, gender, comorbidities, objective measurement of renal function, and INR, if available. Child Pugh scores and creatinine clearance will also be calculated. The primary end point is the overall incidence of hemorrhagic events associated with chronic dabigatran, rivaroxaban, or warfarin therapy. The secondary end point is the incidence of systemic embolism. The Incidence of the primary and secondary outcomes associated with the use of each target specific oral anticoagulant will be compared to that of warfarin, and each other. Statistical analysis of outcomes will be conducted via chi squared test.

6-326

Title: Evaluating the impact of pharmacist intervention on tobacco cessation in patients admitted to the inpatient psychiatry unit

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Purpose: Individuals with mental illness who are addicted to tobacco often receive treatment for their primary psychiatric disorder without being offered concurrent tobacco cessation treatment. The primary objective of this study is to evaluate the impact of a pharmacist intervention on tobacco cessation in patients admitted to the inpatient psychiatry unit. The overall goal of this study is to improve patient health both short and long term by maintaining tobacco cessation in a population of patients less likely to be offered treatment despite their higher risk for morbidity and mortality related to tobacco use.

Methods: This study will be submitted to the Institutional Review Board for approval. This is a retrospective chart review of the electronic medical records belonging to patients hospitalized for treatment of a psychiatric disorder. A pharmacist intervention to help maintain tobacco cessation was provided between July 29, 2013 to November 7, 2013. The intervention occurred prior to discharge from the hospital and consisted of the following: meeting individually with the patient, providing motivational interviewing to remain tobacco free, and arranging follow up treatment. Pharmacotherapy for tobacco cessation was also provided at discharge, when indicated. Patients using tobacco prior to inpatient psychiatry admission, who meet criteria for a tobacco use disorder per DSM V criteria, and who were discharged between April 1, 2013 to November 7, 2013 will be included in the chart review. Patients discharged from the psychiatry unit before April 1, 2013 and after November 7, 2013 as well as those who do not have a tobacco use disorder will be excluded. The charts of patients meeting inclusion criteria will be reviewed. Pertinent statistical analysis will be applied to compare the tobacco cessation status, and related information, between patients who received intervention by a pharmacist and those who did not.

6-327

Title: Effect of pharmacist interventions on heart failure hospital readmission rates in a veteran population

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Purpose: The objective of this study is to develop the role of the clinical pharmacist in a post-discharge clinic at a veterans health care facility as part of a process improvement effort to decrease heart failure exacerbation readmission rates in veterans discharged from the hospital with a primary or secondary diagnosis of heart failure.

Methods: This is a quality improvement project for a facility process and institutional review board acknowledgement of its non-research status will be requested. The pharmacist will collect a list of all patients admitted to the hospital for heart failure as a primary or secondary diagnosis between October 2013 and February 2014 through the generation of admission reports. Patient charts will be examined using the Veterans Administration's Computerized Patient Record System (CPRS) for hospital admissions, medication history, and gaps in care. Identified patients will be contacted via phone within 7 days of discharge as part of a post-discharge clinic. During this call the investigator will provide medication reconciliation and patient education, check adherence to regimens, verify tolerability to medications, and facilitate timely follow up with other healthcare providers. Results of interventions will be compared with a similar- group of patients from the previous year (October 2012 to February 2013) to determine if the post-discharge pharmacy telephone clinic was able to aid the facility in decreasing 30-day and 60-day hospital readmission rates for heart failure exacerbation.

6-328

Title: Evaluation of a pharmacist managed vancomycin dosing protocol

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Purpose: Vancomycin is a glycopeptide antibiotic used to treat infections due to Gram positive organisms. It has a narrow therapeutic index, meaning there is a small range of trough levels that will avoid excessive toxicity and provide therapeutic benefit. Due to the complex nature of dosing, pharmacy managed vancomycin dosing is not uncommon. The primary purpose of this study is to characterize the safety and efficacy in achieving timely therapeutic trough levels with initial intravenous vancomycin dosing by a pharmacy managed Pharmacokinetics Consultation Service.

Methods: This study was approved by the Institutional Review Board. No informed consent will be obtained, given the retrospective nature of this chart review. The health care facilitys electronic medical record will be used to identify patients that received vancomycin per pharmacy protocol for at least 72 hours, were at least 18 years of age, and received a minimum of one vancomycin serum trough level. Data collected from the electronic medical record include the following: patient name, medical record number, date(s) of vancomycin therapy, age, gender, height, weight, any laboratory values including microbiology results, past medical history, diagnoses, concurrent medications, patient location (intensive care unit vs. floor), and documented adverse reactions. Any troughs will be determined to be therapeutic or not therapeutic based on both IDSA and the local institutional guidelines. The primary outcome of this study is the efficacy in achieving timely therapeutic trough levels. Secondary outcomes will include the cost effectiveness and pharmacist time commitment of current vancomycin dosing practices. In addition, the safety profile will be assessed based on the occurrence of adverse reactions such as nephrotoxicity and infusion related reactions.

6-329

Title: Evaluation of the diagnosis and management of heparin induced thrombocytopenia

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Purpose: Heparin induced thrombocytopenia (HIT) is a rare and serious reaction to the administration of heparin, which causes thomboembolic complications due to aggregation of platelet and drug antibody complexes. Diagnosis of HIT poses a clinical challenge, as there are many causes of thrombocytopenia and initial laboratory testing may be more sensitive than specific. Risk evaluation tools such as the 4 T score may aid clinicians in distinguishing true HIT. The objective of this study will be to determine how pharmacy intervention in the diagnosis and subsequent treatment of HIT improves overall management by decreasing costs and optimizing appropriate medication therapy.

Methods: This study will be a retrospective analysis of the management of patients before and after a policy is implemented to guide a pharmacists evaluation and intervention in suspected cases of HIT. The primary outcome will be the number of patients both pre and post policy who have a HIT antibody test completed with a 4 T score 4. Secondary outcomes will include drug costs, laboratory costs, the number of patients started on alternative anticoagulation following a positive antibody result, and the number of patients restarted on heparin following a negative antibody test or serotonin release assay. The pre-policy evaluation period will be August-October 2013, and will include all patients who have a HIT antibody test ordered. The post-policy evaluation period will be from November 2013-January 2014 and will also include all patients who have a HIT antibody test ordered. 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. Primary outcome data will be analyzed using the Chi-squared test or Fishers exact test. This study has been approved by the institutional review board.

6-330

Title: Defining antimicrobial stewardship services, identifying gaps in care, and developing a business plan for an infectious disease pharmacist position

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Purpose: Defining antimicrobial stewardship services, identifying gaps in care, and developing a business plan for an infectious disease pharmacist position

Methods: This is a quality improvement project and Institutional Review Board acknowledgement of its non-research status will be requested. The hospitals current antimicrobial stewardship services will be defined. Then, service gaps will be identified and a business plan will be created stating how a full time clinical pharmacist can resolve the gaps in patient care and antimicrobial services. Outcomes to support the proposed business plan will include cost avoidance and clinical outcomes. Cost avoidance will be calculated from pharmacy resident involvement in direct antimicrobial stewardship interventions including trigger drug assessments, de-escalation, IV to PO conversion, and drug procurement costs reported as cost/1,000 patient days. Potential savings in drug cost will be extrapolated to reflect the interventions of a full time pharmacist. Clinical outcomes will include number of accepted recommendations, changes in resistance, Defined Daily Dose (DDD) changes secondary to stewardship activities, changes in Length of Stay (LOS), and C. difficile rates. Empiric antibiotic choice will be guided by edited order sets to reflect current guidelines, ID Service support, resistance patterns, and formulary and contracting decisions. The pharmacy resident will invest time updating and expanding these order sets and will outline these as core services provided as part of the business plan.

6-331

Title: Appropriate monitoring of electrolytes, creatinine clearance and use of supplements in oncology patients receiving denosumab

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Purpose: Denosumab is indicated for prevention of skeletal- related events in bone metastases and recently for treatment of giant cell tumor of the bone in adults and adolescents. Product labeling shows hypophosphatemia, hypocalcemia, hypomagnesemia, and low vitamin D could occur with denosumab. It should be used with caution in patients with renal dysfunction. However, limited guidance is provided by the manufacturer for appropriate monitoring and supplementation. This research describes monitoring practices, incidence of electrolyte abnormalities, and prescribing of supplementation in oncology patients receiving denosumab in an outpatient oncology center.

Methods: The study will be submitted to the Institutional Review Board for approval. This research is a retrospective chart review. Two hundred patients will be included in the study. Patients who received denosumab (at least one dose) and being followed in an outpatient oncology center between November 2011 to April 2014 will be analyzed. The electronic medical record will be used to identify patients medical record number (MRN), initials, age, gender, comorbidities, diagnosis, denosumab administration (dose, start date and other dates of administration), previous or concomitant bisphosphonate use, levels of calcium, albumin, ionized calcium, magnesium, phosphorus, vitamin D, creatinine clearance and use of supplements at baseline and continuously. Descriptive statistic will be used in order to analyze the data. All data will be recorded with patient identifiers and maintained confidentially.

7-001

Title: Evaluation of a public health department family planning clinic: a Title X family planning clinic

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Purpose: Title X of the Public Health Service Act provides millions of low-income women access to reproductive preventative health services. The Jefferson County Department of Health (JCDH) served 4,154 Family Planning Clinic patients and 5,738 clinic visits between September 1, 2012 and August 30, 2013. The purpose of this study is three-fold: to evaluate the adherence to Title X preventive service guidelines at JCDH Family Planning Clinic, compare adherence between JCDH Family Planning Clinic and Adult Health Clinic (AHC), and to assess what percentage of women rely on the JCDH Family Planning Clinic (FPC) as their sole source of healthcare.

Methods: This study will be submitted to the Institutional Board Review for approval. The electronic medical record system will identify women aged thirteen to fifty-one who attended the FPC from September 1, 2012 to August 30, 2013. Exclusion criteria include male gender and females seeking testing and treatment for sexually transmitted infections. The following data points will be collected: patient age, ethnicity, new or established patient, contraception counseling documentation, breast and pelvic exam frequency, cervical cancer screening (Pap smear) frequency, physical exam and blood pressure check at each visit, and human papillomavirus (HPV) vaccination when appropriate. Based on specific criteria for each preventative health service, outcomes will be reviewed for adherence per Title X guidelines. Additionally, the AHC will be evaluated for any overlapping womens preventative services they provide to women aged nineteen to forty-four (women under the age of nineteen are not routinely seen in the AHC) and compared to the adherence of the FPC using the chi-square test. Women aged nineteen to fifty-one who attended the FPC as their sole source of healthcare will also be quantified by searching the record for established patients who have never visited the AHC and have no record of an outside provider.

7-002

Title: Prevalence of multidrug resistant pathogens in patients with healthcare-associated pneumonia

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Purpose: The American Thoracic Society (ATS) and the Infectious Diseases Society of America (IDSA) consider healthcare-associated pneumonia (HCAP) an entity that resembles nosocomial pneumonia more closely than community-acquired pneumonia (CAP) in terms of prevalence of multi-drug resistant (MDR) pathogens. Current ATS/IDSA guidelines recommend empiric broad-spectrum antibiotic therapy based on poorly defined risk factors and uncertain incidence of MDR pathogens. The benefit of such empiric coverage on patient outcomes is unknown but may potentially induce antimicrobial resistance. The objective of this study is to determine the prevalence of MDR pathogens in patients meeting ATS/IDSA criteria for HCAP.

Methods: Prior to commencement, this observational study will be submitted to the Human Research Review Board for approval. The institutions inpatient database will be used to screen all patients with a diagnosis of pneumonia not coded as CAP between April and August 2013. Included patients will meet the following criteria for HCAP: recognition of pneumonia within two days of admission, previous hospitalization for more than two days in the past ninety days, residence in a nursing home or long-term care facility, intravenous antibiotics or wound care within the past thirty days, or treatment in a hemodialysis clinic. Patients with active cancer, HIV, or history of organ transplant, or those being concurrently treated for another infection will be excluded from the study. The primary outcome will be the rate of infection with MDR pathogens. Secondary outcomes include clinical pulmonary infection score, rate of admission to ICU, rate of intubation, number of ventilator days, length of stay, mortality rate, rate of guideline concordant empiric therapy, rate of positive sputum culture, rate of MDR pathogens for individual HCAP risk factors, rate of guideline concordant de-escalation, rate of resistance to empiric antibiotics, duration of double coverage for gram negative pathogens, and total duration of antibiotics.

7-003

Title: Effectiveness of implementing a vancomycin dosing nomogram in achieving goal trough concentrations

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Purpose: IDSA guidelines recommend targeting serum vancomycin concentrations between 15-20 mg/L for serious infections. The purpose of this study is to evaluate the effectiveness of a vancomycin dosing nomogram in achieving goal trough levels by comparing pre-implementation and post-implementation data.

Methods: This study will be submitted to the Institutional Review Board for approval. Patients who have received a loading dose and at least two maintenance doses of vancomycin will be identified through the electronic medical record system for pre-implementation data. Any patient at the facility with new orders for vancomycin will be evaluated and dosed according to the nomogram if appropriate according to exclusion criteria. Patients must have an appropriately measured vancomycin trough level to be included. Exclusion criteria includes actual body weight above 150 kilograms, acute kidney injury, serum creatinine less than 0.5 or greater than 2.0 mg/dL, creatinine clearance below 40 ml/min, cystic fibrosis, cirrhosis, quadriplegia, and all patients in an intensive care unit. The following data will be collected: loading dose given (20 mg/kg), measured vancomycin trough level, and number of doses given prior to level. The primary outcome is the achievement of serum concentrations between 15-20 mg/L after at least four half-lives. Secondary outcomes include nephrotoxicity, achievement of serum concentrations between 14-21 mg/L, and percent of patients with serum concentrations in each of the following ranges: below 10 mg/L, 10-14.9 mg/L, 15-20 mg/L, and above 20 mg/L. All data will be recorded to maintain patient confidentiality.

7-004

Title: Implementation of medication therapy management services in a charitable pharmacy

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Purpose: Medication Therapy Management (MTM) programs have been shown to improve patient outcomes and to reduce healthcare costs in patients with diabetes, hypertension, and dyslipidemia through the identification and management of suboptimal or unsafe drug regimens. Additionally, medication non-adherence contributes to poor health outcomes, including increased hospitalizations. Interventions that focus on optimizing medication use and adherence may improve patient outcomes and lower healthcare costs; however, few studies exist within indigent patient populations. The study objective is to examine the number and type of clinical interventions identified through a pharmacist-led MTM program for an indigent, uninsured patient population

Methods: This is a retrospective review of a pharmacist-led MTM program at a charitable, independent community pharmacy that serves an indigent patient population. This study will be submitted to the Institutional Review Board. Data will be collected from January 2012 through September 2013 using commercially-available electronic MTM software; all collected data will be de-identified. To be eligible for pharmacy services, a patients income must be at or below the federal poverty guidelines. Patients included in the analysis will be those who are at least 18 years old, served by the pharmacy, and have at least two chronic medical conditions. Patients excluded will be those with prescription drug coverage. The primary outcome will be the number of interventions identified by the pharmacist. Secondary outcomes will include types of MTM interventions (including but not limited to adverse drug reactions, drug interactions, duplications in therapy, medications without indications), number of patients with uncontrolled blood pressure and blood glucose, and the changes in blood pressure and blood glucose measurements. Patient demographic data will also be collected.

7-005

Title: Impact of pharmacists on inpatient warfarin management

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Purpose: At our institution, warfarin has traditionally been dosed and followed by physicians; however clinical pharmacists are frequently consulted to handle the warfarin therapy instead. The objective of this study is to evaluate the impact of pharmacist-managed inpatient warfarin therapy compared to traditional physician-managed therapy.

Methods: Prior to commencement, this retrospective study will be submitted to the Institutional Review Board for approval. Patients receiving warfarin from May to December 2013 will be reviewed using the hospitals electronic medical record system. Only warfarin-nave patients will be included in the study. Exclusion criteria include patients with HIT, warfarin discontinued before 5 days of therapy, and physician override of pharmacist-based warfarin dosing. The following data will be collected: patient demographics, indication for warfarin, daily INR, starting dose, vitamin K administration, bridge therapy, number of inpatient warfarin days, and length of hospital stay. The primary outcome will be the average time to reach goal INR, as defined by indication, in an appropriate time period. Secondary outcomes include percentage of patients achieving therapeutic INR prior to discharge, average starting dose, percentages of patients with INR above 3.5 and above 6, administration of vitamin K, bridge therapy, average number of days on warfarin, and length of stay.

7-006

Title: Impact of clinical pharmacy interventions on congestive heart failure exacerbation 30-day readmission rates at Birmingham VA Medical Center

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Purpose: Reducing hospital readmissions is a large focus of both The Joint Commission (TJC) and Centers for Medicare and Medicaid Services (CMS). Congestive heart failure (CHF) is among the most common hospital discharge diagnoses and is also among the most expensive. Despite high readmission rates and hospitalization costs, the impact of clinical pharmacy interventions at the Birmingham Veterans Administration Medical Center (BVAMC) on reducing the readmission rates associated with CHF has not been determined.

Methods: This study will be submitted to the Institutional Review Board for approval prior to study initiation. Informed consent will be obtained from each patient enrolled. The primary endpoint is 30 day readmission rates. Monthly rates during the study will be compared to those of the previous year. Patients will be recruited based on a primary diagnosis of CHF, and excluded if they are discharged against medical advice, discharged to skilled nursing facility, or were admitted within 30 days of previous discharge. At the time of discharge, a pharmacist will ensure appropriate medications are prescribed based on ACCF/AHA treatment guidelines and will provide heart failure-specific counseling. Additionally, between 48 and 72 hours post-discharge, a follow up telephone call will be made by the pharmacist to provide additional counseling.

7-007

Title: Assessment of antimicrobial stewardship practices in the state of Alabama

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Purpose: The increasing prevalence of multi-drug resistant organisms draws attention to the necessity of appropriate antibiotic use. In 2007, the Infectious Diseases Society of America and the Society for Healthcare Epidemiology of America (IDSA/SHEA) released guidelines on principles of antimicrobial stewardship (AMS). However, implementation of these principles was not addressed in the guidelines. The purpose of this project is to assess current enactment of and understanding barriers to AMS practices, through a survey of hospitals in the state of Alabama.

Methods: This study has received exempt approval through the Institutional Review Board based on collection of non-patient data. A 20-question survey was developed through a web-based survey tool with distribution via an email listserv directed to pharmacy directors of hospitals involved with the Alabama Hospital Association. All information collected from this survey will be anonymous. Questions range from institutional demographics to current AMS practices and potential barriers to implementation of said practices. Hospitals do not have to have a formal AMS program to be involved in the survey. Collected data will be stratified based on hospital characteristics to evaluate implementation of, and potential areas for promoting, AMS practices. The survey is to be open for six weeks with an email reminder sent after two weeks of the initial survey.

7-008

Title: Evaluating student pharmacists' self-efficacy after participating in an organization-based smoking cessation program

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Purpose: Healthcare professionals, including students in healthcare professional training programs, have the highest potential of impacting the tobacco free initiative. However, many students in healthcare training programs do not receive adequate preparation for treating tobacco use and dependence in the public. The purpose of this study is to evaluate second and third year student pharmacists perceived ability and confidence in providing smoking cessation counseling while being involved in our institution's "Pack It Up" club.

Methods: This study will be submitted to the Institutional Review Board for approval. Second and third year Doctor of Pharmacy (PharmD) candidates in the "Pack It Up" club will undergo the Rx for Change Clinician-Assisted Tobacco Cessation training program to be certified as smoking cessation counselors. The certification process will consist of didactic training as well as an objective structured clinical examination (OSCE). A survey will be completed by the student pharmacists prior to and after the training session to measure the change in their overall ability and confidence in providing smoking cessation services. The survey and OSCE will be repeated after the student pharmacists have had their first one-on-one patient encounter. Other outcomes that will be evaluated include smoking quit rates, changes in patient vital signs (BP, weight, pulse, exhaled CO), and the number of potential patients encountered at outreach events.

7-009

Title: Assessing the time to therapeutic PTT range and the percentage of time in therapeutic PTT range with a new heparin protocol versus the current protocol.

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Purpose: During a review of medication errors at the Birmingham VA Medical Center, it was found there were many more errors that expected with administration of heparin. Since anticoagulation is a national patient safety goal and heparin is a high risk drug, the heparin protocol was updated. The protocol update should help reduce errors related to bolus doses and to increase documentation associated with bolus dosing. In addition to the protocol update, an extensive in-service will be done for the nursing and pharmacy staff to educate on the new changes, risks of heparin, and attempt to reduce errors.

Methods: This study will be submitted to the Institutional Review Board for approval prior to study initiation. A retrospective chart review will be conducted to identify patients who were on heparin drips during their hospitalization and to evaluate PTT levels and other safety data. Additionally, a prospective chart review will be conducted on a small number of patients, in order to evaluate that the heparin protocol is being followed correctly in real time. The computerized patient record system (CPRS) at the Birmingham VA Medical Center along with heparin drip medication administration record summary sheets will be used to gather information about potential study subjects. All data will be collected and stored in a confidential manner. Data recorded will include patient age, sex, height, weight, serum creatinine, heparin drip rate, bolus doses given with new protocol, duration of therapy, PTT values, time to therapeutic PTT range, time in therapeutic PTT range, and any adverse drug reactions that occurred.

7-010

Title: Successful reversal of antipsychotic-induced hyperlipidemia and hyperglycemia after converting a patient from olanzapine to lurasidone

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Case Report: This case report presents a treatment consideration for patients with schizophrenia who develop hyperlipidemia and hyperglycemia while taking atypical, or second generation antipsychotics (SGAs). Metabolic side effects are considered common adverse effects for all medications in this class. These metabolic abnormalities are associated with poor cardiovascular outcomes. Because of this, patients who take SGAs are monitored closely so that adverse effects can potentially be reversed or controlled if they develop. In this case, the patient developed hyperlipidemia and hyperglycemia over the course of a year while being treated for schizophrenia with olanzapine. Conversion to lurasidone yielded a resolution of both adverse effects as well as continued control of psychotic symptoms associated with the patient's schizophrenia. The patient is a 71 year old African American male who was admitted to the hospital for treatment of schizophrenia. The patient has an extensive history of psychosis associated hospitalizations and treatment resistant schizophrenia. Since his admission date, the patient's psychiatric medications have included the following: haloperidol decanoate, loxapine, quetiapine, risperidone, clozapine, olanzapine, and lurasidone. The patient was placed on olanzapine following a failed trial of clozapine due to noncompliance and possible neuroleptic malignant syndrome. Prior to initiation of olanzapine in 2011, the patient weighed 257 pounds, and had a hemoglobin A1C (A1C) of 6.8 percent. His lipid panel showed the following: total cholesterol 179 mg/dL, triglycerides 146 mg/dL, LDL cholesterol 134 mg/dL, and HDL cholesterol 40 mg/dL. Approximately twelve months later, the patient's lipids became uncontrolled (total cholesterol 236 mg/dL, triglycerides 149 mg/dL, LDL cholesterol 160 mg/dL, and HDL cholesterol 42 mg/dL), his A1C increased to 9.6 percent and his weight increased to 287 pounds. The treatment team decided to convert the patient to lurasidone in August of 2012. Three months after the conversion, the patient's total cholesterol had fallen to 162 mg/dL, his LDL cholesterol was 102 mg/dL, and his A1C was back to 6.8 percent. The patient's weight had decreased and gradually returned to baseline within six months of the conversion. Currently, the patient is in a mental health recovery unit with plans to transition into a group home setting in the near future. His psychosis has remained stable as evidenced through minimal documented behavioral outbursts, limited use of prn agents (for psychosis or agitation), and consistently positive nursing and psychiatry progress notes. This case shows that adverse effects can be resolved and schizophrenia can remain stable simultaneously when converting a patient from one atypical antipsychotic agent to another. Further research should be done to assess the specific effects of lurasidone on patients who have developed metabolic side effects from another atypical antipsychotic agent. Lurasidone may offer a viable

alternative in patients with treatment resistant schizophrenia who develop lipid and glucose abnormalities while taking other SGAs.

7-011

Title: Assessing the difference in glycemic control in patients on a basal-bolus insulin regimen versus a sliding-scale insulin regimen

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Purpose: Hyperglycemia in hospitalized patients has been linked to poor clinical outcomes including increased complications and mortality. Recent studies suggest that a basal-bolus insulin regimen may provide better glycemic control than the standard sliding-scale insulin regimen. The objective of this study is to determine whether the implementation of a basal-bolus insulin regimen improves glycemic control compared to a sliding-scale insulin regimen in non-ICU, non-surgical hospitalized patients.

Methods: This study will be submitted to the Institutional Review Board for approval prior to study initiation. A retrospective chart review will be conducted to identify patients who were previously treated with insulin while hospitalized at the Birmingham VA Medical Center between January 2012 and the present. Patients will be included in the study if they are greater than or equal to 18 years old, admitted to a medicine team with a greater than or equal to 72 hour hospital stay, and have a diagnosis of type 2 diabetes. Patients will be excluded if they are transferred to or from another floor or service, on corticosteroids, if either regimen is not implemented within 24 hours, or if either regimen is not used the entire hospital stay. The computerized patient record system (CPRS) at the Birmingham VA Medical Center will be used to gather information about potential study subjects. All data will be collected and stored in a confidential manner. Data recorded will include demographics, A1C on admission, serum glucose readings, and point-of-care glucose readings. Differences in glucose readings will be compared in patients on basal-bolus insulin regimens and sliding-scale insulin regimens.

7-012

Title: Evaluation of non-emergent medication administration related to pharmacist recommendations in the emergency department

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Purpose: At our institution, orders in the emergency department are not currently evaluated by pharmacists. Orders are scanned to the pharmacy and if a problem is found, the pharmacist makes comments on the order and scans it back to the nurse. A recent study showed < 50% of scanned back orders were evaluated by nurses. The potential for adverse and allergic reactions increases if nurses are not viewing comments left on orders from pharmacists. It is important to assess how often medications are given before problem orders are reviewed by nurses, and determine ways to improve the process.

Methods: Data will be collected using Wellsoft, an order entry system designed for emergency departments and HealthCare Systems (HCS) order image system. Orders with medication issues will be identified in HCS, and then the patients medication administration record will be viewed in Wellsoft. Patients will only be included if the orders are written for inpatient status, and are not for emergency treatment. Documentation will include whether or not the order was evaluated by a nurse, if there was a note from pharmacy on the order, whether or not any medication from the order was administered, and if the administration was appropriate. Medication administration will be considered inappropriate if the document was flagged by pharmacy and not evaluated by a nurse, or if the document was opened by a nurse but the medication was given prior to opening. Education will be conducted for the nursing staff on the importance of evaluating orders, with pharmacist comments, prior to medication administration. A follow-up data collection will be done to assess improvements in the process.

7-013

Title: Evaluation of a vancomycin initial-dosing nomogram in achieving target levels

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Purpose: Vancomycin is a glycopeptide antibiotic that is used to treat numerous gram-positive bacterial infections including those caused by methicillin-resistant Staphylococcus aureus (MRSA). It comprises the majority of drug-dosing consults that pharmacists receive at many institutions across the nation. Ensuring proper initial dosing of vancomycin will help improve patient outcomes by more rapid eradication of the bacteria and decreased length of hospital stay. The purpose of this research is to assess the effectiveness of an improved vancomycin initial-dosing nomogram at achieving the set trough level range of 10-20 mg/L that it is designed to reach.

Methods: An improved vancomycin initial-dosing nomogram was instituted in March 2012. Patients are dosed using the nomogram based on their actual body weight and creatinine clearance (calculated using the Cockroft-Gault equation). The nomogram was assessed for effectiveness at reaching an initial target trough range goal of 10-20 mg/L and was considered effective if it reached the target range 75 percent of the time. The institutional review board granted exemption from review for this retrospective chart review. Drug reports for vancomycin use were generated for the time period of May 2012 through April 2013. Chart reviews were performed at random until 100 valid troughs were documented. A valid trough was defined as: a trough drawn at steady state, which was considered prior to at least the third dose; drawn no more than one hour prior to or one hour after the scheduled dose; and the scheduled dose was not already being administered while the trough was drawn. Patients with acute renal insufficiency (defined as a change in serum creatinine of 0.5 mg/dL or a greater than or equal to 50 percent change from baseline), on dialysis, younger than 19 years of age, or not initiated on the appropriate nomogram regimen were excluded.

Results: Of the 100 valid troughs, 76 were within the target range of 10-20 mg/dL. Of those outside the target range, 9 were above goal (range: 21.2 24.7 mg/dL) and 15 were below goal (range: 4 9.4 mg/dL).

Conclusion: It was observed that initial nomogram dosing met the target trough range 76 percent of the time. This met the established goal of reaching the target trough range at least 75 percent of the time, and therefore, was deemed effective. Thus, this study validates the improved nomogram and utilization will continue.

7-014

Title: Assessment of a bisphosphonate formulary interchange from zoledronic acid to pamidronate for inpatient treatment of hypercalcemia

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Purpose: Current literature has demonstrated that the intravenous bisphosphonates zoledronic acid and pamidronate when used for the inpatient treatment of hypercalcemia result in similar efficacious outcomes. Therefore, only one intravenous bisphosphonate is needed on a hospital formulary for this indication. The objective of this project is to compare these two medications in regards to reduction of corrected serum calcium levels, duration of therapeutic response, need for repeat dosing, length of hospital stay and adverse drug events.

Methods: This medication use evaluation will include patients who were prescribed either pamidronate or zoledronic acid for treatment of hypercalcemia at an 881-bed tertiary care facility in Huntsville, Alabama. Data for patients receiving zoledronic acid will be gathered retrospectively while information for those receiving pamidronate will be collected prospectively as the hospital pharmacy and therapeutics committee has made pamidronate an automatic formulary interchange for zoledronic acid. Inclusion of patients will be done in a 1:1 experimental to control group ratio. Patients will be identified through use of special computer programs that notify data collectors of individuals who have received either medication. Electronic chart reviews will subsequently be completed to evaluate corrected serum calcium levels, renal function markers, duration of response, need for repeat dosing, length of hospital stay and adverse drug events and will be manually recorded on data collection sheets. Analysis of data will include comparison of efficacy and safety between the experimental and control groups.

7-015

Title: Impact of a pharmacy directed order set for the therapeutic management of diabetic ketoacidosis (DKA) patients

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Purpose: Diabetic ketoacidosis (DKA) represents an acute complication associated with increased morbidity, mortality, multiple readmissions, and a significant financial burden for healthcare institutions. General inpatient management of DKA may differ according to the physician, allowing for significant variations in therapy. At our institution, the Pharmacy and Therapeutics Committee recently approved the utilization of a pharmacy driven DKA management protocol. Our purpose is to formally evaluate a pharmacy directed treatment protocol for the therapeutic management of DKA in comparison to non-protocol management.

Methods: Patients receiving orders for continuous intravenous insulin therapy from January 1, 2012 to September 1, 2013 were retrospectively identified utilizing data derived from our patient information system. Diagnosis of DKA was confirmed via chart review in which attention was allocated to prescriber admission summaries and diagnostic laboratory parameters. Patients therapeutically managed via our order set were identified secondary to protocol codes associated with order verification. Patients managed without use of the approved order set were evaluated for comparison. Clinical endpoints measured included total length of stay, intensive care unit length of stay, hours on continuous intravenous insulin therapy, incidence of restarting continuous intravenous insulin, cost per admission, and 30-day readmissions.

7-016

Title: The Effect of telephonic intervention on Pre-DM patients between visits to aid in weight loss & slow the progression to Type II Diabetes

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Purpose: Type 2 Diabetes affects numerous individuals in the US every year. Some risk factors, elevated plasma glucose levels, overweight and leading a sedentary lifestyle are reversible. The Diabetes Prevention Program (DPP) provided results showing an intensive lifestyle intervention program resulting in a 7% weight loss decreased Diabetes prevalence by 58%. Patients in the Metformin arm reduced their incidence of developing Type 2 Diabetes by 31%, showing the intensive lifestyle intervention was more effective that Metformin. Based on these results, this study seeks to determine if interventions via voluntary telephone education will be effective in slowing the progression to diabetes.

Methods: A multi-centered prospective intervention group compared to a retrospective cohort as a historical control will be identified at two public health clinics; CHC & EHC. The standard care group will be comprised of a retrospective cohort from the same two clinics as a historical control. The intervention group will be patients who have come to one of the two health clinics as a pre-diabetic patient (A1c 5.7-6.4) and have had/will have their initial pre-diabetes education visit. The inclusion criteria will consist of patients aged 19 or above, English speaking, have a baseline A1c at initial Diabetes Clinic visit within the pre-diabetic range of 5.7-6.4% and have a baseline weight at entry. The exclusion criteria will consist of patients younger than 19 years old, pregnant, non-speaking English and deceased. Patients will be seen in clinic every 3-6 months and telephone calls will be made in-between patient clinic visits at intervals of approximately 4-6 weeks. Calls will focus on exercise and nutrition. At each clinic visit A1c & weight will be evaluated. The goal is to have patients lose at least 7% of their body weight which will aid in slowing progression and development of Type2 diabetes based on evidence from DPP.

7-017

Title: Healthcare professional and patient knowledge of pharmacist administered long-acting injectable (LAI) antipshycotics in independent pharmacies

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Purpose: The purpose of this research is to assess healthcare professional and patient knowledge of pharmacist administered LAI atypical antipsychotic medications in the independent pharmacy setting. Furthermore with a prescriber administered survey, the goal is to promote collaboration between physicians and pharmacists with a focus on improving patient care. Up to half of patients with schizophrenia do not adhere to medications increasing the risk for relapse. LAI atypical antipsychotic medicines increase adherence to therapy. This study is needed to assess awareness of pharmacist administered LAI atypical antipsychotic medications. This study may also increase communication among patients, prescribers and pharmacists.

Methods: This study will be submitted to the Institutional Review Board for approval and informed consent will be obtained for all necessary subjects prior to participation. This qualitative study will be completed in two parts. Following informed consent, an orally administered survey will be administered to healthcare professionals and will assess knowledge of pharmacist administered LAI atypical antipsychotic medications in an independent pharmacy. The survey consists of seven questions: five multiple-choice questions and two short answer. Healthcare professionals, including physicians, residents, and/or nurse practitioners that currently prescribe any antipsychotic drug (oral or LAIs) will be identified utilizing pharmacy dispensing software (McKesson Pharmacy RX database). Fifteen-minute appointments in medical offices surrounding 3 independent pharmacies, FMS Pharmacy, Montevallo Drug, and English Plaza Pharmacy, will be set up for interviewing purposes. Second, a paper survey will be administered to any patient at checkout from the pharmacy to assess knowledge of pharmacist administered LAI atypical antipsychotic medications in the independent pharmacy. Upon completion, results will be dropped anonymously into a manila envelope to protect patient identities. This survey consists of five multiple-choice questions. Qualitative analysis will be used to evaluate both sets of data to identify common themes amongst prescribers and patients.

7-018

Title: Evaluation of piperacillin-tazobactam in the treatment of infections caused by extended spectrum beta lactamase (ESBL)-producing organisms

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Purpose: Extended spectrum beta lactamase (ESBL) resistance has limited the therapy options of patients infected with certain Gram negative organisms and is also reported to cause about 26,000 illnesses and 1,700 deaths annually. The CLSI guidelines recognize the susceptibility of ESBL-producing organisms to piperacillin-tazobactam, but treatment remains controversial. The purpose of this study is to evaluate the use of piperacillin-tazobactam (PTZ) in the treatment of infections caused by ESBL-producing organisms in the hospital setting.

Methods: This is a single-center, retrospective chart review that will be submitted to the Institutional Review Board for approval prior to commencement. The health systems Electronic Health Record (EHR) will be used to identify patients that were at least 18 years of age, were admitted into the acute hospital between July 1, 2010 and July 1, 2013, and had a positive culture for an ESBL isolate. Patients included must have cultures susceptible to PTZ and have received PTZ for at least 24 hours after cultures finalize as positive for ESBL. Exclusion criteria include those who are pregnant, prisoners, and those found to have parasitic and/or fungal infections. The primary endpoint is the resolution of infection as determined by a negative culture, resolution of symptoms (swelling, fever, wound healing, etc), and/or good prognosis stated by physician. Secondary endpoints include LOS, inpatient mortality rates, infection recurrence rates, 30-day readmission rates, length of antibiotic therapy, cost of therapy, and concomitant antibiotic use. If available, reported adverse and previous antibiotic exposure will be recorded. Physician documentation will be reviewed to determine patient response to the antibiotic. All patient identifiers will be removed and confidentiality will be maintained.

7-019

Title: Assess the impact of waived generic copays and free worksite delivery on adherence rates of diabetes medications between users of a closed pharmacy and nonusers

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Purpose: In November 2008, our institution, a self-insured employer offering healthcare benefits for about 12,000 employees and their dependents, opened a closed pharmacy for the institution's health plan beneficiaries. The institution has implemented two incentives to help decrease medication costs and increase medication adherence. These incentives are free worksite medication delivery and waived copayments for most generic medications, if beneficiaries use the closed pharmacy to fill all of their prescriptions. Our study will assess whether these incentives increased adherence to medications, specifically in patients taking diabetes medications, as increased adherence could potentially decrease medical costs.

Methods: The study will be submitted to the Institutional Review Board for approval. Medical and pharmacy claims data will be used to identify patients who would qualify for inclusion in the data analysis. The study sample will consist of employees and dependents of the institution that are continuously enrolled in the institutions health insurance plan during a defined time period. The target number of patients to be enrolled in the study will be about 100 patients. Patients that meet the inclusion criteria will be assigned to either the intervention group or the control group. The intervention group will consist of those patients that use the closed pharmacy to fill their diabetes medications while the control group will include patients that do not fill their prescriptions at institution's closed pharmacy. The outcomes measured will be the total number of prescriptions filled per group, the number of prescriptions filled per patient, average cost of copay between the groups and number of patients in each group. Adherence will be assessed based on PDC ratios, odds ratios of medication adherence and percent compliance. Quality indicators of disease management will also be assessed among patients using the closed pharmacy.

7-020

Title: Impact of the Allergy Coding Process on Overall Allergy-Related Medication Errors

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Purpose: Medication errors related to patient allergies are a persistent problem in our institution as well as healthcare institutions nationwide. In our information systems, patient allergies can be coded, alerting healthcare providers of possible cross-reactivity with currently prescribed medications. Uncoded allergies are entered in ways that does not allow the system to screen prescribed medications against the reported allergy. The purpose of this study is to analyze the trends and causes of recent medication errors related to patient allergies, to use these causes to improve the allergy coding system in our institution, and report improvements that have been made.

Methods: Recent reports of allergy-related medication errors from our institution will be analyzed to detect patterns in drug classes involved, places in the medication-delivery system that could be improved, and improvements in allergy coding that could be made to help to prevent these medication errors. At the same time the uncoded allergies in our main information system will be gathered and organized. Using the data from the medication error reports and current uncoded allergies, allergy codes will be optimized and clarified. After new allergy coding updates are implemented, the difference in rates of uncoded allergies will be compared and analyzed. Lower rates of uncoded allergies may help to prevent future allergy-related medication errors. Furthermore, if this study is successful in showing a difference in allergy coding, a process could be initiated in the future in which pharmacists participate in reconciling and clarifying patient allergies upon the first day of admission.

7-021

Title: Assessing compliance with recent implementation of criteria for linezolid use

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Purpose: The last two decades have seen a rapid increase in antibiotic resistance and the need to develop agents with novel mechanisms is imperative, moreover, the need to maintain the integrity and efficacy of these agents is the root of many antimicrobial stewardship programs. We aim to evaluate the use of this protocol and determine if the intervention of a standardized protocol has reduced the incidence of overprescribing of linezolid, thus reducing the chance of developing further antibiotic resistance.

Methods: Patients on linezolid will be identified prospectively through Sentri7. Identified patients will be evaluated based on the set of criteria established by AMT through an extensive chart review. The physicians that prescribed the antibiotic without meeting the criteria will be contacted through a written communication recommending to modify antibiotic therapy. Once a recommendation is left on the chart, the patient will be followed for an additional 72 hours to identify if the prescriber modified therapy. All linezolid orders are recorded into an Access database stratified according to the established criteria developed by the AMT. The information will be collected and analyzed to help assess compliance.

7-022

Title: Pharmacist-directed education to improve appropriateness of stress ulcer prophylaxis utilization

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Purpose: Stress ulcer prophylaxis (SUP) is a mainstay in hospital treatment to reduce the risk of stress related mucosal damage (SRMD). However, SUP has been associated with serious adverse events including increased risk of Clostridium difficile infection and hospital-acquired pneumonia. For this reason, SUP should only be used when indicated. In 1999, the American Society of Health-System Pharmacists (ASHP) developed SUP guidelines that clearly detail which patient populations should receive SUP. The purpose of this study is to evaluate the efficacy of pharmacist-led education on increasing adherence to the ASHP guidelines on SUP.

Methods: After submission to the institutional review board for approval, the electronic medical record will be used to identify patients entering intensive care units (ICU) during January to March of 2013, and 100 randomly selected patients will be included in a retrospective chart review. During December 2013, education will be provided to ICU physicians, pharmacists, and nurses concerning appropriate use of SUP. Another retrospective chart review including patients from January to March of 2014 will then be conducted. Inclusion criteria for both reviews include patients of at least 18 years entering an ICU. Selected exclusion criteria include gastrointestinal bleeding, new onset gastroesophageal reflux disease or esophagitis within 24 hours of admission, treatment with histamine receptor type 2 antagonists for allergic reaction or home medications of histamine antagonists or proton pump inhibitors. Each patient will be evaluated for appropriateness of SUP therapy based on the ASHP guidelines at three distinct points of care: 24 hours after admission to ICU, 24 hours after transfer to floor, and at discharge. The two chart reviews will be compared to determine efficacy of educational efforts.

7-023

Title: Developing an electronic database to improve the efficiency and quality of an established student auditing process in a community hospital setting

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Purpose: Involving students in auditing pharmacist-guided medication adjustments exposes students to the pharmacists clinical thought processes while capturing statistics about pharmacist interventions. Historically students completed auditing forms by hand, and the student audit coordinator would compile the hardcopies for review. The purpose of this project was to create an electronic database to streamline the established student auditing process while automating the audit review process and reporting.

Methods: A database was created to capture audits of intravenous to oral dosage conversions, renal dosage adjustments, and duration of medication therapy reviews. Pharmacy students reviewed patients identified by the hospital's rule-based software and assessed whether they met the pharmacy and therapeutics committee approved criterion for pharmacist-guided interventions. If a student deemed that criteria were met and no medication adjustment occurred, the student audit coordinator reviewed the audit to confirm the assessment. Additionally students assessed whether or not pharmacists documented medication therapy reviews. The database was reviewed regularly and ongoing adjustments were made to create a more intuitive electronic data collection form and to identify potential teaching opportunities. Automated reports were also developed to provide audit results.

Results: The database was successfully initiated, replacing handwritten data collection and analysis. Through periodic reviews, the student audit coordinator was able to identify areas of confusion or deficiencies and provide individual education for students as needed. Additionally data entry errors were also identified and ongoing improvements to data collection have been made to create a more intuitive data entry process. The student audit database reduced the amount of time spent compiling audit results, and has allowed for the evaluation and analysis of student audits resulting in a more accurate audit. Automation of reports has also been used successfully.

Conclusion: Updating the student auditing process has saved a considerable amount of time, improved the accuracy of student audits, and hopefully provided a more meaningful educational experience for pharmacy students.

7-024

Title: Optimization of a Clinical Alert System in a Large Community Hospital

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Purpose: Sentri7 is the current rule based system at our institution used by pharmacy and infection control to capture changes in the clinical course of patients which prompt clinical alerts. Sentri7 management was driven by information technology yet transition to pharmacy specialist for management was accomplished which should aid to maximize the attributes of this clinically focused rule based system. Clinical pharmacists were tasked with decreasing the number of rules that are not being utilized as to streamline the process. Optimizing rule build and management to speed up the system and increase documentation was the intent.

Methods: Documentation data was collected from Sentri7 at baseline, including number of documentation episodes, documentation time, cost saved, and ADR rate. Inappropriate rules were removed from the system, including any rule that had not been used in last 6 months and those rules created by former employees who do not appear on the master dashboard. Rules at that point were checked for appropriate creation, as well as direct link to Quantifi, the pharmacy documentation system. The antimicrobial management team dashboard was also updated to provide only clinically appropriate rules and help increase intervention and documentation rates. Real time updates were also performed in the Sentri7 program following P&T approved drug formulary decisions and pharmacy drug therapy adjustment guidelines. Repeat documentation data was collected and compared to baseline. Sustainability and continued improvement to the system will be addressed.

7-025

Title: Establishment and evaluation of a telephonic diabetes service

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Purpose: The American Diabetes Association recommends that health care teams implement timely and appropriate lifestyle and/or pharmaceutical therapy changes for patients with uncontrolled diabetes. Incorporating pharmacists into these teams has been shown to contribute to reduction in hemoglobin A1c. The objective of this study is to establish and evaluate a telephonic counseling service for diabetic patients of an urban health center in order to improve glycemic control and adherence to insulin therapy.

Methods: This study will be submitted to the Institutional Review Board for approval. The telephonic service will be protocol-based. Eligible patients will be identified through the electronic medical records based on uncontrolled diabetes during insulin therapy (two fasting blood glucose (FBG) levels greater than 130 mg/dL or two HbA1c measurements greater than 7%). Patients who give informed consent will be called by a pharmacist once every two weeks. Initial data that will be collected include age, gender, ethnicity, weight, current medications, FBG and/or HbA1c, blood pressure, and a fasting lipid panel (FLP). During each phone call, the patients self-monitoring blood glucose log, insulin regimen, adherence to therapy, and hypoglycemia incidence will be reviewed. Per protocol, the pharmacist will adjust the patients insulin regimen according to the factors discussed during the phone call. After three months of biweekly phone calls, patients will be asked to return to the clinic for a subsequent FBG and/or HbA1c reading, weight, blood pressure, and a FLP. The difference in change in FBG and/or HbA1c between the three-month monitoring period and the period of usual care will be measured to determine whether the telephonic diabetes service provides any additional benefit in terms of glycemic control.

7-026

Title: Evaluation of clinical outcomes in an incentivized, pharmacist-led diabetes education and monitoring program

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Purpose: The Diabetes and You program is an incentivized diabetes education and monitoring program led by pharmacists in an ambulatory care clinic and offered to employees of the state of Alabama who have diabetes. The goal of the program is to decrease the cost of diabetes management at both the patient and third party levels by improving clinical outcomes. The objective of this study is to determine if the clinical outcomes of patients with diabetes improved through participation in the Diabetes and You program.

Methods: This study will be a retrospective chart review. Patients who attend the Diabetes and You group education class and at least one follow up appointment will be included in the study. The one-hour group education class uses the Journey for Control conversation map to facilitate discussion. After the group education class, patients have one-on-one follow up appointments with a clinical pharmacist. Follow up frequency is based on the patients level of diabetes control, which is evaluated by a clinical pharmacist using hemoglobin-A1c (HbA1c) and blood glucose goals recommended by the American Diabetes Association. As incentive, patients who participate in the program will receive free generic diabetes medications for as long as they remain active in the program. The primary outcomes of this study will be changes in HbA1c and average fasting blood glucose obtained at clinic visits and/or patient self-monitored blood glucose logs. Blood pressure, fasting lipid levels, medication adherence, and compliance with recommended preventative health measures, including dental, eye, and foot exams, vaccinations, and daily aspirin use, will also be assessed. This study will be submitted to the Institutional Review Board for approval. All data collected will be deidentified and maintained confidentially.

7-027

Title: Incidence of enteral nutrition intolerance in critically ill patients receiving vasopressor therapy

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Purpose: Early enteral nutrition (EN) in critically ill patients is associated with fewer infection-related complications, shorter hospital stays, and decreased mortality. The use of EN in critically ill patients requiring hemodynamic support with vasopressors is controversial due to concerns for intolerance to EN and possible bowel ischemia; however, there is data that suggests EN may be well-tolerated and even beneficial in this patient population. The purpose of this study is to evaluate the incidence of enteral nutrition intolerance in critically ill patients receiving concomitant EN and vasopressor therapy.

Methods: This is a retrospective study approved by the Institutional Review Board. Electronic medical records will be used to identify adult patients who meet the following inclusion criteria: age >/= 19 years who received concomitant EN and an IV vasopressor (dopamine, epinephrine, norepinephrine, phenylephrine, and/or vasopressin) in the medical intensive care unit or cardiovascular intensive care unit. The primary outcome will be incidence of intolerance to enteral nutrition, defined as any gastric residual volume measurement of >/= 300 mL; abdominal distention; emesis, radiographic evidence of ileus or obstruction; bowel ischemia or perforation; or EN discontinuation with subsequent parenteral nutrition initiation. Secondary outcomes will include promotility agent usage and intolerance of EN with each specific IV vasopressor. Statistical analyses will be performed using Student's t-tests for continuous data and Chi-square or Fisher's exact tests for nominal data.

7-028

Title: Retrospective, observational analysis of fidaxomicin use and outcomes in the treatment of Clostridium difficile infections in a large community hospital

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Purpose: Recent literature estimates recurrence rates for Clostridium difficile associated diarrhea (CDAD) as high as 45%. As the major referral hospital in the surrounding area, our facility is in a unique position to evaluate CDAD recurrence and readmission rates. Medicare data from recent years has shown that 94% of patients readmitted with CDAD are readmitted to our facility. Although fidaxomicin has demonstrated non-inferiority to vancomycin in initial or first recurrent CDAD episodes, treatment guidelines have not established criteria for fidaxomicin use. The purpose of this observational analysis is to evaluate fidaxomicin utilization and outcomes data at a large community hospital.

Methods: This effort is a single center, IRB-approved, retrospective analysis spanning from August 2011 to August 2013. Hospitalized patients 18 years of age who received fidaxomicin for the treatment of CDAD were included. Patients were identified based upon inpatient fidaxomicin charge data. A CDAD diagnosis was based upon clinical signs and symptoms as well as either positive PCR or pathognomic imaging. Data was collected using electronic medical records and included severity of illness, length of hospitalization, use of concomitant systemic antibiotics, and episode of recurrence. Clinical success was defined as resolution of signs and symptoms of disease and no further requirement for therapy for CDAD as of the second day after the end of the course of therapy. Clinical recurrence was defined by the reappearance of signs and symptoms of disease after the cessation of therapy; a new C. difficile PCR positive, in stool; and a need for retreatment for CDAD. Patients were assessed for recurrence up to 90 days post treatment.

7-029

Title: Comparison of protocol driven and non-protocol driven repletion of hypokalemia

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Purpose: Potassium imbalances are associated with an increased risk of potentially fatal complications. Severe adverse effects related to hypokalemia are electrocardiogram changes, cardiac arrhythmias, and sudden death. The importance of regulating potassium levels is well recognized, and this has led to the development of institution-wide electrolyte repletion protocols (ERP). Protocol driven interventions have been associated with improved outcomes and a more efficient use of resources. The objective of this study is to compare the efficacy and safety of potassium repletion in patients on a hospital-wide ERP compared to patients who were not on the ERP.

Methods: This is a retrospective chart review to compare the efficacy and safety of protocol driven versus non-protocol driven repletion of hypokalemia. Patients 19 years of age or older with a baseline serum potassium less than 3.6 mmol/L admitted between June and July of 2013 will be included for review. Patients who did not have an active ERP order for at least 72 hours will be excluded from the protocol driven group. Exclusion criteria for both groups will include: no repeat serum potassium concentrations, admission diagnosis of diabetic ketoacidosis, baseline serum creatinine greater than 2.5 mg/dL, therapeutic hypothermia, baseline serum magnesium concentration less than 1.8 mg/dL, or concurrent parenteral nutrition. The primary endpoint is the proportion of serum potassium measurements between 3.6-5 mmol/L following repletion. The secondary endpoints are: frequency of missed potassium repletion; time to initiation of potassium repletion for each day; time to serum potassium of 3.6-5 mmol/L; frequency of serum potassium concentrations greater than 5.5 mmol/L; use of anti-arrhythmics (defined by Vaughan Williams classification) to treat arrhythmias induced by hypo- or hyperkalemia.

7-030

Title: Common medication errors encountered when transitioning from written orders to computerized physician order entry

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Purpose: Each year thousands of patients in the United States die because of preventable medication errors that occur in the hospital. Hospitals have been implementing computerized physician order entry (CPOE) in order to improve patient safety by eliminating mistakes due to unclear handwriting, improper abbreviations, incomplete orders and other transcription errors. Previous studies have shown that CPOE can reduce medication errors. Because of its simplicity, it allows physicians to focus more on improvement of patient safety. The purpose of this study is to observe the common medication errors encountered in the hospital during the implementation phase of CPOE.

Methods: The pharmacy department examined the common medication errors that occurred during the first two months of CPOE application. The CPOE-related medication errors from August and September 2013 were compared with the written order-related medication errors from June and July 2013. Researchers used the quality assurance communication tool website where health associates reported medication errors or near misses anonymously. They also asked pharmacists to provide a print screen of the common medication errors that they encountered during this period. They investigated what kind of error occurred and where it took place. The medication errors were compiled and placed in different categories based on where the error occurred (physicians, pharmacy, nursing or other).

Results: Five main hospitalists were the first to participate in the new order entry system when the hospital went live in August 2013. After analyzing the medication errors reported from the quality assurance website and gathering the print screen data from the pharmacists, results showed that prescribing errors made by physicians doubled in number when CPOE was implemented. The errors were primarily due to the physician entering the wrong medication frequency and dosage. The main transcription error observed from the pharmacy department was entering the medication without properly adjusting the dose based on the patient's weight and/or renal function. In the nursing department, errors observed were mainly due to entering the wrong dosages and forgetting to indicate whether the order was a telephone or verbal order from the physician.

Conclusion: CPOE can be a useful tool in preventing medication errors. Training associates a few weeks before the program implementation can help reduce the stress and concern from each group or each involved. Additional training may also be beneficial in helping physicians, pharmacists and nurses better understand how to use the system and work together to maintain patient safety.

7-031

Title: Incidence and degree of overanticoagulation associated with concomitant warfarin and oral anti-infective agents

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Purpose: Oral anti-infective agents are often concomitantly prescribed to patients on warfarin. Drug-drug interactions may result in overanticoagulation and thus increase the patient's risk of bleeding. Anti-infective agents may frequently interact with warfarin. The objective of this study is to evaluate the incidence and degree of overanticoagulation associated with concomitant warfarin and select oral anti-infective agents. A secondary objective is to identify the frequency of international normalized ratio (INR) monitoring in patients with concomitant warfarin and oral anti-infective therapy.

Methods: This study will be submitted to the Institutional Review Board for approval. This study will be a retrospective chart review of outpatients over the past six months. Electronic medical records will be used to identify Veterans who were prescribed warfarin concomitantly with at least one oral anti-infective agent in any of the following classes: azole antifungals, macrolides, quinolones, sulfonamides, penicillins, cephalosporins, tetracyclines, or metronidazole. Patients during the period of February 2013 through July 2013 will be identified. The following data will be collected: patient age, gender, medications, warfarin indication, duration of concomitant warfarin and anti-infective agent, INR, frequency of INR monitoring being performed, whether warfarin dose was adjusted proactively by prescriber, and whether any intervention was required as a result of supratherapeutic INR. Data will be recorded in such a manner that subjects cannot be identified, directly or through identifiers.

7-032

Title: Intra-operative liposomal bupivacaine versus standard treatments for post-surgical analgesia in total hip and knee arthroplasties

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Purpose: Liposomal Bupivacaine (LB) is an extended release drug formulation in which the local anesthetic, bupivacaine, is bound to pegylated liposomes. It is designed to be administered intra-operatively via a single intra-articular injection and can provide post-operative pain relief at over 100 hours. The purpose of this study is to determine whether LB compares favorably to traditional analgesia when administered to tissue already deadened with single entity-bupivacaine.

Methods: This study was approved by the Pharmacy and Therapeutics Committee and is pending approval by the Institutional Review Board. The use of LB on anesthetized tissue will be compared by means of a single-blind retrospective cohort analysis versus traditional analgesia modalities including: bupivacaine alone; bupivacaine and epinephrine; and an intra-articular analgesic drug cocktail containing ropivacaine, ketorolac, epinephrine, clonidine, and morphine. The LB dose will not exceed 266 mg. LB-receiving subjects (n equals 20) will be paired with 20 subjects from each alternate treatment group undergoing an arthroplasty of the same joint and matched according to the following baseline characteristics: age, race, sex, body mass index, and anesthesia method. Patients with complications unrelated to LB use that affect length of stay will be excluded. The following endpoints will be analyzed: length of stay, area under the curve of patient pain scores, and total opiates administered while inpatient, as measured in morphine equivalent doses.

7-033

Title: Writing an anticoagulation protocol to be used for treatment of thromboembolism for implementation in an outpatient oncology clinic

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Purpose: Thromboembolism is a leading cause of death in patients receiving chemotherapy. Chemotherapy patients are at an increased risk of developing blood clots compared to healthy patients, which may lead to stroke or myocardial infarction. The clinic currently has no protocol concerning treatment of thromboembolism or use of vitamin K in the treatment of warfarin toxicity. Presently, the physician will determine on a case-by-case basis how to dose anticoagulants or vitamin K. The objective of this protocol is to allow physicians to more accurately treat thromboembolism in a standardized way.

Methods: This study will not be submitted to the Institutional Review Board for approval because no patients are being assessed. A first year pharmacy practice resident, with guidance from a senior pharmacist, was asked by an oncologist to create standard protocols for anticoagulant dosing in the outpatient oncology clinic. The oncologist was contacted to ask what type of anticoagulants she wanted included in the protocol. The oncologist decided to include enoxaparin for bridge therapy, warfarin, and vitamin K for warfarin toxicity. Guidelines for anticoagulation in oncology patients were researched in PubMed and on www.guideline.gov. Guidelines from American Society of Clinical Oncology and National Comprehensive Cancer Network were chosen as the primary resources to base the protocols on. Guidelines and other resources will be reviewed to ensure that all pertinent information is examined for the writing process. Once the protocols are written, they will be discussed with the oncologist for her approval and implemented for use in the outpatient oncology clinic.

7-034

Title: Appropriate administration of vitamin k in patients with supratherapeutic international normalized ratio

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Purpose: The Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines (CHEST 2012) provide recommendations in administration of vitamin K (phytonadione) to patients on warfarin with a supratherapeutic international normalized ratio (INR). The use of vitamin K in patients on warfarin can lead to warfarin resistance for up to one week putting the patient at risk for a thrombosis. The objective of this research project is to identify the incidence of potentially inappropriate administration of vitamin K (as defined by CHEST 2012) in outpatients that are on warfarin with a supratherapeutic INR.

Methods: This project will be submitted to the Institutional Review Board for approval. The project will be a retrospective chart review of patients treated from July 1, 2012 to July 1, 2013 who were on warfarin with a supratherapeutic INR (defined in this study as > 3.5) that received vitamin K administration. The following data will be collected: total number of outpatients on warfarin, total number of INRs, total number of supratherapeutic INRs, active problems, indication for warfarin therapy, length of warfarin therapy, INR results, dose of vitamin K, route and duration of vitamin K administration (s), date of follow up INR following vitamin K administration, and documentation of an active bleed. All data will be recorded without patient identifiers and maintained confidentially. Data collected will be reviewed and deemed compliant with CHEST 2012 or noncompliant with CHEST 2012 guidelines in vitamin K adminstration in supratherapeutic INR.

7-035

Title: Aspirin plus dipyridamole extended release to clopidogrel conversion: a retrospective review of health and associated economic outcomes

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Purpose: The Prevention Regimen for Effectively Avoiding Second Strokes (PRoFESS) trial established that clopidogrel has similar efficacy and tolerability when compared to aspirin 25mg/dipyridamole 200mg ER for secondary stroke prevention. Based on this data, the Regional Pharmacy Benefits Management (PBM) committee endorsed a conversion from aspirin /dipyridamole ER to generic clopidogrel in a veteran population. The objective of this study is to evaluate the clinical and economic impact of this conversion.

Methods: Data for this project originates from the electronic health record that has been transferred, as part of routine VA procedure, to a central data warehouse. Utilizing queries written within SQL Server Management Studio, required data will be extracted and compiled from this data warehouse. Where specific data is not available in the data warehouse, a retrospective electronic health record review will be conducted. The following data will be collected: patient demographics (age, gender), clinical indication and time since thrombotic event, duration of therapy, new thrombotic and bleeding events, reported adverse events; baseline and post-conversion laboratory data including hemoglobin, hematocrit, platelet count, aspartate aminotransferase (AST), alanine aminotransferase (ALT), and serum creatinine; urgent care visits, hospitalizations, and telephone care encounters related to the conversion. Pharmacy prescription fill data will be used to determine medication possession ratio (MPR) for both medications. The total annual drug acquisition cost avoidance resulting from conversion will be compared to the total annual healthcare expenditures pre- and post-conversion. The drug conversion process was approved by the institution Pharmacy and Therapeutics Committee, and this medication use evaluation was approved as a quality assurance project by the facility Institutional Review Board.

7-036

Title: Clinical outcomes of patients with Parkinson disease (PD) treated with monoamine oxidase type B inhibitors (MAOBI)

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Purpose: Parkinson disease is associated with the development of several features such as dementia, dyskinesia, falls, freezing gait, and hallucinations. There are several medications approved for treatment of PD and preliminary data suggests MAOBIs (rasagiline, selegiline) may reduce the risk of developing these motor and non-motor outcomes of PD. The objective of this study is to determine whether the long term use (greater than one year) of MAOBIs alters the risk of developing these clinical outcomes.

Methods: This study has been approved by the Institutional Review Board. Data from up to 1000 patients with PD from a single neurology clinic will be collected through a retrospective chart review. Subjects with PD will be identified by searching clinic records for patients with diagnostic code ICD9332 (Parkinson disease). Additional inclusion criteria will include age between 18 and 100 years and current use of PD medications. The following data will be collected: age, gender, time since diagnosis, MAOBI use and duration, concurrent PD medications and deep brain stimulation, and presence of clinical outcomes: dementia, dyskinesia, falls, freezing gait, hallucinations. Presence of these clinical outcomes will be determined by standard of practice assessment and documentation by movement disorder specialists. Patients will be excluded from final analysis if information is incomplete in regard to age, gender, time since diagnosis, and drug dosages. A Wilcoxon test will be used for analysis of ordinal data and a chi square test for categorical data between groups. Multivariate logistic regression will calculate odds ratios of clinical outcomes between the MAOBI and non MAOBI treatment groups with respect to MAOBI duration. Collected data will be accessed within the research team only and identifiers will be destroyed.

7-037

Title: Evaluation of acute large volume energy drink consumption on electrocardiographic and hemodynamic parameters in young healthy adults: a randomized, double blind, controlled, crossover study

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Purpose: Energy drink consumption in the United States has grown dramatically since entering the market in 1997, rising 60% in the last four years alone. Emergency room visits involving energy drinks have doubled concurrently. Marketed as a dietary supplement, their safety has not been thoroughly evaluated by the FDA. Limited data suggest potential increase in QT/QTc interval, along with case reports of abnormal heart rhythms associated with the intake of energy drinks. This studys objective is to evaluate the electrocardiographic (ECG) and hemodynamic effects of an acute large volume intake of energy drinks in young healthy adults.

Methods: This randomized, double-blind, active-control, crossover study will be submitted to the Institutional Review Board for approval. Twenty healthy subjects between 18-40 years of age without chronic medical conditions or concurrent medication usage will be enrolled after obtaining informed consent. The endpoints evaluated will be QT/QTc interval, peripheral blood pressure, central blood pressure measured via applanation tonometry, and calculated augmentation index (AIx). All endpoints will be measured at baseline, 1,2,4,6, and 24 hours post study drink consumption. Subjects will refrain from consuming caffeine or energy drinks for 48-hours prior to each intervention arm. Subjects will receive either the energy drink or the control drink during the first intervention arm. The control drink will contain an equivalent amount of caffeine (160mg) and sugar (54g) per container as the energy drink but no additional energy-blend ingredients. Subjects will consume two-16oz containers of the assigned drink within 60 minutes. A 6-day washout period will be observed prior to participating in the second intervention arm. The sample size to power this study was determined based on a mean change in QT/QTc interval of 10msec with a standard deviation of 14. Intra-subject and inter-group differences for all endpoints will be analyzed using a paired t-test.

7-038

Title: Impact of multidisciplinary approach to increasing the appropriateness of initial vancomycin trough level acquisition and interpretation using an electronic medical record

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Purpose: Vancomycin, a glycopeptide antibiotic with complex pharmacokinetics, has therapeutic effects that are dependent on trough level concentrations for efficacy and toxicity monitoring. The accuracy of trough levels is dependent on the timing of trough level acquisition at steady state. Established literature recommends a first steady-state trough level concentration measured immediately before the fourth dose. Healthcare systems struggle with the correct timing and acquisition of vancomycin steady state trough levels because of a lack of standardization. The objective of this study is to identify quality improvement areas involving vancomycin trough level ordering, and to assess the impact of the quality improvements.

Methods: A multidisciplinary taskforce was created that included representation from healthcare providers involved in the care of adult and pediatric patients receiving intravenous vancomycin while hospitalized: physicians, nurses, pharmacists, phlebotomists, and microbiology laboratory. The taskforce developed a process map to track the steps involved from the 1) initial vancomycin medication order, 2) vancomycin trough order(s), 3) administration of vancomycin, 4) acquisition of a vancomycin level and, 5) microbiology laboratory processing of the samples collected. The process map will be utilized to identify areas of intervention related to inaccurate trough level acquisition and interpretation. Once each area of intervention is identified, a multimodal approach will be undertaken. A communication and education plan for the changes will be developed. The identified areas of intervention will be assessed three months post implementation, and the data will be compared to a prior retrospective, cohort analysis at our institution. The parameters that will be assessed are: correct sampling, within one hour from dosing interval; appropriately drawn, before fourth dose and one hour from dosing interval; correct dose, immediately before the fourth dose. Statistical analysis will be performed to assess if the intervention improved standardization of vancomycin trough level acquisition. Institutional review board approval is in progress.

7-039

Title: Development and implementation of a clinical pharmacy productivity metric

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Purpose: Pharmacy productivity is traditionally measured using operational metrics such as the number of orders verified or number of doses dispensed. Most institutions do not have a system in place to capture pharmacy cognitive services. Furthermore, a gold standard to guide best practices has not yet been established in the scientific literature. This study aims to develop and implement a new pharmacy productivity metric that captures both operational and clinical activity.

Methods: Prior to data collection, a work group will be established to evaluate and optimize current documentation practices for pharmacy cognitive services. In addition, centralized and decentralized pharmacists and pharmacy technicians will be surveyed to determine the amount of time spent on various high-yield clinical activities. The health systems electronic medical record system and a new electronic documentation system will be utilized to collect data. Data for operational activity will be tracked based on the number of orders processed by a pharmacist, which includes entering, discontinuing, modifying, and verifying orders. Data for clinical activity will be tracked based on the number of clinical interventions documented by a pharmacist, which includes anticoagulation dosing, antibiotic dosing, renal dosing, total parenteral nutrition monitoring, therapeutic substitution, IV-to-PO substitution, code attendance, discharge medication reconciliation, discharge counseling, multidisciplinary rounds, antibiotic stewardship, and pharmacy technician-led medication histories. Each clinical intervention will be weighted based on survey data of the average amount of time spent on each activity. A new productivity calculation will be designed to incorporate both operational and clinical activity and applied over a two-month period.

7-040

Title: Epidemiology and outcomes in healthcare-associated pneumonia (HCAP) at an urban, county hospital

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Purpose: Our hospital serves a large, urban patient population that includes high rates of intravenous drug use (IVDU), human immunodeficiency virus (HIV) infection, and homelessness. There is a high utilization of emergency and inpatient services by this population, and frequent inpatient admissions for pneumonia are common. The purpose of this study is to better define the epidemiology, antibiotic prescribing habits, microbiology, and clinical outcomes of healthcare-associated pneumonia (HCAP) versus community-acquired pneumonia (CAP) at our institution. This information may help inform treatment guidelines specific for the hospital's patient population.

Methods: The institutional review board approved this prospective, observational, cohort study. Data collection for patients admitted to the hospital with a diagnosis of pneumonia commenced from August 2012 through November 2012. Classification of CAP or HCAP was based on the 2005 Infectious Diseases Society of America guideline definitions. The hospital electronic medical record system was utilized to identify patients and monitor therapy and outcomes. The primary outcome was a composite endpoint of treatment failure, which was defined as reported death at our institution within 30 days of admission, readmission within 30 days of discharge, or escalation of the initial empiric antibiotic regimen. The secondary outcome measured the primary outcome plus length of hospital stay exceeding 10 days.

Results: Of the 106 patients diagnosed with pneumonia, 48 patients (45.3 percent) met criteria for HCAP and 58 patients (54.7 percent) were defined as CAP. The baseline demographics of the two groups did not differ significantly. Definitive microbiologic diagnosis was made in only 12.5 percent of HCAP patients and 15.5 percent of CAP patients. In the small number of patients with positive cultures, the microbiology of HCAP and CAP appeared similar. Isolation of multidrug-resistant pathogens was uncommon (less than 4 percent of all patients). For a patient presenting with CAP, the odds ratio (OR) for the primary outcome was 0.34-fold that of someone presenting with HCAP when controlled for confounders such as age, co-morbidities, aspiration risk, and level of care (p-value equals 0.03, 95 percent CI 0.13-0.89). Patients admitted to the hospital for CAP had 0.38-fold odds of achieving the secondary outcome when compared to those admitted with HCAP while controlling for confounders (p-value equals 0.07, 95 percent CI 0.14-1.06). Patients meeting the definition for HCAP who received appropriate empiric HCAP therapy exhibited similar outcomes compared to patients meeting the

definition of HCAP who were treated with narrower antibiotics recommended for CAP (p-value equals 0.13, 95 percent CI 0.02-1.6).

Conclusion: At our institution outcomes for patients meeting criteria for HCAP appear worse than for CAP after controlling for potential confounders. However, adequate therapy for HCAP did not appear to confer an advantage in those meeting criteria for HCAP. This suggests that patients diagnosed with HCAP may be sicker at baseline and lead to poorer outcomes, but resistant organisms do not appear to account for the difference in outcomes at our institution. Due to the small sample size, this study did not establish a clear reason to change current prescribing practices but should be further evaluated with a larger population size.

7-041

Title: Clostridium difficile disease mortality: performance of two prediction score tools in patients receiving metronidazole or vancomycin

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Purpose: The objective is to determine if information readily available at the time of treatment correlate with CDI (Clostridium difficile infection) outcome. The primary aim is to evaluate the ATLAS (age, treatment with systemic antibiotics, leukocyte count, albumin and serum creatinine) scoring system in predicting CDI response and recurrence rates in patients being treated with metronidazole or vancomycin. The second aim is to determine if an alternate scoring system or weighting scheme provides a more accurate predictive tool for CDI response and recurrence.

Methods: This study has been submitted to the Institutional Review Board for approval. This retrospective cohort study will collect data from 500 patients from four hospitals in southern California with positive results for CDI disease diagnosed between January 2009 and August 2013. Data from a random sub-sample of 250 patients will be used to perform a multivariable logistic regression model with a recurrence and 30-day all-cause mortality as a dependent variable. Covariates such as age, treatment with systemic antibiotic usage, leukocyte count or WBC count, serum albumin and serum creatinine, if retained in the model, will be assigned weighted points to develop a recurrence and 30-day all-cause mortality prediction score. Data from the second sub-sample of 250 patients will be used to validate the prediction score tool developed as well as the ATLAS Scoring System. The performance of the scoring tools will be estimated by calculating the area under the receiver operating characteristics curve.

7-042

Title: Evaluation of the role of the pharmacist in transitions of care for cystic fibrosis patients at a pediatric hospital

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Purpose: The impact of a pharmacist in reducing readmission rates of cystic fibrosis (CF) patients at a pediatric hospital has not yet been evaluated in recent published studies. Pharmacists are part of the CF multidisciplinary team to provide medication reviews, assist in medication scheduling, and counsel patients on proper medication use. The objectives of this study were to 1) evaluate the clinical impact of pharmacist interventions and discharge counseling in transitions of care by comparing 30-day readmission rates before and after the addition of a pharmacist to the team, and 2) categorize pharmacist interventions made at the outpatient CF clinic.

Methods: A retrospective chart review was conducted in two phases: prior to and after the addition of pharmacists to the CF multidisciplinary team (8/2011-2/2012 and 8/2012-2/2013, respectively). Inclusion criteria were patients with a diagnosis of CF or CF Related Metabolic Syndrome taking one or more medications. Patients were excluded if they did not see a pharmacist during clinic visits or hospital admissions. Readmission rates within 30 days of discharge were compared between the two groups. Readmission rates were compared by Chi-Square test. Readmission rates were further stratified to patients seen by pharmacists in the inpatient or outpatient setting and patients seen by pharmacists in both settings. Number and type of interventions by pharmacists were also collected.

Results: There were 81 patient encounters (pharmacist) and 102 patient encounters (no pharmacist) evaluated in each group. Both groups did not differ in baseline characteristics. There were fewer 30-day readmissions after the addition of a pharmacist to the CF team, although it did not reach statistical significance (11.1% pharmacist vs. 18.6% no pharmacist, p=0.16). The 30 day readmission rate was lowest at 6.5% for patients seen by a pharmacist in both outpatient and inpatient settings. In the CF clinic, 281 pharmacist interventions were recorded, with 40% made for physicians and 60% made for patients/parents. Interventions for physicians included dose adjustments (22.4%), formulation changes (5.7%), and discontinuation of a medication (4.3%). Interventions for patients/parents included correction of medication frequency/dose (17.1%), optimization of medication scheduling due to identification of potential drug interactions (12.8%), and education on proper inhaler use (11.4%).

Conclusion: Pediatric cystic fibrosis patients may benefit from pharmacist-led discharge counseling sessions as well as medication-related interventions made in the outpatient clinic setting. Pharmacists as part of a multidisciplinary team may play a role in reducing 30-day readmission rates in pediatric CF patients.

7-043

Title: A pharmacist initiated probiotic program targeting Clostridium difficile rates in hospitalized patients

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Purpose: Probiotics have been shown to be effective in preventing antibiotic associated diarrhea in numerous clinical trials. At this time, the use of probiotics in conjunction with antibiotics is controversial; however, there are a number of studies that have shown improved outcomes. Certain antibiotics are more commonly associated with Clostridium difficile associated diarrhea (CDAD) and are considered to be high risk such as carbapenems, cephalosporins, clindamycin, and fluoroquinolones. The purpose of this study is to evaluate the efficacy of probiotics in preventing CDAD.

Methods: Through a protocol approved by the Pharmacy and Therapeutics Committee (P&T) at Desert Regional Medical Center (DRMC), pharmacists were able to empirically provide probiotic supplementation for patients on high risk antibiotics to reduce the incidence and severity of antibiotic associated diarrhea. Literature supports probiotics containing either Lactobacillus or Saccharomyces to reduce the incidence of antibiotic associated diarrhea and CDAD. Based on this, Florastor (Saccharomyces boulardii) was chosen as the probiotic of choice for inpatient therapy. Probiotics were initiated with the first dose and continued until discharge or physician order to discontinue. A retrospective chart review of a random sampling of patients on both antibiotics and probiotic therapy was conducted to compare CDAD rates with a historical control. Data collection included type of antibiotic used, duration of probiotic administration, and C. difficile rates both with and without probiotic use. Exclusions to probiotic therapy included: immunosuppression, children<13 years old, NPO status, pregnant or lactating females, or those with implantable devices.

7-044

Title: Impact of pharmacist-driven medication reconciliation and discharge counseling on 30-day readmission rates

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Purpose: Hospital readmissions following patient discharge account for a large portion of healthcare expenditure. A recent publication showed that pharmacist medication reconciliation and discharge counseling significantly reduced readmission rates in the intervention group vs. control group (16.8 percent vs. 26 percent). Due to large healthcare expenditures, the preventable nature of hospital readmissions, and the accessibility of pharmacists, pharmacist-driven medication reconciliation and discharge counseling may contribute to decreasing our hospital's readmission rates. The primary objective of this study is to determine if implementation of pharmacist-driven medication reconciliation and discharge counseling results in reduced 30-day readmission rates.

Methods: This study is exempt from Institutional Review Board approval as only aggregate data will be used to measure the outcomes. The list of patients to be potentially discharged will be provided by nursing and transferred to pharmacists dedicated to medication reconciliation and discharge counseling. The pharmacists will screen the patients for counseling according to age over 70 years and greater than 10 discharge medications or discharge on high risk medications including anticoagulants, insulin, digoxin, and opioids. Patients with decreased mental capabilities, who speak a foreign language, and patients being discharged to skilled nursing facilities will be excluded from discharge counseling. Readmission rate data will be collected prospectively and compared against a retrospective control group.

7-045

Title: Safety and efficacy of intramuscular olanzapine alone or in combination with benzodiazepines for the management of acute agitation in the emergency department

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Purpose: Acutely agitated patients in the emergency department (ED) have been conventionally treated with first generation antipsychotics (i.e. haloperidol) alone or in combination with benzodiazepines (BZDs). Second generation antipsychotics (i.e. olanzapine) have also been used in the ED for management of agitation. Concomitant use of intramuscular (IM) olanzapine and parenteral BZDs may result in excessive sedation and cardiorespiratory depression. Although the manufacturer recommends against the concurrent use of IM olanzapine and BZDs, simultaneous use of both is still observed. This study aims to evaluate the safety and efficacy of IM olanzapine with or without BZDs for the treatment of acute agitation.

Methods: This study was submitted to the Institutional Review Board for approval. A retrospective electronic chart review will be conducted for all patients who have received IM olanzapine in the emergency department of a teaching hospital between October 2011 and July 2013. Inclusion criteria include patients age 18 years and above who have received IM olanzapine with documented vital signs and oxygen saturation prior to drug administration, and within 4 hours afterward. Patients will be excluded if they are pregnant or younger than 18 years of age. Data collected will consist of patient demographics, past medical history, recent use of antihypertensive agents, admission diagnosis, vital signs (blood pressure, heart rate, and respiratory rate), evidence of alcohol or substance abuse at admission, oxygen saturation and the administration of drugs associated with the management of agitation. Objective data will be analyzed to determine if certain patient characteristics pose potential risk factors for adverse drug outcomes when given IM olanzapine with or without BZDs. Safety will be evaluated by means of drug effects on vital signs, episodes of hypoxia and mortality in acutely agitated patients. Efficacy endpoint will be analyzed based on the need for additional medical interventions within 2 hours of treatment initiation.

7-046

Title: Patient specific parameters which compel the use of voriconazole in the treatment of coccidioidomycosis over traditional antifungal therapy

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Purpose: Traditional antifungal treatment options for coccidioidomycosis are not always effective; an alternative treatment option would be valuable. Voriconazole has shown favorable effects in refractory coccidioidomycosis. Studies are needed to identify patients most likely to benefit from early use of voriconazole. Early initiation of voriconazole therapy could prevent disease progression, avoid or decrease hospital stay, and decrease healthcare costs. The purpose of this study is to identify common characteristics in patients with coccidioidomycosis nonresponsive to traditional therapy that may contribute to treatment failure. These characteristics may predict the need for voriconazole earlier in the course of coccidioidomycosis treatment, preventing disease progression.

Methods: This study will be submitted to the Institutional Review Board for approval. An observational retrospective study of infected coccidioidomycosis patients hospitalized between 2005 and 2013 will be conducted. Identification of eligible patients and data collection will be achieved by accessing electronic health record databases and archived hard copies of medical records. In order to identify patients with coccidioidomycosis, a list of patients who have received voriconazole therapy will be generated and reviewed to identify patients with coccidioidomycosis nonresponsive to fluconazole therapy. Patients will be excluded from this study if they are pregnant or under eighteen years of age. Data will be collected to determine similarities within the patient population that may have contributed to treatment failure with traditional antifungal therapy. Pertinent data will include: patient demographics, concurrent medical conditions, microbiologic cultures, pathology results, serologic test results, radiographic studies, location of dissemination, duration of symptoms, length of therapy for antifungal agents, signs and symptoms of disease regression or improvement and patient outcomes. The collected data will be analyzed to identify common parameters in patients likely to respond to voriconazole therapy.

7-047

Title: Evaluation of risk factors in patients with never in control hypertension

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Purpose: Hypertension control rates continue to be low, despite overall improved control rates in recent years. Hypertension poses many risk factors and complications that include cardiovascular and renal morbidity and mortality: controlling hypertension is vital. The objective of this study is to identify risk factors and modifiable barriers that may be associated with hypertension that has never been in control (NIC), in a population already exposed to concentrated hypertension control efforts. In identifying risk factors and creating a risk model associated with NIC hypertension, we hope to use that information to improve hypertension control.

Methods: This was a retrospective cohort study in a large integrated staff model healthcare system in Southern California. Electronic medical record system, HealthConnect, was used to identify patients with a diagnosis of hypertension from January 1, 2010 to December 31, 2012, diagnosed through ICD-9 code. From this group, patients with never in controlled (NIC) hypertension for 18 months or more from the time of diagnosis were identified. Patients must have at least 75% of blood pressure readings greater than or equal to 140/90 with a total of 4 or more blood pressure readings from the time of diagnosis. Physiologic and demographic factors were analyzed. This included age, gender, body mass index, alcohol use, smoking, ethnicity, education level, number of antihypertensive agents and length of time on the medications, other concurrent medication use, intercurrent conditions, adherence score, payor status (commercial, Medicare, Medicaid), and deductible status (such as higher deductible or self-funded). Findings will be presented.

7-048

Title: A Veterans Affairs Experience with Sorafenib in Advanced Hepatocellular Carcinoma

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Purpose: In 2013, over 28,000 new cases of liver cancer and 20,000 liver cancer-related deaths are expected to occur in the United States. Approximately 80% of these cases will consist of hepatocellular carcinoma (HCC), or liver cancer. The Federal Drug Administration (FDA) approved sorafenib in 2008 for treatment of unresectable HCC. Sorafenib is shown to inhibit multiple intracellular (RAF) and cell surface kinases (VEGF) implicated in hepatic carcinogenesis. The purpose of this retrospective chart review was to evaluate the efficacy, safety, costs of sorafenib use in a veterans population at VA Greater Los Angeles with hepatocellular carcinoma.

Methods: A retrospective chart review was conducted to identify all patients who were prescribed sorafenib from November 1, 2007 to September 30, 2011 who had a diagnosis of hepatocellular carcinoma, who were initiated and managed by a provider within the institution, and who were eligible for a one-year evaluation period. This study was approved by an investigation review board at the Veterans Affairs Greater Los Angeles Healthcare System (VAGLAHS).

Results: The median overall survival time was 117 days, ranging from 21 days to 60 months. At one year, the overall survival rate was 40.5%. In the group that survived at one year, ECOG Performance Status scores were no greater than 1 and only one patient presented with Child Pugh Class B. In contrast, in the group who did not survive at one year, there were four patients with ECOG Performance Status scores greater than 1 and nine patients that presented with Child Pugh Class B or C. The median duration of treatment was 3.4 months, ranging from 5 days to 60 months. Reasons for discontinuing sorafenib included symptomatic progression (52.4%), radiographic progression (23.8%), severe adverse effects (16.7%), and mild-moderate adverse effects (11.9%). Serious adverse effects were intracranial hemorrhage, gastrointestinal hemorrhage, gastrointestinal perforation, and acute renal failure; three of these events led to death.

Conclusion: This study suggests that patients diagnosed with hepatocellular carcinoma that present with poor performance scores and moderate-severe hepatic impairment, which was observed in the veteran population at VAGLAHS, may experience less benefit from sorafenib than other populations.

7-049

Title: Implementation of a dispense queue logic program at a tertiary care hospital

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Purpose: Titratable intravenous (IV) medications are compounded at our institution using the cart fill technique. This process uses static data, which may result in waste of time, labor, and pharmaceutical products. Dispense queue logic is a program that allows pharmacy technicians to determine, in real time, which medications actually need to be compounded based on administration rate. The objective of this study is to determine the amount of pharmaceutical waste reduction that a dispense queue logic program may provide. By expanding technology and pharmacy technicians' involvement in patient care, this promotes ASHP's Pharmacy Practice Model Initiative (PPMI).

Methods: Utilizing an electronic medical record (EMR) system upgrade, the dispense queue logic program will be implemented in a satellite pharmacy in our decentralized pharmacy model. This satellite serves cardiology and bone marrow transplant (BMT) patients. It was chosen based on the level of pharmacy technician and pharmacist engagement, as well as the patient population. In the dispense queue logic model, the pharmacy technician will conduct IV rounds at scheduled times throughout the day to determine which titratable medications will need to be compounded and which medications will not need to be compounded for that time frame. The technician then utilizes the dispense queue within the EMR to print labels for medications that will need to be compounded while cancelling labels for medications that do not need to be compounded. Pharmaceutical waste was collected from the satellite for 12 days pre-implementation. Cost analysis will be conducted for the medications collected as waste. This will be compared to any waste collected 12 days post-implementation of the dispense queue logic program. Feedback collected from pharmacy techniicans and pharmacists will be utilized to implement future enhancements in the program.

7-050

Title: Common barriers and potential solutions to student participation in international advanced pharmacy practice experience programs

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Purpose: Despite growing interest, many barriers to student participation in an international advanced pharmacy practice experience program (IAPPEP) exist. The purpose of this study was to assess the impact of IAPPEP on student participants and site preceptors, identify barriers and develop solutions to student participation.

Methods: We surveyed all previous University of California San Francisco IAPPEP student participants and site preceptors, current 1st and 2nd year UCSF SOP students, and schools of pharmacy via email or direct contact in 2011-2013. Schools of pharmacy were selected based on their IAPPEP activities. With questionnaires consisting of 13-34 questions, impact of IAPPEP was assessed in previous participants and preceptors, barriers were identified in previous participants and current students, and application processes for IAPPEP were evaluated in schools of pharmacy. A literature review of international experiential programs for health care professional students was conducted to compare barriers and to develop solutions to improving IAPPEP.

Results: A total of 18 previous participants, 9 site preceptors, 178 current students, and 5 schools of pharmacy participated in the study with the response rate ranging 78-100%. The vast majority of the previous participant respondents (94%) reported that IAPPEP was a worthwhile experience. All of the preceptor respondents felt that students made positive contributions to their site. The respondents identified cost, lack of information, long application process, and language as major barriers, consistent with the results of literature review. Schools of pharmacy had various application processes for IAPPEP. Potential solutions included scholarships/grants, partnership affiliations agreement, established website, utilization of third party services, and pre-departure courses.

Conclusion: Despite positive impact on students and sites, common barriers to IAPPEP participation were identified. Potential solutions developed may be used in other institutions for improvement or development of their own IAPPEPs.

7-051

Title: Impact of telephone follow up after hospitalization in patients on warfarin

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Purpose: The benefits of pharmacist intervention have been seen in medication education and discharge planning. Studies have shown that pharmacist intervention decreases disease exacerbations and readmissions as well as increases patient satisfaction. This community hospital experiences a sizeable increase in admissions during winter due to seasonal fluctuations in population. Many patients do not have a local PCP or cardiologist to follow up with after discharge or do not follow up at appropriate intervals. This study aims to determine the impact of a pharmacist-based post discharge telephone follow up on patient adherence to discharge instructions related to warfarin monitoring and dosing.

Methods: A quality initiative was created to improve outpatient warfarin use and potentially decrease re-hospitalization. Patients on warfarin prior to admission whose INR upon admission is sub or supratherapeutic will be evaluated. Target therapeutic range will be determined by indication per CHEST 2012 guidelines. Students or resident pharmacists will provide inpatient warfarin counseling. An assessment using a questionnaire will be performed after each counseling session until the patient has full understanding about the medication. A student or resident will perform a telephone follow up on day 3 and day 7 days post discharge. At this time the student or pharmacist will assess proper adherence and follow up for warfarin therapy using a standardized questionnaire. Each account will be reviewed 30 days after discharge to determine if readmission is due to complications from warfarin use. Based on the data collected investigators will determine the utility of telephone follow up on patient satisfaction and adherence to warfarin monitoring, particularly in patients who do not have a primary care physician in Florida. The adherence rate of patients followed in the affiliated warfarin clinic will be compared to other modalities for follow up. All data will be collected without patient identifiers and remain confidential.

7-052

Title: Therapeutic and pathological risk factors associated with severe hypoglycemia in a community hospital

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Purpose: Severe hypoglycemia can be a life threatening condition, especially in critically ill patients. Particular attention needs to be taken in order to optimize glucose control protocols and minimize the occurrence of severe hypoglycemic events in hospitalized patients. Our objectives are to identify risk factors associated with severe hypoglycemia occurring in adult patients hospitalized in a community based medical center predominantly serving underprivileged patients. We also aim to promote awareness among medical staff regarding the risk factors and causes of severe hypoglycemia and implement new strategies to improve patient care and safety.

Methods: This study is IRB approved. This is a retrospective chart review of thirty seven episodes of severe hypoglycemia, defined as a blood glucose level of less than 40 mg/dL between January 2013 and April 2013 at a community based medical center. Inclusion criteria included all adult patients 18 years of age or older. Patients were excluded if they were pregnant or younger than 18 years of age. Several variables were reviewed including age, sex, BMI, primary diagnosis, type of insulin and oral hypoglycemic agents ordered, serum creatinine and frequency of hypoglycemic events. Episodes were classified into three cohorts: insulin related, oral hypoglycemic medication related, and nonhypoglycemic medication related. The Cockgroft & Gault equation was used to estimate renal function and was categorized by the National Kidney Foundations classification of chronic kidney disease (CKD).

Results: Severe hypoglycemia during night shift was identified as a common issue in hospitalized patients (63%). Severe hypoglycemia was commonly observed when concomitant administration of insulin sliding scale and long acting or mixed insulin were dispensed at bedtime and without meals. Elderly on glyburide therapy were more at risk of oral hypoglycemic induced hypoglycemia (83%). Severe hypoglycemia was also frequently observed in critically ill patients presenting with Stage 3, 4 and 5 CKD (78%).

Conclusion: Hospitalized patients can be predisposed to hypoglycemic events due various risks factors. Identification of such risks factors can serve as a guide for practitioners on how to optimize patients glycemic control.

7-053

Title: Development and implementation of an intranet-based pharmacy intervention documentation program

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Purpose: Documentation of pharmacist interventions is vital to assessing pharmacists' impact on the safety, quality, and cost of patient care. A decline in the number of pharmacist interventions reported was observed at a cancer hospital over the last few years despite previous efforts to improve the documentation system. The need to capture more meaningful interventions to demonstrate positive outcomes of pharmacist interventions was also identified. The purpose of this study was to select, develop, and implement an effective pharmacy intervention program that would facilitate the documentation of meaningful pharmacist interventions.

Methods: A baseline survey was conducted to identify barriers that pharmacists perceived were preventing them from documenting interventions. A literature search was then performed to identify different types of documentation tools that would help address these barriers. After comparing several documentation systems, an intranet-based program was selected to develop a new intervention documentation program. From December 2012 to January 2013, a pilot group of 13 pharmacists received education on using the new intervention program, and then documented their interventions in the new program. At the end of the pilot study, the group was surveyed to assess the accessibility and usability of the new intervention program. The intervention program was modified to eliminate barriers to documentation that continued to persist after the pilot study. The final intervention program was launched to all pharmacists in February 2013. After launch of the new program, emails with dashboards depicting documentation progress were sent to all staff pharmacists every two weeks to remind and encourage pharmacists to continue documenting their interventions. Monthly pharmacy intervention data was collected before and after implementation. A post-implementation survey was also conducted two months after the launch of the new program.

Results: A total of 677 interventions were reported during the post-implementation phase (March to April 2013) compared to 100 interventions reported during the pre-implementation phase (October to November 2012). Twenty-five pharmacists completed the post-implementation survey. All survey responses were positive or neutral with respect to pharmacists feeling that the new intervention program was quick to access, easy to use, and that the data fields were streamlined. A majority of the pharmacists also felt that training for the new intervention program was adequate and effective. Comparing responses from the baseline survey, the number of pharmacists who never document

interventions decreased from 14 to 3, and the number of pharmacists who document interventions during every shift increased from 2 to 6 after implementation of the new program.

Conclusion: An intranet-based intervention program is an effective and convenient tool for capturing pharmacist interventions. Providing sufficient training for pharmacists, supplying regular email reminders, and optimizing the speed and efficiency of the pharmacy intervention documentation program may improve pharmacist intervention reporting trends.

7-054

Title: Safety and efficacy of nitrofurantoin in elders, a case control study

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Purpose: The American Geriatrics Society's 2012 update to the Beers Criteria describes potentially inappropriate medications to avoid in adults 65 years and older due to risk for adverse events and limited efficacy. One of the medications recommended to be avoided is nitrofurantoin due to its potential for pulmonary toxicity and lack of efficacy with CrCl less than 60 ml/min. These recommendations are based on expert opinion. The aim of this study is to determine the prevalence and incidence of nitrofurantoin-associated pulmonary fibrosis or other organ fibrosis and to examine its effectivenes in treating urinary tract infections with CrCl less than 60.

Methods: This retrospective, case-control study will gather data from an electronic medical record system from a large, integrated health system from 1998 to 2012. Patients 65 years and older who were diagnosed with pulmonary fibrosis or other organ fibrosis will be identified via ICD-9 codes. These patients will be matched with control subjects within the health system without a diagnosis for pulmonary fibrosis or other organ fibrosis. Prior exposure to nitrofurantoin will then be evaluated among each group. Patients 65 years and older with a CrCl less than 60 ml/min (identified via the Cockroft-Gualt calculation) and who were re-treated with antibiotics after five days of urinary tract infection treatment will be identified. These patients will be matched with control subjects who had a CrCl less than 60 ml/min and did not receive re-treatment. Among both groups, the initial use of nitrofurantoin for urinary tract infection treatment will be evaluated. Cases and controls will be matched on age and gender. Covariates include current medications or conditions that may result in organ fibrosis or decreased efficacy of nitrofurantoin. Logistic regression analysis will be used to determine the association between nitrofurantoin and organ fibrosis and the relationship between CrCl and efficacy of nitrofurantoin.

7-055

Title: Warfarin-related hospital readmissions: effects of implementing a pharmacist-managed anticoagulation clinic in a community hospital

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Purpose: The primary objective of this study is to compare warfarin-related hospital readmission rates pre- and post-implementation of a pharmacist-managed anticoagulation clinic. The CHEST 2012 guidelines acknowledge warfarin therapy is most effectively managed under the coordinated care of an anticoagulation clinic. A pharmacist-managed outpatient anticoagulation clinic will open at a 515-bed acute care facility in the Los Angeles metropolitan area in the fall of 2013. Under the affordable care act, hospital readmissions due to any cause within 90 days will lead to a rescission of federal insurance reimbursements; thus, optimization of warfarin therapy is one solution to reducing readmission rates.

Methods: The total number of patients discharged from the hospital receiving warfarin therapy during a twelve-month period pre-implementation of the anticoagulation clinic will be collected. Subsequently, the total number of warfarin-related hospital readmissions during the same period will be evaluated through the hospital's health information management system. Next, the total number of warfarin-related hospital readmissions will be evaluated for a three-month period post-clinic implementation. Patients readmitted for warfarin-related adverse events will be stratified into two groups: patients managed by the anticoagulation clinic and non-clinic patients; adverse events and INR will be evaluated. The number of warfarin-related hospital readmissions pre and post-implementation will be statistically analyzed using a student's t-test. The post-implementation readmission data of the clinic group and non-clinic group will be compared using a student's t-test. The following data will be collected: patient age, gender, ethnicity, current medications, PT/INR values, and reported adverse medication events. This study has been submitted to the hospital institutional review board (IRB) for review.

7-056

Title: Epidemiology and treatment outcomes of hospitalized patients with skin soft tissue infections in the era of MRSA epidemic

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Purpose: To determine the clinical and molecular epidemiology of SSTI. To compare the clinical presentation associated with MRSA vs non-MRSA SSTI. To assess the management approach of SSTI and associated outcomes.

Methods: Medical records from January 2012 to December 2012 at Huntington Hospital will be reviewed retrospectively to identify patients who were admitted to the hospital for presentation of SSTI using ICD-9 codes relating to SSTIs. Patients will be categorized into 3 major groups depending on their wound culture result: MRSA, non-MRSA, and no growth. Patient demographics, co-morbid conditions, and clinical features at presentation of infection along with antibiotic regimens prescribed and surgical interventions will be recorded. Clinical features and evaluation on treatment response will include criteria per recent FDA guideline in clinical trials. Outcome measures include days to cessation of spread and resolution of fever, length of stay (LOS), 30-day mortality, and readmission within 30 days of hospital discharge.

7-057

Title: Therapeutic drug monitoring of phenytoin: an assessment of current practices at a trauma based community hospital

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Purpose: Although the serum therapeutic range of phenytoin is relatively well defined, the appropriate dose and interpretation of serum concentrations are not as straightforward. Several studies have shown that serum level measurements are often requested without an appropriate indication, that blood sampling is done at an incorrect time point, or that the result is interpreted incorrectly. The objective of this retrospective study is to evaluate the appropriateness of therapeutic drug monitoring of phenytoin and fosphenytoin at a trauma based community hospital. The findings will ultimately help determine if a pharmacy dosing protocol is warranted.

Methods: This study will be submitted to the Institutional Review Board for approval prior to commencement. Medical records will be reviewed for patients who were on phenytoin or fosphenytoin and 18 years of age or older. Phenytoin serum levels will be evaluated using three criteria previously defined in the literature. These criteria include appropriate indication for ordering a phenytoin serum level, correct sampling time, and proper adjustments to the phenytoin or fosphenytoin regimen relative to the serum level. The fulfillment of all three criteria is needed to classify a patient as appropriately monitored and based off this, patients will be categorized into two cohorts: appropriately monitored and inappropriately monitored. The following data will be collected and compared between the cohorts: relevant demographics, co-morbidities, seizure type, hospital service, concurrent medications, length of hospital stay, length of intensive care unit stay, seizure control, ventilator days, phenytoin/fosphenytoin dose, phenytoin toxicity, and mortality. Patient data will be collected within the parameters of the study, without patient identification, and will maintain confidentiality.

7-058

Title: Ethanol locks in the prevention and treatment of catheter-related bloodstream infections

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Purpose: Catheter-related bloodstream infections (CRBSI) are associated with significant morbidity and mortality with increased length of stay and higher health care costs. Considering the potentially preventable nature of CRBSI, effective prophylaxis and treatment interventions are needed. Ethanol is a cost-effective antiseptic with no known acquired resistance and minimal adverse effects. The objective was to determine the role of ethanol lock therapy (ELT) in the prevention and treatment of CRBSI.

Methods: Studies were identified using Pubmed and a review of all references of relevant papers. Studies were evaluated for study design, patient population size, and availability of key outcomes data. For prevention, the primary outcomes were rates of infection and catheter removal associated with ELT. For treatment, the primary outcomes included rates of ELT-associated clinical cure and line salvage.

Results: A total of 49 unique papers were identified for CRBSI prophylaxis and 96 for treatment. After application of exclusion criteria, 13 papers were included for analysis for prophylaxis and 9 papers for treatment. 627 patients were included in 13 prophylaxis studies with all studies reporting a decreased rate of infection and catheter removal with ELT. The most efficacious ELT regimen was 70 percent ethanol, and a 2-4 hour dwell time exchanged daily for 1 month or longer. 213 catheters were evaluated in 8 treatment studies, with an overall clinical cure rate of 94 percent (200/213) and line salvage rate of 84 percent (179/213). ELT was always used with systemic antibiotics and the most common regimen was 70 percent ethanol with a 12-24 hour dwell time, exchanged for a duration of 1-5 days. ELT was either aspirated or flushed with equal frequency. Blood ethanol concentration measured after flushing ELT did not reveal clinically significant levels. No serious adverse events were reported with use of ELT.

Conclusion: ELT used for the prevention or treatment of CRBSI suggests that ELT is both efficacious and safe. Prophylactic ELT decreases the rate of infection and catheter removal and ELT treatment appears to augment the effect of systemic antibiotics. Prospective, randomized, placebo-controlled studies with optimized ELT regimens are needed to confirm the results of this review.

7-059

Title: Evaluating the effectiveness of education by the pharmacist in reducing indiscriminate wound cultures ordered in the emergency department (ED)

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Purpose: Reviews of the ED cultures revealed a concerning number of wound cultures ordered and whether current best practices are being utilized when ordering these cultures. Since there is no consistent standard of practice in ordering wound cultures in the ED, the ED pharmacist will provide education to the staff on when to appropriately order wound cultures based on current wound care best practices and Infectious Diseases Society of America (IDSA) recommendations. The purpose of this study is to determine whether education provided by the ED pharmacist can reduce the number of indiscriminate wound culture orders.

Methods: This retrospective study will review patients' medical records from the ED with primary and secondary diagnosis of cellulitis, wound and skin infection during the pre-education (January 1st, 2013 to May 31st, 2013) and post-education period (October 1st, 2013 to February 28th, 2014). Education is provided through a developed wound culture algorithm (WCA) based from current wound care practices and IDSA skin-related infection guidelines during the month of September 2013. The pre- and post-education groups will be assessed to determine if their wound orders followed or deviated from the WCA, with indiscriminate wound culture orders defined as deviating from the WCA. Baseline characteristics of patients will include age, gender, past medical history, and vital signs upon initial presentation to the ED. Other objectives of the study include evaluating the cost savings from the number of indiscriminate wound culture ordered, and comparing the differences in the total number of wound cultures ordered, the total number of wound cultures that followed the WCA, the total number of positive cultures and whether that altered antibiotic therapy, and revisit to the ED within 14 days of the pre- versus post-education groups. This study will be submitted to the Institutional Review Board for approval.

7-060

Title: Impact of concomitant probiotic use with antibiotic treatment for the prevention of Clostridum difficile-associated diarrhea (CDAD) in high risk patients

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Purpose: Antibiotic treatment can disturb the resistance of gastrointestinal flora to colonization, leading to the development of Clostridium difficile-associated diarrhea (CDAD). CDAD is the most common cause of hospital-acquired infectious diarrhea, resulting in increased hospital length of stay and health care costs. Literature suggests that there is moderate-quality evidence that probiotic prophylaxis results in a large reduction in CDAD without an increase in clinically significant adverse effects in high risk patients. This project is designed to measure the incidence of CDAD at a community hospital with the use of probiotics in high risk patients receiving antibiotics.

Methods: This study is exempt from the institutional review board as outcomes will be measured by rate comparison without patient-specific data. As part of an antimicrobial stewardship program, patients at high risk for CDAD receiving antibiotics will be identified by clinical pharmacists. Patients are considered high risk for CDAD if they meet one of the following criteria: age over 70 years, admitted from a skilled nursing facility, history of recurrent or previous CDAD, or previous hospitalization within 30 days of admission with exposure to antibiotics during that time. Patients will be excluded if they have any of the following: compromised immune system, oncological/hematological disease, pregnancy, history of gastrointestinal surgery, history of intestinal parasitic disease, or receiving vancomycin or metronidazole. During rounds with the Infectious Disease physicians, the pharmacist will intervene if the patient is determined to be a candidate for probiotics. Lactobacillus acidophilus (Florajen) one capsule twice daily for the duration of antibiotic treatment will be recommended to the prescribing physician. Clostridium difficile infection rates will be compared with historical controls.

7-061

Title: Evaluating the effectiveness of implementing a new subcutaneous insulin order set to improve glycemic control in hospitalized patients requiring corticosteroids

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Purpose: Persistent hyperglycemia has been associated with an increased risk of complications such as infections, cardiovascular diseases, and longer hospital stays. In hospitalized patients, corticosteroid therapy can contribute to hyperglycemia. These patients may require a different and more dynamic approach to insulin therapy. Given its complexities, an order set that accounts for this acute variation can address the needs of these patients to improve glycemic control. This study aims to evaluate the effectiveness of implementing a new subcutaneous insulin order set (SIOS) specifically in patients on corticosteroids to improving glycemic control.

Methods: This study will be submitted to the Institutional Review Board for approval. Retrospective chart reviews will be conducted on patients receiving subcutaneous insulin and corticosteroid therapy equivalent to prednisone greater than 15mg per day for greater than 24 hours. Data will be collected before and after the implementation of a new (SIOS) for patients receiving corticosteroids. Patients will be excluded if they have Type 1 Diabetes and been hospitalized for less than 24 hours. Patients with diabetic ketoacidosis and hyperglycemic hyperosmolar syndrome will also be excluded. All data will be collected without patient identifiers and maintained confidentially. Primary endpoints include patient days with well-controlled blood glucose (BG) within 70-180mg/dL and episodes of extreme hypoglycemia (BG <40mg/dL) or hyperglycemia (BG >300 mg/dL). The secondary objective is to compare the number of patient days the SIOS was implemented and hospital length of stay before and after the implementation. The expected sample size will be 200 glycemic patient days in each group. This should be adequate to detect a 20-30 percent reduction in extreme glycemic days (power of 80 percent and alpha of 0.05). Statistical analysis will be performed using the statistical program R. Confounding data will be adjusted using appropriate regression models.

7-062

Title: Effects of Enhanced External Counterpulsation on delayed onset muscle soreness, a pilot study

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Purpose: Enhanced External Counterpulsation (EECP) is a non-invasive device that enhances blood circulation and is FDA approved for stable angina. Delayed onset muscle soreness (DOMS) is thought to be part of an inflammatory process that takes place after high intensity workout sessions and can last for as long as five to seven days. The objective of this study is to evaluate the effects of EECP on DOMS. Based on the results of this study, EECP could serve as a tool to help active duty members train more frequently, with higher intensity and increase long-term performance.

Methods: This randomized, non-blinded, crossover study will be submitted to the Institutional Review Board for approval. Twenty healthy subjects between the ages of 30 and 60 years old without any current medical conditions or on medication therapy will be included in the study. Subjects will be randomized into two treatment groups, either having EECP or not having EECP therapy. Additionally, 50% of the subjects will receive EECP before exercise and the other 50% will receive EECP after exercise. DOMS will be induced by intensive exercise sessions. The EECP therapy will be 30 minutes long. There will be a 30b5 day washout period between each session. The primary endpoints are total time of DOMS, intensity of pain during DOMS, laboratory tests (CRP, CPK and WBC) to measure inflammatory markers, and a pain tolerance test. Time and intensity of pain will be measured using a pain scale sent by text message every 3 hours after exercise during waking hours. All other endpoints will be measured at baseline, 24, 48 and 72 hours post exercise. A students paired t-test or ANOVA with a bonferroni post-hoc test will be utilized for statistical analysis.

7-063

Title: Pregabalin three times daily (TID) to twice daily dosing (BID): a post-conversion analysis in a veteran population

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Purpose: Pregabalin is a non-formulary drug within the Veterans Health Administration (VHA) and is only dispensed if evidence-based criteria have been met. Although often dosed three times daily (TID), studies have demonstrated efficacy when taken twice daily (BID) at the same daily dose. The Veteran Affairs Northern California Health Care System (VANCHCS) completed a conversion of pregabalin TID to this BID dosing strategy after receiving approval from the Pharmacy & Therapeutics (P&T) Committee. This analysis aims to measure clinical and economic outcomes of patients after the conversion from three times daily to twice daily dosing at VANCHCS.

Methods: This is a retrospective, single center analysis using the Veterans Integrated Service Network (VISN) 21 databases and the VHA electronic medical records to review patients who underwent the conversion process with pregabalin. Patient demographics, refill histories, and pain scores will be identified through both of these methods. Twice daily dosing clinical outcomes will be assessed through post-conversion add-on pain medications, reversion back to TID dosing or discontinuation of pregabalin, and unscheduled visits or hospitalizations related to neuropathy. Economic outcomes will be calculated by finding the difference between pharmaceutical cost avoidance and healthcare expenditures.

7-064

Title: Efficacy of extended infusion cefepime and meropenem in trauma and burn intensive care unit patients at a level one trauma and burn center

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Purpose: Broad spectrum beta lactam antibiotics, such as cefepime and meropenem, are often utilized in the intensive care unit (ICU) setting. Compared to traditional intermittent infusion, extended infusion administration of these antibiotics has been shown to decrease mortality rate and length of stay. However, extended infusion administration of these antibiotics has not been extensively studied in the trauma or burn ICU population, which encompasses a unique subset of patients who are often in a hypermetabolic state. The objective of this study is to evaluate the efficacy and cost savings of extended infusion cefepime and meropenem in trauma and burn ICU patients.

Methods: This study has been submitted to the Institutional Review Board for approval. A retrospective chart review will be conducted for all patients admitted to the adult trauma and burn ICUs and started on meropenem or cefepime therapy. Data will be collected four months prior to and following the implementation of a protocol authorizing the substitution of intermittent infusion to extended infusion administration of cefepime and meropenem. Patients younger than 18 years, on cefepime or meropenem less than 24 hours, receiving concomitant beta lactam antibiotics, with insufficient microbiologic data, incarcerated, or pregnant will be excluded. Data collected will include patient demographics, microbiologic culture and sensitivities, antibiotic history, infection recurrence rate, ICU and hospital length of stay, and mortality. The efficacy of extended infusion administration will be determined by the infection recurrence rate, defined as two positive cultures with the same pathogen separated by a full treatment course of cefepime or meropenem. ICU and hospital length of stay, and change in minimum inhibitory concentration (in recurrent infection) will also be evaluated. All data will be recorded without patient identifiers and maintained confidentially. The cost saving component will be calculated based on medication acquisition cost, duration of antibiotic therapy, and length of stay.

7-065

Title: Implementation and evaluation of a pharmacist managed basal bolus insulin protocol

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Purpose: Growing evidence shows that hyperglycemia is a common, serious, and costly healthcare problem in hospitalized patients. Sliding scale insulin therapy as the sole regimen in treating hyperglycemia is no longer the standard of care. We assessed the efficacy of basal bolus insulin therapy as the recommended approach for glycemic control in the non-critically ill patients. The study will be submitted to the Institutional Review Board for approval. The purpose of this study is to compare the efficacy and safety of a pharmacist managed Basal Bolus Insulin Protocol (BBIP) versus physician managed insulin regimen.

Methods: This will be a prospective cohort study at a 515-bed acute care hospital in the Los Angeles metropolitan area. The inclusion criteria for this study are non-critically ill patients greater than or equal to 18 years of age with two POC-glucose readings greater than 180 mg/dL within a 12 hour time frame and diabetic patients with a physician order for a pharmacy consult. The exclusion criteria for this study are patients managed on insulin pumps and patients residing in ICU, Maternity, Labor and Delivery, NICU, Rehab, and Behavioral Health. The duration of this study is approximately four months, from September 2013 to January 2014. The primary outcome of this study is the number of days to reach a blood glucose goal of less than 180 mg/dL. Secondary outcomes measured are length of stay, mortality, and number of days spent within a goal blood glucose level between 70 to 180 mg/dL. The safety outcomes that will be measured in this study are hypoglycemic events, defined by blood glucose levels less than 70 mg/dL, and severe hyperglycemic events, defined by blood glucose levels greater than 350 mg/dL. The outcomes of this study will be analyzed using a chi-squared test.

7-066

Title: Adherence to the clostridium difficile infection and American society of health-system pharmacists (ASHP) stress prophylaxis guidelines

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Purpose: Proton pump inhibitors (PPIs) are the third most prescribed medication in the United States and their use have been linked to bone fractures, pneumonia, and vitamin deficiency. Most recently, the FDA released a safety alert suggesting a possible association between PPIs and clostridium difficile infection (CDI) and disease. The available information should urge healthcare providers to reevaluate the necessity of PPI use in a patient. The purpose of this study is to determine the adherence to the ASHP stress prophylaxis and Society for Healthcare Epidemiology of America (SHEA) and Infectious Diseases Society of America (IDSA) CDI treatment guidelines.

Methods: This study is exempt from approval by the institutional review board (IRB) as a drug utilization evaluation for quality improvement. A retrospective chart review of all CDI cases from October 2012 to August 2013 will be performed. Cases will be identified using the International Classification of Diseases (ICD-9) diagnosis code for CDI (008.45). Patients will be excluded from the analysis if they are under the age of 18 years and have an incomplete medical record to review. Baseline serum creatinine (SCr) and white blood cell (WBC), SCr and WBC upon CDI diagnosis will be recorded to determine severity of CDI. The choice of antibiotic, dose and duration to treat CDI will also be documented to assess adherence to CDI treatment guideline. The adherence to ASHP stress prophylaxis guidelines will be evaluated by determining PPI use during hospitalization, duration of use and the indication for its use.

7-067

Title: Optimizing the pharmacy department's role in ensuring safe transitions of care for patients on anticoagulants

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Purpose: Anticoagulants are used to prevent debilitating and life threatening thrombotic events such as stroke and deep-vein thrombosis. Anticoagulant use also puts patients at risk for adverse events due to their complex dosing, timely monitoring, and required compliance. Recent initiatives by several national organizations aimed at hospitals are calling for a reduction in the likelihood of patient harm associated with the use of anticoagulants. The goal of this project is to improve upon the transitions of care and patient education for anticoagulants. The primary objective is to optimize the role of the pharmacy department in achieving this goal.

Methods: This will be a quality improvement project examining anticoagulation use in a community setting hospital. To accomplish the primary objective we will get a baseline assessment using retrospective chart reviews to evaluate the current transitions of care process in place, assessing for compliance to regulatory issues and best practices. All patients with a drug history upon admission or discharge for the following: enoxaparin (Lovenox), warfarin (Coumadin), fondaparinux (Arixtra), dabigatran (Pradaxa), apixaban (Eliquis) and rivaroxaban (Xarelto) admitted to the emergency department or inpatient setting will be included for review. After the baseline has been established, a goal will be set for the primary endpoint. Findings from the baseline assessment will be examined and gaps for improvement will be prioritized. These gaps will be further dissected into smaller projects that will attempt to improve the overall process. Next a prospective quality improvement phase utilizing the rapid cycling of the PDCA (Plan-Do-Check-Act) method will be used to make these improvements from our initial baseline assessment. The PDCA cycle will be repeated weekly until the goal has been met. This project is seeking approval from the Institutional Review Committee.

7-068

Title: Use of procalcitonin in a community non-teaching hospital to decrease antibiotic duration for pneumonia

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Purpose: A number of studies have demonstrated the utility of procalcitonin (PCT) as a biomarker of the likelihood and severity of bacterial infections. In patients with community-acquired pneumonia and other respiratory infections, PCT-guided antibiotic therapy algorithms have been shown to reduce antibiotic exposure without compromising patient safety when compared with standard care. The objective of this study is to assess the effect of a procalcitonin (PCT)-guided algorithm on the duration of antibiotic therapy in patients with pneumonia in a community hospital.

Methods: This study will be submitted to the Institutional Review Board for approval. This is an observational study in which patient data will be collected retrospectively and concurrently through chart reviews. The PCT group will be compared to a control group in which PCT was not utilized. Patients will be identified through the electronic medical record system using ICD-9 codes for pneumonia. An algorithm will be developed to guide patient inclusion criteria and classification of pneumonia type. In addition to ICD-9 codes for pneumonia, patients will also need to present with clinical findings suggestive of pneumonia in order to be included. The following data will be collected through electronic medical records and paper charts: Patient age, gender, ICD-9 codes, dates of admission and discharge, co-morbidities, relevant clinical symptoms and history, laboratory findings, antibiotics used and duration of use, and other clinical information regarding the patient's hospital course relevant to the study. The primary outcome will be days of antibiotic therapy, and secondary outcomes will include 30-day readmission and the re-starting of antibiotics for pneumonia following discontinuation of therapy.

7-069

Title: Evaluation of current antibiotic use for surgery prophylaxis

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Purpose: The Surgical Care Improvement Project (SCIP) is focused on decreasing adverse events from surgeries. The objective of this study is to evaluate current antibiotic use for surgery prophylaxis. Current antibiotic use will be evaluated on how it adheres with SCIP guidelines and a cost analysis will be done to evaluate the cost of current antibiotics versus intraoperative dosing only.

Methods: Surgical patients will be identified and the following information will be collected: type of surgery, selection of antibiotics, dose, duration, antibiotic drug levels (if available), antibiotic therapy cost, patient age, gender, renal function, height, and weight. All data will be collected by the electronic medical record and patient identifiers will be removed. All patients that have duration of antibiotic therapy greater than 24 hours or an inappropriate antibiotic will be reviewed for reasons why they are outside of guidelines. A cost analysis will be conducted of the current use of antibiotics versus intraoperative dosing of antibiotics only. This study will be submitted to the Institutional Review Board.

7-070

Title: A pharmacist led approach to decrease inappropriate utilization of Clostridium difficile treatment in medical patients: an observational study

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Purpose: C.difficile is known as the principal pathogen responsible for antibiotic-associated colitis and results in 15%-25% of patient cases with nosocomial antibiotic-associated diarrhea. The Infectious Diseases Society of America and the Society of Healthcare Epidemiology of America have published diagnostic and treatment guidelines for C. difficile infections, which include recommendations for appropriate antimicrobial regimens. Inappropriate utilization of C. difficile treatment can lead to increased hospital costs, length of stay, and treatment failure. The purpose of this observational study is to determine the effectiveness of physician-directed educational sessions reviewing the current guidelines and the influence on physician prescribing habits post-education.

Methods: An observational study will be implemented to determine compliance with current treatment guidelines for C. difficile infections post-education by a pharmacist. A pharmacy database will be utilized to identify patients who received C. difficile treatment from September 2011 to September 2013. Inclusion criteria will consist of patients 18 years of age or older, diagnosis of C. difficile infection, received oral or intravenous antimicrobial therapy (metronidazole and or vancomycin), hospitalized for 3 or more days, and with significant symptoms (usually diarrhea). Electronic medical records will be utilized for data collection. An educational program will be developed to address appropriate diagnostic tests, medications, doses, route of administration, duration, and frequency of antimicrobial treatment. The educational program will include a pharmacy resident presentation to medical residents and physicians. A handout will also be distributed. A subsequent retrospective review, using the same criteria, will be completed approximately 3-4 months after the completion of the educational sessions to assess prescribing changes and guideline compliance. This study will be submitted to the Mercy Medical Center North-Iowa Institutional Review Board for approval.

7-071

Title: Assessment of antipsychotic polypharmacy in the veteran affiars central iowa health care system: a quality improvement project

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Purpose: The Veteran Affairs policy on antipsychotic polypharmacy requires the provider to document appropriate justification for prescribing two or more antipsychotic medications. Justifications include at least three failed monotherapy trials, a recommended plan to taper to monotherapy, or a cross-taper in progress. The policy also states clozapine should be offered as an option for any Veteran diagnosed with schizophrenia or schizo-affective disorder who has experienced two antipsychotic medication failures. The objective of this project is to perform a chart review to determine if this policy is being followed and to offer a pharmacy consult service to help assess antipsychotic polypharmacy.

Methods: Prior to commencement, this review was submitted to the privacy officer, chief of pharmacy and chief of staff for approval. The Department of Veterans Affairs computerized patient record system will be used to identify Veterans who are prescribed two or more antipsychotic medications concurrently. The following data will be collected: patient name, last four digits of the social security number, age, antipsychotic medications, provider, quantity of medication order, refills remaining, and last dispense date. Provider documentation will be reviewed for appropriate justification for the use of more than one antipsychotic medication and whether clozapine has been considered as an option. If there is no documentation found justifying the antipsychotic polypharmacy, the provider will be notified and offered a mental health pharmacy clinical consult for further review and evaluation. Records of consulted Veterans will be reviewed by one mental health clinical pharmacist and one pharmacy resident who will offer assessment and any clinically relevant recommendations to address antipsychotic polypharmacy. To maintain confidentiality, the data will be recorded without patient identifiers. The presence or absence of appropriate documentation will be the primary outcome of this review. Secondary outcomes may include cost avoidance and acceptance of clinical pharmacist recommendations.

7-072

Title: Implementation and evaluation of a depression screening protocol in heart failure patients

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Purpose: Depression is a common comorbidity among cardiac rehabilitation patients; in particular it is slightly more common in heart failure patients than other cardiac conditions. Depression can negatively impact heart health along with compliance to medications. The primary objective of this study is to implement and evaluate a depression screening protocol in heart failure patients admitted to the acute cardiac unit. Secondary objectives are to compare the degrees of depression severity, examine the variances in demographics, and evaluate the psychiatry interventions.

Methods: The Patient Health Questionnaire (PHQ-9), a self-reporting scale for depression, will be given to both newly diagnosed or exacerbation of heart failure patients admitted to the cardiology floor. PHQ-9 scores 1-4 indicate minimal depression and scores 5-9 indicate mild depression. Scores > 10 indicate moderate, moderately severe, or severe depression, and will receive a psychiatry consult. At least 50 PHQ-9 questionnaires will be collected from patients over a 3 month time period. The questionnaire scores will be analyzed retrospectively to determine how many heart failure patients are impacted by the implementation of a depression screening protocol. Impacted patients will be considered those that received psychiatry consult. Furthermore, the psychiatry interventions will be analyzed to evaluate how many patients were started on an antidepressant. This will assess if continued screening for depression is a reasonable and beneficial addition to the heart failure patient population at Mercy Medical Center-North Iowa. This study will be submitted to the Mercy Medical Center-North Iowa Institutional Review Board for approval. Informed consent will be obtained for all subjects.

7-073

Title: Appropriate use of smart infusion pumps in a 200 bed community hospital

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Purpose: To survey current smart pump usage by nursing staff to determine if pumps are used appropriately for infusing intravenous medications.

Methods: A total of 100 infusions on randomly selected units of the hospital will be surveyed. The data will be collected over a period of 4 to 6 weeks. Prior to the survey, a form will be developed to collect the needed information. Data collected will include matching the medication infusing and medication parameters that are ordered (such as volume and rate) with those programmed on the pump at the time of infusion. Data will also be collected to determine if the medications that are infusing require the use of a smart pump. This information will be analyzed for any deviation from the appropriate utilization of the smart pumps. The nursing staff compliance rate will be calculated. Compliance less than 90% (appropriate drug, volume, and rate) will result in an intervention and follow-up survey. Due to the nature of this hospital quality improvement project, review by the Institutional Review Board is not required.

7-074

Title: Comparing an existing admission medication history process with best practices: identifying medication discrepancies in a quality improvement study

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Purpose: Medication reconciliation has become an area of intense scrutiny by the Joint Commission since adding it to the Hospital National Patient Safety Goals in 2005. In order to perform quality medication reconciliation spanning all transitions of care, it is crucial to obtain an accurate and complete medication history for each patient upon admission. The objective of this study is to identify areas for improvement in the current admission medication history process by comparing to best practices.

Methods: This study will be submitted to the Institutional Review Board for approval. Participants will be selected from a list of patients admitted within the past 24 hours to a telemetry unit, transitional care unit, or medical/surgical unit. Patients in critical care units will be excluded. After nursing staff has recorded the patient's admission home medication list, a pharmacist or pharmacy student will compile a complete home medication list using validated best practices. This will consist of a patient interview and a medication list from at least two sources in most cases, and then comparing the various lists to create a "best possible medication history." The medication lists from before and after the use of best practices will be compared and discrepancies will be identified, recorded, and classified by type. Patients will be categorized into high- or low/intermediate-risk groups based on their likelihood of having medication discrepancies. A group of two to four practitioners (physicians, nurse practitioners, and/or clinical pharmacists) will rate the potential harm of each discrepancy on a scale of one to three. Data will be collected on paper forms and transcribed to an electronic database with restricted access. Descriptive statistics will be used to evaluate outcomes.

7-075

Title: Evaluation and implementation of a standardized approach to supportive care management for veterans receiving chemotherapy

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Purpose: Provision of optimal care is an essential component of Veteran-centered care, specifically the coordination and administration of supportive care medications for patients undergoing chemotherapy. The objective of this evaluation is to assess the existing process of supportive care management in patients who receive chemotherapy and to optimize current practices to improve the Veterans experience. By implementing change, the Veteran may experience decreased time spent in clinic with equivalent clinical outcomes.

Methods: This project is a quality improvement assessment and will be reviewed by the Chief of Staff, Chief of Pharmacy, and Pharmacy and Therapeutics Committee. Current supportive care practices will be assessed to identify the 15 most common treatment plans over the last two years that default to intravenous supportive care medications and/or utilize aprepitant. These regimens will be evaluated for opportunity to switch to oral anti-emetics as well as the appropriateness of aprepitant use. Collaboration with Hematology/Oncology service will identify which of the selected treatment plans are appropriate to switch to oral supportive care medications and when to make use of aprepitant. After assessment of the most common treatment plans, a standardized approach to supportive care will be established and implemented for all treatment plans. Patients currently receiving intravenous supportive care therapy, with clinical pharmacist review, may be considered for conversion as appropriate. Following conversion from intravenous to oral therapy, a chart review to identify changes in supportive care medication use and/or a switch back to intravenous anti-emetics with a future cycle of chemotherapy will be completed. Pharmacy and nursing satisfaction will be assessed by survey. Cost and resource avoidance including nursing, pharmacy, and facility parameters, will also be monitored.

7-076

Title: Pharmacist driven antimicrobial stewardship initiative to improve anti infective use in patients discharged from the emergency department

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Purpose: Antimicrobial resistance is a well documented and growing public health concern. To combat resistance, institutions use antimicrobial stewardship initiatives to improve appropriate anti infective utilization. Current inpatient guidelines on antimicrobial stewardship encourage the use of pharmacists on stewardship teams. Despite the critical functions of the emergency department (ED) and high patient volumes seen in this setting, antimicrobial stewardship initiatives in the ED are infrequently reported in literature. The purpose of this study is to assess the efficacy of a pharmacist driven stewardship program to improve anti infective use in patients who are discharged from the ED.

Methods: This study will be submitted to the Institutional Review Board for approval. During staffed hours, ED pharmacists will monitor for patients being discharged with anti infective prescriptions. The electronic patient tracking system in the ED will be utilized to identify all patients discharged from the ED on anti infective therapy. ED pharmacists will review these patients to assess for appropriateness of therapy, and will suggest preferred therapy regimens in patients with inappropriately prescribed anti infective therapy. In this retrospective review, investigators will assess each patients prescription as appropriate or inappropriate given indication, guidelines for therapy, and patient-specific factors. Patients less than 18 years of age, pregnant women, immunocompromised patients, and intravenous drug users will be excluded from review. The following data will be collected: patient age, gender, allergies, diagnosis, anti infective prescribed including dose and duration, all available culture data, and any readmission within 72 hours for the same complaint. No patient specific data will be recorded, and all data will be securely maintained. The primary endpoint will be a statistical comparison of the proportion of appropriate anti infective prescriptions during pharmacist hours and non-pharmacists hours. A subgroup analysis of patients with culture and sensitivity data will also be performed.

7-077

Title: Pharmacist medication reconciliation in physician clinics: a cost-benefit analysis

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Purpose: Medication reconciliation is an important piece to patient safety in the hospital setting. Pharmacist led medication reconciliation has been shown to prevent therapeutic duplications, reduce adverse drug reactions, and reduce the number of hospital readmissions. Due to benefit shown in the hospital setting, medication reconciliation may soon be expanded to traditional physician offices. The goal of this study is to determine the impact of putting a pharmacist into an outpatient clinic setting to perform medication reconciliation services. The service will be implemented and evaluated through the development of a business plan and a cost-benefit analysis.

Methods: The cost-benefit analysis will be based on patients identified through a computer software program. This program identifies patients with multiple chronic diseases states, including those at risk for polypharmacy. This analysis will examine factors including time value of physicians/nurses/pharmacists, available reimbursement rates for services rendered, length of time to perform each medication reconciliation, amount of patients able to be seen in a day, and consumer costs.

7-078

Title: Evaluation of a pharmacy-initiated vancomycin dosing protocol in hospitalized dialysis patients

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Purpose: To investigate whether a pharmacy-based vancomycin protocol achieves therapeutic vancomycin trough levels faster than non-protocol dosing in patients undergoing dialysis treatment.

Methods: We conducted a retrospective analysis of vancomycin dosing in dialysis patients at a 200-bed community hospital. A total of 32 patients receiving renal dialysis and treated with vancomycin from January 2012-August 2013 were included in the study. Two groups of patients were reviewed: the protocol group included patients dosed using a pharmacy-developed vancomycin dosing protocol and the control group consisted of patients dosed without using the protocol. In the protocol group of 12 dialysis patients, vancomycin levels were obtained prior to the third dialysis session. The control group (physician-initiated dosing group) consisted of 20 dialysis patients who had at least two doses of vancomycin and at least one vancomycin trough level. Target trough plasma levels for both groups varied based on severity of illness: for moderate illness, the target was set at 10-15mcg/mL and for severe illness at 15-20mcg/mL. In this study, the primary endpoints were therapeutic vancomycin trough levels between 10-15mcg/mL for moderately ill patients and 15-20mcg/mL for severely ill patients. Secondary endpoints included duration of vancomycin monitoring, duration of vancomycin therapy, and length of hospital stay. Due to the retrospective nature of this quality improvement project, Institutional Review Board approval was unnecessary.

7-079

Title: Development of a virtual pharmacy resident conference

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Purpose: Due to recent changes in how to obtain conference travel reimbursement for VA employees, pharmacy departments are faced with a unique challenge to more creatively utilize their available resources to provide their employees with educational and professional development that does not require travel. Our goal is to develop a virtual pharmacy resident conference for the VA pharmacy residents in VISN 11. This conference will not only allow members of the pharmacy department to participate without incurring the expense of conference registration or travel, but it will also provide a means to disseminate Veteran specific information to a larger audience.

Methods: We aim to develop a virtual pharmacy resident conference for the pharmacy residents of VISN (Veterans Integrated Service Networks) 11. There are currently 29 residents within the VISN. We aim to structure this conference over several days, with each resident presentation scheduled during a 30 minute block. Participants will gain 0.5 ACPE (Accreditation Council for Pharmacy Education) continuing education (CE) credit hours per presentation. Resident presentations will be grouped into themed tracks (inpatient, ambulatory care, and administrative issues) so that audience members may conveniently attend presentations relating to specific interest areas. Regarding ACPE credit, a planning committee (consisting of four members from throughout the VISN) has been created. This planning committee will work closely with members of Employee Education System (EES) to ensure the appropriateness of each resident presentation for ACPE credit. Presentations will be delivered virtually through Microsoft Lync. Residents will be trained on how to utilize a virtual presentation through this software. Currently, this conference is not intended to replace the regional pharmacy resident conference that members of VISN 11 traditionally attend, but rather offer a different opportunity to allow residents to learn how to deliver a virtual presentation as well as share Veteran specific information between institutions.

7-080

Title: Evaluating the effectiveness of a medical Spanish training course for community pharmacists

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Purpose: The objective of this study is to determine the effectiveness of a pharmacist-directed medical Spanish training course. As the Spanish-speaking population in the United States continues to grow; more patients are in need of a linguistically diverse healthcare team. Pharmacists are readily accessible healthcare providers and therefore have a unique opportunity to make advancements towards overcoming linguistic and cultural barriers.

Methods: This study has been approved by the Institutional Review Board. Data will be collected from pharmacists who will be attending a medical Spanish training session tailored toward the needs of a community pharmacist. Prior to training sessions, pharmacists that agree to participate in the study will complete a pre-training assessment. Upon completion of the training course, a second assessment will be administered to assess objective and subjective medical Spanish language skills. The primary outcome measured will be pharmacists' ability to recognize and use Spanish language in a pharmacy. This outcome will be assessed by comparison of pre- and post-training responses to an objective assessment of language skills. The assessment will include Spanish language necessary to perform typical pharmacy functions such as obtaining pertinent information from patients, verifying accuracy of a prescription processed in Spanish, and providing basic medication counseling. A secondary outcome will measure self-efficacy with Spanish skills. A five point Likert-type scale will be used to assess a pharmacist's confidence in their ability to perform typical pharmacy functions with Spanish-speaking patients. Comparison of data collected from pre- and post-training assessments will allow for evaluation of the impact of training sessions on pharmacists' ability to utilize medical Spanish.

7-081

Title: The impact of low health literacy level in patients with chronic obstructive pulmonary disease (COPD) at a community hospital.

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Purpose: Inhaled medications are recommended as first line treatment for chronic obstructive pulmonary disease (COPD) and can reduce exacerbations and hospitalizations. Low health literacy in associated with poor inhaler technique. This study will examine if handouts written specifically for patients with low health literacy are more effective in showing patients how to use their medications when compared to standard education materials.

Methods: This study has been submitted to the Institutional Review Board for approval. The electronic medical record will be used to identify patients admitted to the hospital with a diagnosis of COPD. The health literacy of participants will be identified using the Rapid Estimate of Adult Literacy in Medicine Short Form (REALM-SF). Patients scoring <7 on the REALM-SF and on at least one inhaled medication for COPD will be included in the study. Handouts explaining the proper use of common inhalers were developed at an appropriate reading level for individuals with low health literacy. These handouts will be compared against the standard hospital educational material for inhalers. Participants will be randomized to receive either the low health-literacy (LHL) handout or standard educational handout (SEH). Participants will be asked to demonstrate how they use their inhaler at home. Participants will then be provided their pre-assigned handout and given 15 minutes to review. The participant will demonstrate their inhaler technique a second time, based on what they learned from the handout. Correct technique during each demonstration will be evaluated using a standardized checklist. Difference in the mean change in technique score and difference in satisfaction with the two handouts will be analyzed.

7-082

Title: Evaluation of a pharmacist-managed vancomycin dosing and monitoring strategy in hemodialysis patients

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Purpose: Hemodialysis patients are at an increased risk of developing drug-resistant gram positive infections and therefore intravenous vancomycin is frequently used in this group of patients. Targeted trough levels have been defined as 10-20 mg/L, dependent on the site of infection. Pharmacokinetic parameters of vancomycin are significantly altered in hemodialysis patients, leading to multiple opinions on the appropriate management of vancomycin to achieve the target drug concentrations. Studies have examined dose calculators and various protocols to determine ideal ways to dose vancomycin in hemodialysis patients, but data validating any specific dosing and monitoring strategy remains limited.

Methods: In this retrospective study, data from adult patients receiving intravenous vancomycin and intermittent hemodialysis concurrently will be assessed. Patients under the age of 18, pregnant, incarcerated or undergoing continuous renal replacement therapy will be excluded. Manual review of the electronic medical record (EMR) will be performed to collect data. Patient demographics including age, gender, height, weight, admitting diagnosis, concomitant medications, past medical history, cause of renal failure and residual renal function will be recorded. Hemodialysis parameters such as hemodialysis schedule, access type, membrane type, flow rate and duration of session will also be recorded. Additionally, collection of information regarding the infection type, cultures and sensitivities, goal trough, vancomycin dose and frequency, adjustments to the regimen, treatment success or failure and length of stay will be performed. The primary objective will be to evaluate the efficacy of a pharmacist-managed vancomycin dosing and monitoring protocol in the achievement of target serum concentrations in hemodialysis patients. Secondary objectives include documentation of any adverse events, identification of any hemodialysis factors or patient factors affecting achievement of target drug concentrations, assessment of the compliance with the working protocol and identification of opportunities for improvement in the protocol.

7-083

Title: Analysis of a pharmacist driven telephone-based tobacco cessation clinic

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Purpose: It has been estimated that 19% of adults use tobacco in the United States. In the Veteran population this percent is higher, indicating that tobacco cessation efforts in the Veteran population is critical. The William S. Middleton Veterans Memorial Hospital currently operates a Tobacco Cessation Clinic which is pharmacist driven and telephone based. This clinic uses both medication therapy as well as behavioral activation techniques to assist patients in their tobacco cessation attempt. The purpose of this study is to evaluate the impact of this pharmacist-driven clinic on patients remaining tobacco free along with which medications were the most efficacious.

Methods: This study was a retrospective chart review of patients enrolled in the Tobacco Cessation Clinic using the electronic medical records at the William S. Middleton Veterans Memorial Hospital. Primary outcome was the success rate of patients, which is defined as a patient who became tobacco free for at least 6 months while enrolled in the Tobacco Cessation Clinic. Secondary outcomes include the relationship between number of phone calls completed by the pharmacist to the patient verses success rate; most efficacious tobacco cessation regimen; relationship between confidence of patient quitting tobacco verses ability to remain tobacco free for 6 months; number of relapses prior to reaching 6 months tobacco free; impact of referral source on success rate; and success rates of patients utilizing the telephone tobacco cessation clinic versus group visits that are conducted via face to face appointments or telehealth.

7-084

Title: Appropriateness of Antibiotic Duration of Therapy in Community-Acquired Pneumonia in a Community-Based Regional Medical Center

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Purpose: This study aims to evaluate the appropriateness of antibiotic duration in patients with community-acquired pneumonia (CAP) in a community-based regional medical center. Current guidelines state that most patients with CAP will not benefit from more than 7 days of antibiotics. The current pneumonia admission order-sets at Parkview Regional Medical Center do not include a stop date on any antibiotics. If implemented properly, the information provided by this study has the potential to decrease hospital length of stay, drug resistance, and patient costs, while optimizing therapy for patients with CAP.

Methods: In this retrospective chart review, patients with a diagnosis of pneumonia in the electronic medical record system were selected for review. Subjects eligible for inclusion in this study met the following criteria: 18 years and older; admitted from the home setting between September 2012 and August 2013; diagnosed with CAP upon admission or discharge. CAP was defined as an onset of pneumonia symptoms before admission or within 48 hours of admission, as well as a positive chest radiograph indicating pneumonia within 48 hours of admission. Patients diagnosed with HAP, VAP, or HCAP were excluded from the study, as were patients with cystic fibrosis, immunosuppressive diseases or medications, concomitant infections, renal replacement therapy, and a creatinine clearance <30 mL/min. To minimize confounding factors, patients who did not receive an appropriate dose of antibiotics for more than 48 hours as defined by core measures were also excluded. The data will be analyzed to assess the appropriateness of antibiotic duration of therapy. A secondary analysis will be conducted to review the appropriateness of IV to PO conversion of antibiotic therapy in these patients.

Results: Results to be presented at the ASHP Midyear Clinical Meeting in Orlando, Florida.

Conclusion: Results to be presented at the ASHP Midyear Clinical Meeting in Orlando, Florida.

7-085

Title: Time to analgesia after introduction of intranasal fentanyl in the prehospital setting

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Purpose: Pain management in the prehospital setting requires an expeditious assessment of pain followed by rapid administration of systemic pain medication while initial resuscitation and transport occurs. The intravenous route allows for rapid relief of pain, but is often associated with increased time to analgesia due to the time required to place an intravenous line. Intranasal administration of fentanyl offers an alternative to the use of intravenous analgesia. The purpose of this study is to determine if shorter time to analgesia can be achieved by incorporating intranasal fentanyl in the prehospital pain management protocol.

Methods: Review of current literature involving various strategies for prehospital pain management will be performed and utilized to develop a new, prehospital pain management protocol incorporating intranasal fentanyl into standard practice. Appropriate steps will be taken for protocol approval by the emergency medicine services medical director and protocol committee. Pharmacist led education will be provided to all emergency medicine services personal prior to protocol implementation. Data regarding time to analgesia before and after protocol implementation will be retrospectively reviewed and evaluated.

7-086

Title: Pharmacy Residency Preceptor Development Program

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Purpose: Preceptorship has become an integral part of pharmacy practice and requires integrating various teaching methods into daily practice. The American Society of Health-System Pharmacists (ASHP) Accreditation Standards establish requirements for pharmacist preceptors. The majority of available literature regarding preceptorship and preceptor development is delivered as text meant for individual reading. Minimal data exists with instruction for preceptor development tailored to a specific pharmacy residency program. The objective of this research project is to assess implementation of a five-year, site-specific preceptor development program and serve as a reference to new residency programs or established programs looking to enhance preceptor skills.

Methods: An anonymous survey will be submitted to current and potential pharmacy residency preceptors within the institution. Information gathered from the survey will be used to assess areas in which residency preceptors need preparation and development. Based on the survey and existing literature, a plan will be created for implementation of various learning sessions and modules over the course of five years. A variety of methods will be utilized to provide education including: live lectures, online lectures, group discussions, situation-based role playing and recitation, question and answer sessions with an expert panel, self-assessment forms, and online modules through MyLearning, an online education manager used across the healthcare system for various learning activities. Following the first two sessions, an altered survey will be administered to assess usefulness and success of the specific learning activities completed. It will also indicate areas for improvement. Plans for preceptor development and follow up will be made into a five year plan, and various modules will be stored and made available for beginner or new preceptors to utilize in the future as well as for current preceptors to re-visit at a later date.

7-087

Title: Comparison of diabetes management by pharmacists to usual care in a Veterans Affairs Medical Center

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Purpose: Although studies have determined that collaboration with a pharmacist leads to increased HbA1c lowering, there is little information regarding independent management of Type 2 Diabetes Mellitus (T2DM) by a pharmacist compared to a physician. The objective of this study is to assess the management of T2DM by pharmacists versus usual care in a Veterans Affairs Medical Center.

Methods: Institutional Review Board approval is pending. This study will be a retrospective chart review comparing patients in selected clinics whose diabetes is managed by physicians to those patients who are referred to and managed independently by clinical pharmacists. A target of 400 patients will be identified via the computerized patient record system at the point of initiation of insulin or a third oral antihyperglycemic agent between January 2010 and December 2012. Data will be collected for one year from the date of initiation of the aforementioned therapies. The primary outcome will be reduction in HgbA1c. Secondary outcomes include time to goal HbA1c, time at goal HbA1c, percentage of patients achieving HbA1c less than seven percent, percentage of patients achieving HbA1c less than nine percent, number of hypoglycemic and hyperglycemic events that require hospitalization, and medication adherence. Statistical methods will be used to detect clinically significant differences between groups. A priori alpha of 0.05, beta of 0.2, and 95 percent confidence intervals will be utilized.

7-088

Title: Effect of the implementation of the Pasero Opioid-induced Sedation Scale on naloxone use.

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Purpose: There are many side effects to opioid use, the most life threatening of which is respiratory depression. Administration of naloxone, an opioid antagonist, can be used as a surrogate marker of over-sedation. One approach to minimizing the incidence of opioid-induced respiratory depression is to employ a validated sedation assessment tool, such as the Pasero Opioid-induced Sedation Scale (POSS). The purpose of this study is to assess the impact of the implementation of the POSS on the incidence of naloxone use for respiratory depression and over-sedation in patients receiving hydromorphone, a potent opioid with a high potential for adverse events.

Methods: This multi-center study, performed in conjunction with the Indianapolis Coalition for Patient Safety (ICPS), has been submitted to the Indiana University IRB for approval. It will be a retrospective chart review conducted in two phases, a three-month period before and after the implementation of the POSS. Adult patients who received hydromorphone in peri-operative and inpatient areas will be included in the study. Patients will be excluded if naloxone was given for diagnostic purposes or non-opioid indications. Primary endpoints for this study will be the percentage of patients receiving naloxone after receipt of at least one dose of hydromorphone, and the rate of naloxone use events per 1000 patient days. Secondary endpoints will be the percentage of patients who are over-sedated, the percentage of patients who are transferred to a higher level of care, and changes in patient specific use (dose and frequency) of hydromorphone. This study hypothesizes that implementation of a validated sedation scale to assess the effects of opioid use will improve patient safety and outcomes through a reduction in the incidence of respiratory depression, and study results may help influence current sedation monitoring practices in Indianapolis area hospitals.

7-089

Title: Drug utilization evaluation of intravenous acetaminophen in a community health network

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Purpose: Intravenous acetaminophen is approved for the management of fever, mild to moderate pain, or in combination with opioid analgesics for moderate to severe pain. Studies have shown that intravenous acetaminophen provides a higher maximum concentration and has a quicker onset compared to oral or rectal formulations. These qualities may prove beneficial for patients that have elevations in intracranial pressure for whom rapid reduction in temperature may be required and in peri-operative patients. The objective of this study is to assess, in community health network, the appropriateness of use and cost of intravenous acetaminophen when compared to oral or rectal formulations.

Methods: This is a retrospective, cross-sectional study of patients that received one or more doses of intravenous acetaminophen within a network of six community hospitals. Since this is a retrospective study designed for the purpose of quality improvement, approval by the investigational review board is not necessary. A finance report will be generated for patients that received at least one dose of intravenous acetaminophen between February 8, 2013 and August 1, 2013. One hundred of the patients from the finance report will be randomly selected utilizing the randomization software available through Microsoft Excel. A chart review will then be performed by the primary investigator to determine the appropriateness of each dose administered to those one hundred subjects. For the purpose of this study intravenous acetaminophen will be deemed appropriate for peri-operative patients if administered within 6 hours of surgery or up to 24 hours after surgery. Intravenous acetaminophen will also be considered appropriate for intensive care patients at high risk of or experiencing elevated intracranial pressure for whom rapid reduction in body temperature may be required. The primary outcome of this study is to determine the proportion of doses administered that were inappropriate according to the criteria designated for this study.

7-090

Title: Efficacy of moxifloxacin for treatment of Stenotrophomonas maltophilia infections

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Purpose: Stenotrophomonas maltophilia infections are concerning as they are associated with significant rates of morbidity and mortality. These organisms are often multidrug resistant and are common among patients with significant comorbidities including cystic fibrosis, hematological malignancies, indwelling catheters, and prolonged intensive care unit stay. Intrinsic antimicrobial resistance, patient allergies, medication intolerance, or drug shortages may necessitate additional treatment options. The current drug of choice for S. maltophilia infections is trimethoprim-sulfamethoxazole; however, case reports have shown moxifloxacin to be effective in treating these infections. The objective of this study is to investigate the efficacy of moxifloxacin for treatment of S. maltophilia infections.

Methods: This retrospective, consecutive case series will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify patients with a positive culture for Stenotrophomonas maltophilia from December 2008 to March 2013 who received moxifloxacin therapy. The following data will be collected: Patient demographics, intensive care unit length of stay, comorbidities, immunosuppression, source of positive culture, and moxifloxacin treatment duration. Labs and vitals within 24 hours of a positive S. maltophilia culture will be reported for Apache II score. Primary outcomes: Death within 28 days of positive culture, clinical treatment failure, microbiologic treatment failure, and microbiologic treatment success. Secondary outcomes: Death within 7 days of positive culture and readmission to the hospital within 28 days for S. maltophilia infection. Safety data associated with moxifloxacin use will also be collected by assessing discontinuation of the drug due to adverse drug reactions as noted in provider clinical notes.

7-091

Title: Evaluation of hydromorphone use in a community hospital

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Purpose: Inpatient pain management remains a challenge for clinicians due to unpredictable patient responses to opioid therapy. Because of its potency, some patients may be more sensitive to opioid therapy, resulting in severe and life threatening side effects. This may be more pronounced when using more potent opioids, such as hydromorphone. The purpose of this study is to evaluate the prescribing habits and adverse effects of intravenous hydromorphone in a community hospital before and after the implementation of a computerized physician order entry (CPOE) system.

Methods: This study was approved by the Institutional Review Board at Franciscan St Margaret Health. A retrospective chart review will be conducted and include patients who are at least 18 years of age or older and received at least one dose of intravenous hydromorphone before (January 2012 to May 2012) and after (January 2013 to May 2013) the implementation of the CPOE system. Patients who received hydromorphone must have received at least one dose for inclusion in this study. Primary endpoints are overall rate of compliance with generally accepted recommendations in literature on hydromorphone prescribing as well as the evaluation of the impact of CPOE on compliance with these recommendations. Secondary endpoints are the number of adverse events, rapid responses/codes, and reversal agents used among those patients with dosing outside of the recommendations as well as the overall rate of adverse events.

7-092

Title: Medication use evaluation of intravenous acetaminophen in a multi-hospital system

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Purpose: Intravenous (IV) acetaminophen is frequently used in the inpatient setting for a variety of reasons, including for pain control in post-operative patients, patients who are NPO, or in patients with severe nausea and vomiting. Despite potential benefit when used appropriately, IV acetaminophen is available only as a branded product, making cost a prohibitive factor. The objective of this medication use evaluation (MUE) is to assess the utilization and cost of IV acetaminophen in adult patients within a multi-hospital system and to evaluate the appropriateness of use and potential for cost savings with regard to usage restrictions.

Methods: This MUE will be submitted to the Institutional Review Board for approval. A retrospective chart review will be conducted on patients who were 18 years old or greater and received at least 1 dose of IV acetaminophen from January 1, 2013 through June 30, 2013. This MUE will include patients from 7 institutions that utilize the same electronic medical record system within a health system. Patients will be identified through the medical record system and 200 will be randomly selected for inclusion based on the proportion of patients with IV acetaminophen use from each institution. The following data will be collected: patient demographics, IV acetaminophen regimen and length of therapy, service prescribing, number of IV doses given concomitantly with any oral medication, total daily dose of acetaminophen from all sources, appropriate conversion to oral formulation per hospital policy, patients' NPO status, and contraindications to other non-opioid pain medications. All patient identification will be removed from data. Following data collection, a cost analysis will be conducted to determine the potential cost savings if hospital restrictions were correctly followed and if more stringent restrictions were implemented.

7-093

Title: Survey of colleges of pharmacy to determine methods of preparation for and promotion of postgraduate education

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Purpose: Many national pharmacy organizations promote postgraduate education. Specifically, residency and fellowship training can serve as a means to enhance clinical maturity of pharmacy graduates, a necessary tool for positively influencing health care. Colleges of pharmacy promote postgraduate education in a variety of ways. Individual colleges of pharmacy have described their methods and at least one surveyor summarized methods for the support of residency training employed by multiple colleges of pharmacy in 2009. The purpose of this study is to summarize the extent to which colleges of pharmacy currently prepare their students for and promote postgraduate education.

Methods: An electronic survey will be sent to administrators of all accredited colleges and schools of pharmacy in the United States. The survey will collect information about formal activities made available to students regarding postgraduate opportunities: community and hospital-based PGY1 and PGY2 residencies, fellowships, masters degree programs, and PhD programs. The survey will also collect information regarding the extent to which colleges of pharmacy assist unmatched students in obtaining a pharmacy residency position. Descriptive statistics will be used to analyze the data via SPSS. Participation in this survey will be completely voluntary and no questions will be asked that could force identification of a single institution. Responses will remain confidential and anonymous and will be presented in aggregate. This study will be submitted to the Butler University Institutional Review Board for approval.

7-094

Title: Utilization of objectives from the ASHP 2015 and PPMI initiatives to inspire pharmacy practice change in a VA medical center

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Purpose: This residency project is a continuation of the work that was performed during the previous residency year. Overall results of a survey given to employees during the previous residency year showed that accepting responsibility for both clinical and distributive activities in the pharmacy department was an issue that pharmacy employees felt should be addressed. At the end of the previous residency year action items were identified for pharmacists working in ambulatory care, acute care, inpatient operations, and outpatient operations. This years project will seek to implement and evaluate these identified action items.

Methods: The action item related to job rotation identified last year will be evaluated by use of a survey given to pharmacists working in rotating and non-rotating roles. The second action item identified was to re-visit the medication consult process for restricted medications at the Indy VA. Currently all restricted medication consults are reviewed and processed by clinical pharmacy specialists, leaving clinical pharmacists out of this process. Restricted medications may need to be processed by clinical pharmacists for patients being discharged or patients leaving the ED. In an effort to expedite care, and increase accountability for clinical and distributive activities, part two of this action item will be to identify ways to incorporate clinical pharmacists in the consult process. Specifically, outpatient pharmacists may have a role in evaluating consults for certain restricted medications in our institution. To help expand the roles of inpatient clinical pharmacists, this project will look at drafting and implementing a policy for automatic renal dose adjustments for certain medications. Finally, to further the idea of a total pharmacy care model, this project will look to examine the feasibility of having a pharmacist in the emergency department, possibly serving in the role of a "pharmacy navigator".

7-095

Title: Transitional care: medication management in discharge follow up

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Purpose: Medication management in care transitions programs have been implemented throughout the United States in various medical centers. Studies conducted by these programs have shown improved results in reduction of readmission rates and health care costs. These programs primarily focus on enhancing the patient discharge process and the subsequent transition to the community setting. Pharmacists serve an important role in this process by reducing medication-related events. The goal of this project is to assess pharmacist intervention during the post discharge process by way of follow-up phone calls on patients with heart failure at a community hospital.

Methods: The study was granted approval by the Institutional Review Board. The electronic medical record will identify patients with a diagnosis of heart failure. The inclusion criteria consists of patients with heart failure at least 18 years of age that have not been discharged to a skilled nursing facility or nursing home and are without cognitive impairment. The electronic medical record will be used to gather the following data: patient age, gender, ethnicity, left ventricular ejection fraction, admission date, discharge date, readmission date and discipline of the health care team member conducting the medication reconciliation counseling prior to discharge. Eligible patients will receive a follow up phone call within five days of discharge. Patients will be interviewed and responses to a medication compliance questionnaire will be recorded. The type of pharmacist intervention will be logged with each follow up phone call. The reviewer will classify each pharmacist intervention using a web based clinical documentation and reporting tool. The primary efficacy outcome will analyze 30-day readmission rate and the secondary efficacy outcome will assess pharmacist interventions during the post discharge follow-up phone call.

7-096

Title: Integration of the Nanosphere Verigene test into an antimicrobial stewardship program.

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Purpose: The excessive prescribing of broad-spectrum antibiotics is a major problem in the medical community. This overuse of antimicrobial agents has resulted in the emergence of multi-drug resistant (MDR) bacterial strains. Rapid and accurate detection of bacterial species and resistance factors is essential for tailoring antimicrobial therapy. The purpose of this study will be to evaluate the effectiveness of implementing a rapid Gram-positive bacteria and resistance factor test into an existing antimicrobial stewardship program.

Methods: This prospective study will be conducted at a 400-bed, community hospital. The following data will be collected: patient age, gender, weight, complete blood count, pertinent physical exam findings, culture and sensitivity reports, antimicrobial therapy, renal and hepatic function tests, time to appropriate antibiotic regimen, and Nanosphere Verigene test results. Data will be collected, recorded, and analyzed confidentially and without the use of patient identifiers. The laboratory will automatically run the Nanosphere Verigene test for inpatients with a gram-positive blood culture isolate and will contact pharmacy with the test results. The pharmacist will evaluate the patients profiles to ensure they are on appropriate treatment. The pharmacist will order a one-time dose of vancomycin for any mecA positive result. The pharmacist will also notify the physician and nurse of the test results and initial vancomycin therapy. If a result comes back with a positive result for the vanA and/or vanB genes, the pharmacist will contact the physician. The pharmacist will consult with the physician in all cases to determine further treatment. Analysis will be completed to determine if the Nanosphere Verigene test reduced the time to appropriate antibiotic treatment and also to determine potential and actual cost savings to the institution.

7-097

Title: Effectiveness of a medication reconciliation program conducted by pharmacy technicians in the emergency department

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Purpose: The Joint Commission identifies medication reconciliation as a source of transitional error that significantly impacts patient safety. Dedicated pharmacy-driven medication reconciliation has proven superior to the traditional nurse-physician model by reducing the rate of potential adverse drug events by greater than 85%. The objective of this study is to evaluate the effectiveness of a medication reconciliation program conducted by pharmacy technicians in the emergency department and determine if the use of pharmacy technicians reduces unintentional discrepancies within the hospital and meets national norms.

Methods: This study was submitted and approved by the Institutional Review Board. Phase I Control Group: One hundred subjects will be included based on a retrospective chart review. Subjects will be eligible if they are 18 years of age or older, admitted from the emergency department, and had a medication reconciliation completed. Subjects will be excluded if they do not speak English, do not have any home medications, unresponsive, or unavailable for subsequent medication reconciliations. Electronic patient charts will be utilized for data collection to include: demographic information, admission diagnosis, number of medications reconciled, time started, time ended, number of medication discrepancies, medication name, type of medication discrepancy, and time and date of admission and discharge. Phase II Intervention Group: During the same time period as the control group, one hundred subjects will be included based on a prospective review. Subjects will be included who meet the same inclusion criteria as the control group. The review will be based on implementation of a pharmacy technician driven medication reconciliation program where clinical pharmacists will do education and training of the technicians. Phase III: Analysis between the control and intervention group will take place utilizing the data collected.

7-098

Title: Timing of initiation of corticosteroids and impact on outcome in patients with septic shock

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Purpose: The Surviving Sepsis Campaign guidelines suggest using intravenous hydrocortisone if fluid resuscitation and vasopressor therapy are inadequate to restore hemodynamic instability. The use of corticosteroids to decrease mortality in patients with septic shock is unproven; however, in the CORTICUS trial patients receiving hydrocortisone had a shorter duration of vasopressor therapy. When drafting a sepsis protocol at our institution we found disagreement among clinicians and variability in practice on timing of initiation of corticosteroids in patients with septic shock. The objective of this study is to evaluate timing of initiation of corticosteroids on duration of vasopressor therapy in septic shock.

Methods: As this analysis is a quality improvement project intended to guide development of our sepsis protocol, it is exempt from Institutional Review Board approval. Subjects will be identified via the electronic medical record system if they received hydrocortisone while in the intensive care unit. Subjects will be included in the analysis if they are receiving vasopressors secondary to hypotension due to sepsis and if hydrocortisone was initiated for this indication. Baseline demographic data will include subject age, gender, weight, concomitant disease states, admit category, APACHE II score, and type of infection. Subjects will be analyzed in one of two groups dependent on the dose of vasopressor therapy when hydrocortisone was started. The primary outcome is total duration of vasopressor therapy for subjects in whom hydrocortisone was started when the norepinephrine dose was ≤ 10 mcg/min versus those in whom hydrocortisone was started when the norepinephrine dose was > 10 mcg/min. Secondary outcome measures will include: mortality, ICU length of stay, hospital length of stay, and duration of mechanical ventilation. All data will be recorded without patient identifiers and confidentiality will be maintained.

7-099

Title: Evaluation of rivaroxaban, enoxaparin, and warfarin on hospital readmission rates after total knee arthroplasty

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Purpose: Venous thromboembolism is a major and potentially fatal complication that can occur after orthopedic surgery including total knee arthroplasty. Rivaroxaban, a direct factor Xa inhibitor, is FDA approved for this indication and has shown superiority to enoxaparin in the ROCKET3 trial. Current clinical practice at a 526-bed not-for-profit community teaching hospital does not yet reflect a favored use of rivaroxaban over other anticoagulants. Agents such as enoxaparin and warfarin remain the anticoagulants of choice in this patient population. The objective of this study is to compare prescribing patterns for rivaroxaban, enoxaparin, and warfarin and determine hospital readmission rates.

Methods: This study was submitted to the Institutional Review Board for approval. Electronic medical records will be examined to complete a retrospective review of the hospitalized patients that received either rivaroxaban, enoxaparin, or warfarin after a total knee arthroplasty. All data will be de-identified and all patient health information will be stored in a password protected electronic file. Data will be analyzed in reverse chronological order for a one year timeframe and include a maximum of 100 cases for each anticoagulant evaluated. The primary endpoint of this study is 30 day hospital readmission rate. Secondary endpoints include 60 to 90 day hospital readmission rates, cause of readmission, bleeding rates, and initial anticoagulant dose.

7-100

Title: Effect of providing selected free discharge medications to heart failure patients on 30-day readmissions

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Purpose: Twenty-five percent of Medicare beneficiary heart failure patients are readmitted to the hospital within a 30 day period. Several studies examined strategies to prevent patients from being readmitted, such as physician or nurse follow-up, partnering with hospitals or physicians, arranging follow up appointments, or assigning staff members to follow up with lab results after discharge. The purpose of this study is to assess the change in 30-day readmission rates for heart failure patients who receive selected free medications at discharge. Primary endpoint is the 30-day readmission rate between participants and non-participants. Secondary endpoints are patient reported barriers to obtaining medications.

Methods: This study was approved by the Institutional Review Board and informed consent will be obtained from all participants included in the study. Patients will be included in the study if they have a diagnosis of heart failure and have financial, transportation, or psychosocial barriers to obtaining their heart failure medications. Patients will be excluded if the patient or their physician decline to participate. Participants will receive a free 30 day supply of selected heart failure medications (ACE inhibitor, beta blocker, diuretic, and/or digoxin) as well as medication and disease state counseling from a clinical pharmacist. Data will be collected on all patients screened and will include demographics, patient reported barriers to obtaining medications, and if they are readmitted in 30 days.

7-101

Title: Comparing infection rates in cardiac surgery patients receiving pre-operative cefuroxime plus vancomycin versus either vancomycin or cefuroxime alone

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Purpose: In 2006, the Society of Thoracic Surgeons released guidelines for antibiotic prophylaxis in cardiac surgery.1,2 These guidelines made evidence based recommendations for antibiotic selection, dosing, and duration of therapy for patients undergoing cardiothoracic surgery. Current literature, however, is unclear on the use of monotherapy vs. combination therapy in the cardiac, peri-operative setting. The purpose of this study is to compare post-operative surgical site infection rates between cefuroxime, vancomycin, or a combination of the two in patients undergoing cardiothoracic surgery. The secondary aim will be to evaluate vancomycin use in the peri-operative setting at this institutions heart and vascular hospital.

Methods: This is a retrospective comparative cohort study of patients undergoing cardiothoracic procedures who received either a combination of cefuroxime and vancomycin versus those receiving either agent as monotherapy at our institutions heart and vascular hospital. The primary aim of the study is to compare the incidence of surgical site infections between cohorts. Additional data will be collected with regards to the surgical care including: surgeon performing surgery, the procedure and the perioperative antibiotic administration and timing. Secondary outcomes will include length of stay (LOS), LOS in ICU, mortality, the need for an additional surgical procedure, readmission in 28 days, and patient laboratories and demographics. The second aim of the study will evaluate the use of vancomycin in the perioperative setting at this institution. Data to be collected will include the patients allergies, the reason for selecting vancomycin therapy, the practitioner ordering the antibiotic, whether or not it was ordered from an order set, the perioperative antibiotic administration and timing, procedure type, as well as patient laboratories and demographics. All data will be collected on a uniform data collection sheet by the primary investigator.

7-102

Title: Evaluation of electronic discharge medication reconciliation on quality measures in ischemic stroke and acute myocardial infarction patients

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Purpose: On June 25th, 2013, Indiana University Health Methodist hospital implemented a new process of Cerner electronic medication reconciliation at discharge. The primary goal of this study is to evaluate its effectiveness in increasing discharge medication compliance in line with The Joint Commission specifications for patients with ischemic stroke and acute myocardial infarction. Methodist Hospital has specific units for stroke patients and pharmacists are tasked to review the discharge medications of patients where they are assigned. The effect of pharmacists and discharging unit on the discharge compliance is not known. The prescriber reasons for non-compliant discharges have not been characterized.

Methods: A retrospective chart review of discharged patients with ICD-9 codes for AMI or stroke will be conducted. The periods of pre (February 24-June 24, 2013) and post-implementation (July 2-November 2, 2013), with a one-week washout will be compared. Excluded are patients < 18 years of age, with LOS > 120 days, who expire, that leave AMA, or are discharged to hospice. The primary endpoint, appropriate discharge, will be composite of required medications prescribed at discharge. For AMI, all patients should be discharged with aspirin, a statin, a beta-blocker, and an ACE-inhibitor/ARB if LVEF < 40%. For stroke, all patients should be discharged with an antithrombotic, an anti-coagulant if afib/flutter was present, and a statin if LDL > 100 mg/dL, was not measured, or the patient was admitted on a lipid-lowering agent. Secondary endpoints will evaluate the effect of pharmacist intervention and nursing unit on pre and post-implementation frequency of appropriate discharge. In addition, the reasons given, or lack thereof, for excluding required medications will be summarized. Estimated sample size will be 216 for an alpha of 0.05, beta of 0.2, and delta of 10%. Statistical analysis will be chi-squared for the primary endpoint and descriptive statistics for secondary endpoints.

7-103

Title: Implementation of an antimicrobial clinical decision support system (CDSS) within a Veterans Affairs Medical Center

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Purpose: Inappropriate antimicrobial therapy can cause adverse drug events, promote emergence of antimicrobial-resistant organisms, and increase morbidity and mortality. In an attempt to increase quality and safety of antimicrobial therapy, electronic antimicrobial clinical decision support systems (CDSS) have been developed to offer clinical guidance at the point of order entry. The objective of this project is to improve antimicrobial stewardship through implementation of an antimicrobial CDSS into a VA Medical Center computerized patient record system (CPRS). This is a quality improvement project and does not require IRB oversight or approval.

Methods: The antimicrobial CDSS consists of menus that guide a provider in selecting appropriate antimicrobial therapy for a suspected disease, syndrome, or pathogen, and then propagates a quick order with recommended drug dosing, route, and interval. The CDSS will be implemented in the acute care setting only with potential to expand to the outpatient clinics. To date, the antimicrobial CDSS has been approved for testing by the Clinical Informatics Committee and Medical Executive Committee. In order to maximize provider utility, a needs assessment will be distributed to identify factors that will affect prescriber acceptance of CDSS. Results of this assessment will be used to address potential concerns regarding CDSS implementation. The antimicrobial CDSS order menus, which will be transferred from the another VA Medical Center, will be tailored based on needs assessment results, reviewed for guideline adherence, and adjusted based on local susceptibility patterns. Providers will receive education on proper use and the role of CDSS within their practice. The Antimicrobial Stewardship Team at the VA Medical Center will assume responsibility for ensuring the order menus are up-to-date with current guidelines and practices. All menus and order sets will be reviewed for continued appropriateness and general upkeep on an annual basis.

7-104

Title: Retrospective comparative cohort of concomitant piperacillin-tazobactam and vancomycin use and acute kidney injury

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Purpose: Historically, both penicillins and vancomycin have been known to contribute to the development of acute kidney injury (AKI) when used individually. Due to a perceived increase in incidence of AKI in patients treated concomitantly with piperacillin-tazobactam and vancomycin, infectious disease physicians within our health network have begun to avoid using this combination. A literature review reveals no published studies examining this relationship, thus the purpose of this study is to compare the incidence of acute kidney injury by categorization, utilizing RIFLE criteria, in patients treated concomitantly with piperacillin-tazobactam and vancomycin versus those with no changes in renal function from baseline.

Methods: This study will be a retrospective comparative cohort. Patients aged 18-89 years admitted to the four main hospitals within our health network that received therapy with both piperacillin-tazobactam and vancomycin between June 2011 and June 2013 will be evaluated for inclusion. Study patients with AKI, defined as an increase in serum creatinine (SCr) ≥2mg/dL within 48 hours, will act as the case group. Patients with no evidence of AKI will then be matched according to admission time frame 7 days. Patients <18 years of age, >90 years of age, admitted to the maternity floor, prisoners, those readmitted to the hospital within 30 days of initial discharge that again receive both study medications, those with acute renal failure not meeting the previously mentioned AKI SCr cut-offs and patients with chronic kidney disease (kidney damage or CrCl <60mL/min for ≥ 3 months) will be excluded. Additional information to be collected includes concomitant nephrotoxins, ICU admission status, comorbid conditions and readmission >30 days with acute kidney injury on readmission. Descriptive statistics will be used to characterize patient demographic information. Clinical characteristics will be compared utilizing independent samples t-test, chi-squared analysis or comparable tests for non-parametric data utilizing a significance value of <0.05.

7-105

Title: Evaluation of Antipsychotic Therapy for the Management of Delirium in the Intensive Care Unit

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Purpose: Delirium is associated with the acute onset of cerebral dysfunction typically characterized by altered baseline mental status, inattention, disorganized thinking, or level of consciousness. Patients may be agitated, calm or lethargic, or fluctuate between the two. The dopamine antagonist haloperidol is the most commonly prescribed medication for this indication despite minimal evidence supporting its use. Recently published guidelines emphasize use of non-pharmacologic interventions in conjunction with drug therapy for delirium-specific states. However, evidence supporting one drug over another is limited and contradictory and no specific antipsychotic is recommended alone or in conjunction with non-pharmacologic therapy.

Methods: This is a retrospective, observational cohort study with a prospective outcome evaluation following prescriber education at Lutheran Hospital in Fort Wayne, Indiana. The primary endpoint of the study is the length of delirium as measured by a positive CAM-ICU score following administration of haloperidol or dexmedetomidine for the treatment of delirium in adult ICU patients. Secondary endpoints include all-cause mortality, length of ICU stay, length of hospitalization, and rates of patient readmission within 30 days. A retrospective chart review is to be performed for adult ICU patients who received haloperidol between 1 January 2012 and 1 September 2013. In early fall 2013, ICU prescribers will receive education on the hospitals updated delirium protocol. Following that session, prospective chart review will be utilized to evaluate patient outcomes. Predetermined endpoints will be used to compare patients receiving therapy consistent with the hospital protocol and those who do not. Inclusion criteria include adult age (≥18 years old), ICU admission >24 hours, and a positive CAM-ICU score while present in the ICU. Patients who have a negative CAM-ICU score or lack documentation of its result, contraindications to haloperidol and dexmedetomidine, or a positive pregnancy test will be excluded from statistical analysis.

7-106

Title: Determining an empiric dosing recommendation for vancomycin in obese patients

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Purpose: The growing prevalence of obesity necessitates evidence regarding medication dose adjustments in this population to achieve therapeutic concentrations. A recent consensus statement regarding vancomycin recommends using actual body weight in obese patients for initial dosing and obtainment of serum concentrations for dose adjustments. The consensus statement did not incorporate available data regarding differences in vancomycin clearance and volume of distribution. The objective of this study is to determine the pharmacokinetic parameters of obese patients by obtaining two serum concentrations in order to adjust doses and design empiric dosing recommendations for future use.

Methods: This prospective study from October 1, 2013 to March 30, 2014 is under review by the Institutional Review Board and will be compared to data collected for a medication use evaluation from October 1, 2012 to March 1, 2013. Patients receiving intravenous vancomycin with a BMI ≥ 30 kg/m2 will have peak and trough serum concentrations obtained at steady state in order to calculate patient-specific pharmacokinetic parameters and make dose adjustments. The median Vd, k, and t1/2 values will be the primary endpoint and used to provide recommendations for empiric dosing and monitoring for obese patients receiving vancomyin. Exclusions are: < 18 years old, pregnant, prisoner, cystic fibrosis, burn, hemodialysis/continuous renal replacement therapy, or risk for/experience acute kidney injury upon vancomycin initiation or up to the time of initial serum concentrations. Data collected will include: patient demographics, indication, renal function, culture results, serum concentrations, duration of therapy, and concomitant nephrotoxins. Secondary endpoints include percentage of patients: requiring dose adjustments, initially meeting goal trough concentrations, with initial trough concentrations < 10 mcg/mL, and with initial trough concentrations > 20 mcg/mL. Safety and efficacy will be evaluated by documented clinical outcome and reported adverse events.

7-107

Title: Hyponatremia as a risk factor for falls in hospitalized patients

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Purpose: Hyponatremia is the most common electrolyte disorder found in hospitalized patients. Stable mild chronic hyponatremia (120-132 mEq/L) is usually asymptomatic and generally considered benign. However, recent evidence suggests that mild chronic asymptomatic hyponatremia is associated with a high incidence of falls, possibly due to gait and attention impairments. The purpose of this study is to determine if hyponatremia is associated with an increased incidence of falls in hospitalized patients.

Methods: Approval from the Institutional Review Board will be obtained. A retrospective case-control study will be performed. Patients that experienced a fall while hospitalized will be compared to a control group of patients that did not experience a fall during hospital stay. Patients will be included in the fall group if they experienced a fall or a near miss fall and had at least one serum sodium level measured while hospitalized. A near miss fall was defined as any patient that started to fall but was caught and lowered to the ground by an employee. Patients will be excluded if they presented with suspected acute hyponatremia (polydipsia-hyponatremia syndrome and/or presence of seizures). The following patient data will be collected: the presence of hyponatremia (serum sodium level between 115 and 132 mEq/L), fall or near miss fall, fracture as result of fall, history of cardiac failure, nephrotic syndrome or cirrhosis, and use of the following medications: diuretic, antiepileptic or selective serotonin reuptake inhibitor (SSRI). The primary outcome will be to compare the incidence of hyponatremia between patients that experienced a fall and those that did not. Secondary outcomes will include analyzing patient risk factors for hyponatremia between groups.

7-108

Title: Evaluating intensive care nursing interruptions and distractions in the medication administration process of critically ill patients before and after implementation of strategies to minimize events

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Purpose: Previous studies, although scarce, support the use of strategies to reduce the amount of interruptions and distractions during the medication administration process. Interruptions and distractions are known to be a cause of medication errors. The aim of this study is to evaluate the interruptions and distractions that occur during the medication administration process through observations and develop strategies to decrease those events and implement them in the Intensive Care Unit (ICU).

Methods: In this study, the investigator will observe the nursing procedures during the medication pass process in a 36 bed mixed ICU. During this period, the investigator will record the number and type of interruptions and distractions that do occur. This baseline data will provide information to design strategies to minimize these events in the future. These strategies will then be educated to the nursing staff and implemented during the medication pass process. Observation will follow education to the nursing staff and reevaluate the amount of events that nurses will encounter during the same time period for the medication pass process. Data analysis will include the difference in the number of events that occur during the medication pass process before and after implementation of strategies to minimize interruptions and distractions. This project was approved by the Medication Safety Team, Critical Care Committee, Pharmacy and Therapeutics Committee, and the Medical Executive Committee, the appropriate review boards at this institution.

7-109

Title: Assessment of the use of metformin in patients with and without renal impairment at a veterans affairs medical center

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Purpose: Despite recent evidence for the safe use of metformin in patients with diabetes and renal impairment, providers continue to discontinue metformin based on serum creatinine as outlined in the metformin prescribing label, leading to omission of a beneficial therapy. The purpose of this two phase study is to evaluate metformin use at a veterans affairs medical center based on a regional dosing guideline approved in April 2013 that utilizes estimated glomerular filtration rate (eGFR). The first phase will evaluate metformin use since April 2013 and the second phase will evaluate those who had metformin discontinued prior to this date.

Methods: This retrospective study will be submitted to the Institutional Review Board for approval. A list of patients with type 2 diabetes mellitus (T2DM) on metformin between January 2011 and December 2012 will be generated and crossed with those on metformin between April 2013 and June 2013 to identify patients that are no longer on metformin on or prior to April 2013. This list will be randomized to 150 patients. The list of patients that are still on metformin from April 2013 to June 2013 will also be randomized to obtain 150 patients. The following data will be collected and analyzed: age, gender, race, ethnicity, comorbidities, body mass index, metformin prescription information, appointment history, adverse drug events caused by metformin, reason for change in metformin dosing or discontinuation, concurrent diabetes medications, comprehensive metabolic panel, eGFR, serum lactate concentration, hemoglobin A1c, and blood glucose concentrations. No patient identifiers will be used and data will be maintained confidentially. The primary endpoint of the first study phase is the percentage of patients in compliance with the new guideline. The primary endpoint of the second phase is the percentage of patients who could be restarted on metformin.

7-110

Title: Outcomes of orthopedic hardware-related osteomyelitis treated via a county hospital outpatient parenteral antimicrobial therapy (OPAT) program

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Purpose: Outpatient parenteral antimicrobial therapy (OPAT) is an increasingly popular approach for treating complicated infections due to its obvious clinical advantages including decreased length of hospital stay and increased patient convenience. There is limited published literature addressing the clinical outcomes of patients with orthopedic hardware-related osteomyelitis managed by an OPAT program, thus the barriers to cure are largely unknown. The objective of this study is to evaluate clinical outcomes, complications, and risk factors for treatment failure in patients with orthopedic hardware-related osteomyelitis being treated with OPAT at an inner-city, teaching hospital.

Methods: Electronic and clinic records of patients who received OPAT for orthopedic hardware-related osteomyelitis from July 1, 2009 to June 30, 2011 will be retrospectively reviewed. Data collected will include: patient age; gender; race; medical and medication history; social history; infection being treated including site and infecting organism(s); inflammatory markers; radiographic results; culture and susceptibility results; antibiotic regimen including dose, duration, and compliance; and adverse events. Information regarding the clinical outcome of each patient will be collected for 24 months after OPAT and will be classified as cure (clinical improvement without signs/symptoms of infection, C-reactive protein (CRP) < 5 mg/L, radiographic stability/improvement, and hardware removed as planned) or failure. Failure cases will be further classified into early (within 4 weeks of completed OPAT course) or late failure (≥4 weeks). The primary outcome measure is the number of patients who achieved clinical cure. Secondary outcome measures will include the incidence of treatment complications, the overall OPAT compliance rate, and the risk factors associated with treatment failure. Data will be analyzed using descriptive statistics to delineate the factors with the greatest influence on the clinical course of orthopedic hardware-associated osteomyelitis. This study has been approved by the Indiana University Institutional Review Board.

7-111

Title: Implementation of medication education alerts for nurses to improve patient health care measured by HCAHPS survey scores

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Purpose: Hospital consumer assessment and healthcare provider and systems (HCAPHS) survey scores are used by many health systems to assess patient care during their hospital stay. One aspect of the HCAPHS survey is medication education. Health systems continuously evaluate efforts to improve these scores and to facilitate patients receiving the best health-care possible. The purpose of this study is to determine how education for new medications in the information technology system can improve HCAPHS scores and ultimately patient medication awareness and health care.

Methods: Many health facilities use Cerner information technology system for medication orders, administration and to maintain patient records. The medication education alerts in this technology system will prompt the nurse at scanning during medication administration of formulary medications. The alert will contain the drug name, common indications and some possible side effects. The goal is to provide information which is readily available to nurses during medication administration to facilitate medication education with ease and eventually help improve patient health care. The computerized medication education alerts for nurses project was recently approved by the appropriate hospital committee and will be implemented by the end of October 2013. The study outcome of improvement in patient health care will be measured using HCAPHS survey scores, which will be collected and evaluated monthly. The study is exempt from the Institutional Review Board, as data collection is recorded without patient identifiers.

7-112

Title: Improving Quality of Care through Discharge Medication Education: A Pharmacist-Based Initiative

Primary Author: Victoria Pattison**,** Saint Joseph Regional Medical Center, 611 East Douglas Road, Ste. 407, Mishawaka, IN 46545; **Email:** victoria.pattison@sjrmc.com

Purpose: The purpose is to assess whether pharmacist-led discharge education counseling of the patient will increase patient perception of receiving medication education as seen in Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) scores. HCAHPS is a survey given at random to discharged hospital patients assessing their satisfaction with hospital care, including medication communication and education. This project aims to educate patients discharged from a specific hospital unit about their medications, while potentially, increasing survey results regarding communication about medications and communication about medication side effects.

Methods: The pharmacy resident, along with advanced experiential pharmacy students, will educate Progressive Care Unit (PCU) patients upon discharge about medication side effects, as well as the use of their medications based on their hospital discharge orders. The study period is 1 month with the assistance of the nursing staff and healthcare team in recognizing discharged patients. Patients will then be randomly phone surveyed by Press-Ganey using the HCAHPS survey. The research team will extrapolate the results from the surveys for the PCU floor and will assess their effectiveness in educating patients by evaluating the two questions relating to medication communication and medication communication about side effects. The patient population will include patients that are discharged home without home care with a prognosis greater than 6 months. There is no compensation for receiving medication education and the data collected will only include the number of patients educated. The number education will be compared against the total number of patients discharged home from the PCU. The results from the HCAHPS scores will show the impact that a pharmacist has in increasing patient perception of medication education in the hospital.

7-113

Title: Implementation of an outpatient parenteral antimicrobial therapy team to evaluate patients for early discharge

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Purpose: There are a number of undesirable risks that can occur with prolonged inpatient treatment of infections. These include risk of acquiring a healthcare associated infection, potentially insufficient reimbursement to cover the costs of the patient's infection, increased costs associated with each day of inpatient stay, and patient dissatisfaction with hospitalization for the sole purpose of receiving intravenous antibiotics. The purpose of this study is to develop a consult team to identify patients for early discharge, assess the benefits of treating patients in an outpatient setting, and establish a formal process for the facilitation of outpatient parenteral antimicrobial therapy.

Methods: The steps involved in order to implement this consult service will be to identify the health care professionals that will be needed on the consult team, create a list of clinical criteria for appropriate patient selection, develop a protocol to enroll patients into the appropriate outpatient setting, and create a standardized discharge process to ensure proper follow up. This study will be submitted for Institutional Review Board approval. The data collected will only focus on patients with cellulitis for the purposes of comparison. Data will be collected retrospectively and will compare patients with cellulitis before and after the initiation of the consult service. The comparative demographic information will include but is not limited to: age, gender, white blood cell count, febrile status, culture results, recent history of antibiotic failure, parenteral antibiotic(s) prescribed, and length of parenteral therapy. The outcomes data to be evaluated will include inpatient length of stay, readmission rates within thirty days, and costs associated with parenteral therapy in the inpatient setting versus the outpatient setting.

7-114

Title: Development and implementation of a twelve-week pharmacy residency wellness program

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Purpose: The stress of pharmacy residency training can lead to unhealthy dietary choices, sleep deprivation, reduced levels of physical activity, decreased social activity, and a reduction in overall quality of life. Literature regarding physician resident wellness suggests that improved physician wellness may lead to the delivery of higher quality care. The implementation of a pharmacy residency wellness program would provide a valuable component to resident education. Program topics will teach residents the importance of developing healthy work-life balance and prioritizing personal health. These skills will lead to improved resident satisfaction and the delivery of higher quality patient care.

Methods: This study is approved by the Institutional Review Board. Since there are no standards for the development of a residency wellness program, the program is modeled from employee health promotion programs. The Centers for Disease Control and Prevention (CDC) Workplace Health Model will be utilized with the four main steps of assessment, planning, implementation, and evaluation. The assessment stage of the project is underway to determine the interests of pharmacy residents. Current post-graduate year one and year two pharmacy residents will be eligible for enrollment into the twelve week program. Baseline data will be obtained for the following: dietary intake, physical activity, sleep hygiene, caffeine, alcohol, and tobacco use. Upon enrollment, residents will be provided a wellness packet and calendar with guideline-based health information. The calendar will provide dietary and physical activity suggestions for each week. A social media site will be available for group communication and posting throughout the program. Health behaviors will be assessed on a monthly basis via online submission to the program coordinator. Pre and post clinical measures will be evaluated via participant surveys.

7-115

Title: Decreasing readmission rates through follow-up medication education: a multidisciplinary collaboration

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Purpose: The purpose is to determine the effects of pharmacist participation in medication education aspects of transitions of care acutely and clinic-based. This project aims to identify and avoid potential high-risk behavior that will result in hospital readmission, such as medication non-adherence, lack of physician follow-up, and lack of medication understanding. Stage one will involve follow-up phone calls by an acute care PGY1 resident pharmacist, while stage two will include a follow-up phone call in addition to a clinic visit with an ambulatory care PGY1 resident pharmacist and physician.

Methods: Stage one: The pharmacy resident, along with advanced experiential pharmacy students, will educate patients with congestive heart failure, acute myocardial infarction, and pneumonia upon discharge from the hospital. Patients will then be contacted by phone within 2 business days to ensure new medications have been filled, a follow-up physician visit is made, and new medications are understood. The pharmacist will then track the affected patient population to measure trends in readmissions with pharmacist intervention. Stage two: The pharmacy resident will educate all Family Medicine Clinic patients upon discharge from the hospital. Patients will be contacted by phone within 2 business days, and will also be made a follow-up appointment with a Clinic physician within 14 days, incorporating new transitional care billing codes. The goal of the clinic visit to ensure continued care by the medical team and ease of transition for the patient. The pharmacist will track the affected patient population to measure trends in readmission with pharmacist and physician intervention. At the conclusion of the project, the pharmacists will compare the impact of pharmacists' collaborative medication education efforts on readmission rates and a potential financial benefit to the hospital.

7-116

Title: Implementation of a pilot home-based INR self-testing point-of-care program in telehealth warfarin patients

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Purpose: Warfarin has served as the primary anticoagulant for decades, however, maintaining patients within therapeutic INR range is a challenge. Studies have addressed home-based patient INR self-testing and shown improved anticoagulant control and a potential reduction in the bleeding risk and re-thrombosis. The use of telehealth devices interfacing with patient self-testing devices has the potential to improve access to health care and reduce patient self-reporting error. Telehealth is the delivery of services such as chronic disease state management through telecommunications technologies. The purpose of this pilot program is to implement an INR self-testing program in warfarin patients managed by telehealth.

Methods: This study was exempt from IRB review and classified as a quality assurance program. Telehealth and INR self-testing devices will be selected and ordered based on current patient acceptance data, cost, and accuracy. The telehealth and patient INR self-testing device must interface to allow INR data to be directly uploaded for pharmacist assessment to remove the potential for patient self-reporting error. Policies and procedures for the pilot program will be designed. Electronic medical record system will identify patients currently managed by telehealth who have been on warfarin for at least 3 months before the start of self-testing. All information will be de-identified. Inclusion/exclusion criteria will be applied to determine patient eligibility. Eligible patients will be contacted by phone to determine interest. Education materials will be prepared targeting both patients and healthcare providers. Education classes will be administered for patients and pharmacists separately at the anticoagulation clinic to learn about self-testing. Patients will be deemed competent on the basis of training by the program staff, 4 weeks of testing, and a formal competency evaluation. The selection of the devices, policies and procedures, inclusion and exclusion criteria, education materials, and barriers throughout the implementation of the pilot program will be described.

7-117

Title: Institution of a pharmacist in a patient-centered medical home (PCMH): the benefit on patient outcomes

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Purpose: With health care reform in process, quality outcomes and obtaining patient specific health care goals are becoming a component in the Pay for Performance model. Therefore, collaborative approaches are evolving and implementation of the Patient-Centered Medical Home (PCMH) model is becoming common practice. A PCMH focuses on each patient having their own physician who leads a team of health care professionals that provides ongoing, coordinated care. The approach of utilizing a pharmacist in a PCMH has been supported in the literature with results demonstrating improvements in patient outcomes and decreased health care cost.

Methods: IRB approval will be obtained through Deaconess Research Institute and Butler University. The trial is a 6-month pilot study utilizing a pharmacist in a PCMH to improve patient outcomes. Patient outcomes will be assessed via improvements in hemoglobin A1C, BP, LDL, smoking cessation, and reduction in readmission rates. A collaborative practice agreement will be utilized and signed by all participants. There will be four processes that the pharmacist will pursue in an effort to improve outcomes. First, patients will be identified proactively and a referral will be requested for diabetic patients with the following criteria: A1C >9%, BP >140/90 mmHg, and LDL > 130 mg/dL. Second, patients with hemoglobin A1C >7%, BP above goal, or LDL not at goal based on patient specific criteria will be identified, and pharmacists will complete a medication reconciliation for these patients the day of their physician visit. Any recommendations will be noted for the physician. Third, pharmacists will complete medication reconciliation on any additional patients as time permits. Fourth, pharmacists will be available to provide new medication education at the physicians requests. Physicians may also refer other patients to the pharmacist for disease state management or poly-pharmacy.

7-118

Title: Evaluation of antibiotic prescribing in the emergency department

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Purpose: Patients admitted for an infectious etiology are often given initial antibiotic doses in the emergency department (ED). Studies show that appropriate antibiotic prescribing (including empiric drug choice, timing, and dosing) lead to improved patient outcomes. The primary purpose of this medication use evaluation was to evaluate how antibiotics are being prescribed in the ED with respect to dose, indication, and timeliness. The secondary purposes were to assess appropriateness of initial antibiotic therapy, length of stay, and all-cause readmission rates in the next 30 days.

Methods: The study was approved by the institutional review board at Franciscan St. Margaret Health. Patients included were at least 18 years old, evaluated in the emergency department and admitted to the hospital for over 24 hours, and received their first dose of antibiotics in the emergency department for any indication. A standard data collection form was created and includes patient demographics, allergies, admitting diagnosis, ED antibiotics, dosing, time to antibiotic start, ordering physician, culture results, changes in therapy, length of stay, and days to next ED visit/admission. Utilization of order sets, delay in continuation of therapy, and therapeutic drug levels for vancomycin and aminoglycosides were also included on the data collection form.

Results: A total of 100 patients were included for analysis (average age 68.3 years, 49% male). These patients were evenly divided between the two hospital campuses. Out of the 176 antibiotic doses prescribed in the ED, 60 were piperacillin/tazobactam (34%) and 42 were for vancomycin (23.9%). Of the 42 doses of vancomycin given, 27 (64%) were dosed incorrectly based off of the hospital protocol, 24 of which were 1000mg doses. Additionally, 6 patients were given incorrect empiric regimens based on evidence based order sets (EBOS), and only 5 patients had antibiotics ordered via order sets. The most common admitting diagnoses were pneumonia at 39%, UTI at 28% and cellulitis at 13%. The average time to initiate antibiotics was 3.4 hours. For patients with suspected sepsis, the average time to first antibiotic dose was 3.1 hours. Average length of stay was 8.5 days. Thirty-three were seen again within the next 30 days, 12 of which were readmitted. Twenty-five patients had delays in antibiotic continuation from ED to admitting floor for greater than one hour from next dose due.

Conclusion: Some opportunities for improvement include dosing and administration time of antibiotics in the ED. Patients that meet SIRS criteria for sepsis should be receiving their first antibiotic dose within 1 hour, so an improvement in the screening process and timely prescribing may be an option. Additionally, vancomycin was commonly given as a 1000mg ready-to-use preparation that is stocked in

the automatic dispensing machine in the ED. This shows an opportunity for pharmacy to intervene and improve initial weight-based dosing. There is also an opportunity to improve appropriate timing of second doses so as not to delay therapy continuation.

7-119

Title: Development of collaborative drug therapy management (CDTM) and clinical pharmacy services in an outpatient psychiatric clinic

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Purpose: Literature on the burgeoning role of pharmacists in clinical practice is ubiquitous; numerous qualitative and descriptive reports of the development of collaborative drug therapy management and clinical pharmacy services in outpatient settings have been published. However, review of the arduous process specific to psychiatry is sparse. Merely 1% of subjects with mental illness achieve the five good health indicators compared to 10% of matched controls, while multiple studies have demonstrated pharmacists ability to detect medication-related problems in this patient population. Distinctions in health-care facility structure, funding, regulation, and patient population factors make the generalizable of current published approaches challenging.

Methods: The author will collaborate with a BCPP-certified psychiatric pharmacist in the development of a CDTM protocol detailing the scope of pharmacy practice in an outpatient psychiatric clinic. Due to previously identified barriers regarding the lack of knowledge of clinical pharmacist abilities has warranted a formal presentation to the administrative body responsible for the protocol approval. The author will develop a descriptive report of the approval process and obstacles encountered, with a step-wise approach for others desiring similar practice implementation to follow. Limitations secondary to the electronic health record structure and documentation influencing billing and reimbursement will be discussed, as well as a qualitative analysis of the types of interventions and referrals made by the clinic pharmacist. Primary tasks will include medication reconciliation, comprehensive medication reviews to identify potentially inappropriate medications, absence of necessary pharmacotherapy, initiation of appropriate laboratory and drug interaction monitoring, particularly metabolic adverse effects and abnormal involuntary movements. The pharmacist will act as a liason between inpatient psychiatric pharmacy services already developed and out-of-network psychiatric clinics to enhance continuity of care. This preliminary descriptive study will organize pertinant data for future quantitative review and association with outcome measures, such as rehospitalizations.

7-120

Title: Implementation of a pharmacist driven medication therapy management (MTM) service as part of an employer sponsored program for hospital employees

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Purpose: Chronic diseases such as hypertension, diabetes, and hyperlipidemia are lifelong conditions. They affect the population worldwide and are described by the Center for Disease Control as the leading cause of death and disability in the United States. Many employers across the nation have implemented wellness services to help decrease health-care cost by improving employees health. The primary objective is to design a pharmacist driven MTM service at a self-insured health system and to assess the impact on the employees clinical improvements and financial benefits to the hospital.

Methods: The MTM service would be designed to be cost-free for the employee participants. The participants would meet with a trained pharmacist regularly to discuss personal health goals and work with their primary care physician to manage their medication therapy. Incentives will be offered for continued participation, and annual evaluations will be performed for adherence to the program. Sustainability of the service will be evaluated as well as the clinical and financial outcomes. Resources available at the hospital will be utilized, and key players will be identified to facilitate the process. Human resources and the hospitals wellness group will be the main point of contact throughout this project. The study is exempt from Institutional Review Board, as data collection is recorded without patient identifiers and will remain confidential.

7-121

Title: Evaluation of iron sucrose dosing and safety at a community-based regional medical center.

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Purpose: The prescribing information for iron sucrose states that there is limited experience with iron sucrose 500 mg infusions. Despite this, the current pharmacy iron sucrose dosing protocol at our institution for patients without chronic kidney disease and patients with non-dialysis dependent chronic kidney disease is 500 mg given on day 1 and day 3. The purpose of this study is to evaluate the adverse effects associated with high doses (greater than or equal to 400 mg) of iron sucrose compared to the lower doses (less than 400 mg) of iron sucrose at a community-based regional medical center.

Methods: In this retrospective chart review, patients were selected if they received one dose of iron sucrose charged through the electronic medical record system. Eligible subjects were 18 years or older and received at least one dose of iron sucrose. The following data was collected from the electronic medical record: age, sex, height, weight, serum creatinine, dialysis status, indication for iron sucrose, dose of iron sucrose, infusion rate of iron sucrose, ordering provider, and the incidence of adverse effects including hypotension, nausea/vomiting, and evidence of anaphylaxis. Electronic medical records were evaluated for documentation of adverse effects or the administration of medications to treat adverse effects that have occurred. High dose iron sucrose was defined as a single dose of iron sucrose greater than 400 mg. Adverse effects were included if they occurred within one hour of the completion of the iron sucrose infusion. All data was recorded without patient identifiers and maintained confidentially. Upon completion of chart review, data will be analyzed to determine the safety of high dose iron sucrose when compared to lower dose of iron sucrose.

7-122

Title: Evaluating intensive care unit nurses knowledge concerning delirium in critically ill patients before and after pharmacist-led education and implementation of delirium assessment

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Purpose: Previous studies support the use of delirium assessment methods such as Confusion Assessment Method for the Intensive Care Unit (CAM-ICU) in critically ill patients. With frequent use of analgesics and sedatives due to severe illness, delirium is difficult to assess. It affects many Intensive Care Unit (ICU) patients and is associated with increased length of stay and neurological deficit. The aim of this study is to evaluate knowledge regarding delirium in ICU before and after pharmacist-led education and incorporation of delirium assessment methods.

Methods: A baseline survey of knowledge will be provided to all registered nurses, who assess delirium in critically ill patients, in this thirty-six bed mixed ICU. Each questionnaire will evaluate knowledge regarding delirium, CAM-ICU, and Richmond Agitation Sedation Scale (RASS). Following survey administration, pharmacist-led instruction will include written and verbal education on the benefits of delirium assessment. This will lead to delirium assessment implementation techniques for the ICU. Re-evaluation with the initial survey will follow education. Data analysis will include change from baseline of knowledge, acceptance, and implementation of this practice in the ICU. This research project was approved by the Critical Care Committee, Pharmacy and Therapeutics Committee, and Medical Executive Committee at this institution.

7-123

Title: Comparison of time in therapeutic range of face-to-face patients and telephone patients at a VA pharmacist-run anticoagulation clinic

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Purpose: Anticoagulation therapy requires a large amount of monitoring by both health care professionals and the patient. As anticoagulation clinics continue to grow, avenues to reach patients are also expanding with many clinics following patients via telephone visits. The purpose of this study is to evaluate if the percent time in therapeutic range (TTR) of phone patients is non-inferior to the percent TTR of face-to-face patients at a pharmacist-run anticoagulation clinic. In addition, the actual time in therapeutic range of phone patients and face-to-face patients will be compared to expected time in therapeutic range.

Methods: The institutional review board approved this retrospective study evaluating patients enrolled in the pharmacist-run anticoagulation clinic between June 2010 and June 2012. Extension of this study to include patients between June 2012 and June 2013 is still pending. Patients were included if they were enrolled in the clinic for at least 6 months, had INR goal of 2-3, and with INR values separated by less than 56 days. The following data will be collected: type of patient appointment (face-to-face or telephone), gender, age at initiation of study period, indication for warfarin therapy, duration of warfarin therapy, warfarin-related adverse events, patient-reported missed doses, patient-reported extra doses, patient no-show rates, comorbid health conditions, number of chronic medications, and number of hospitalizations during the study period. These data points will be entered in the TTR risk-adjustment tool to find the expected TTR, which will then be compared to the actual TTRs.

7-124

Title: Addressing adherence in pharmacist managed pharmacotherapy clinics

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Purpose: Research is available stating the importance of adherence, but no consensus currently exists for the most effective way to improve adherence to medications. This study aims to assess if a pharmacist addressing common reasons for non-adherence during a pharmacy clinic visit will have a positive impact on adherence.

Methods: This study has been submitted to the Institutional Review Board for approval. Administration of an adherence survey is to become part of the standard of care for all patients seen by a pharmacist at three primary care clinics starting in October 2013. A scoring system will be utilized to quantify patients responses to both the pre and post surveys. This system is explained in Appendix A. Patients who respond to any of survey questions with a score of 1 or 2 will be targeted for a pharmacists intervention. The type of intervention completed will be at the pharmacists discretion. Patients between the ages of 18 and 80 who have an appointment with a pharmacist at one of the clinic sites between IRB approval date and December 15, 2013 will be included in this study, which is expected to be approximately 100 patients. Patients who are pregnant or prisoners will be excluded from this study. Follow up will be made between 60-90 days by administering the same survey either in person during a visit or over the phone. Descriptive statistics will be performed to analyze the differences between the two surveys.

7-125

Title: Implementation and evaluation of standardized staff development procedures at a VA pharmacy call center

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Purpose: The Roudebush VAMC pharmacy call center has transformed into a multi-service, off-site triage service for all prescription-related calls for the entire VISN 11. Numerous modifications to daily processes and staffing adjustments were implemented to service the increased call demand. Currently, no formalized staff development procedures or assessment plans exist for the expansion of personnel. With the opportunity for further expansion of services, staff at the call center require formalized training to ensure all calls and associated documentation are handled efficiently. The primary objective of this study is to evaluate the efficacy of implementation of standardized staff development policies and procedures.

Methods: This quality-improvement study is exempt from Institutional Review Board approval. Current personnel training procedures of the RL Roudebush VAMC pharmacy call center will be observed and documented. This study will utilize voice of the customer surveys and current state process mapping to identify operational barriers, waste process variation, and system redesign characteristics in order to develop and implement formalized staff development training tools. The following data will be collected: personnel hiring criteria, training processes and benchmarks, evaluation measures, and overall job satisfaction.

7-126

Title: Hyperlipidemia Outcomes in VA Pharmacist-Run Chronic Disease Management Clinic: a Retrospective Cohort Study

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Purpose: The intention of the study is to assess the effectiveness of pharmacist-run clinics vs. usual care of patients managed solely by PCPs. The primary objective is to evaluate CSPs and PCPs progress toward meeting the objectives provided in published guidelines (% reduction in LDL and % at goal LDL <100 mg/dL). One secondary objective is to evaluate how timely CSPs and PCPs are toward meeting the LDL <100mg/dL goal. The remaining secondary objectives are used to evaluate CSPs and PCPs progress toward the reduction of additional adverse cardiac event risk factors, specifically smoking status, and elevated blood pressure.

Methods: Patient information will be pulled for patients meeting the inclusion/ exclusion criteria. Inclusion criteria include: Veterans age 18-80 years receiving care at the Topeka VA, patients with a visit to Chronic Disease Management Clinic (CDM) or PCP from August 1st, 2009- August 1st 2011, patients who are diagnosed with hyperlipidemia by first CDM or PCP visit, patients a high risk (based on diagnoses) for acute vascular events by first CDM or PCP visit, and patients with an LDL>130 mg/dL from August 1st, 2009- August 1st 2011. Exclusion Criteria include: Patients who are pregnant, absence of at least one LDL value during all follow-up periods, patients who are deceased, and ChampVA patients. The data will be compared, looking for statistically significant improvements (or lack thereof) for the primary and scondary objectives in the CDM patients compared with the patients only receiving care through their PCP.

7-127

Title: Assessment of Outcomes in VA Patients with Poorly Controlled Diabetes Mellitus: A Retrospective Study of the Impact of a Pharmacist-Run Chronic Disease Management Clinic

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Purpose: The purpose of this study is to evaluate the outcomes of poorly controlled diabetics at the Topeka VA campus when comparing patients managed in pharmacist-run clinics versus primary care only. The focus will be on poorly controlled patients as defined by hemoglobin A1C value >9% in order to evaluate interventions resulting in significant progress towards acceptable levels of glycemic control. As the pharmacist-run clinic is designed to improve diabetic patient outcomes, it is important to evaluate and describe the degree to which this may be occurring and compare it to usual care.

Methods: This is a single center, retrospective cohort study consisting of medical record reviews using the VINCI database. We aim to identify approximately 2000 veterans from the Topeka VA division with active diagnoses of type II diabetes mellitus during the trigger period of 07/01/09-06/30/11. Inclusion criteria will consist of: type II diabetes, A1C value >9% during trigger period, and veterans >/=18 years of age at trigger period start. Exclusion criteria will consist of: Type I diabetes, gestational diabetes, absence of baseline A1C value within 1 year prior to trigger period, absence of follow-up A1C value within two years succeeding trigger period, >/=80 years of age at trigger period start, and CHAMPVA patients. The patients who meet the inclusion and exclusion criteria will be involved in the study. A minimum of one pharmacist visit for diabetes during the study period will be included in the pharmacist-managed group analysis. Patients with only primary care visits and no pharmacist visit will be included in the control group. The trigger point will be the oldest A1C >9% during the trigger period. Medications, A1C values, blood pressures, and LDL values will be collected at baseline, trigger point, and follow-up.

7-128

Title: Potential cost savings through drug vial optimization (DVO) at a community hospital in an oncology outpatient clinic setting.

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Purpose: In January 2013, the Food and Drug Administration (FDA) granted PhaSeal classification as a medical device that, among other things, prevents microbial ingress for 168 hours. The cost saving utility of PhaSeal, a closed system transfer device (CSTD), through DVO will be investigated at a community outpatient oncology clinic and is based on existing knowledge from recent studies. PhaSeal may prove of benefit in helping meet the increasing budgetary and drug shortage demand through DVO to realize significant cost savings, reduced environmental waste, and reduction in resources consumed in procurement.

Methods: This study will be submitted to the Institutional Review Board for approval. Epic will be utilized to retrospectively collect data during a 13 week period of the following: drug, dose, theoretical amount wasted, administration date and time for the subsequent products: bevacizumab, bortezomib, cetuximab, cyclophosphamide, docetaxel, doxorubicin, oxaliplatin, pemetrexed disodium, and rituximab. Electronic medical record will be reviewed to determine if dose rounding occurred, minimizing study results. Any doses for one of the aforementioned medications that were documented as having been administered within a 168 hour window will be considered a candidate for DVO. Theoretical drug and cost savings will be analyzed using different vial sizes and will be expressed as a percent of original dose and percent of original cost in addition to overall savings in terms of drug and expenses. Upon implementation of PhaSeal for DVO at the outpatient cancer center, the same data will be tracked for the above drugs, plus: drug expiration date and time, and amount wasted. A microbiological component will be conducted during this study serving as a quality control component, to verify patient safety was not compromised. All data will be unidentified and stored confidentially.

7-129

Title: Characteristics of a 30-day readmission population using adverse drug event data

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Purpose: Hospital admissions related to medication errors have resulted in a 20 % increase in cost and 8.25% increase in duration of stay. As several studies have shown, pharmacist involvement at time of patient discharge can reduce medication errors at time of discharge, leading to a decrease in thirty day readmissions and overall cost and increased patient satisfaction. The purpose of this study is to examine the association between 30-day hospital readmissions and adverse drug events (ADEs), based on ICD-9 codes, at Via Christi Hospitals, Wichita.

Methods: This retrospective chart review will be submitted to the Institutional Review Board for approval. The electronic health record will be used to identify adults who were readmitted within 30 days from May 2012 to August 2013. Demographics and potential risk factors for ADEs, such as age, sex, number of medications at index discharge, co-morbid conditions, payer source, patient destination at index discharge and length of stay will be gathered to determine if there an association exists between those factors and the presence of an ADEs based on ICD-9 codes. Results will be utilized to identify and target high risk patient populations for implementation of pharmacist involvement in the discharge process in order to reduce frequency of ADEs leading to 30-day readmission.

7-130

Title: Tolerability of cephalosporins and carbapenems in patients with reported penicillin allergies in a real world setting

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Purpose: Practitioners have historically feared using cephalosporins and carbapenems in patients labeled penicillin-allergic. Recent literature suggests that the cross-sensitivity between beta-lactams is much lower than originally feared. The purpose of this study is to evaluate the tolerability of cephalosporins and carbapenems in patients with reported penicillin allergies in a real world setting.

Methods: This study has been approved by the institutional review board. This study will evaluate pediatric patients 1-17 and patients 18 years and greater admitted to Wesley Medical Center that were labeled penicillin-allergic and received a cephalosporin or carbapenem prior to June 30, 2013, will be retrospectively enrolled until a sample size of 500 is reached or the study end date of July 1 2008 is reached, whichever comes first. Patients will be excluded if they had a cephalosporin or carbapenem allergy listed in the allergy queries section of the electronic health record prior to receiving the antibiotic, have any unspecified beta-lactam allergy listed, or received medication to treat an allergic reaction 2 hours prior to receiving the antibiotic. The following data will be collected: patient age, gender, penicillin allergy listed, date allergy added, reported reaction, cephalosporin/carbapenem given, date and time of first and last dose, allergy to antibiotic added, date allergy added, administration of any medication to treat allergic reactions as well as date and time given. All data will be obtained in a de-identified report. Data will be analyzed to determine tolerability of cephalosporins and carbapenems in patients labeled penicillin allergic and assess differences with gender and age.

7-131

Title: Evaluation of neonatal total parenteral nutrition (TPN) contents

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Purpose: Management of neonates is an ever changing area of practice that can be very challenging, especially in the area of nutritional support. Various methods have been explored to help encourage appropriate prescribing as well as prevention of errors that are common with complex prescribing such as TPN. The objective of this study is to evaluate the contents of TPNs in the neonatal intensive care unit (NICU) in order to establish prescribing trends and create standardized TPN solutions.

Methods: Prior to commencement, this study was approved by the institutional review board. The study was designed as a retrospective analysis of patients having received a TPN in the NICU between 7-1-11 and 6-30-13. Patients will be excluded if they have received insulin, had necrotizing enterocolitis or congenital anomalies. Individual TPNs will be excluded if sodium levels were outside of 125-155 mEq/L, ionized calcium was greater than 6.5mg/dL, TPN was given on the first three days after birth or two TPN orders were ordered on the same day. Patient data will be collected every day a TPN was ordered and will include the neonates birth weight, gestational age at birth, daily weight, age, TPN administration rate, TPN volume as target intake and amounts prescribed for the following TPN components: amino acids, dextrose, sodium, potassium, calcium, magnesium, chloride, acetate and phosphate. Each component will be standardized to 100mL using the total intake value. The primary outcome will be to describe prescribing practices in concentration based histograms in order to develop standardized TPN bags. Secondary outcomes will include a comparison of the standardized TPNs to the prescribed TPNs and a comparison of TPN amounts to current practice recommendations.

7-132

Title: Development and implementation of a hyperglycemic emergency protocol in a community hospital setting

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Purpose: Diabetic ketoacidosis (DKA) and hyperosmolar hyperglycemic syndrome (HHS) are two acute complications of diabetes that can result in increased morbidity and mortality if not treated promptly. These disorders can occur in both type 1 and type 2 diabetes and are commonly precipitated by infection or insulin omission. Standardization of treatment protocols, prompt identification, and treatment of the precipitating cause are important factors affecting outcome. The objective of this study is to determine the extent to which treatment provided in a community hospital setting for patients with DKA and HHS complies with the 2013 American Diabetes Association guidelines.

Methods: This study will be submitted to the Institutional Review Committee for approval. A retrospective electronic records review of patients admitted for DKA or HHS from September 2012 to August 2013 will be conducted. The following data will be extracted: (1) demographic information including age, gender, weight, insurance coverage (2) date and value of metabolic parameters including initial blood glucose level, average blood glucose, electrolytes, and renal function, (3) diagnosis and pharmacological treatment of DKA or HHS. Based on the information collected, a hyperglycemic treatment protocol will be developed and implemented grounded on recommendations from treatment guidelines and studies completed by other institutions. Following the implementation of the protocol, a prospective evaluation of the use and effect of the protocol on treatment patterns will be assessed.

7-133

Title: Determining the utility of penicillin allergy skin testing in reducing perioperative vancomycin use in elective surgery patients with a documented penicillin allergy

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Purpose: Penicillin allergy skin testing may be used to support antibiotic stewardship initiatives as a means to limit unnecessary vancomycin use in elective surgery patients. Further, improvement of perioperative antibiotic selection may be achieved through identification of true Type-1 allergic reactions to penicillin in these patients. The primary objective of this study is to determine the impact of penicillin allergy skin testing on perioperative vancomycin use.

Methods: This study will be submitted to the Institutional Review Board for approval. The hospital's electronic medical record will be used to retrospectively identify patients with a documented penicillin allergy who underwent elective surgery from January 1, 2013 through June 30, 2013. The following data will be collected: age, gender, documented reaction to beta-lactam antibiotics (i.e. penicillin, cephalosporins), perioperative antibiotic used, type of elective surgical procedure, previous antibiotic(s) received at our facility, and identification of any previous MRSA infection. Provider documentation will be reviewed for any further explanation or alternative indication for perioperative antibiotic selection. Appropriateness of antibiotic selection in relation to the patient's documented reaction to penicillin will be reviewed. All patients receiving vancomycin will be compared with the proportion of patients potentially receiving the drug inappropriately. Patients deemed to have inappropriately received vancomycin will be identified as having the potential to benefit from penicillin allergy testing. This data set will be used to determine the potential impact of penicillin allergy testing on perioperative vancomycin use. All data will be de-identified and stored confidentially.

7-134

Title: Cost analysis of pharmacist versus physician warfarin management in post total hip or knee arthroplasty patients

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Purpose: The benefits of a pharmacist managed anticoagulation service (ACS) have been supported in the literature and include reduction in length of stay, readmission rates, cost, and increased time in therapeutic range. Current literature has focused on the management of patients with chronic indications for warfarin such as atrial fibrillation or previous thrombotic events. Very little literature can be found regarding cost comparison in short-term indications such as orthopedic surgery. The purpose of this study will be to determine whether there is a cost difference between pharmacist and physician management of warfarin in patients undergoing total hip or knee arthroplasty.

Methods: Prior to commencement, this study will be approved by the Institutional Review Board. This study will retrospectively enroll patients who underwent a primary total hip arthroplasty (THA) or total knee arthroplasty (TKA) and received greater than one dose of warfarin during their hospital stay. Patients will be excluded if they were on chronic warfarin therapy for another indication. Patients who received a THA or TKA on or before June 30, 2013 but no earlier than July 1, 2008, will be selected consecutively and assigned to their appropriate study group. A sample size of 50 in each group, for a total sample size of 100 patients, has a 90% power to detect an increase in cost of 0.30 with an alpha of 0.05 (two-tailed). The primary outcome will be the cost of warfarin management by the pharmacy ACS as compared to usual physician management. Secondary outcomes include bleeding due to warfarin, clots from inadequate anticoagulation, length of stay, readmission within 90 days, international normalized ratio (INR) at discharge, and supratherapeutic INR (INR greater than 3.0). Any use of prothrombin complex concentrate or vitamin K will also be evaluated.

7-135

Title: Enoxaparin Prophylaxis in Trauma Patients

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Purpose: Trauma patients are at higher risk of venous thromboembolism (VTE) due to hypercoagulability, endothelial injury, and venous stasis. The current CHEST guidelines recommend patients with a high risk of VTE receive prophylaxis with a low molecular weight heparin (LMWH) such as enoxaparin. The standard method of determining efficacy of enoxaparin is by the acquisition of antifactor Xa levels. Trauma patients frequently exhibit subtherapeutic antifactor Xa levels resulting in physicians ordering regular antifactor Xa levels in these patients. The purpose of this study is to determine the incidence of non-prophylactic antifactor Xa levels following enoxaparin prophylaxis in trauma patients.

Methods: Prior to initiation, this retrospective study will be submitted to the Institutional Review Board for approval. All patients 18 years of age admitted to the trauma service who received standard enoxaparin prophylaxis between June 2013 and December 2013 will be identified. Data collected will include age, gender, weight, height, hypersensitivity to enoxaparin, serum creatinine, spinal puncture/neuraxial anesthesia, incarceration, pregnancy status, enoxaparin dose, antifactor Xa levels, platelet number, history of DVT or pulmonary embolism (PE), injury severity score (ISS), history of cancer, thrombophilic condition, congestive heart failure (CHF), acute myocardial infarction (AMI), ischemic cerebrovascular accident (CVA), Doppler ultrasounds, computerized tomographic angiographies (CTA), concomitant or prior antithrombotic medications, and dosage changes based upon non-prophylactic antifactor Xa levels. The primary outcome will be whether or not standard DVT prophylaxis with enoxaparin provides prophylactic antifactor Xa levels. The secondary outcomes include risk factors associated with non-prophylactic antifactor Xa levels, DVT incidence prior to and after the practice of drawing antifactor Xa levels, and the cost effectiveness of drawing antifactor Xa levels.

7-136

Title: Tranexamic acid versus aminocaproic acid versus no lysine analog: reducing blood transfusion in orthopedic knee and hip surgeries

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Purpose: Orthopedic surgeries are associated with a high rate of blood loss and transfusion. Allogenic blood transfusion is not without risks; it is associated with many complications including a higher rate of mortality. Antifibrinolytic lysine analogs, tranexamic acid and aminocaproic acid, have been shown to reduce blood loss in orthopedic surgery, but their effect on blood transfusion is less well established, especially in settings without a transfusion protocol. The objective of this study is to determine if the perioperative administration of these agents reduces blood transfusion in orthopedic knee and hip surgeries.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record will be searched to identify all orthopedic knee and hip surgery patients from 09/01/2011-09/01/2013. A retrospective chart review will be conducted in which the following patient data will be collected: patient age, weight, sex, preoperative hemoglobin, type of surgery, anticoagulant/antiplatelet home medications, tranexamic acid/aminocaproic acid dose and number of doses, blood transfused in the first 24 hours, blood transfused entire hospital stay, blood transfused intraoperatively, blood transfused postoperatively, estimated blood loss, length of surgery, length of stay, ICD-9 codes for thromboembolic events (MI, stroke, PE, and DVT). The average number of units of blood transfused will be compared between the two groups that received antifibrinolytics and a control group that received neither. The primary outcome will be the difference in the amount of blood transfused in the first 24 hours after surgery between the three groups. The secondary outcomes will be the amount of blood transfused over the course of the entire hospital stay, blood transfused intraoperatively, blood transfused postoperatively, estimated blood loss, and the rate of thromboembolic events (MI, stroke, DVT, PE).

7-137

Title: Evaluation of pharmacist compliance to a pharmacist driven intravenous vancomycin dosing protocol in obese patients

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Purpose: In a 173 bed community hospital, a collaborative practice agreement provides pharmacists with the autonomy to dose intravenous (IV) vancomycin per protocol. Compliance to this protocol, especially in the obese population, is unknown. The primary objective is to evaluate compliance to the protocol in obese patients. The secondary objective will identify the percentage of vancomycin troughs within goal range as stated per protocol.

Methods: This quality improvement project will be a retrospective chart review of inpatients who received IV vancomycin for greater than or equal to 48 hours, who have a BMI greater than or equal to 30, and a calculated creatinine clearance of greater than or equal to 60 milliliters per minute. Patients less than or equal to 18 years of age or patients without an evaluable trough level will be excluded. The following data will be collected from the electronic medical record: age, gender, actual body weight, BMI, serum creatinine, indication for treatment, vancomycin dose and interval, vancomycin serum trough levels, and timing of trough levels. Reviewers will manually calculate creatinine clearance, as well as weight based loading and maintenance dose per protocol using a standardized calculation tool. Data will be analyzed by the primary investigator to rate compliance to the protocol. A standard calculation will be used to determine the percentage of vancomycin troughs within goal range. Approval from the Institutional Review Board will be obtained before data is shared beyond the quality improvement committee. Patient identifiers will be removed to maintain confidentiality.

7-138

Title: Intravenous acetaminophen as adjunctive treatment for post-operative pain after cardiac surgery: a retrospective review

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Purpose: Pain management continues to remain a challenge in post-operative cardiac surgery patients. Opioids are routinely used for pain control; however, these medications are not without side effects. Intravenous acetaminophen provides an adjunctive option for pain control in this patient population. The aim of this study is to determine the efficacy of intravenous acetaminophen for pain control in post-operative cardiac surgery patients.

Methods: A retrospective review comparing post-operative cardiac surgery patients analgesic regimens will be conducted. A pre-intervention group receiving standard analgesia without intravenous acetaminophen will be compared to a post-intervention group who received intravenous acetaminophen as a part of their analgesic regimen. Prior to data collection, the study will be submitted to the Institutional Review Board for approval. The primary endpoint will compare amount of opioids used (in intravenous morphine equivalent dosages) 48 hours post-operatively. Secondary endpoints assessed will include pain scores during the 48 hour post-operative period, length of intensive care unit stay, overall length of hospital stay, time on ventilator, and post-operative nausea and vomiting. Data collected will include patient age, gender, allergies, diagnosis, physical examination findings, pain scores, current medications, and length of stay. All data will be recorded without patient identifiers and maintained confidentially. Exclusion criteria include patients with documented allergy to acetaminophen, patients taking opioids prior to admission, patients receiving non-opioid analgesics other than intravenous acetaminophen during the 48 hour study period, patients receiving less than two doses of intravenous acetaminophen after initial post-operative dose, and patients that required cardiopulmonary resuscitation during surgery or during the 48 hour post-operative period.

7-139

Title: Evaluation of prescribing patterns of histamine 2 receptor antagonists and proton pump inhibitors for stress ulcer prophylaxis in a 173 bed community hospital

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Purpose: Medications used for stress ulcer prophylaxis have been associated with increased risk of osteoporosis, pneumonia, Clostridium difficile associated diarrhea, vitamin deficiencies, and altered absorption of pH dependent medications. These adverse effects can ultimately lead to increased healthcare costs. Despite established guidelines for stress ulcer prophylaxis, histamine 2 receptor antagonists and proton pump inhibitors are often started inappropriately on many hospitalized patients. The objective of this study is to determine the percentage of inpatients who receive unnecessary stress ulcer prophylaxis and attempt to identify the economic impact on the institution.

Methods: This quality improvement project will be a retrospective chart review of inpatients who received famotidine or esomeprazole by the intravenous or oral route over a one month period of time. The following data points will be abstracted from the electronic medical record database: hospital unit, patient age, gender, drug, dose, route, and frequency. Appropriate indications for stress ulcer prophylaxis will be determined by current clinical practice guidelines and identified using provider documentation in the electronic medical record. Data will be collected and recorded using a standardized evaluation tool and chart review process. All data will be recorded without patient identifiers and maintained confidentially. This quality improvement project will be submitted for institutional review board approval.

7-140

Title: Frequency of weight-based initial vancomycin doses ordered by pharmacy dosing service providers versus non-pharmacy dosing service providers in an acute care hospital

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Purpose: Actual body weight has been shown to predict vancomycin clearance and to be the optimal dosing weight to achieve target trough concentrations. The purpose of this study is to evaluate the frequency with which vancomycin is initiated at a dose of at least 15 milligrams per kilogram actual body weight as recommended by the 2009 ASHP, IDSA, and SIDP consensus review, when dosed by the pharmacy dosing service providers versus non-pharmacy dosing service providers. Secondary end points of this study include the number of vancomycin concentrations per days of therapy, frequency of therapeutic vancomycin trough concentrations, and frequency of nephrotoxicity.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will be utilized to identify patients receiving intravenous vancomycin during the course of their hospitalization. Patients age 18 and older who receive intravenous vancomycin therapy for at least 48 hours will be included. The following data will be collected: whether the pharmacy dosing service was consulted on day one of vancomycin therapy, initial vancomycin dose and interval, vancomycin serum concentrations, length of vancomycin therapy, serum creatinine values, concurrent medications potentially affecting renal function, whether the patient is in the ICU at time of vancomycin initiation, length of hospitalization, and patient age, gender, height, weight, and diagnosis. Initial vancomycin doses will be evaluated to determine if the dose equals at least 15 milligrams per kilogram actual body weight.

7-141

Title: Achievement of appropriate anti-Xa levels with standard prophylactic dose enoxaparin in a trauma population

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Purpose: Trauma patients have a greater than 50 percent risk of development of a venous thromboembolism (VTE) if they do not receive anticoagulation. Recent data indicates that the standard doses of enoxaparin do not achieve anti-Xa levels within the target range and therefore may not provide adequate anticoagulation, especially in overweight or high risk patients. The purpose of this study is exploratory to determine the distribution of patients on prophylactic enoxaparin that fall into the adequate prophylactic range of anti-Xa levels stratified by body mass index (BMI).

Methods: This is a single center, prospective study of 155 trauma patients. Adults 18 years of age admitted to the trauma service between October 2013 and March 2014 who receive enoxaparin for VTE prophylaxis will be included in the study. Data collection will include age, sex, height, weight, body mass index (BMI), serum creatinine, creatinine clearance , enoxaparin dose received, dose number after which level was drawn, anti-Xa level, risk assessment profile (RAP) score (obesity, malignancy, abnormal coagulation, h/o VTE, femoral venous line, transfusion greater than 4 units, surgery lasting greater than 2 hours, major venous repair, chest abbreviated injury scale (AIS) greater than 2, abdomen AIS greater than 2, head AIS greater than 2, spinal fractures, Glasgow Coma Scale (GCS) less than 8, severe lower extremity fracture, pelvic fracture, spinal cord injury, age). Data will be stratified based on BMI, risk as determined by RAP score and a composite of BMI and risk. Patients will also be followed until discharge for development of a VTE. This study is pending final approval from the Wesley Medical Research and Education Foundation Institutional Review Board. Informed consent will be obtained from all subjects prior to enrollment.

7-142

Title: Quality improvement analysis of the drug shortage process at a large tertiary care facility

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Purpose: Drug shortages are becoming more frequent, and it is imperative for health systems to have in place procedures for handling them. In 2006, 70 drug shortages were reported compared to the 204 reported in 2012. When developing a plan for handling drug shortages, it is important to maintain focus on the patient, not the situation. To do this, protocols must be in place, and staff must be properly educated. The purpose of this study is to develop a patient-driven delineated approach to managing drug shortages and ultimately, improving the process.

Methods: At a large tertiary care facility, a plan, do, study, act (PDSA) cycle will be implemented to develop an approach to handling drug shortages. The study is currently pending Institutional Review Board approval. An initial assessment of the current procedures for handling drug shortages will be completed via discussion with the parties involved in the process. Then a survey will be sent out to physicians, nurses, and pharmacy staff to aid in the identification of areas of improvement. Upon receiving survey responses, changes to the current process will be developed and implemented. The changes will be evaluated over a period of five drug shortages to allow for adequate trial and error time. After the evaluation period, the cycle will be repeated if necessary. Group discussion amongst current parties involved and short surveys sent to pharmacy department employees will determine if another cycle is necessary or if the end result matches the pre-stated goals. Upon completion of PDSA cycles, the initial survey will be sent to physicians, nurses, and pharmacy personnel to assess the impact of the changes.

7-143

Title: Evaluation of stress-ulcer prophylaxis in the intensive care unit (ICU) in a community hospital setting before and after pharmacy-driven intervention

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Purpose: A multitude of studies have demonstrated that intensive care patients are at an increased risk for developing stress ulcers. Consequently, stress-ulcer prophylaxis (SUP) has remained a goal of many clinicians; however, many patients are inappropriately prescribed and subsequently discharged on acid-suppressive agents. Inappropriate prescribing of such has the potential to lead to increased healthcare costs and long-term complications. The purpose of this study is to evaluate the use of SUP in ICU patients in a community hospital setting based upon The American Society of Health-System Pharmacists (ASHP) Gastrointestinal Stress Ulcer Prophylaxis Guidelines before and after intervention by a pharmacist.

Methods: This study will be presented to the Institutional Review Committee for approval prior to initiation. Prior to the initiation of this study, pharmacists did not participate in assessment of SUP. The ASHP Gastrointestinal Stress Ulcer Prophylaxis Guidelines will serve as the standard for evaluation of appropriate SUP therapy in ICU patients in a community hospital setting. A retrospective analysis of electronic medical charts during a three-month pre-intervention period will be conducted to evaluate appropriateness of SUP and to serve as baseline data. A three-month post-intervention period, in which pharmacists will be involved in assessing appropriateness and making recommendations, will then be performed. Comparison of appropriateness of SUP physician prescribing before and after pharmacist intervention will then be reviewed.

7-144

Title: Evaluation of a pharmacist-led multimodal approach to pain management in an inpatient community hospital

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Purpose: Pain in the acute care setting is common, with a majority of patients reporting pain during hospitalization. Suboptimal pain management can negatively impact patients and institutions providing care. Uncontrolled pain has been directly correlated to a decrease in patient outcomes and satisfaction, and may result in decreased federal government reimbursement through the Hospital Care Quality Information from the Consumer Perspective Survey "HCAHPS". The purpose of this study is to evaluate whether intensive, unit specific nursing education and pharmacist-led pain consultations improve the quality of pain management in an acute care setting.

Methods: A prospective cohort study will be conducted at a 504 bed inpatient community hospital. This study has been deemed exempt from evaluation by the Institutional Review Board by a member of the hospitals research oversight committee. Specific units throughout the hospital will be targeted on a monthly basis from November 1, 2013 to March 1, 2014. During this time, nursing staff will have the ability to consult a pharmacist for pain management recommendations. At the end of each month, a pharmacist will address the pain management deficiencies of each unit by providing pharmacist-led pain management education. To compare the effectiveness of the unit specific nursing education, pre/post education testing will be implemented using a scientifically validated survey on pain management. Pharmacist interventions will consist of evaluating pain management regimens of patients not at their desired pain goal. Recommendations will subsequently be made for all patients receiving suboptimal pain management. The primary outcome of this study will analyze the effectiveness of pharmacist-led nursing education by evaluating pre and post survey scores. Secondary outcomes will review the impact of the study on HCAHPS scores, individual patient pain scores, and the potential financial implications of the project.

7-145

Title: Impact of a pharmacist-driven weight management program on weight and waist circumference

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Purpose: Excess weight is a modifiable risk factor directly associated with increased morbidity and mortality. Participation in a health and wellness program provides education-based guidance towards improved overall health via weight loss initiation and maintenance. Sustained weight loss and corresponding health benefits are possible with regular physical activity, consistent eating patterns and self-monitoring. There is currently no literature available that evaluates the impact of a pharmacist-driven weight management program. The purpose of this study is to determine the efficacy of an Interdisciplinary, pharmacist-driven Health and Wellness Program on reductions in weight and waist circumference measurements.

Methods: Institutional review board approval was obtained for the information presented and informed consent was provided by all subjects. This was a single-center, prospective study that included individuals at least 18 years of age with a body mass index (BMI) of 25 or greater. Participants were excluded from the research for age greater than 65 years, limited mobility, history of gastric surgery or use of chronic steroids or weight loss medications within the last three months. It was hypothesized that this program would not result in significant total weight loss or decreased waist circumference. It was hypothesized that a pharmacist-driven, interdisciplinary program for weight management would result in at least a 10 percent decrease in total weight per participant, as well as a decreased waist circumference. Participants were enrolled in a twelve week Health and Wellness program. Education-based behavioral interventions, regarding food choices and physical activity, were implemented and health metrics for each participant were measured at baseline and at follow-up intervals throughout the program. The primary endpoints were total weight reduction from baseline and a decrease in waist circumference. Secondary outcomes included improvements in blood pressure, total cholesterol, LDL cholesterol, HDL cholesterol, triglycerides, Hemoglobin A1C and overall quality of life.

7-146

Title: Improving patient safety by implementing a guideline based alcohol withdrawal order set in a community teaching hospital

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Purpose: An estimated 2 million Americans experience symptoms of alcohol withdrawal each year with 10 to 20% of patients being treated as inpatients. Abrupt cessation of alcohol exposure in patients with alcohol dependence results in brain hyperexcitability because receptors previously inhibited are no longer inhibited. This hyperexcitability results in physiological changes such as diaphoresis, insomnia, tachycardia, anxiety, and tremors. Currently, there is no alcohol withdrawal protocol and order set in use at our facility; however, it has been requested by physicians. The goal of implementing these tools is to standardize treatment of this patient population and ultimately improve patient care.

Methods: The alcohol withdrawal protocol and treatment order set will be developed based on current guideline practices with the input of the multidisciplinary team members to ensure all aspects of these tools are appropriate. Following approval by the Pharmacy and Therapeutics Committee, applicable staff will be trained in the use of the protocol and order set. The protocol will address the severity of alcohol withdrawal syndrome based on the assessment tool. The corresponding medication regimens will include fixed-schedule and symptom-triggered regimens. Timing of vital signs and appropriate lab values will also be available in the order set for convenience. These tools will be available for use in all adult medical patients with potential alcohol dependence. A post implementation survey will be developed and distributed to staff to evaluate the impact of these tools.

7-147

Title: Evaluation of a vancomycin nomogram for the veteran population

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Purpose: Vancomycin nomograms are based on the linear pharmacokinetics of vancomycin, the strong relationship between drug clearance and patient estimated creatinine clearance, patient weight and targeted trough serum concentrations. Due to the advanced age of the Veteran population and associated renal impairment in these patients, it is important to validate the accuracy of a vancomycin nomogram specific to this population. The purpose of this study is to assess the accuracy of a vancomycin dosing nomogram in achieving a target trough serum concentration of 15-20 mg/L in the Veteran population.

Methods: This study is a prospective, cohort analysis with a time frame of data collection from October 2013 through February 2014. A vancomycin nomogram was created using dosing in relation to pharmacokinetics for creatinine clearance and actual body weight in kilograms. Inpatient pharmacists completing vancomycin orders identify patients newly started on vancomycin and screen to determine eligibility for nomogram use. Data collected at baseline includes age, gender, serum creatinine, BUN, height in inches, actual body weight in kilograms, medical service unit, infectious diagnosis, concomitant nephrotoxic medications, and co-morbidities. Co-morbidities evaluated include heart failure, chronic obstructive pulmonary disorder, and sepsis. All data is extracted using The Veterans Health Information Systems and Technology Architecture, VistA, and the VA electronic medical record, Computerized Patient Record System (CPRS). Once data is collected, the proportion of patients achieving a target vancomycin trough serum concentration of 15-20 mg/L prior to the fourth dose will be determined. Other outcomes to be assessed include the safety profile, such as nephrotoxicity with other renally toxic agents. This quality improvement project was considered a non-research operations activity per the Research and Development committee and therefore exempt from further review.

7-148

Title: Retrospective analysis of mortality, renal dysfunction, and bleeding in patients receiving hydroxyethyl starch (HES) 130/0.4, hetastarch, or albumin

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Purpose: In June 2013, the FDA issued a Black Box Warning on synthetic colloids resulting from data indicating an increased risk of mortality and renal injury; as well as, excess bleeding incidence in septic patients admitted to the Intensive Care Unit (ICU) and patients undergoing coronary artery bypass graft (CABG) surgery . The purpose of this study is to compare the incidence of mortality, incidence and severity of renal injury and bleeding in septic ICU patients, as well as, patients undergoing CABG surgery who have received hydroxyethyl starch 130/0.4, hetastarch, or albumin.

Methods: A computer generated list will provide patients that have received hydroxyethyl starch 130/0.4, hetastrach, or albumin during their inpatient stay as either a septic intensive care unit or post coronary artery bypass graft patient. To determine the incidence of mortality, patient death will be recorded. In order to determine the incidence and severity of kidney injury, Risk, Injury, Failure, Loss, End Stage (RIFLE) criteria classification will be used. For the incidence and severity of bleeding, Thrombolysis in Myocardial Infarction (TIMI) bleeding criteria will be utilized. In addition, patient charts and electronic records will be utilized to evaluate parameters as specified to determine mortality, RIFLE criteria, need for renal replacement therapy, TIMI scale, and other necessary trends of lab values. All data will be de-identified. Prior to initiation of this study, submission for exemption status will be filed to the Western IRB for approval. For statistical analysis, T-tests, chi square, Fischers exact and ANOVA will be utilized as appropriate. This study will take place in a 468 bed community hospital located in Lexington, Kentucky.

7-149

Title: Validation of anti-xa assay for therapeutic heparin protocol

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Purpose: The aPTT is used to measure the activity of heparin during a heparin continuous infusion. The aPTT is a global clotting assay that reflects intrinsic pathways in the coagulation cascade. Medications and diseases can alter the aPTT, creating unknown knowledge of therapeutic anticoagulation. Conversely, the anti-Xa assay measures the direct activity of heparin. Literature has shown higher specificity in vitro activity of anti-Xa, but few clinical studies have been performed. This study will evaluate time to achieve therapeutic anticoagulation for heparin drip monitoring using anti-Xa compared to aPTT levels. Additional outcomes will evaluate length of stay, mortality and bleeding.

Methods: This will be a single-center, retrospective observational study conducted at Baptist Heath Lexington hospital. The study will involve a review of electronic and paper medical records of patients who received continuous intravenous unfractionated heparin (UFH), using the in-house standard UFH intravenous protocol, between January 2013 and January 2014. All patients with standard UFH intravenous infusion protocol orders will be identified through a query of the hospital database information system. This population will be evaluated before and after the implementation of anti-Xa laboratory testing. Data on age, sex, actual weight, height, indication for UFH, co-morbidity, length of therapy, time to therapeutic coagulation at 18, 24, 30, 36 and over 40 hours, monitoring tests performed every 24 hours, percentage of patients with therapeutic first level, bleeding occurrences (determined by ICD9 codes) will be collected during the retrospective chart review.

7-150

Title: Evaluation of the incidence of infusion related reactions with rapid infusion in patients receiving rituximab for all indications in an outpatient setting

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Purpose: To compare the rates of infusion related reactions with rapid rituximab infusion in patients receiving rituximab for cancer related indications and patients receiving rituximab for autoimmune related indications.

Methods: This is a single center, retrospective chart review of patients who received at least one rapid infusion of rituximab from September 2010 through September 2013. Data collection includes demographic data, underlying comorbidities, baseline and pretreatment white blood cell count and lactate dehydrogenase, diagnosis, dates of rituximab exposure, concomitant antineoplastic regimens, premedications, rituximab dose, infusion rate, infusion related reaction severity according to Common Terminology Criteria for Adverse Events version 4.0, and other adverse drug reactions occurring within 30 days of last infusion. This study has received approval from the Clinical Scientific Review Committee and has been submitted to the Institutional Review Board for approval.

7-151

Title: Comparing the effects of low-dose IV steroids to high-dose IV steroids in acute exacerbations of chronic obstructive pulmonary disease (AECOPD)

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Purpose: Systemic corticosteroids are used in AECOPD and have shown to shorten recovery time, improve lung function, and reduce the risk of early relapse, treatment failure, and length of hospital stay. However, there is still controversy on what the most appropriate and effective dosage regimen is. The main objective of this study is to retrospectively observe and compare the effects of low-dose IV steroid treatments to high-dose IV steroid treatments in mild, moderate, severe, and very severe AECOPD patients admitted to Saint Joseph East Hospital (SJE) in Lexington, Kentucky.

Methods: This study has been submitted and approved by the Institutional Review Board. All patients with pulmonary function tests (PFTs) from September 22, 2010 to August 28, 2013 will be pulled from the SJE database as potential study subjects. A data collection sheet will be filled out for each patient who is 18 years of age or older that was admitted and definitively diagnosed with AECOPD at SJE. Each patient will be categorized as mild, moderate, severe, or very using the GOLD criteria. For each group, patients will be categorized into subgroups depending on whether they received high-dose or low-dose steroids. Patients with a concomitant diagnosis of acute exacerbation of congestive heart failure or history of asthma will be excluded. The following data will be collected: age, gender, weight, height, body mass index, serum creatinine, PFTs, home and hospital medications, steroid regimen including doses and taper, whether patient experienced treatment failure or not, length of hospital stay, length of ICU stay, adverse effects, readmission or follow-up after discharge, and deaths during hospital stay. Data will be analyzed using the Chi-square test, the students t-test, and the Wilcoxon signed rank test, measuring significance with a priori value of $p < 0.05$.

7-152

Title: Development and implementation of a pharmacist run tobacco cessation clinic catered towards veterans with mental health diagnoses

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Purpose: A strong link between mental illness and tobacco use has been established in previous studies. Notably, mental illness and tobacco use are prevalent among veterans. Clinical pharmacy specialists within the mental health clinic have the ability to prescribe tobacco cessation therapies outlined by their scope of practice. Currently, there is not a tobacco cessation clinic run in conjunction with the mental health department at this facility. The primary objective of this project is to develop and implement a pharmacist-run tobacco cessation clinic for Veterans enrolled in the outpatient mental health clinic.

Methods: The tobacco cessation clinic will be formed as a subset of the outpatient mental health pharmacotherapy clinic at a Veterans Affairs Medical Center. Participation in the tobacco cessation clinic will be initiated through self-enrollment or via referral by mental health providers in conjunction with the facilitys established referral protocols. Promotion for the tobacco cessation clinic will include written and verbal communication of the available services to both veterans and mental health providers. The timeline for clinic development will be eight weeks, with a projected opening date of January 1, 2014. The tobacco cessation clinic will consist of a single one-hour group session per week. Each session will include a 30 minute educational presentation on a tobacco cessation-related topic, such as health consequences of nicotine addiction, overview of tobacco cessation therapies, and management of nicotine withdrawal symptoms. The remaining 30 minutes will consist of an informal group discussion and/or individualized counseling, as appropriate. Participants will be enrolled in clinic for eight consecutive sessions in order to receive exposure to all topics discussed. This administrative project is exempt from review by the Institutional Review Board as it does not require data collection or analysis.

7-153

Title: The Pharmacists Role in Discharge Medication Reconciliation - Improving Patient Satisfaction and HCAHPS Scores While Reducing Discharge Summary Errors

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Purpose: The purpose of this study is to evaluate the impact of pharmacist-led discharge medication reconciliation in a community based hospital including patient satisfaction with the medication education process, discharge summary discrepancies, and improvement in HCAHPS scores compared to conventional non-pharmacist-led method.

Methods: Patients will be randomly assigned to one of the two predefined study groups. The study group will consist of the clinical pharmacist reviewing the patients medication profile prior to discharge; providing medication education while answering any questions that the patient may have concerning their current medication profile. The patients will receive a follow-up intervention prior to 7 days post-discharge to discuss the current medication profile with the patient. The control group will be considered the non-pharmacist method during the medication reconciliation process. The non-pharmacist staff will complete the process documenting the patients current medication profile in the chart for pharmacy to review later. All study groups will be mailed a follow-up questionnaire assessing their satisfaction with the medication reconciliation process. A retrospective analysis will be completed to compare the results of the pharmacy-led services to the conventional method including patient satisfaction, discharge summary discrepancies, and improvements of the HCAHPS scores.

7-154

Title: Post operative pain control using liposomal bupivacaine in transversus abdominis plane (TAP) blocks

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Purpose: Our institution has experienced an increase in the use of liposomal bupivacaine in place of immediate release anesthetics for a regional anesthesia procedure known as the transversus abdominis plane (TAP) block. The only FDA approved indication for liposomal bupivacaine is single dose infiltration into surgical sites to manage post operative pain and there is currently a paucity of data to support its use for TAP blocks. The objective of this study is to evaluate the effectiveness of liposomal bupivacaine in the reduction of post operative pain scores and opiate requirements when compared to immediate release anesthetics for TAP block procedures.

Methods: A request for approval has been submitted to our Institutional Review Board for this study. Data will be collected through a retrospective chart review of patients who will have received a TAP block during the time from April 2012 to February 2014. Pain scores, which are measured on a verbal pain scale from 0 to 10 at our institution, will be collected for the first 72 hours after surgery. The primary outcome will be the difference in mean pain score between groups for each 24 hour interval (up to 72h) after administration of the TAP block. Secondary outcomes include differences between groups for the first 72 hours in total opiate requirements, total doses of non opiate pain medication, total doses of antiemetic agents, and total doses of naloxone. Patients will be included if they are 18 years or older and received a TAP block less than 8 hours after completion of surgery. Those included will be stratified based on operative time. Patients will be excluded if their surgery is experimental, if they received a TAP block greater than 8 hours after surgery, or if they were unable to report at least one verbal pain score for each 24 hour interval.

7-155

Title: Evaluation of the impact of a clinical pharmacist on an inpatient substance abuse and posttraumatic stress disorder unit.

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Purpose: Over the past decade, with the increase in conflict overseas, more veterans are returning home with traumatic experiences, thus leading to an increase in the diagnosis of posttraumatic stress disorder (PTSD). Additionally, as these veterans try to cope with their experiences, some turn to using illicit substances or alcohol to try to distance themselves from the trauma or self-medicate. While some veterans are able to heal with outpatient treatment, others require more structured inpatient care. The purpose of this study is to evaluate the clinical and financial impact of placing a clinical pharmacist on this inpatient unit.

Methods: This study is an administrative retrospective chart review. The four week study period will be from October 7 to November 1, 2013 when a pharmacist will be staffing full time on the inpatient substance abuse and PTSD unit at a Veterans Affairs Medical Center. The pharmacist will complete admission and discharge medication reconciliations, teach classes to the veterans, assist providers with drug information questions, see patients and recommend treatment, and assist veterans with increasing knowledge of and managing their medications. The pharmacist will also assist with prazosin titration for nightmare treatment. The pharmacist will enter notes in the computerized patient record system (CPRS) to document all recommendations, interventions, interviews, and questions answered from providers. At the end of the study period, the workload will be evaluated through the use of procedure codes documented in the notes. Financial impact can then be determined based on the number and types of interventions conducted by the pharmacist. This data can be extrapolated to the impact the pharmacist would have over the full calendar year. This will assist in the justification of placing a pharmacist on the unit full time to better serve the veteran population. This project is pending local IRB approval.

7-156

Title: Impact of a rounding clinical pharmacist on medication errors and discrepancies at hospital discharge in Veterans with heart failure

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Purpose: Medication reconciliation upon hospital discharge has emerged as an integral aspect of inpatient care. When compared to other professionals, numerous investigations suggest that discharge medication reconciliations facilitated by pharmacists contain less medication errors and discrepancies. In addition, rounding with medical treatment teams provides pharmacists with a comprehensive perspective of patients individualized therapies and treatment goals. This study will attempt to provide evidence that discharge medication reconciliations for Veterans diagnosed with heart failure facilitated by pharmacists involved with medical team rounds will contain fewer errors and discrepancies compared to those facilitated by pharmacists who did not round with the medical team.

Methods: The study population will include patients over the age of 17 with a diagnosis of heart failure who were discharged between July 1, 2012 and June 30, 2013. Discharge medication reconciliations facilitated by pharmacist X, who had rounded with the patients treatment team, will be compared to discharge medication reconciliations for patients that were discharged from a cardiology team without a rounding pharmacist. Each patients electronic medication profile will be reviewed for the presence of medication errors and discrepancies present at hospital discharge. A diagnosis of heart failure was selected as the focus of this study due to the specific guidelines in terms of clinically indicated as well as inappropriate medications. The total number of medication errors and discrepancies identified will be compared between the two study groups as the primary endpoint. Secondary endpoints include between group analyses of pneumococcal vaccination status, classification of identified mediation errors, whether the discrepancies occurred with active outpatient medications at hospital admission or with medications that were started as inpatient and continued upon discharge, and hospital readmission rates. This quality improvement project was considered a non-research operations activity per the Research and Development committee and therefore exempt from further review.

7-157

Title: Determining the impact of pharmacist involvement with high readmission risk chronic obstruction pulmonary disease patients in a community hospital

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Purpose: In compliance the federal Affordable Care Act (ACA) of 2010, a set of 35 core measures were developed by the federal Centers for Medicare and Medicaid Services (CMS) to encourage states to improve the quality of healthcare and overall patient satisfaction. One measure is readmission rates for patients with chronic obstructive pulmonary disease (COPD). Efforts have been made to develop action plans to decrease these rates through improving care. This study seeks to determine whether pharmacist driven inpatient medication therapy management (MTM) will lead to decreased readmission rates in high risk COPD patients.

Methods: This study was approved by the Institutional Review Board. Patients with COPD admitted to the hospital qualify for inclusion if admitted to the intensivist or hospitalist medical services, medication reconciliation can occur within 48 hours of admission and are acknowledged as being high risk for readmission by a validated LACE scoring system. Once identified, a pharmacist interviews the patient and reconciles admission medication regimens. Additionally, pharmacists review the regimen and provide recommendations based on current practice guidelines, pharmacotherapeutic and pharmacoeconomic principles. Recommendations for modification of a patient's regimen are placed in the patient's chart for physician review. Patient education, a medication calendar, and reinforcement of medication regimen changes are provided by a pharmacist upon discharge. Data will be collected retrospectively on the number and type of recommendations accepted, quantifying discharge versus admission medications, number of corrections in medication reconciliation documents, age, sex, primary diagnosis, and LACE score. Concurrently, a set of unmatched control patients are being identified with the same inclusion criteria as the treatment group. Both groups will be followed for 6 months to determine readmission data. All data will be recorded without patient identifiers and maintained confidentially.

7-158

Title: Evaluation of off-label aprepitant use in pediatric oncology patients for the prevention of chemotherapy-induced nausea and vomiting

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Purpose: Aprepitant is a neurokinin 1 receptor antagonist utilized for the prevention of chemotherapy-induced nausea and vomiting in adolescents and adults receiving highly emetogenic chemotherapy. Aprepitant is only FDA approved for children greater than or equal to 11 years of age and greater than 40 kg. The purpose of this evaluation is to assess the utilization of aprepitant in oncology patients who are below the age and weight criteria and receiving highly emetogenic chemotherapy. Additional assessment of the incidence of chemotherapy-induced nausea and vomiting and subsequent adverse effects in these patients will be conducted.

Methods: This medication use evaluation involves a retrospective chart review of patients less than 11 years of age and less than 40 kg who received aprepitant while admitted to the oncology unit at our institution. This evaluation is exempt from institutional review board as the retrospective data will be deidentified and utilized for quality control. Data will be collected on patients admitted March 1, 2013 through September 30, 2013. Demographic data including age, weight and gender will be collected. In order to characterize use and response to aprepitant, additional data such as oncologic diagnosis, chemotherapeutic regimen, concomitant antiemetic therapy, and number of emetic events will be collected. Descriptive statistics will be utilized to assess use and response to aprepitant in this specific patient population.

7-159

Title: Diazepam use in alcohol detoxification: a retrospective review of three treatment strategies at a Veterans Affairs Medical Center

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Purpose: Hospital admission solely for the purpose of alcohol detoxification is a frequent occurrence within the Veterans Affairs hospital system. Benzodiazepines, specifically diazepam, are typically used to prevent withdrawal seizures during detoxification. However, there are several different methods for the use of diazepam for during the detoxification process. The objective of this study is to identify differences in average cumulative dose of diazepam and length of hospital stay for patients receiving one of three treatment strategies. The results of this study will be used in the development of a standardized alcohol detoxification protocol for this facility.

Methods: This is a retrospective cohort study. Patients will be identified using the Veterans Health Information System and Technology Architecture (VISTA) system and will be included if they received diazepam for the purpose of alcohol detoxification between April 2012 and April 2013. Retrospective chart review of the Computerized Patient Record System (CPRS) will be performed to assess the cumulative dose of diazepam received and the length of hospital stay. Patients will be sorted into three treatment cohorts: (1) patients treated with a single loading dose of diazepam, (2) patients treated with a scheduled diazepam taper, (3) patients treated with diazepam only as needed for withdrawal symptoms. The primary outcomes will include the average cumulative dose of diazepam received over the course of detoxification, the average daily dose of diazepam, and the average length of hospital stay. Secondary outcomes will include the rate of hospital readmission within three months of treatment and the percentage of patients experiencing documented seizures or delirium tremens during treatment. Differences in prescribing patterns between physicians in the medicine, psychiatry, and emergency departments will also be described. Statistical analysis will be performed using ANOVA analysis. This study has been approved by the facility Institutional Review Board (IRB).

7-160

Title: Retrospective evaluation of rasburicase use for the management of tumor lysis syndrome at a single pediatric institution

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Purpose: An expert panel of the American Society of Clinical Oncology (ASCO) published its most recent guidelines in 2008 on the management of tumor lysis syndrome (TLS) in adults and children. This paper addresses the use and dosing of rasburicase, a recombinant urate oxidase enzyme, in patients at low, intermediate, and high risk for developing TLS. The purpose of this review is to evaluate compliance with these guidelines regarding use of rasburicase at our institution.

Methods: This medication use evaluation is exempt from Institutional Review Board approval as it is designed as a quality improvement measure evaluating retrospective data. Data collected from computerized records of patients at our pediatric institution between January 1, 2004 and September 30, 2013 will serve as a primary source for analysis. Patients will be included in the review if they are between 0-18 years of age and received at least one dose of rasburicase for the management of hyperuricemia secondary to TLS. Those with a G6PD deficiency or known hypersensitivity to rasburicase will be excluded. The following patient-specific demographic data will be collected: age, gender, weight, and oncologic diagnosis. Laboratory data at time of patient presentation will include: serum levels of uric acid, potassium, phosphorus, calcium, and creatinine; and white blood cell count. Descriptive statistics will be utilized to analyze appropriate use of rasburicase at our institution. Compliance with rasburicase use guidelines will be used to determine utility of an order-set to assist prescribers with dosing at the time of presentation.

7-161

Title: Effect of acute heart failure exacerbations on warfarin therapy

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Purpose: The primary objective of this project is to assess the effect of heart failure exacerbations on warfarin therapy with the goal of improving dosing of warfarin in patients with heart failure at St. Elizabeth Healthcare.

Methods: This study has been submitted to the Institutional Review Board and research will begin upon approval. Patients will be identified via retrospective chart review. Inclusion criteria include all patients admitted to St. Elizabeth with principal ICD-9 code of heart failure and who are also a patient of a St. Elizabeth Pharmacy Anticoagulation Clinic. Patients will be excluded from review if in the week prior to admission, new medications known to have major drug-drug interactions with warfarin were initiated. This list includes amiodarone, cimetidine, ciprofloxacin, clarithromycin, clofibrate, erythromycin, fluconazole, fluvoxamine, gemfibrozil, isoniazid, itraconazole, ketoconazole, methimazole, metronidazole, phenytoin, propafenone, propylthiouracil, tamoxifen, thyroid hormones, trimethoprim/sulfamethoxazole, and zafirlukast. Data will be reviewed from August 2012-August 2013 to produce an approximate sample size of 100 patients. Data collected will evaluate percent change in weekly warfarin dose, supratherapeutic INR (defined as 0.5 increase from value of maximum INR goal); for supratherapeutic INRs, time taken to return to at least upper limit of therapeutic range, and if available, BNP levels and New York Heart Association Functional Classifcation.

7-162

Title: Beta-lactam antibiotics and thrombocytopenia: a case review

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Case Report: This case study reviews the potential risk of thrombocytopenia with beta-lactam use. A unique case of a pediatric patient with appendicitis was investigated. A 13-year-old female presented to the emergency department with complaints of severe abdominal pain and vomiting for a duration of 3 days. She was afebrile upon presentation. The patient had no known history of cancer, human immune deficiency, aplastic anemia, or other conditions that could lead to hematologic complications. Family history was noncontributory. Because there was abdominal pain, a CT was performed and revealed an acutely inflamed appendix. The patient was then taken to the operating room for a laparoscopic appendectomy. The operation report noted the appendix appeared inflamed and gangrenous in several places. The appendix was removed without complication. Prior to the procedure, the patient received Zosyn 3.375mg IV as pre-operative antibiotic prophylaxis. The patient was doing well post operatively, but did have episodes of post-operative emesis in which she was treated with ondansetron 4mg IV. On post-operative day 3, the patients complete blood count with differential was done per protocol and reported as hemoglobin 6.1 platelet count of 17. Hematology was then consulted and recommended discontinuing the Zosyn. The patient's other laboratory values were within normal limits. The patient's hematologic values steadily improved after the discontinuation of the agent. Careful consideration of all possible causes of thrombocytopenia in this particular incident provides credence to the use of Zosyn as the precipitating event. As this case study shows, beta-lactam induced thrombocytopenia may appear more quickly and more commonly in certain patient populations; however more clinical studies would be required to appropriately assess this adverse event.

7-163

Title: Outcomes of clinical triggers to enhance antimicrobial stewardship

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Purpose: One of the major issues in healthcare today is growing rates of resistant bacterial pathogens accompanied by slow emergence of new antimicrobial agents. Patients infected with these pathogens have high rates of inappropriate or inadequate therapy, which can negatively impact patient outcomes. The purpose of this research is to analyze the utility of a Clinical Triggers Program implemented at a 468-bed tertiary care facility in August 2011. This program quickly notifies appropriate providers of issues requiring prompt intervention, including the isolation of various drug resistant pathogens. It aims to minimize time to appropriate antimicrobial therapy and contact precautions.

Methods: This is a retrospective cohort study of patients at a 468-bed tertiary care facility in Lexington, Kentucky. Prior to initiating this study, it will be submitted to the Institutional Review Board for approval. Patients will be included if they have any of the following isolates in microbiologic cultures and require either a change in antimicrobial therapy or initiation of containment precautions: 1)Vancomycin Minimum Inhibitory Concentration (MIC) greater than or equal to 2mcg/mL(Staphylococcus aureus) 2)Carbapenem-resistant enterobacteriaceae 3)Extended spectrum beta-lactamase producing enterobacteriaceae 4)Fungemia due to Candida glabrata, Candida krusei, or Candida parapsilosis 5)Piperacillin/tazobactam MIC greater than or equal to 16mcg/mL (Pseudomonas aeruginosa). One arm will analyze patients from January to June 2011 prior to the implementation of the Clinical Triggers Program. The second arm will analyze patients from August 2013 to January 2014 after the implementation of the Clinical Triggers Program. Patient demographics, antimicrobial regimens, culture data, containment precautions, infectious disease consultation, clinical and microbiologic success, mortality rates, and length of stay will be documented and analyzed. Primary outcomes will include time to appropriate therapy and time to containment precautions. Secondary outcomes will include clinical and microbiologic success, in-hospital mortality, and length of stay (total, intensive care unit, and ventilation days).

7-164

Title: Retrospective analysis of ceftriaxone versus levofloxacin for inpatient treatment of urinary tract infection in a community hospital

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Purpose: Levofloxacin is a first-line treatment for urinary tract infections (UTI) in hospitalized patients; however, resistance to fluoroquinolones is increasing. Ceftriaxone is another frequently recommended first-line option, and both antibiotics are commonly used in practice at our institution. Currently no data is available comparing the two antibiotics' effectiveness at treating UTIs. A small pilot study at our institution showed that patients on ceftriaxone had a shorter length of stay than patients on levofloxacin. The purpose of this study is to expand on the initial data and compare treatment outcomes between the two antibiotic choices.

Methods: The study was approved by the institution's investigational review board (IRB). A retrospective chart review will be performed on patients admitted with a primary diagnosis of UTI, who were hospitalized between January 1, 2011 and December 31, 2012 and received treatment with either levofloxacin or ceftriaxone. Patients were randomized for review with 100 patients in each group. The primary outcome will compare failure rates between patients treated with ceftriaxone versus levofloxacin. Additional information gathered for secondary analysis includes basic demographic data, length of stay, days of therapy, adverse events, renal labs, urinalysis results, cultures with sensitivities, and if possible, readmission.

7-165

Title: Prospective, randomized, cohort study on blood pressure outcomes following a health fair

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Purpose: Professional pharmacy organizations use health fairs to provide hypertension education by promoting awareness, offering screenings, and counseling patients on lifestyle modifications . As pharmacy schools across the nation expand the service learning component of their curriculum, student-led organizations will likely increase the number of health fairs during the year. Studies demonstrating the benefits of outcomes after health fairs are lacking. We hypothesize that increased communication between student pharmacists and physicians will improve outcomes. Therefore, the purpose of this study is to determine if faxing patients blood pressure results to their primary care physician following a health fair will improve outcomes.

Methods: This prospective, randomized, cohort study is currently being carried out by pharmacists and student pharmacists from Sullivan University College of Pharmacy. Approval for this study was obtained from the Sullivan University College of Pharmacy Institutional Review Board. Blood pressure screenings are being conducted at health fairs throughout the Louisville, KY area from September 2012- April 2014, with follow-up continuing through May 2014. Written consent will be obtained from each participant. To be included in the study, patients aged 18 or older must present in a hypertensive state (average of two readings showing systolic blood pressure to be >140 mmHg or diastolic >90 mmHg). In addition, patients must have a primary care physician and be capable of providing a follow-up blood pressure measurement. Patients who present with a systolic blood pressure >180 mmHg or diastolic >110 mmHg will be excluded. Patients will be randomized to have their blood pressure results either faxed or not faxed to their primary care physician. All patients will receive 2- and 6-week follow-up phone calls. Interventions made since the health fair, as well as SBP and DBP readings will be documented at each follow-up interval.

7-166

Title: QT prolongation monitoring program: providing clinical services to patients prescribed psychiatric medications that are associated with QT interval prolongation in a Kentucky state psychiatric hospital

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Purpose: Prolongation of the QT interval is a well-described adverse effect associated with a variety of medications. This adverse effect can result in Torsades de Pointes (TdP) which can lead to fatal arrhythmias and sudden cardiac death. Of special interest is the potential for psychiatric medications to have effects on cardiac conduction, specifically QT interval prolongation. The primary goal of this study is to assess the prevalence of QT prolongation risk factors in newly admitted patients at a Kentucky state psychiatric hospital. The secondary outcome will be to stratify the risk factors for QT interval prolongation in this population.

Methods: This study will be submitted to the Institutional Review Board for approval. A retrospective chart review will be conducted on patients who were admitted to a Kentucky state psychiatric hospital between March 1, 2013 and August 31, 2013; chart review will identify patients with QT interval prolonging risk factors. Data to be collected will include: hypokalemia, HR<50, female sex, significant cardiac history, medications that prolong QT interval, ages 55 and older, and diabetes mellitus. The type and number of risk factors will be documented and descriptive statistics will be used to report the prevalence of risk factors and the risk factor trends in a Kentucky state psychiatric hospital patient population. These data may support the need for a QT interval prolongation monitoring program at a Kentucky state psychiatric hospital.

7-167

Title: Poractant alfa versus beractant: a comparison of efficacy and financial impact

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Purpose: Poractant alfa and beractant are surfactant products used in the treatment of surfactant deficiency disease in the newborn. Comparisons between the products have failed to show a significant difference in most measured outcomes regarding efficacy or adverse events. One of the proposed advantages of poractant alfa is a higher initial dose, which may result in fewer required doses. The purpose of this evaluation is to compare efficacy and financial impact of poractant alfa and beractant with the goal of selecting a product for formulary.

Methods: This study is exempt from review because data is pre-existing and will be de-identified. It is a retrospective, before-and-after comparative chart review. Patients admitted to the neonatal intensive care unit at our institution who received either poractant alfa or beractant will be included. Beractant data was collected on all patients who received a dose between August 2010 and July 2011, while poractant alfa data was collected between November 2012 and March 2013. Efficacy will be determined by the total number of doses required. Duration of mechanical ventilation, incidence of chronic lung disease, and costs for each product will also be evaluated for impact. All data will be stratified based on the patients gestational age. The following data will be collected: gestational age, number of doses, timing of surfactant doses, time on mechanical ventilation, length of stay, incidence of chronic lung disease, and associated treatment costs. The resulting data will be analyzed using descriptive statistics.

7-168

Title: Cardiovascular outcomes in Veterans with uncontrolled LDL cholesterol on combination niacin and statin therapy versus statin therapy alone

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Purpose: NCEP ATPIII guidelines for cholesterol management recommend that niacin be considered in patients with HDL-C less than 40 mg/dl once other lipid goals are met. Studies consistently demonstrate that the risk of coronary heart disease is significantly lower in patients with higher levels of HDL-C. However, the cardiovascular benefits of adding niacin to patients already on statin therapy are controversial. Moreover, the majority of studies have included patients with well-controlled LDL-C. The purpose of this study is to determine whether the addition of niacin to statin therapy in Veterans with uncontrolled LDL-C improves cardiovascular outcomes and reduces mortality.

Methods: The Institutional Review Board approved this retrospective chart review. The electronic medical record will be utilized for subject identification and data collection. Included in the study will be Veterans 18 years of age and older with LDL-C greater than 100 mg/dl who had active prescriptions for a minimum of 5 years for both niacin at a dose of at least 1000 mg per day and a statin (atorvastatin, fluvastatin, lovastatin, pravastatin, rosuvastatin or simvastatin) or a statin alone. Veterans with an active prescription for a fenofibric acid will be excluded. Data to be collected are baseline demographics (gender, height, weight, smoking status, basic metabolic panel, lipid panel and comorbid conditions), niacin dose, statin drug and dose, duration of therapy, refill history, final lipid panel, and cardiovascular events (i.e. stroke and myocardial infarction). Pacemaker usage, echocardiogram records, and date and cause of death will be obtained, as available. Subject information will be de-identified after data collection and maintained confidentially. The primary outcome will be the composite of cardiovascular-related death, non-fatal stroke and non-fatal myocardial infarction. Secondary outcomes will evaluate death from any cause and individual components of the primary outcome.

7-169

Title: Implementation and impact of a pharmacist-led discharge counseling program at a community hospital

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Purpose: Reduction of hospital readmissions has garnered attention across the United States. Centers for Medicare and Medicaid Services regulations call for reduced payments to hospitals with excess readmissions and the Joint Commission has issued key quality outcome measures along similar lines. Research suggests that about 20% of discharged patients experience adverse drug reactions, some of which may lead to readmission. Studies of pharmacist involvement in discharge have shown potential error reduction but variable effects on readmissions. We propose to assess the impact of pharmacist reconciliation and discharge counseling on readmission in the community hospital setting.

Methods: A pharmacist-led discharge counseling program will be implemented on one unit of the hospital and its impact evaluated. The study will compare the 30-day readmission rate in an intervention group to that of a historical control group. Inclusion criteria include polypharmacy and/or use of insulin, digoxin, anticoagulants, or antiplatelet agents. Exclusion criteria include a life expectancy of <6 months, hospital visit for dialysis or chemotherapy, documented dementia, and discharge to another hospital or nursing home. Patients in the intervention group will be provided with medication reconciliation, discharge counseling addressing therapy and compliance, and a current medication list. Control patients will be a matched cohort admitted to the same unit of the hospital during the same span in the previous year and prior to the implementation of this program. Target sample size will be 100 per group (N=200) based on a need for 62 patients/group to achieve 80% power to detect a 20% inter-group difference. Kaplan-Meier analysis will be used to compare readmission rates. The Students t-test or chi-square analysis will be used to compare baseline characteristics. Number and type of interventions made, time spent performing interventions, and estimated economic savings will be illustrated with descriptive statistics. IRB approval is pending.

7-170

Title: Evaluation of opioid-sparing effects of intravenous acetaminophen after coronary artery bypass graft surgery

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Purpose: The management of acute postoperative pain has proven challenging for health care providers and represents an area of practice with potential for improvement. In recent years, multimodal therapy consisting of opioid and non-opioid agents administered simultaneously has been used to provide synergistic pain control and reduce opioid-related adverse effects, including nausea, vomiting, constipation, sedation, and respiratory depression. Several studies have evaluated the safety and efficacy of intravenous (IV) acetaminophen for pain control in surgical patients and shown significant opioid-sparing effects as an additional benefit.

Methods: This is a retrospective, cohort study involving patients who received doses of IV acetaminophen with opioids or monotherapy with either agent after undergoing coronary artery bypass graft surgery (CABG). The study will be conducted at a 468-bed tertiary care facility in Lexington, Kentucky where approximately 1,000 CABG procedures are performed annually. Data from August 2008 to August 2013 will be collected through chart review of existing hospital databases both preceding and following the introduction of IV acetaminophen to the hospital formulary. The primary endpoint assessed will be total morphine equivalents administered post-operatively. Secondary endpoints will include pain scores, total acetaminophen dose administered, time to first bowel movement, total ventilator time, ICU length of stay, total length of stay, antiemetic use, sedative use, and use of medications to treat delirium. The resulting data will be utilized to evaluate the utility of IV acetaminophen as an opioid-sparing drug. Patients excluded from the analysis will include those retained in the ICU for more than one week, patients with an allergy or intolerance to acetaminophen or opioid analgesics, and patients with severe hepatic impairment. The study protocol has been approved by the Western Institutional Review Board under exemption status.

7-171

Title: Impact of a pilot program on the quality and documentation of counseling and education on oral chemotherapy in an outpatient oncology clinic

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Purpose: The number and use of oral chemotherapy agents has greatly increased in the last decade and many common malignancies can be treated with them. Oral chemotherapy offers more convenience compared to infusions. However, due to potential toxicities and importance of adherence for successful treatment of oral chemotherapy, it is essential patients receive adequate education. Updated ASCO/ONS safety standard encourages institutions to provide education and assess adherence to oral chemotherapy. The purpose of this study is to evaluate a pilot program that provides formalized process and education materials for improvements in quality and documentation of patient education, adherence, and patient satisfaction.

Methods: This is a single-center retrospective, observational cohort study that will include patients who have had a physician order for at least one oral chemotherapy agent from Saint Joseph Hematology/Oncology East. Patients will be divided into two groups according to whether or not they were prescribed an oral chemotherapy agent before or after implementation of the pilot program. The primary outcome is to evaluate for improvements in quality (indicated by number of patients receiving education, percentage of topics covered in education, and patient self-reported understanding of the education provided). Secondary outcomes include chart documentation of education provided to patients receiving oral chemotherapy, adherence (indicated by patient self-report of whether or not the prescription was filled and how many doses were missed in a month), and patient satisfaction with counseling. Data will be collected via a chart review and phone calls conducting patient surveys. Institutional Review Board approval has been submitted to Western IRB and will be obtained prior to starting data collection.

7-172

Title: Evaluation of the safety and efficacy of a universal heparin infusion protocol in morbidly obese versus not morbidly obese patients

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Purpose: Unfractionated heparin infusions are often dosed using weight-based protocols that include dosage maximums. Recent studies have shown that morbidly obese patients may initially be improperly dosed due to these dose limits as well as differences in pharmacokinetic parameters, which could lead to increased time to anticoagulation and rate of adverse events. This study will seek to determine whether a separate weight based dosing protocol should be developed for morbidly obese patients in this institution and whether the current limits on initial dosing are appropriate.

Methods: This study will be a retrospective, single-institution, cohort analysis of a universal heparin infusion dosing protocol in morbidly obese patients versus not morbidly obese patients. The study will take place at a 468-bed tertiary care facility in Lexington, KY. Patients will be eligible for review if they received a heparin infusion for any indication between August 15, 2010 and June 30, 2013. Eligible patients will then be classified as morbidly obese (BMI greater than 40) or not morbidly obese (BMI less than or equal to 40) for data analysis. Data collected will include: patient age, gender, ethnicity, height, weight, aPTT values, occurrence of bleed or coagulation events, and current medications. All data will remain confidential. Inclusion criteria will be age greater than or equal to 18, administration of heparin infusion for at least 24 hours and at least two aPTT readings on record. Exclusion criteria will include the use of continuous renal replacement therapy, hemodialysis, a non-protocol heparin drip or pregnancy. Primary endpoints will include achievement of therapeutic aPTT, time to therapeutic aPTT and weight-based infusion dose required to achieve therapeutic aPTT. These methods have been determined to meet exemption criteria by the Western Investigational Review Board.

7-173

Title: Impact of pharmacist intervention on inappropriate use of proton pump inhibitors at a community hospital

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Purpose: Published literature indicates that up to 73% of hospital proton pump inhibitor (PPI) use may be inappropriate. A previous study at our institution evaluated changes in PPI ordering and the utility of a policy allowing pharmacists to discontinue inappropriate PPI use. This study found an overall 8% reduction in inappropriate PPI use along with a reduction in the difference between intensive care unit (ICU) length of stay and duration of PPI therapy. The current study expands upon the previous research to quantify the appropriateness of PPI use and evaluates the impact of pharmacist intervention on reducing inappropriate use of PPIs.

Methods: The institutions investigational review board (IRB) approved this study. A retrospective chart review will be conducted on 150 randomly selected, adult patients who received at least four days of PPI therapy between June 1, 2011 and May 31, 2012, and who were not receiving acid suppression therapy at home (PPI or H2 receptor antagonist). A second chart review will be conducted on an additional 150 randomly selected patients hospitalized between August 1, 2012 and July 31, 2013 after implementation of changes in PPI ordering via computerized physician order entry, removal of PPIs from admission order sets, and a policy allowing pharmacist discontinuation of PPIs upon transfer of patients from the ICU to the floor. Collected data will include patient demographics, days of PPI therapy, PPI indication, and hospital and ICU length of stay. The primary outcome is to determine if the aforementioned interventions lead to an overall reduction in inappropriate PPI use. Secondary outcomes include total reduction in PPI use and reduction in days of PPI therapy after transfer from ICU to the floor.

7-174

Title: Implementation of a pharmacist-managed diabetes care clinic at a college of pharmacy

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Purpose: Pharmacist-managed clinics are well documented in the literature and have improved patient care in many settings. The objective of this study is to implement a pharmacist-managed diabetes care clinic at a college of pharmacy in order to provide screenings for employees through point-of-care testing and referrals for treatment of diabetes in accordance with current guidelines. Point-of-care testing will include hemoglobin A1c and blood glucose.

Methods: This study will be submitted to the Institutional Review Board for approval. A pharmacist-designed survey will identify employees who have been diagnosed with diabetes or those who may be at risk for developing diabetes. The survey will be distributed electronically and will collect the following data: previous diagnosis of diabetes, employee insurance company, age, gender, ethnicity, family history of diabetes, level of physical activity, symptoms of diabetes, description of overall health, and level of interest in a pharmacist-managed diabetes clinic. All data will be collected without employee identifiers and maintained confidentially. Data will be reviewed by pharmacists at the college, and used to guide implementation of services to meet employee needs.

7-175

Title: Effects of fluconazole treatment on clinical outcomes in intensive care unit patients with bronchoalveolar lavage cultures positive for Candida species

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Purpose: The current Infectious Diseases Society of America guidelines for management of candidiasis and healthcare associated pneumonia recommend against treating immunocompetent patients with positive Candida respiratory cultures. Despite these recommendations, clinical practice varies. It has been observed at this institution that intensive care unit (ICU) patients frequently receive fluconazole therapy in response to positive bronchoalveolar lavage (BAL) cultures. The purpose of this study is to determine the effect of fluconazole treatment on clinical outcomes in ICU patients with BAL cultures positive for Candida species.

Methods: This is a retrospective, single centered, case control study. Prior to commencement, this study will be submitted to the Institutional Review Board for approval. Patients will be included in the study if they have a BAL culture positive for Candida species and are located in the ICU during collection of the BAL sample. The case group will include patients treated with fluconazole, and the control group will include patients not treated with fluconazole. Exclusion criteria include a positive BAL culture for Candida glabrata or Candida krusei, an absolute neutrophil count (ANC) less than 1500 cells per microliter, cancer patients receiving radiation or chemotherapy, patients receiving other systemic antifungals, patients receiving immunosuppressive therapy, and HIV patients. Primary outcomes being investigated are the effects of fluconazole treatment on ICU and hospital length of stay. Secondary outcomes include ventilator days, Candida species clearance, positive cultures for Candida species from other sterile sites, positive cultures for multi drug resistant (MDR) organisms after initiation of fluconazole, antibiotic regimens, and fluconazole dose and duration of therapy.

7-176

Title: Comparing vancomycin MICs: a retrospective evaluation of clinical outcomes in veterans with MRSA infections among veteran affairs (VA) hospitals

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Purpose: Poor clinical outcomes have been documented in the literature for methicillin-resistant Staphylococcus aureus (MRSA) bacteremia with a susceptible minimum inhibitory concentration (MIC) of less than or equal to two but few studies have evaluated susceptible vancomycin MICs from other sources of infections such as the lung, bone, or urine. The primary objective of this study is to evaluate the relationship between all cause mortality and treatment failure to susceptible high vancomycin MICs compared to susceptible low vancomycin MIC in patients with MRSA infections. Secondary objectives include length of hospital stay, ICU admissions, and escalation of therapy between the groups.

Methods: A retrospective review will be conducted of patient data on those patients, age 18 and older, admitted within any of the seven hospitals in the VA Mid South Health Network between January 01, 2000 and September 01, 2013. Subjects that received vancomycin therapy for 24 hours or more and had a documented MRSA infection will be included. Subjects will be identified via the VA Healthcare Data Warehouse and extracted using the SQL program. Subjects will be divided into two subgroups based on their vancomycin MICs: high susceptible group (MIC =2) and low susceptible group (MIC < 1). All-cause mortality and treatment failure defined as readmission for the same infection 30 days after the first positive blood culture for MRSA will be compared between the two groups as the primary outcomes. Length of hospital stay, ICU admissions, and escalation of therapy (conversion to an alternative anti-MRSA antibiotic) will be evaluated as secondary outcomes. Categorical variables will be compared by chi-squared or Fishers exact test and continuous variables will be compared using the students t test. Bivariate logistic regression analysis for clinical response and all cause mortality will also be performed. This study has been approved by the Institutional Review Board.

7-177

Title: Evaluation of clinical and economic outcomes and provider acceptance rates of pharmacist recommendations in a diabetes medication therapy management clinic

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Purpose: Diabetes mellitus is the seventh leading cause of death in the United States. Educational and medical intervention by health care providers helps patients with diabetes improve glycemic control, which reduces morbidity and mortality. However, improvements in diabetes management decline within 3 months of intervention cessation. Regular meetings between patients and pharmacists create opportunities to prevent or resolve medication-related errors, improve adherence, and teach self-management skills. The objective of this study is to determine the provider acceptance rates of pharmacist recommendations in a diabetes medication therapy management (MTM) program and analyze clinical and economic outcomes.

Methods: This is a retrospective, cohort study involving review of patient charts from a diabetes MTM program from January 2010 to August 2013. The primary endpoint will be provider acceptance rates of pharmacist recommendations in the program. Pharmacy prescription records and clinical reports will be used to determine if a recommendation was accepted. Types of recommendations include, but are not limited to: dose adjustments, medication initiation, and medication discontinuation. Clinical and economic outcomes will also be analyzed. Patients 18 years old or greater who are diagnosed with type 1 or type 2 diabetes and are enrolled in the diabetes MTM program will be included in the study. Patients with less than 6 months enrollment in the program will be excluded. Outcome measures will consist of provider acceptance of pharmacist recommendations, A1c, blood pressure, triglycerides, low-density lipoprotein, patient health questionnaire score, and hospital and emergency room admissions and charges.

7-178

Title: Effects of pharmacist-completed admission medication reconciliation in the emergency department

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Purpose: Currently, discharge medication reconciliation processes for those patients admitted through the emergency department at this facility rely on a home medication list that was briefly collected by a nurse. This is not always a complete or accurate list due to emergency room priorities. The primary goal of this trial is to determine the number of discrepancies between nurse-collected and pharmacist-collected medication histories and assess the time saved at discharge when a pharmacist collects the medication history in the emergency department.

Methods: A prospective observational trial that included 36 emergency room patients who were admitted to the hospital from August 4, 2013 through August 9, 2013 was completed. Pharmacists were stationed in the emergency department from 0900 to 1900 during the trial period. When admission status was determined, a pharmacist would gather, in a good faith effort, a complete and accurate medication list. This list was then used to create an admission order sheet with which the admitting physician could continue or discontinue appropriate medications for inpatient purposes. These orders were then sent up to the appropriate floor with the patients chart, and an admission nurse was notified of each new trial patient. In addition, the pharmacist would compare the reconciled home medication list against the emergency department nurses initial list for discrepancies. The number of discrepancies was tracked throughout the trial. During the trial period, nurses kept track of how much time was spent on the discharge process for all patientsthose who had had medication reconciliation completed by a pharmacist at admission and those who did not. Time spent on discharge was then compared between groups.

Results: Data collection and analysis is ongoing. Due to the small number of patients included in this trial, an additional 3-week trial is set to be conducted from October 7, 2013 through October 25, 2013.

Conclusion: Final results and conclusions will be presented.

7-179

Title: Retrospective evaluation of acute kidney injury: extended infusion versus standard infusion piperacillin/tazobactam with vancomycin

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Purpose: The primary objective of this study is to evaluate the incidence of acute kidney injury in patients receiving: the combination of standard infusion piperacillin/tazobactam and vancomycin versus the combination of extended infusion piperacillin/tazobactam and vancomycin, in order to determine which administration method will have a higher incidence of acute kidney injury.

Methods: This study has been submitted to the Institutional Review Board and research will begin upon approval. All patients receiving combination piperacillin/tazobactam and vancomycin therapy will be identified during a retrospective review using the hospitals electronic medical record system. Non-ICU patients greater than 18 years old, who received combination piperacillin/tazobactam and vancomycin for a minimum of 48 hours will be included in the study. Excluded patients will include: patients with a baseline serum creatinine (SCr) greater than 2 mg/dL, receiving peritoneal or hemodialysis, an ICU stay, pregnancy, concomitant use of defined nephrotoxic agents (aminoglycosides, IV contrast dye, amphotericin B, cyclosporine, tacrolimus, or vasopressors), as well as, those who received both formulations of piperacillin/tazobactam therapy due to IV access and compatibility issues. Acute kidney injury will be defined as an absolute increase in SCr of 0.5 mg/dL or a 50% increase from baseline. Data collected on all patients, if available, will include: demographics (age, sex, ethnicity, height, weight); use of angiotensin-converting enzyme inhibitors, angiotension receptor blockers, diuretics or NSAIDs; vancomycin trough levels; baseline SCr and highest SCr during treatment or up to 72 hours after completion of specified antibiotic therapy.

7-180

Title: Evaluating a Hydromorphone Dose Substitution Policy and the Effect on Patient Safety and Pain Management

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Purpose: Hydromorphone is a semisynthetic opioid-receptor agonist and a derivative of morphine. It is estimated to be 7.5 times more potent than morphine when given intravenously. The current literature fails to recommend a consistent starting dose for hydromorphone. Starting doses range from 1 to 2 mg IV every four to six hours as needed or even 0.2 to 1 mg every 2-3 hours as needed. Dosing such potent pain medications can be difficult for patients when considering their past opioid use and co-morbidities. The goal of practitioners is to target adequate pain control, while assuring the dose of hydromorphone is safe for the patient. There are many risk factors that place patients at higher risk of overdose when receiving opioids. Currently, there are a lack of published trials that assess the safety and efficacy of implementing a hydromorphone dosing protocol. The purpose of this study is to determine if implementing a dose substitution policy for hydromorphone has an effect on patient safety and pain management.

Methods: This retrospective, single-center, observational cohort study will include patients who have received hydromorphone from June 2011 to June 2014. Adverse effects will be compared between patients that were pre-implementation and post-implementation of the hydromorphone dosing protocol. Data will be collected using electronic medical records and recorded utilizing a data collection form and Microsoft Excel. Categorical data will be analyzed with Fishers exact tests. Continuous data will be analyzed using students t-tests or Wilcoxon rank-sum tests. Data analysis will be performed with SAS statistical software.

7-181

Title: Evaluation of MRSA treatment failures associated with elevated vancomycin minimum inhibitory concentrations in a rural, nonacademic hospital

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Purpose: Currently at St. Claire Regional Medical Center (SCR), sixty percent of Staphylococcus aureus isolates are methicillin-resistant (MRSA). Several clinical studies done in academic medical centers have demonstrated increasing vancomycin treatment failures and negative outcomes in patients infected with MRSA isolates that have minimum inhibitory concentrations (MIC) near the Clinical and Laboratory Standards Institute breakpoint. There are limitations to applying those results to rural community hospital populations. This study examines whether the correlation between vancomycin MIC and clinical outcomes at a rural community hospital are similar.

Methods: This study is pending Institutional Review Board approval. All patients with cultures positive for MRSA from 7/1/12 to 6/31/13 were identified by the laboratory software and divided into two groups, MIC <2 and > 2 mg/L. Patient data collected from the electronic record includes: age, gender, underlying comorbid conditions, culture results, antibiotic therapy, pharmacokinetic variables, and laboratory values to assess treatment response. Provider documentation is reviewed for validation of treatment outcomes. Treatment failures are defined as: continued fever, continued elevated white blood cell counts, or the persistence of symptoms of infection such as wound drainage or purulent sputum for 120 hours after the initiation of vancomycin. Failure rates will be calculated for both MIC groups. The difference in treatment failure rate and baseline characteristics between groups will be compared with a chi square test. For both groups, pharmacokinetic variables, when available, will be analyzed to assess pharmacodynamic target attainment of MIC to area under the curve ratio greater than 400.

7-182

Title: Daptomycin versus vancomycin for the treatment of methicillin-resistant Staphylococcus aureus blood stream infections with vancomycin minimum inhibitory concentration greater than or equal to 2 mg/L

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Purpose: Daptomycin has been studied as a potential alternative to vancomycin for the treatment of methicillin-resistant Staphylococcus aureus (MRSA) bacteremia when the vancomycin minimum inhibitory concentration (MIC) is greater than or equal to 2 mg/L; however, studies thus far have had mixed results as to which option has improved clinical cure rates. The purpose of this trial is to compare clinical outcomes of treatment with daptomycin versus vancomycin for patients with MRSA bacteremia with a vancomycin MIC greater than or equal to 2 mg/L.

Methods: Prior to commencement, this retrospective, single-center, cohort study will be submitted to the Investigational Review Board for approval. Inpatients between June 2008 and June 2013 will be included if they are at least 18 years old, have MRSA bacteremia with vancomycin MIC greater than or equal to 2 mg/L, received greater than 72 hours of daptomycin or vancomycin, and have a target vancomycin trough of 15 to 20 mg/L. Patients will be excluded from the trial if the primary source of bacteremia is pneumonia, if they received more than 72 hours of alternative MRSA coverage prior to initiation of vancomycin or daptomycin, or if their renal function does not allow for scheduled dosing of vancomycin. The primary outcome is clinical failure, defined as persistent bacteremia or in-hospital mortality; secondary outcomes include time to negative blood culture, reoccurrence of infection, or hospital readmission within 30 days. Safety endpoints include nephrotoxicity or creatine kinase elevations. Economic outcomes include length of stay, cost of therapy, and total cost of hospitalization. Categorical variables will be analyzed using the chi-squared test or Fisher exact test, while continuous variables will be analyzed using the Students t test or Mann-Whitney U test.

7-183

Title: Implication of the VerifyNow P2Y12 assay on patient outcomes

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Purpose: The platelet inhibitory response of clopidogrel is substantially variable. Studies show that high platelet reactivity with clopidogrel is associated with increased risk of cardiovascular events after PCI. VerifyNow P2Y12, is an assay that specifically and rapidly monitors inhibitory effects of thienopyridine-therapy. No studies to date have used this assay to analyze time to surgery in cardiothoracic (CTV) patients on thienopyridine therapy. Decreases in time to surgery and/or length of hospital stay could broaden its utilization to non-PCI patients. This study will evaluate clinical outcomes of CTV patients analyzed by VerifyNow P2Y12 compared to those not analyzed by VerifyNow P2Y12.

Methods: This retrospective, single-center study has been approved by the Western Institution Review Boards for exemption. The institution is a 468-bed community hospital with approximately 1,000 bypass surgeries a year. The hospital's Information Technology department will identify patients who have received the VerifyNow P2Y12 assay since 2009. The primary objectives include determining if the utilization of the assay decreases pre-surgery time for CTV patients and/or decreases length of hospital stay. Secondary objectives include determining current clinical settings in which the assay is being used, evaluating if the assay results dictate changes in P2Y12 antiplatelet therapy, assessing the composite and individual incidence of all-cause death, myocardial infarction, stent thrombosis, stroke, and target vessel revascularization, and assessing the rate of major and minor bleeding events. In addition, the following data will be collected: patient age, gender, race, height, weight, serum creatinine, hemoglobin, hematocrit, platelet count, co-morbid conditions, other antiplatelet therapy, type of cardiovascular procedure, platelet function assay, use of blood products. Continuous data will be analyzed using an unpaired t-test, ANOVA and/or ANCOVA, and categorical data will be analyzed using a chi-squared test. All protected health information will be kept confidential at all times and will be properly destroyed following study completion.

7-184

Title: Evaluating the efficacy and safety of tranexamic acid in a community teaching hospital

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Purpose: One of the major complications for patients undergoing primary arthroplasty and other surgeries include major blood loss, requiring red blood cell transfusions. These transfusions are not without their risks, including blood borne infections, immunological reactions, as well as increased cost. Tranexamic acid is an antifibrinolytic agent that has been used in the perioperative setting to reduce blood transfusions in patients undergoing surgery. Prior studies and meta-analyses have demonstrated that tranexamic acid is effective in reducing the number of red blood cell transfusions in such patients. However, tranexamic acid is not without its own risks, including venous thromboembolism and high expense. Given the proposed benefits and potential risks of tranexamic acid, the investigators will perform a retrospective medication utilization review to evaluate the efficacy and safety of tranexamic acid in a community teaching hospital.

Methods: This study was initiated after obtaining approval from the MedStar Institutional Review Board. The hospital's electronic medical record system will be used to identify patients who underwent surgical procedures from February 1, 2011 to January 31, 2012 (before tranexamic acid was on formulary) and from February 1, 2012 to January 31, 2013 (after tranexamic acid was on formulary). Patients 17 years or younger were excluded from this study. The primary outcome is the incidence of red blood cell transfusions in patients who received tranexamic acid compared to patients who did not. The primary safety outcome is the incidence of venous thromboembolism between the two groups. Secondary outcomes include adherence to tranexamic acid policy, decrease in baseline hemoglobin and hematocrit after surgery, time to discharge after procedure, and pharmacoeconomic impact.
By performing this medication utilization review, we may determine if tranexamic

7-185

Title: Effects of scheduled intravenous acetaminophen during and after discontinuation on postoperative pain scores and opioid consumption in patients treated at a rural teaching hospital

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Purpose: With concern for declining satisfaction in pain management at the study hospital, it was identified that the General Surgery Service did not achieve levels of acceptable pain defined by the patient in 91.72 percent of all pain assessments conducted. With the American Society of Anesthesiologists recommendation for use of multimodal therapy postoperatively and recent approval of intravenous acetaminophen, this study looks to evaluate the impact intravenous acetaminophen, as part of multimodal therapy, has on pain scores in the first 24 hours postoperatively and any continued benefits that may exist after its discontinuation due to possible initial reductions in pain severity.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record will be utilized to identify patients who received intravenous acetaminophen up to 24 hours postoperatively and be compared to a cohort given the standard of care currently provided. All patient data will be recorded without patient identifiers and maintained for confidentiality. The following data will be collected: patient demographics, type of surgery performed, opioid use and its intravenous morphine equivalence, usage of non-opioid pain medications, pain scores rated from 0 10 on a numerical rating scale up to 96 hours postoperatively, and postoperative time to discharge. Pain scores will be assessed in 24 hour subsets up to 96 hours postoperatively and the two groups compared using the Kolmogorov-Smirnov Test. Time to reach acceptable pain scores, percent of pain assessments that meet this criterion in each patient, opioid use in intravenous morphine equivalents, time to discontinuation of any patient controlled opioid analgesia regimens, and postoperative time to discharge will be compared using a one-sided t-test.

7-186

Title: Intravenous Magnesium Sulfate for the Treatment of Acute Asthma and Chronic Obstructive Pulmonary Disease in the Emergency Department

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Purpose: Asthma and chronic obstructive pulmonary disease (COPD) are inflammatory airway disorders that can lead to serious consequences including emergency department (ED) visits, hospitalization, and death. The use of intravenous (IV) magnesium sulfate for refractory asthma and COPD exacerbations was first described in 1940, however, the exact mechanism, dose and efficacy remain uncertain. Due to conflicting results in current literature, a study will be conducted to determine if IV magnesium sulfate is an effective adjunctive agent to reduce hospital admissions from acute asthma and COPD exacerbations presenting to the ED.

Methods: This study will be a retrospective, matched, case control study of asthma and COPD patients presenting to the ED at an academic medical center. Prior to commencement, the study will be submitted to the Institutional Review Board for approval. Patients will be included if they are greater than 18 years of age, have a pre-existing diagnosis of asthma or COPD, and present to the ED for an exacerbation between January 2012 and April 2013. Patients who are pregnant, intubated prior to arrival, not treated in the main ED or who have previously been included in the study will be excluded. Case patients who received adjunctive magnesium therapy in the ED will be matched with control patients who did not receive magnesium based on diagnosis and baseline oxygen saturation. The primary outcome is hospital admission rates due to asthma or COPD exacerbations. Secondary outcomes include changes in oxygen saturation, changes in respiratory rate, intubation requirements, intensive care unit admission rates, and the incidence of adverse effects associated with IV magnesium sulfate administration.

7-187

Title: Development of a QT monitoring system to identify high risk patients at a community hospital

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Purpose: QT prolongation can lead to life-threatening cardiac arrhythmias (such as torsades de pointes (TdP)) and is considered a predictor of cardiac mortality. Patients enter the hospital with prolonged QT intervals due to congenital long QT syndrome, chronic arrhythmias, or medications. Upon admission, those patients may be exposed to further risk factors including electrolyte abnormalities and medications that prolong the QT interval. The objective of this study is to determine the validity of a QT interval risk factor flagging system to alert pharmacists to patients who are at risk of QT prolongation/TdP so that changes can be made to their therapy.

Methods: This study has been approved by the institution's investigational review board (IRB) and will utilize the electronic patient surveillance and reporting program Sentri 7. This program will be used to flag patients who meet 4 or more set criteria that are known risk factors for increased QT intervals. Those criteria include: age > 65, female sex, potassium < 3.5, magnesium < 1.7, and medications with evidence of QT prolongation. The patient's information, including medications, will then be reviewed by a pharmacist and recommendations such as electrolyte replacement and alternative mediations will be made to lower the patient's risk of arrhythmia/TdP. Data will be collected regarding number of interventions, number of accepted interventions, most common risk factors, and incidence of TdP. As dictated by these findings, standing order sets and daily pharmacist review (via electronic patient surveillance) will be adjusted.

7-188

Title: Identification and evaluation of hypoglycemic adverse drug events in a community teaching hospital

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Purpose: Treatment of hyperglycemia with insulin and other antidiabetic therapies are used to achieve glycemic control while minimizing the risk of hypoglycemia. Proper administration of medications, adequate diet, sufficient glucose monitoring, and identification of risk factors are essential to prevent hypoglycemic events. Hypoglycemia results in serious health and financial consequences that may be avoidable. The purpose of this project is to evaluate the occurrence of hypoglycemic events and assess appropriate use of insulin and other antidiabetic medications. Hypoglycemia will be assessed with an emphasis placed on potential interventions in order to prevent these events from occurring.

Methods: Patient blood glucose data from January 2013 to August 2013 will be reviewed to determine the rate of hypoglycemia in the inpatient population. A retrospective evaluation of these selected patients with known hypoglycemia will be completed. The following data will be collected: patient demographics, risk factors for hypoglycemia, concurrent diabetes medications, fasting blood glucose, frequency of plasma glucose monitoring, and glycated hemoglobin. Collected data will be evaluated to determine the incidence of hypoglycemic adverse events and assess whether these events were preventable.

7-189

Title: Impact of pharmacist counseling on outcomes in patients discharged on oral anticoagulants at a community teaching hospital

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Purpose: Discharge medication counseling may contribute to improving patients' knowledge and compliance as well as reducing the incidence of adverse events and hospital readmission rates. The new oral anticoagulants are associated with a risk of bleeding, drug-drug interactions, food-drug interactions, lack of routine monitoring, need for dose adjustment in renal impairment and risk of thrombosis after discontinuation in patients with atrial fibrillation. The study objective is to evaluate the impact of pharmacist discharge-counseling on adherence, adverse events, readmission rates, emergency department (ED) visits, patient satisfaction with counseling and pharmacist-time.

Methods: The study will consist of a retrospective and prospective phase. Institutional Review Board approval will be obtained. Patients who are to be discharged on oral anticoagulants i.e. warfarin, dabigatran, rivaroxaban and apixaban will be included. All data will be de-identified and only aggregate data will be presented in order to ensure confidentiality. Data collection in both phases will include demographics, co-morbidities, concomitant drugs, 30-day readmission rates and ED visits. In the retrospective phase, patients discharged on oral anticoagulants without pharmacist counseling will be included. In the prospective phase; prior to discharge, a pharmacist will review the appropriateness of discharge medication orders and intervene accordingly. Interventions and pharmacist-time will be documented in the hospital computer system. Patients' medication knowledge will be assessed using a questionnaire. The pharmacist will then counsel the patient about the ordered medication. Two to four weeks after discharge, a follow-up phone call will be used to assess adherence, adverse drug events and patients' satisfaction with counseling. Impact of pharmacist counseling on adherence, patient satisfaction and pharmacist time will be evaluated. Readmission rates and ED visits before and after pharmacist intervention will be compared. The results will be presented to the Pharmacy and Therapeutics Committee.

7-190

Title: Pharmacists interventions and counseling in promoting appropriate use of proton-pump inhibitors and addressing the risk of infection

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Purpose: Different approaches to optimize antimicrobial stewardship have been utilized to augment patient safety and better healthcare. The U.S. Food and Drug Administration issued a drug safety communication associating long-term use of proton-pump inhibitors (PPIs) with Clostridium Difficile associated diarrhea. Studies also have linked PPIs use with increased risk of pneumonia. PPIs are easily abused and misused; therefore more attention should be paid to guarantee their proper utilization. The purpose of this study is to examine inappropriate prescribing pattern of PPIs, the attributed risk of infection; and to promote PPIs proper utilization.

Methods: The study will consist of retrospective and prospective phases. Institutional Review Board approval will be obtained. Electronic data for all patients on PPIs will be collected retrospectively over a period of 6 months. Patients on both PPIs and antibiotics indicated for the treatment of pneumonia will be compared to those on PPIs only. Antibiotics included are levofloxacin, ciprofloxacin, ceftriaxone, cefepime, piperacillin/tazobactam, azithromycin, tobramycin and vancomycin. The appropriateness of PPIs prescribing pattern (dose, route, duration, indication) will be evaluated according to American Gastroenterology Association (AGA) guideline. Prospectively, all PPI orders will be evaluated for proper indication, dose and duration of therapy. Pharmacist interventions will be directed to orders which do not meet AGA guideline criteria. Newly admitted patients on PPIs will be targeted for admission interviews and counseling sessions. Outcomes to be measured will include the percentage of prescriptions without a proper indication or inappropriate dosage regimen; percentage of infections associated with the inappropriate use of PPIs; and the number of interventions and counseling sessions made by the pharmacist regarding judicious use of PPIs. The results of this study will be presented to Pharmacy and Therapeutic Committee to endorse proper utilization of PPIs.

7-191

Title: Impact of a clinical pharmacist-run medication reconciliation telephone service for new patients entering a primary care practice

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Purpose: A clinical pharmacist performing medication reconciliation helps in identifying medication-related issues that will improve a patients quality of care. The purpose of this study is to determine the impact of implementing a service in which a clinical pharmacist (CP) contacts patients new to an Atrius Health primary care practice via telephone and documents an accurate medication list, identifies medication-related issues, drug cost-saving opportunities, and screens for medication non-adherence. Any medication-related recommendation provided by the CP will be available to the primary care physician (PCP) prior to the patients first upcoming primary care practice appointment.

Methods: The research study protocol will be submitted to MCPHS University Institutional Review Board for review and approval. Patient data from Atrius Healths electronic medical record (EMR) will be used to determine eligible candidates. Subjects included will be new patients assigned a PCP at the Wellesley, MA site who are ≥ 40 years old. Retrospective control subjects will be selected by applying the aforementioned inclusion criteria to patients who joined this same practice from May to August 2013. Study subjects will receive a call from the CP to obtain the patients current medication list, and identify any medication issues and recommendations of which will be documented in the patients EMR. Recommendations will be sent electronically to the PCP prior to the patients first appointment. In the control group, the primary investigator will identify medication issues addressed by the PCP in the patients first appointment. The primary outcome will be the number of CP provided medication recommendations acted upon by the clinician during the patients first visit in the study group, compared to the number of medication issues addressed by the clinician during the patients first visit in the control group. Secondary outcomes will include clinician satisfaction and a financial return-on-investment assessment.

7-192

Title: Comparison of bumetanide and furosemide in patients admitted for heart failure exacerbations: impact of a drug shortage on diuretic pharmacotherapy management, a pilot study

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Purpose: Medication drug shortages have impacted healthcare systems across the country. In most recent years, the number of medications affected by drug shortages has increased. This increasing problem impedes providers clinical decision-making skills and affects established policies and procedures. Healthcare systems and clinicians are pressured to make decisions, which ultimately impacts the cost and quality of patient care. The objective of this study is to examine if drug shortages cause healthcare systems to use medication alternatives that are less safe or effective to standard therapy in the setting of patients admitted for heart failure exacerbations treated with diuretic therapy.

Methods: This study will be submitted to the Institutional Review Board for approval. The design will be a retrospective analysis of electronic medical charts of patients admitted for heart failure exacerbations treated with IV bumetanide during September 1st, 2012 to April 30th, 2013, during the setting of the critical drug shortage of furosemide. These patients will be compared to patients admitted for heart failure exacerbations treated with IV furosemide at equivalent total daily doses and administrations during September 1st, 2011 to April 30th, 2012, one year prior to the critical drug shortage. The following data will be collected: patient age, gender, height, weight, ethnicity, co-morbidities, ejection fraction, and concomitant medications. Safety will be assessed by comparing the incidence of acute kidney injury, as defined by the most recent KDIGO Clinical Practice Guidelines for Acute Kidney Injury published in March 2012. Safety measurements will be collected by results of renal function tests, including serum creatinine and blood urea nitrogen. Efficacy will be assessed by measuring time to IV to PO transition, average length of stay, and time to readmission, if applicable. All data will be recorded without patient identifiers and maintained confidentially.

7-193

Title: An evaluation of vancomycin in critically ill patients requiring continuous venovenous hemofiltration therapy (CVVH)

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Purpose: Vancomycin is one of the core agents frequently administered to critically ill patients. In this population physiological changes such as increase in volume of distribution and clearance may affect pharmacokinetic behavior of antimicrobials. Because vancomycin is partially cleared by CVVH, numerous variables in machine settings will play a role in the clearance and subsequent maintenance dose of vancomycin. Unfortunately, published literature on vancomycin dosing during CVVH provides little guidance due to small sample sizes, patient population, and variable hemofiltration rates. The purpose of this study is to evaluate vancomycin dosing regimens at a large academic medical center in patients requiring CVVH.

Methods: This study will be submitted to the Institutional Review Board for approval. Patient charts will be retrospectively reviewed and data related to all aspects of care relating to CVVH and vancomycin will be collected. Patients will be included if they are at least 18 years old and are receiving vancomycin concomitantly with CVVH. Patients will be excluded if they have an average urine output greater than 0.5 ml/kg/hr for six consecutive hours during the study, or after initiation of vancomycin, if they receive concomitant extracorporeal membrane oxygenation (ECMO), if no vancomycin levels are drawn throughout the duration of treatment, and if the first dose of vancomycin is received 6 or more hours prior to initiation of CVVH. Data will be analyzed to determine the percentage of patients who achieved a therapeutic level within 24 hours of initiation of therapy. Secondary outcomes will focus on time until therapeutic vancomycin levels are achieved, as well as effect of patient-specific factors such as fluid status, CVVH flow rate, and absence or presence of a loading dose, on ability to reach therapeutic levels.

7-194

Title: Duration of response to abiraterone versus docetaxel as first line therapy in patients with metastatic castration resistant prostate cancer (mCRPC): a pilot study

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Purpose: On the basis of placebo controlled trials, the FDA in December 2012 granted an extension to the indication of abiraterone, an oral androgen synthesis inhibitor, to include treatment naive metastatic castration resistant prostate cancer (mCRPC) patients. Prior to this time, the intravenous taxane chemotherapy agent docetaxel was the only agent approved for first line use in hormone refractory prostate cancer patients. This retrospective noninferiority study will evaluate whether abiraterone is as efficacious as docetaxel in this setting by comparing duration of response with each agent as measured by time until treatment discontinuation.

Methods: This study will be submitted to the Institutional Review Board for approval. Subjects will be identified from the electronic medical record on the basis of International Classification of Diseases, 9th revision (ICD-9) codes for malignant neoplasm of the prostate and active orders for docetaxel or abiraterone within the censored period. Duration from initiation of docetaxel or abiraterone until discontinuation of respective treatment will be recorded. Additional patient data collected will include: demographic data, comorbid conditions, concurrent medications, duration of prostate cancer diagnosis, prior hormonal therapies trialed, side effects reported, Eastern Cooperative Oncology Group performance status, serial prostate specific antigen levels, and radiographic imaging findings. All data will be stored without patient identifiers and will be maintained confidentially. Mean treatment duration with abiraterone and docetaxel will be calculated and compared for noninferiority.

7-195

Title: Retrospective comparison of outcomes with narrow INR control versus traditional INR control in U.S. veterans with nonvalvular atrial fibrillation and venous thromboembolism: a pilot study

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Purpose: Guidelines for management of warfarin therapy for treatment of venous thromboembolism and nonvalvular atrial fibrillation recommend a therapeutic international normalized ratio (INR) range of 2 to 3 with a target of 2.5. While 2.5 is recommended as a target, there is no data to support an average INR closer to 2.5 is more effective than other INR averages within the therapeutic range. The objective of this study is to determine if patients with an average INR of 2.3 to 2.7 experience less hemorrhagic and thromboembolic complications than patients with an average INR of 2.0 to 2.2 or 2.8 to 3.0.

Methods: This study will be submitted to the Institutional Review Board for approval. This study will be a retrospective analysis of veterans on maintenance warfarin therapy, defined as being on warfarin for at least 4 weeks before follow up begins, for the treatment of venous thromboembolism or atrial fibrillation. The duration of this study will be 6 months and the study will follow 3 separate groups. An anticoagulation database will identify patients who have an average INR of 2.0 to 2.2, 2.3 to 2.7, or 2.8 to 3.0 over 6 months. The following baseline data will be collected: patient age, gender, ethnicity, indication for warfarin, warfarin start date, CHADS2 score, medications, and comorbidities, including presence of liver disease, kidney disease, hyperlipidemia, hypertension, diabetes, congestive heart failure, peptic ulcer disease, and history of hemorrhage or thromboembolism. Computerized patient medical records will be reviewed for occurrence of major bleed, minor bleed, or thromboembolic event over the study period and the rates of complications will be compared between groups. All data will be recorded without patient identifiers in a manner that will maintain patient confidentially.

7-196

Title: Impact of pharmacist and nurse practitioner collaborative medication reconciliation and counseling on compliance

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Purpose: Medication reconciliation and counseling at discharge is important for patient safety. Despite evidence supporting pharmacist-led medication reconciliation, there is no consensus regarding the most effective methods to conduct this. Limited collaboration among physicians, pharmacists, and nurses at discharge can further lead to poor medication compliance. Integrating pharmacists into the process of counseling and reconciliation can improve patient outcomes. The purpose of this study is to conduct medication reconciliation and counseling at discharge for primary care center patients who are admitted to the hospital to evaluate its impact on patient safety and compliance.

Methods: This study was approved by the Institutional Review Board. This is a prospective study consisting of pharmacist-led medication reconciliation, inpatient counseling, post-discharge office visit, and phone-call. The patient population consists of patients who are seen at the primary care center who are hospitalized. Patients who are not taking any medications prior to admission will be excluded. Prior to discharge, a pharmacist will reconcile the patients medications, provide medication counseling, and assess patient compliance using a revised version of the Morisky 8-item Medication Adherence Questionaire. A nurse practitioner will conduct a wellness phone call 24 to 48 hours post-discharge. At 14 days post-discharge, a nurse practitioner will follow-up with patients to reassess compliance using baseline interview data. The nurse practitioner will also assess medication understanding by verbally administering a medication use questionnaire. The following data will be collected: patient age; gender; ethnicity; disease states; compliance findings; and reported medication dose, frequency, indication, and medication adverse events. All data will be recorded without patient identifiers and maintained confidentially.

7-197

Title: Medication discrepancy impact on hospital readmission rates in older patients with cognitive impairment: a pilot study

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Purpose: Medication discrepancies at discharge have been recognized as a common occurrence in the geriatric population, a group with risk factors for medication related problems. The effect of medication discrepancies on health care utilization post discharge is currently unknown in the cognitively impaired subset. The purpose of this study is to quantify and describe hospital discharge instruction discrepancies provided to this group and determine if these discrepancies resulted in increased health care utilization.

Methods: This study will be submitted to the Institutional Review Board for approval. Patients aged 65 and older who are discharged from the hospital with evidence of cognitive impairment will be electronically identified using inpatient orders for dementia medications. Patients who meet the following inclusion criteria will be eligible for analysis: inpatient admission for greater than 24 hours, discharged directly home, and 5 or more prescribed discharge medications. The following patient data will be collected: age, gender, number of co-morbid conditions, number of medications, number and class of dementia medications, Beers criteria medications, length of stay, readmissions within 12 months of index admission, and type of caregiver support. In order to identify medication discrepancies, the discharge medication list provided to the patient will be compared to the active medication orders at the time of discharge. Identified discrepancies will be counted and categorized into the following: omission, commission, incorrect drug, incorrect dose and duplicate drug. Health care utilization rates including readmission, emergency department visits and urgent care visits within 30 days of discharge will be calculated and compared between patients with and without discrepancies. All data will be analyzed without patient identifiers and maintained confidentially.

7-198

Title: Evaluating time to first dose of antibiotics after diagnosis of sepsis at a community teaching hospital

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Purpose: Per the Surviving Sepsis Campaign guidelines, once a diagnosis of sepsis has been established, the patient should receive appropriate broad-spectrum antibiotic therapy within 60 minutes of the recognition of sepsis.

Methods: MedStar Union Memorial's (MUMH) Critical Care Quality Improvement Committee evaluated the hospital's success with this goal previously in 2010 by retrospectively monitoring the time for the following parameters: ordering of antibiotics after the diagnosis of sepsis, for order scanned to pharmacy, order verification by the pharmacy, and medication availability for administration by the nurse. Approximately 66% of patients received their empiric antibiotic therapy after diagnosis within the appropriate timeframe at MUMH. The rate limiting steps at that time were found to be the time to order the antibiotic post-diagnosis and the time for antibiotic to be administered.

Results: To decrease the time from order entry to administration, the Pharmacy Department investigated the storage of antibiotics within the Critical Care Unit (CCU) Pyxis® stations. Closer proximity to patient care areas would facilitate quicker administration by nursing by avoiding the need for pharmaceutical preparation, dispensing, and delivery or tubing from the inpatient pharmacy. In consideration of the most-frequently prescribed antibiotics from the Severe Sepsis order set, the Pharmacy Department has since stored vancomycin, cefepime, piperacillin/tazobactam, moxifloxacin, and ciprofloxacin within the Pyxis®. Also, since the previous review the hospital started computerized physician order entry (CPOE) in February 2013. The CPOE process included a sepsis order set with antibiotic recommendations.

Conclusion: By performing this retrospective review, we will determine if the changes in policy have had a positive outcome on our hospital's treatment of sepsis. This study will be initiated after obtaining approval from the MedStar Institutional Review Board. The hospital's electronic medical record system will be used to identify patients with a diagnosis of sepsis from January 1, 2011 to February 28, 2014. The primary outcome will be if the patient received empiric antibiotics within the appropriate timeframe after diagnosis of sepsis. Secondary outcomes will be to evaluate success with above goals for the individual sub-groups based on patient location. In addition the investigators will stratify times for each step of the required process for a patient to receive an antibiotic and to evaluate survival rates based on success of goal time. The investigators will also collect data on which antibiotics classes were used,

average duration of antibiotics, and also evaluate whether de-escalation was performed based on microbiology data consistent the guideline recommendations.

7-199

Title: Daptomycin versus linezolid for the treatment of vancomycin-resistant enterococcal urinary tract infections

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Purpose: Although enterococci are rarely pathogenic in otherwise healthy individuals, they have emerged as one of the most common nosocomial pathogens, especially in urinary tract infections (UTIs). Vancomycin-resistant enterococci (VRE) are frequently resistant to many antimicrobials leaving clinicians with limited therapeutic options. Common treatment regimens include oral or intravenous linezolid or intravenous daptomycin; however, limited data exist comparing the efficacy of these agents for this indication. The objective of this study is to evaluate and compare clinical outcomes of oral/intravenous linezolid versus intravenous daptomycin for the treatment of VRE UTIs.

Methods: This retrospective chart review will be submitted to the institutional review board prior to commencement. All adult inpatients with VRE isolated from urine cultures between January 2008 and September 2013 will be screened for inclusion. Patients receiving at least 48 hours of oral/intravenous linezolid or intravenous daptomycin and meeting diagnostic criteria for UTI will be eligible for inclusion. Data to be collected include patient demographics; results of urinalysis and urine culture; white blood cell count and serum creatinine within 24 hours of positive culture; linezolid/daptomycin dose, route, and duration of treatment; hospital length of stay; intensive care unit length of stay, if applicable; and severity of illness. The primary outcome of this study will be clinical cure, defined as completion of treatment and no urinary symptoms. Clinical failure will be defined as treatment failure documented in the medical record or the need to reinitiate therapy within 30 days of completing treatment. Secondary outcomes will include microbiological outcomes in patients with repeat cultures and adverse events associated with either medication. Clinical and microbiological outcomes will be analyzed using chi-square test, while continuous variables will be analyzed using the Students t-test or Wilcoxon rank sum test depending on data distribution.

7-200

Title: Retrospective analysis of the efficacy of oral vitamin K in reducing the anticoagulant effect of warfarin in patients receiving antibiotic therapy: a pilot study

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Purpose: Most patients on warfarin are managed with a goal international normalized ratio (INR) of 2 to 3 or 2.5 to 3.5, which provides antithrombotic effects while minimizing bleeding risk. In patients with elevated INR who are at risk for bleeding, providers may choose to administer oral vitamin K in addition to skipping warfarin dose(s). Antibiotics can impair vitamin K production by gut-flora and increase the effect of warfarin by reducing its metabolism. The purpose of this study is to determine if current or recent broad-spectrum antibiotic therapy impacts return to target INR range after the administration of vitamin K.

Methods: This study will be submitted to the Institutional Review Board for approval. This will be a single center retrospective electronic medical chart review of up to 320 subjects who received oral vitamin K for the reversal of warfarins anticoagulant effects between October 2009 and October 2013. Half of the subjects must have been treated with one or more antibiotics that are known to enhance the anticoagulant effect of warfarin. Only subjects who received one dose of either 2.5mg or 5mg of oral vitamin K in 48 hours will be included. Percentage reduction of INR values at 48 hours will be evaluated. The investigators will also compare the effects of oral vitamin K 2.5mg versus 5mg on INR reduction and the percentage of subjects that returned to their goal INR range at 48 hours. Logistic regression will be used to determine if antibiotic therapy had a significant effect on the subjects return to their goal INR. The secondary outcome data will be tested by two-way between group analysis of variance.

7-201

Title: Evaluation of ventilator-associated pneumonia surveillance criteria and the impact on antimicrobial prescribing patterns

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Purpose: Ventilator-associated pneumonia (VAP) is associated with significant morbidity and mortality. In the past, the diagnosis of VAP has proven difficult as guidelines published by the CDC were based on subjective observation of symptoms and interpretation of chest radiography. In June 2013, the CDC published an updated ventilator-associated event surveillance algorithm with purely objective criterion. The primary objective of this study is to compare the sensitivity and specificity of the different VAP surveillance criteria and physician diagnosis of VAP. Secondary objectives are to compare antibiotic usage based on different VAP surveillance criteria and to compare antibiotic usage between ICU units.

Methods: This is a prospective, observational study expected to enroll approximately 100 ICU subjects. Subjects ≥ 18 years of age admitted to the neuro ICU, surgical ICU, or medical ICU will be deemed eligible if mechanically ventilated for greater than 48 hours and receiving treatment for suspected VAP for greater than 3 days. Subjects receiving antibiotics for a secondary infection with positive blood cultures for an organism other than the organism initially implicated in VAP will be excluded. Subjects will be prospectively identified by clinical pharmacists rounding with the ICU teams. The following data will be collected daily until hospital discharge: age, admission and discharge date, intubation date and location, primary diagnosis, comorbid conditions, radiography, vital signs, pulmonary symptoms, ventilator settings, microbiologic data, and antimicrobial and vasopressor use. In order to determine the sensitivity and specificity of various VAP surveillance criteria, the ventilator-associated event calculator on the CDC website will identify patients meeting the new criterion, which will be compared to the date as identified by the old CDC criterion as well as physicians. This study has been approved by the Institutional Review Board.

7-202

Title: Evaluation of time to first dose of appropriate antimicrobials in septic patients presenting to the emergency department

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Purpose: The 2012 Surviving Sepsis Campaign Guideline (SSC) recommends administration of broad-spectrum antimicrobials within 1 hour of recognition of severe sepsis and septic shock. Published literature displays worsened outcomes with each hour antimicrobial therapy is delayed. The SSC concedes that the feasibility of achieving these recommendations has not been scientifically evaluated. The purpose of this phase I analysis is to assess the time from initial presentation to antimicrobial administration in patients presenting to the emergency department (ED) with sepsis, severe sepsis or septic shock at a tertiary academic medical center.

Methods: We conducted a retrospective, single-center analysis of adult patients admitted to our institution via the emergency department diagnosed with sepsis, severe sepsis or septic shock. After receiving Institutional Review Board approval 786 patients identified by a hospital claims database discharged from the hospital with ICD-9 charge codes for sepsis, severe sepsis or septic shock between January 1st 2012 and December 31st 2012 were screened for enrollment. Patients were excluded from the analysis if they presented from an outside hospital, were not admitted through the ED, or were not found to have sepsis upon admission. Data collected include demographics, ED time course, time of initial antimicrobial administration, appropriateness of empiric antimicrobial regimen based on empiric prescribing guidelines as well as final culture data, hospital length of stay and mortality.

7-203

Title: Evaluation of the efficacy of lipid lowering therapy in veteran health administration patients converted from rosuvastatin to atorvastatin: A pilot study

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Purpose: Hyperlipidemia is a disease affecting greater than 14 percent of the US population with the potential for serious cardiovascular complications if inappropriately managed. Previous studies have compared statin therapies in patients to determine similar lipid lowering potential of different agents, but none have addressed the maintenance of efficacy in patients who are switched from one statin to another. The objective of this study is to determine if lipid lowering was sustained in patients who were switched from treatment with rosuvastatin therapy to atorvastatin therapy.

Methods: This study will be submitted to the Institutional Review Board for approval. The VA computerized patient record system (CPRS) will be used to identify patients who were on rosuvastatin as lipid lowering therapy, who were then converted to atorvastatin from October 1, 2012, through October 1, 2013. Mean dose conversion ratios were consistent with VHA recommendations (5mg rosuvastatin equals 20mg atorvastatin). The following data will be collected: patient age, gender, ethnicity, co-morbid conditions total cholesterol, low- density lipoprotein (LDL) cholesterol, high- density lipoprotein (HDL) cholesterol, triglycerides, goal lipid level, liver function tests (LFTs), reported adverse drug events and allergies. All data will be recorded without patient identifiers in an effort to maintain confidentiality. LDL values before the conversion will be evaluated to determine if the patient had achieved goal LDL level per ATP III guidelines. Reviewers will assess LDL levels after the conversion to determine if patients maintained their goal levels with the change.

7-204

Title: Acute pancreatitis associated with antipsychotic use: review of case reports

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Purpose: Antipsychotics are effective in treating psychotic symptoms and are associated with adverse metabolic effects and pancreatitis. There are no prospective studies evaluating the association of antipsychotics with acute pancreatitis though retrospective cohorts and case-studies have evaluated this association. The purpose of this review is to summarize and evaluate the reported evidence and clinical features of pancreatitis associated with typical and atypical antipsychotics in published case reports.

Methods: Reports published in English were collected from PubMed/EMBASE using the terms (pancreatitis) AND (antipsychotics). We compiled another search of ((pancreatitis) AND ((aripiprazole) OR (asenapine) OR (chlorpromazine) OR (clozapine) OR (fluphenazine) OR (haloperidol) OR (iloperidone) OR (loxapine) OR (lurasidone) OR (olanzapine) OR (paliperidone) OR (perphenazine) OR (pimozide) OR (quetiapine) OR (risperidone) OR (thioridazine) OR (thiothixene) OR (trifluoperazine) OR (ziprasidone)). The results were collated and filtered to find unique articles and subsequently categorized by relevance. Relevant articles were reviewed and individual cases were identified and evaluated. Pertinent laboratory data, clinical features, Naranjo scores and event probability were abstracted and evaluated. The JMP software package was used to compile appropriate descriptive and inferential statistics.

Results: There were 47 reports summarizing 37 cases of pancreatitis with evaluable data. Pancreatitis was more frequent in men (58%, n=21 vs. 42%, n=15, p=0.04) and the median age at presentation was 38.5 years (range 7-78). Alcohol, biliary disease and chronic pancreatitis were infrequently associated with cases. The median lipase, amylase and alkaline phosphate were 1066 IU/L (range 243-5178), 343 IU/L (range 3-7000) and 152 IU/L (range 119-367), respectively. Symptoms improved or resolved with dechallenge (60%, n=22) though not consistently reported. Positive CT scans and ultrasound were reported in 46% (n=17) and 14% (n=5) of cases, respectively. The median time until resolution was 8.5 days (range 2-180). The median causality score was 4 (range 2-8) and was rated possible in 73% (n=27) and probable in 10% (n=10). The median drug exposure was 35 days (range 5-1095) with severity ranked mild 62% (n=23), severe 30% (n=11) and fatal 8% (n=3). Schizophrenia/schizoaffective disorder and bipolar disorder were the most common reasons for treatment (58%, n=21 vs. 22%, n=8, p=0.003). Clozapine (35%, n=13) and olanzapine (32%, n=12) were associated with most pancreatitis reports (p=0.98). Antipsychotic combination therapy or overlap was found in most 61% (n=19) reports and monotherapy was used in 39% (n=12).

Conclusion: Pancreatitis is most often reported with dual, overlapping atypical antipsychotics or concomitant medications. Patterns of elevated amylase, lipase, alkaline phosphatase are present and should be confirmed with a CT scan. Most cases are mild and causality is most frequently ranked as "possible". Symptoms improve with dechallenge and the median time until resolution is 8.5 days. Pancreatitis should be suspected when abdominal pain, metabolic and laboratory abnormalities are found after beginning antipsychotics and symptoms should be followed by CT or imaging. Most cases are ranked "possible" and are frequently associated with concomitant medications which limits any causality analysis.

7-205

Title: Implementation of a phenobarbital-based alcohol withdrawal protocol in critical care

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Purpose: Alcohol withdrawal is a common disorder seen in critically ill patients. The standard treatment includes the use of benzodiazepines guided by the Clinical Institute Withdrawal Assessment from Alcohol (CIWA) scale. This practice utilizes frequent administration of large-dose benzodiazepines, which has been associated with respiratory depression and over-sedation. Phenobarbital has a long half-life that allows for less frequent dosing and a presumed reduced risk of respiratory depression and sedation, making it an attractive option in intensive care unit (ICU) patients. The objective of this study is to determine if a phenobarbital-based alcohol withdrawal protocol is non-inferior to CIWA scale-benzodiazepine administration.

Methods: This prospective, observational study has been submitted to the Institutional Review Board for approval and will be conducted from October 2013 to March 2013. Medical, surgical, and trauma ICU patients admitted with a primary or secondary diagnosis of alcohol withdrawal or alcohol intoxication will be included in this study. Patients who receive CIWA-based benzodiazepines will be compared to patients who receive phenobarbital-based therapy. The primary endpoint will be the proportion or occurrence of severe alcohol withdrawal symptoms in each cohort as measured by a CIWA score greater than or equal to 15 or moderate alcohol withdrawal symptoms as measured by a CIWA score between 8 and 14. Data analysis between groups will include the incidence of delirium, delirium tremens, and seizures; utilization of benzodiazepines, opioids, and other adjunctive medications; Richmond Agitation Sedation Scale (RASS) scores; serum phenobarbital levels; need for mechanical ventilation; ICU and hospital length of stay; and protocol compliance. Demographic data to be collected include age, gender, reason for hospitalization, blood alcohol level on admission, risk of alcohol withdrawal, risk of respiratory compromise, risk of sedation, and prior or concomitant use of benzodiazepines, anticonvulsants, and antipsychotics within the last 30 days.

7-206

Title: Efficacy of cefepime therapy for treatment of Enterobacteriaceae bloodstream infections (BSI): an evaluation of the revised susceptibility breakpoints

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Purpose: Recent clinical and pharmacokinetic/pharmacodynamic data have raised concerns regarding cefepime efficacy at the current susceptibility breakpoint of 8 mg/L. Thus, in June 2013, the Clinical and Laboratory Standards Institute (CLSI) voted to decrease the cefepime breakpoints for Enterobacteriaceae. The new susceptibility breakpoint will be defined as a minimum inhibitory concentration (MIC) less than or equal to 2 mg/L. The objective of this study is to evaluate the potential impact of this proposed change by applying the revised breakpoints to patients who were treated with cefepime for Enterobacteriaceae BSI and assessing the corresponding outcomes.

Methods: In this retrospective study approved by the institutional review board, patients with an Enterobacteriaceae BSI between January 2008 and December 2012 will be screened. Patients co-infected with yeast or gram positive organisms, or those with a previous BSI within 30 days will be excluded from analysis. Patients who received at least 48 hours of cefepime will be stratified according to cefepime MIC; an MIC less than or equal to 2 will be defined as susceptible and an MIC greater than 2 will be defined as non-susceptible. The primary outcome of thirty-day all-cause mortality will be compared between the two groups. Secondary outcomes will include microbiological outcome and BSI-related length of stay. Data including baseline demographics, gram-negative organism(s) identified, date of first positive blood culture, duration and dose of cefepime therapy, and concomitant antibiotics will be collected. Categorical variables will be analyzed using Fisher's exact test and continuous variables will be compared using the Student's t-test. Patient comorbidities, source of bacteremia and severity of illness will also be documented and used to identify any independent risk factors for mortality using multivariate logistic regression analysis.

7-207

Title: Quetiapine-induced cataracts: a pilot study examining the incidence of cataract formation in patients on long-term quetiapine therapy

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Purpose: Unlike several phenothiazine neuroleptic drugs, atypical antipsychotics do not appear to, as a class, induce cataract formation. However, when initially studied in animals, high-dose quetiapine was found to induce cataracts, which prompted labeling recommending biannual eye exams for all patients on long term quetiapine. There have been a limited number of case reports and a few commentaries published debating the recommendation, but no specific studies of quetiapine induced cataract formation. The objective of this study is to quantify, compared to the general population, the increase in cataract formation in patients on quetiapine compared to risperidone.

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 been on quetiapine or risperidone therapy for greater than 6 months. The following data will be collected via chart review for these patients: patient age, gender, indication for antipsychotic medication, duration of treatment, dosage (categorized as low or high), comorbid diabetes, comorbid hypertension, smoking history, other medications, previous cataract history, time to new cataract diagnosis (identified by ICD-9 code), and, for patients taking quetiapine, frequency of eye exams after starting antipsychotic therapy. All data will be recorded without patient identifiers and confidentiality will be maintained. The reviewers will compare the incidence of cataract formation with quetiapine and risperidone as compared to the general public and consider sub-group analysis to attempt to evaluate confounding variables.

7-208

Title: Evaluation of chloramphenicol use in cystic fibrosis patients at a pediatric teaching hospital

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Purpose: Chloramphenicol is a seldom used antimicrobial agent due to its adverse effect profile despite having highly effective, broad-spectrum activity against many gram-positive and negative bacteria. The most significant toxicity associated with chloramphenicol is bone marrow suppression. Cystic fibrosis (CF) patients often have limited antibiotic options due to the high incidence of resistance among pathogens involved. There is currently a lack of studies on the use of chloramphenicol in this patient population. The objectives of this analysis are to evaluate dosing regimens and subsequent serum concentrations of chloramphenicol to determine toxicity and efficacy in CF patients.

Methods: A thorough literature review will be conducted to review existing recommendations regarding chloramphenicol use in CF patients. Prior to commencement, this work will be submitted to the hospital's Institutional Review Board (IRB) for approval. A retrospective analysis will be conducted looking at patients with cystic fibrosis who have been treated with chloramphenicol at a large pediatric tertiary care center. Data will be gathered using the electronic medical record system to identify patients who have been treated in the past with chloramphenicol. The following data will be collected: patient demographics (age, gender, weight), past medical history, drug allergies, concurrent antibiotics, laboratory data (complete blood count, inflammatory markers), pulmonary function tests, microbiology data, drug information (chloramphenicol doses, serum concentrations, duration of treatment, rationale for starting medication, adverse events), length of stay, and time between exacerbations. All data will be recorded without patient identifiers and maintained confidentially. Conclusions will be drawn based on the data gathered to guide use of chloramphenicol in cystic fibrosis patients at our institution.

7-209

Title: Comparison of the Efficacy and Safety of the Area Under the Concentration / Minimum Inhibitory Concentration Vancomycin Dosing Method and the Traditional Weight-Based Dosing Method

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Purpose: The purpose of the study is to determine whether AUC24/MIC dosing is a better predictor of therapeutic vancomycin troughs and a favorable dosing method to reduce the incidences of nephrotoxicity when compared to the traditional weight-based method of dosing vancomycin.

Methods: The study will be a quasi-experimental design that will compare the vancomycin troughs at steady state between a retrospective control group, dosed using the traditional weight-based method, and a prospective intervention group, dosed by the AUC24/MIC method. To determine the total daily dose for the intervention group, the product of the targeted AUC24, vancomycin renal clearance, and patient's creatinine clearance will be calculated. An AUC24 of approximately 650 will be targeted, ensuring that the value is between 400 and 952, and an MIC of 1 will be assumed unless proven otherwise. To evaluate efficacy, the rates of subtherapeutic, therapeutic, and supratherapeutic trough levels will be quantified and compared between the control and intervention groups. Nephrotoxicity, defined as a serum creatinine increase of 0.5 mg/dL or 50% from baseline, for two consecutive days after vancomycin therapy initiation, will also be quantified to evaluate the safety of the two vancomycin dosing methods.

7-210

Title: Examining obesity as a risk factor for Clostridium Difficile infection recurrence: a pilot study

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Purpose: Clostridium difficile infection (CDI) is on the rise in the United States, with incidence rates more than doubling from 2000 to 2009. Approximately 25 percent of patients who initially contract CDI will have a recurrence. Identified risk factors contributing to CDI recurrences include age greater than 65 years, prolonged hospital stay, severe comorbidities, use of agents that increase gastric pH, and ongoing antibiotic therapy for treating non-CDI illnesses. The purpose of this study will be to determine if obesity is also a significant, independent risk factor for CDI recurrence.

Methods: This study will be submitted to the Institutional Review Board for approval. Patients with polymerase chain reaction (PCR)-confirmed CDI between the dates of March 1, 2010 and February 28, 2013 will be identified, retrospective chart review will be performed, and the following data will be extracted from the patients charts: age; sex; length of stay; body mass index (BMI); dates of CDI index case and recurrence; any antibiotics used for treatment of non-C. difficile related infections within 30 days of index case and/or recurrence; antibiotic used to treat CDI and length of treatment; histamine 2 receptor antagonist (H2RA) and/or proton pump inhibitor (PPI) use within 30 days of CDI recurrence; and Charlson comorbidity index score. If available, data on C. difficile strain will also be collected, as will data on all-cause mortality during the 3-year study period. All data will be recorded without patient identifiers, and will be maintained securely and confidentially. Rates of CDI recurrence between obese and non-obese patients will be compared while controlling for other covariates known to increase recurrence rates.

7-211

Title: Examining the rate of infectious complications after implementing a new prophylactic antibiotic regimen in patients undergoing transrectal ultrasound-guided prostate biopsies; a pilot study

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Purpose: Antibiotic prophylaxis with fluoroquinolones before transrectal ultrasound-guided prostate biopsies (TRUS-guided prostate biopsy) significantly decreases rates of infection compared to placebo. Unfortunately, fluoroquinolone resistance is increasing and reported as high as 22% in patients undergoing a urological procedure. In 2011, in an effort to combat fluoroquinolone resistance and decrease post-operative infectious related complications, the urology department updated their protocol for antibiotic prophylaxis prior to TRUS-guided prostate biopsy from ciprofloxacin to ciprofloxacin and cefpodoxime. The objective of this study is to compare the rate of infectious related complications in patients who received ciprofloxacin to those who received ciprofloxacin and cefpodoxime.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify males who underwent TRUS-guided prostate biopsies from 2011 to present. The following data will be collected via chart review for males who underwent this urologic procedure: patient age, current medications by class, comorbid conditions, class and strength of prophylactic antibiotics used and number of doses of antibiotics prescribed. If patients were admitted post-operative for an infectious related complication within 30 days following their procedure, data collected will include: admitting diagnosis, physical exam findings, relevant lab findings, antibiotics received, and culture sensitivities. Infectious related complications are defined as symptomatic urinary tract infection with fever, sepsis or bacteremia. All data will be recorded without patient identifiers and confidentiality will be maintained. The reviewers will compare the rate of infectious related complications in males who received ciprofloxacin, the original antibiotic regimen, to ciprofloxacin and cefpodoxime, the updated antibiotic regimen.

7-212

Title: Efficacy and safety of warfarin use in atrial fibrillation patients at a moderate risk of stroke in a U.S. veteran population: a pilot study

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Purpose: Current practice guidelines recommend either warfarin or aspirin for atrial fibrillation patients who are at a moderate risk of stroke, which is classified by a CHADS2 score of 1. The objective of this study is to determine the safety and efficacy of warfarin use compared to non-warfarin use in patients with atrial fibrillation at a moderate risk of stroke.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify patients who have a diagnosis of atrial fibrillation. The CHADS2 score will be determined for every atrial fibrillation patient, and only those patients with a CHADS2 score of 1 will be included. These patients will then be stratified into a warfarin group and a non-warfarin group. The following data will be collected: patient age, gender, ethnicity, atrial fibrillation diagnosis, history of hypertension, history of diabetes, history of stroke, history of congestive heart failure, history of major bleed requiring transfusion, current medications, and any contraindications or reported adverse reactions to warfarin. All data will be recorded without patient identifiers and maintained confidentially. The reviewers will determine the relationship between the efficacy and safety of using warfarin in atrial fibrillation patients who are at moderate risk for stroke.

7-213

Title: Impact of Pyxis Medstation 4000 on operational management and patient care delivery in public health hospitals

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Purpose: Currently, public health hospitals in the Commonwealth of Massachusetts use Pyxis Medstation 2000 for medication storage and dispensing. Medication errors coupled with a suboptimal inventory management system may increase costs for the state Department of Public Health and contribute to delays in medication administration. As a result, there is a barrier to optimal patient care. The objective of this study is to assess the impact of a large systems implementation of Pyxis Medstation 4000 on operational management and patient care delivery, as defined by medication error rate and efficiency of automated medication management.

Methods: Two large hospitals upgrading to Pyxis Medstation 4000 will be included in the study. This study will be submitted to the department's Institutional Review Board for approval. Pre-implementation and post-implementation study data will be collected at each site. The cost of inventory will be determined from the same day of the week at each site. The average time required for preparing fills, filling and retrieving medications from Pyxis will be collected daily over a two-week period. Data on medication errors will be collected three months prior to and three months after the upgrade. To obtain the aforementioned study metrics, data will be extracted from medication safety reports, time-tracking, and Pyxis reports. All data will be recorded without patient identifiers and maintained confidentially. Statistical analysis will assess margin of improvement of the system upgrade. With the system upgrade, investigators anticipate improved patient care delivery as observed by a reduction in medication error rate, mean time for the pharmacy team to prepare medications for Pyxis fills, mean time for pharmacy technicians to refill the Pyxis, and mean time for nurses to pull medications prior to administering to patients. In addition, improved operational management will be measured by reported overall cost reduction.

7-214

Title: Impact of a pharmacist-initiated pain management intervention on post-operative pain in orthopedic patients

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Purpose: It is estimated that 80% of post-surgical patients experience pain during their post-operative stay. Poorly controlled post-operative pain can lead to the development of chronic pain, delay healing, prolong hospital stay, and decrease patient satisfaction and hospital reimbursement rates. Many institutions implemented different initiatives in order to improve post-operative pain management. This purpose of this study is to measure the impact of a pharmacist intervention on post-operative pain management in patients who are admitted for an orthopedic procedure at a community hospital.

Methods: This study will be submitted to the Institutional Review Board for approval. The study will be a quasi-experimental design that will compare pain scores between a retrospective control group and a prospective intervention group. Pharmacists and nurses will be provided education on how to optimize pain management in orthopedic patients. The electronic medical record will be reviewed to identify patients who were admitted to the orthopedic unit and received counseling from a pharmacist. The pre-intervention group will include patients admitted from January 2013 to April 2013. The post-intervention group will consist of patients admitted from December 2013 to March 2014. The following data will be collected: gender, age, home pain medications, admission diagnosis, pain scores, length of hospital stay, incidence of adverse effects associated with opioid use, and number of interventions made by the pharmacist. All data will be recorded without patient identifiers and maintained confidentially. The primary outcome will be the number of times the patient’s actual pain score meets the desired pain score on each day of admission. Secondary outcomes will include changes in HCAHPS scores for the corresponding months, prolongation of hospitalization due to pain, number of pharmacist interventions, and incidence of side effects associated with opioids.

7-215

Title: Comparison of broad versus narrow gram negative coverage for patients with suspected healthcare associated pneumonia (HCAP)

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Purpose: Current guidelines for the treatment of HCAP recommend empiric treatment with coverage of both methicillin-resistant Staphylococcus aureus and Pseudomonas aeruginosa; however a growing body of literature suggests that this extensive empiric coverage may not be necessary. The related increase in broad spectrum antibiotic use could potentially be associated with untoward outcomes, unnecessary drug exposure and additional drug related toxicity. The objective of this study is to determine if empiric therapy with broad spectrum gram negative coverage is non-inferior to more narrow, community acquired pneumonia regimens.

Methods: This study will be submitted to the Institutional Review Board for approval. Patients admitted to BIDMC between January 2008 and July 2013 will be identified based on empiric antibiotic regimens of vancomycin plus either cefepime or piperacillin-tazobactam or receiving azithromycin plus ceftriaxone or levofloxacin with or without ceftriaxone (CAP therapy). Patients will be included as having HCAP based on radiographic findings as well as two or more of the following: fever or hypothermia, leukocytosis or leukopenia, new or worsening dyspnea or cough, pleuritic chest pain, increased sputum production or abnormal auscultatory findings in addition to a HCAP risk factor. The primary outcome measure will be clinical improvement/cure with secondary outcomes including 30 day mortality. Demographic information, relevant past medical history, HCAP risk factor(s), admission labs and relevant physical exam findings, severity of illness (pneumonia severity index and Charlson comorbidity index) and available microbiologic data will be collected and compared between groups. Categorical variables will be compared with Fishers exact test and continuous variables with Wilcoxon rank-sum. Risk factors for clinical failure, infection with a resistant organism and receipt of initially inappropriate therapy will be evaluated using logistic regression.

7-216

Title: Assessing the role of a pharmacist on the selection and knowledge of non-prescription medications provided to patients through point-of-care consultations

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Purpose: As the role of a pharmacist has evolved in the past decade, it is a pharmacists responsibility to educate and counsel their patients regarding, not only, prescription medications, but also non-prescription medications. Having the most direct relationship with their patients, community pharmacists have the potential to make a dramatic difference in their patients overall health status. The primary objective of this study is to assess the role a pharmacist plays on the selection of non-prescription medications during a point-of-care consultation. The secondary objective is to assess the patients knowledge on the specific non-prescription medication.

Methods: This study will be submitted to the Institutional Review Board for approval. The point-of-care service will occur in two community pharmacies within the same community chain in Massachusetts. Patients found in the front store viewing any non-prescription medication including over-the-counter products, herbal and dietary supplements, patients that present themselves to the patient consultation room, or drop-off, pick-up, and pharmacy consultation windows at the pharmacy, and patients eligible for MTM services will be included in this study. A thorough consultation will include collecting a patients age, sex, allergies, current disease states and medications, as well as chief complaint after informed consent is documented. Additional information such as a patients current knowledge of the selected product such as active ingredients, warning, side effects, and directions of use will be gathered. All data will be recorded without patient identifiers and confidentiality will be maintained. Data from each patient will be evaluated to be included in the studys descriptive analysis. The reviewers will assess how many patients were receptive to a pharmacists consultation, how many interventions were made, how many patients changed their intended purchases after the consultation, and how many patients did or did not have previous knowledge of their intended purchase.

7-217

Title: The Impact of a Pharmacist-Led Intervention Program to Discontinue Stress Ulcer Prophylaxis After Risk Factors for Bleeding are Resolved in Critically Ill Patients

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Case Report: Stress ulcer prophylaxis (SUP) is initiated in critically ill patients with risk factors for gastrointestinal (GI) bleeding. SUP may be inappropriately continued in patients who no longer have risk factors for GI bleeding and potentially expose patients to adverse events such as pneumonia and Clostridium difficile-associated diarrhea. The purpose of this study is to determine whether a pharmacist-led intervention can reduce the continuation of stress ulcer prophylaxis without an indication in patients transferred from critical care units to general medicine floors. The primary outcome will be the difference in the incidence of inappropriate continuation of stress ulcer prophylaxis for general medicine patients transferred from critical care units prior to and following implementation of a pharmacist-led intervention program. Retrospectively, information will be gathered from medical records of patients admitted to the critical care unit with an order for SUP and were transferred to the general medicine floor. The medical record information will be used to determine the percentage of patients continued on SUP without meeting criteria during the same time period one year prior to initiation of the intervention program. Prospectively, the intervention program will consist of a daily review of whether each patient on SUP in the critical care unit meets the predefined criteria for SUP use and a subsequent recommendation to the physician to discontinue SUP when criteria are not met. Secondary outcomes will include the difference in the incidence of pneumonia and Clostridium difficile-associated diarrhea, the rate of SUP continuation without an indication upon discharge, the percentage of pharmacy recommendations resulting in discontinuation of inappropriate SUP, and a cost analysis of SUP utilization.

7-218

Title: Development and implementation of a pharmacist-managed vancomycin protocol at a community teaching hospital

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Purpose: Vancomycin has been used increasingly in the treatment of Staphylococcus aureus infections due to the rise in infections caused by methicillin-resistant strains. The management of vancomycin dosing and pharmacokinetic monitoring was identified as an area for improvement in patient care. The goal of this project is to quantify the benefits of pharmacist intervention in the dosing and monitoring of vancomycin via a pharmacy managed protocol.

Methods: This study will be submitted to the Institutional Review Board for approval. A protocol will be developed for the management of vancomycin by the infectious diseases team. Doctors will be able to request that a pharmacist reviews and follows a given patient. Patients on vancomycin with a goal trough of 15 to 20 micrograms per liter, with unstable renal function, receiving treatment courses beyond three days, on hemodialysis, who are morbidly obese, or who are at a high risk for nephrotoxicity will be included. Pharmacists will follow these patients, and will recommend laboratory tests, such as a vancomycin level and serum creatinine and provide a recommendation for changes to the dose as necessary to ensure that they remain at both a therapeutic and safe trough level. Information regarding the patients disease state being treated, the doses of vancomycin administered, the times doses were given, the levels taken, and the time at which levels were drawn will be collected. A sample of past patient data for vancomycin use will be taken from the electronic medical record system. This data will be compared to data collected after implementing this protocol to assess the impact of pharmacist intervention on vancomycin dosing and monitoring.

7-219

Title: Impact of a Closed-System Transfer Device on Workplace Contamination, Occupational Exposure, and Duration of Antineoplastic Drug Preparation

Primary Author: Brittany Westwood**,** St. Joseph's Hostpital, 3001 W. Dr. Martin Luther King Jr. Blvd, Tampa, FL 33607; **Email:** Brittany.Westwood@baycare.org

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Purpose: The primary objective is to evaluate effectiveness of a closed-system transfer device in reducing pharmacy workplace contamination. Secondary objectives include reduction of occupational exposure and impact of a closed-system transfer device on preparation time of antineoplastics. This study will take place in the oncology pharmacy satellite of an 870 bed, not-for-profit, acute care hospital.

Methods: This will be a prospective comparative study. Baseline measurements of workplace contamination and employee exposure will be compared to those taken after the implementation of a closed-system transfer device. Workplace contamination will be measured via surface wipe samples. Eleven surfaces in the satellite pharmacy will be analyzed six times for cyclophosphamide, ifosfamide, 5-fluorouracil, docetaxel, paclitaxel and methotrexate. Pharmacy personnel exposure will be measured in consenting employees, six times throughout the study. Blood, saliva, and hair samples will be collected and analyzed for chemotherapy exposure. Duration of antineoplastic preparation will be observed and documented for selected formulations of cyclophosphamide, methotrexate, and paclitaxel both before and after device implementation, in order to evaluate the impact on workload.

7-220

Title: Implementing standardized pharmacist notes in the electronic medical record to demonstrate the value of pharmacists in a community academic medical center

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Purpose: Current literature indicates that ineffective communication among healthcare professionals is a leading cause of adverse events and patient harm. Pharmacist documentation of comprehensive medication management in the electronic medical record (EMR) is designed to improve collaboration and communication among healthcare professionals. Currently in this hospital, pharmacists document interventions in an electronic database, while other professionals document in the EMR using a SBAR format (situation, background, assessment, and recommendation). The objective of this study is to implement pharmacist notes in the EMR using a SBAR format to align with comprehensive medication management, provide more effective communication, and optimize patient outcomes.

Methods: This study will be submitted to the Institutional Review Board for approval. A standardized pharmacist note using a SBAR format will be developed and utilized to document in the EMR. This note will include the following: indication, medication dosing, monitoring parameters, and recommendations. Pharmacist competencies will be developed to ensure standardization of documentation; then implementation will begin on one unit and be expanded to all inpatient areas. To compare the impact of the pharmacist note, at least one hundred patients will be selected during a three month period before and after the implementation. Inclusion criteria will be adult patients that require a pharmacist intervention who are on anticoagulants and/ or targeted antibiotics. Data collection will include patient demographics, allergies, dosing information, laboratory data, clinical interventions/notes reported by pharmacists and related outcomes. The primary outcomes will include: number of pharmacist interventions/notes, types of interventions/notes, time per note, length of hospital stay, 30-day readmission, and cost. Data, before and after the implementation, will be analyzed and compared to demonstrate the influence of pharmacist documentation in the EMR. Results will be presented to the pharmacy and therapeutic committee.

7-221

Title: Antibiotic choice and duration in association with Clostridium difficile infection in a tertiary academic medical center

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Purpose: Clostridium difficile is the major cause of infectious nosocomial diarrhea in the United States, accounting for 20-30% of cases. Decreased quality of life and financial burden are among the negative consequences of Clostridium difficile infection (CDI). Previous literature has attributed certain antibiotics (i.e., quinolones) with having a higher propensity to cause CDI; however, a health care institution may benefit from knowing its specific antibiotic-associated CDI patterns based on its antibiotic formulary and patient population. This study aims to determine the type and exposure of antibiotic that is associated with the highest CDI incidence at a tertiary academic medical center.

Methods: This is a retrospective, chart review study. Patients who received antibiotic therapy during the period from 2010 to 2012 will be assessed for type and duration of antibiotic, and presence of nosocomial CDI. Patients who developed CDI will be considered as cases, and the control population will be patients who received antibiotic therapy but did not develop CDI. Factors such as age, acid suppression therapy, use of antineoplastic agents, and length of hospital stay will be assessed. The study was approved by the local institutional review board.

7-222

Title: Pharmacist intervention to increase hepatitis B vaccination rates in adults with diabetes in two patient-centered medical homes

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Purpose: The American Diabetes Association (ADA) updated its guidelines in 2013 to recommend all adult patients with diabetes receive the hepatitis B (HBV) vaccination series. The objective of this study is to determine if a pharmacist intervention can improve adherence to the ADA guidelines and increase HBV vaccination rates in adult patients with diabetes ages 19-59 in two patient-centered medical homes. We hypothesize that a greater percentage of patients will receive at least 2 doses of HBV vaccine in the prospective cohort compared to the historical cohort.

Methods: This study will be submitted to the Institutional Review Board for approval. This is a multi-centered, open label, prospective study that will be completed using a historical cohort as a control. The historical cohort will be identified using a query of the electronic medical record systems at each health center to determine HBV vaccination status of all patients seen from January to August 2013 with a diagnosis of diabetes ages 19-59 years and will serve as our baseline. A prospective cohort of patients with the same inclusion characteristics will be enrolled from October 2013 to April 2014. During this time, patients identified as unvaccinated will be screened for eligibility. Members of Clinical Pharmacy Services will educate providers and eligible patients regarding the importance of HBV vaccinations. Patients can refuse vaccination. Once enrolled, patients will be scheduled for administration of the first vaccine and follow up vaccinations at 1 and 6 months. The primary outcome will be comparison of the percent of patients who have received at least 2 doses of HBV vaccine in the prospective cohort versus those in the historical cohort. Data collected will include medical record number, diagnoses, age, gender, race, and HbA1c.

7-223

Title: Teaching residents how to conduct a network meta-analysis: an alternative residency research project

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Purpose: Pharmacy residencies accredited by the American Society of Health-System Pharmacists require that residents demonstrate project management skills, which includes conducting effective research and preparation of a final manuscript worthy of publication. However, regional resident publication rates range from 4 to 33 percent. Most projects are observational studies, which though inexpensive, are laborious and potentially unfeasible to complete within the residency year. In order to deliver significant results and stimulate publication rates in a timely fashion, alternative study designs should be explored. The objective of this study is to describe the utility of a network meta-analysis in providing conclusive results efficiently.

Methods: We describe the process of performing and teaching residents to conduct a network meta-analysis. This multi-step process begins with differentiating between pairwise meta-analysis with network meta-analysis. A topic is assigned to the resident who then assesses the topic using the FINER criteria: feasibility, interest, novelty, ethics, and relevance. Once the research question has satisfied these criteria, a comprehensive literature is conducted in Medline, Embase, and Cochrane to identify all pertinent and available literature. Next, investigators filter through the studies using pre-defined inclusion and exclusion criteria. Data from each included study is abstracted and entered into a central database (Aggregate Data Drug Information System [Addis] version 1.16) for analysis. Finally, interpretation and manuscript preparation completes the process. We will present examples of this process to illustrate the feasibility of conducting a network meta-analysis during the residency year.

7-224

Title: The pharmacist role in improving glycemic control in the intensive care setting

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Purpose: Preventing dysglycemia in the intensive care unit (ICU) decreases mortality and morbidity. Generally, protocolized treatment plans are adopted to maximize safety and efficacy in the care of hospitalized patients including in glycemic control. Staff education and compliance are key elements to a protocols success. Limited data suggest when pharmacists monitor dysglycemia in conjunction with an institutionalized protocol, that it can improve compliance with the protocol and result in better glycemic outcomes. The studys objective is to investigate if pharmacists involvement in educating staff and assuring protocol compliance can improve the safety and efficacy of glycemic control in the ICU.

Methods: The study will be conducted at a community-based teaching hospital and will be submitted to the Institutional Review Board for approval. Hospital guidelines for glycemic control are in place in the form of an electronic order sheet where results are interpreted and managed by nursing without pharmacy consultation. It will consist of retrospective pre- and prospective post-intervention periods, each of which will endure 3 months. Subjects will be studied for the duration of insulin therapy in the ICU. The following data will be collected: patient demographics, past medical history, medication history, admitting service, diagnosis, APACHE II score, SOFA score, blood glucose (BG), incidences of hypoglycemia, hyperglycemia and noncompliance with the protocol. The intervention shall include the following: print daily BG reports of ICU patients on insulin; review all dosage changes in response to BG results; record the time lapsed before the change was implemented; review overall compliance with the institutionalized protocol and provide individual recommendations on a case per case basis. The pharmacist shall educate nurses about protocol compliance in instances where variance is perceived. The incidence of hypoglycemia, hyperglycemia, number of pharmacist interventions and protocols noncompliance will be measured as an outcome and will be compared with pre-intervention values.

7-225

Title: Perioperative versus prophylactic use of antibiotics for external ventricular drains with or without intracranial pressure monitors

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Purpose: External ventricular drains (EVDs) are used to relieve elevated intracranial pressure by diverting cerebral spinal fluid (CSF) out of the cranium. The prophylactic initiation of antibiotics has been customary for the prevention of CSF infections. Prophylactic antibiotic regimens include: perioperative (just prior to placement of an EVD), within the first 24 hours, within the first 3 days, or for the entire duration while an EVD is in place. The purpose of this study is to evaluate the risks and benefits of administering cefazolin or vancomycin perioperatively for the first 24 hours versus prophylactically for the entire duration of the EVD.

Methods: The study has been submitted for Institutional Review Board approval. Upon approval, the electronic billing system will be utilized to identify patients who have had an EVD inserted. The electronic medical record system will be used to identify patients who have received an EVD and antibiotics perioperatively and/or prophylactically. The following data will be collected: patient age, gender, height, weight, renal function tests, date of antibiotic initiation, dose of antibiotic, microbiology cultures and sensitivities, methicillin resistant staphylococcus aureus (MRSA) and vancomycin resistant enterococcus (VRE) colonization swab results, clostridium difficile toxin test, cerebral spinal fluid labs, medication list, past medical history, reported adverse medication events, length of stay and death. The primary outcome of this study is to assess the adverse events and complications related to cefazolin or vancomycin use between the two groups and incidence of CSF infections. Secondary outcomes include length of stay and mortality assessed by Glasglow Coma Score, Acute Physiology and Chronic Health Evaluation II and Injury Severity Score.

7-226

Title: Statin dosing post myocardial infarction: adherence to PROVEIT-TIMI22 in a non-teaching community hospital

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Purpose: To assess whether statin use/dosing practices in patients discharged with a diagnosis of acute myocardial infarction conform to the recommendations published in the PROVEIT-TIMI 22 trial. To determine if low-density lipoprotein (LDL) measured within the first 24 hours of myocardial infarction (MI) impact statin use/dosing.

Methods: This study is designated as a performance improvement project and per site institutional review board practices does not require review. All patients discharged from January through June 2013 with Diagnosis Related Group codes 280-282 for acute myocardial infarction were identified. Data elements collected include: utilization or non-utilization of a statin prior to admission, dose potency of prior statin (low, medium, high), and change in dose potency from prior statin therapy. Other data elements include the initiation of a statin post MI and dose potency of initiated statin. If available, a LDL value within the first 24 hours of MI was also identified. LDL levels are categorized into less than 70 mg/dL , 70-124 mg/dL, greater than 124 mg/dL or not available. Results will be reported as the percentage of patients receiving high dose statin post MI; this includes patients that changed from none/low/medium to high dose statin post MI and patients that continued on high dose statin therapy. The percentage of patients discharged with none, low, medium or high dose statin therapy will be recorded for all LDL groups.

7-227

Title: Impact of an interdisciplinary controlled substances committee on opioid prescribing within a patient centered medical home

Primary Author: Rachel C Bastien**,** Penobscot Community Health Care, 992 Union St, Bangor, ME 04401; **Email:** rbastien@pchc.com

Purpose: Prescription opiate abuse and addiction are prevalent issues throughout the United States. Since 1999, there has been a 400% increase in deaths caused by prescription opioid overdose in women, and a 265% increase in men. As a result, the FDA has required more stringent product warnings and Risk Evaluation and Mitigation Strategy (REMS) programs in an attempt to combat rampant prescription drug misuse. In light of Maines growing controlled substance abuse epidemic, an interdisciplinary controlled substances review committee was formed within a patient-centered medical home to help guide and improve the prescribing of controlled substances.

Methods: The Controlled Substances Initiative (CSI) was formed in March 2013, comprised of the executive medical director, chief quality officer, pharmacy residents, physicians, and mid-level practitioners. Patients were referred to committee review based on provider or care team requests, patient request, and patient outliers identified through internal quality audits including high morphine equivalent daily doses (MEDs) and multiple controlled substance prescriptions. Patient cases were reviewed and presented by pharmacy residents to the committee. Evidence-based recommendations generated by the team were communicated to the responsible prescriber. A retrospective chart review assessed CSI recommendations consistency and changes in controlled substance prescribing patterns, including MED, absolute number of C-II prescriptions filled, and absolute number of codeine and hydrocodone prescriptions filled. The patient charts were assessed for indication, daily morphine equivalent dose, duration of therapy, and concurrent use of other controlled substances. This review was approved by an internal ethics committee.

Results: One hundred four of the patients reviewed by CSI over a 3 month period were included in this retrospective chart review. Eighty seven patients were on narcotics at the time of initial review, with a mean MED of 281.64 mg. By August 2013, the mean MED for this group of patients decreased to 179.97 mg. Fifty five patients narcotic doses were reduced, and 21 patients were tapered off of narcotics entirely. Dose decreases were recommended by the CSI in 83.9% of reviewed patients and consequently occurred in 63.2% of patients. Subsequent to CSI review, 11 patients (8.3%) opted to leave the practice. In-house pharmacy data reflected a 17.7% decrease in the number of C-II prescriptions filled between June-August 2012 and June- August 2013. Prescriptions for codeine and hydrocodone products were reduced by 24.4% during the same time period.

Conclusion: The interdisciplinary Controlled Substances Initiative team provided prescriber support and education, defined clear expectations for patients, and allowed for more objective and evidence-based use of controlled medications, as evidenced by the decrease in mean MED prescribed and the overall reduction in controlled medication prescriptions.

7-228

Title: Evaluating potential patient cost reduction following restricted use of granulocyte-colony stimulating factors in intermediate risk febrile neutropenia chemotherapeutic regimens

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Purpose: Reducing cost is a popular topic in healthcare reform. Several methods have been proposed to reduce the cost of cancer care. One approach is to restrict the use of granulocyte-colony stimulating factors (G-CSFs). This project evaluates the effect of a policy change in 2011 restricting administration of G-CSFs from all intermediate risk febrile neutropenia (FN) chemotherapeutic regimens to patients on regimens with intermediate risk for FN only with curative intent. Primary outcomes are patient cost and safety. This research is exempt from investigational review board approval because it evaluates previously collected data.

Methods: This retrospective chart review included patients at a multidisciplinary, American Society of Clinical Oncologys Quality Oncology Practice Initiative certified, regional cancer care center with an ambulatory infusion clinic on intermediate risk FN regimens based on National Comprehensive Cancer Network classification. Regimens were excluded due to low prescribing, local classification of high risk for FN, and regimens containing bleomycin due to a drug interaction with the formulary G-CSF, pegfilgrastim. Patients started on an intermediate risk regimen with the associated malignancy were identified and followed for the duration of therapy or until the end of the calendar year, whichever came first. Patients were followed for an additional three weeks to ensure episodes of FN from treatments given at the end of the calendar year were included. The control group included any patients started on the regimen in 2011, the intervention or restriction group included patients started on the regimen in 2012. Measured outcomes included: inpatient cost per FN episode; outpatient cost; aggregate cost of hospital admissions for primary febrile neutropenia; secondary neutropenia with infection; and secondary neutropenia with other comorbidities. The groups will be evaluated by aggregate annual cost and average admission incidence for FN using Students t-test.

7-229

Title: Pharmacy managed pill counts

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Purpose: One approach to decreasing prescription opioid abuse is to closely monitor patients who may be diverting, or selling, their prescription medications. Random pill counts allow health care providers to see a snapshot of a patients medication usage, and may help identify non-reassuring behaviors surrounding the use of these medications. This project was designed to involve pharmacy personnel in this quality improvement measure to identify patients who are not using their prescription drugs appropriately. The objective of this study is to analyze the effect pharmacy managed pill counts will have on compliance with organizationally required annual pill counts.

Methods: This study was approved by the clinical management committee. Patients on chronic opioid medications will be randomly selected and called into the pharmacy for a pill count. The pharmacist conducting the pill count will calculate how many pills the patient should have remaining based on data from the patients last fill. This will be compared to the actual amount counted during this encounter. Those numbers will then be reported to the provider and the pill count will be determined either a pass or a fail. The site chosen to pilot the study had 247 patients on chronic opioid therapy who should be receiving annual pill counts. Of the 247 patients eligible for pill counts only 116 (46.9%) had received one in the past year. Going forward we will be measuring the improvements seen in percentage of eligible patients receiving required pill counts. Other data being assessed includes pill count fail rates and percentage of patients tapered off opioids after a failed pill count.

7-230

Title: Pilot study of pharmacy driven medication reconciliation in the emergency department at a new community hospital

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Purpose: Medication reconciliation is a tremendous undertaking that has resulted in downstream efforts to mitigate errors. By resolving medication discrepancies at admission, patient safety is improved. The purpose of this study is to develop and implement a pharmacy driven medication reconciliation process in the emergency department and to determine if it improves the current nonstandard approach. This project is exempt from investigational review board review as it is evaluating a process improvement and all results are deidentified.

Methods: This prospective, randomized study at a 192 bed nonprofit community hospital examines medication reconciliation for admissions from the emergency department. Randomly selected patients are assigned to the treatment group (pharmacy driven medication reconciliation) or control group (documentation of current practice) during the evening shift. Treatment group patients will undergo medication reconciliation performed by a pharmacist. The total number of medications (over-the-counter, herbal, recreational, prescription) found during the patient/family interview, the total number of medications found when contacting applicable resources, the total number of discrepancies addressed, and time to complete this process are compared between groups using a data analysis tool. This comparison examines total medications and discrepancies, including: medication, dose, frequency, route of administration, duplications, and omissions. In addition, potential workflow improvement in the treatment group is assessed via a nursing and physician survey before and after implementation to provide global and case specific feedback.

7-231

Title: Identification of patients who received vancomycin despite being low risk for development of methicillin-resistant Staphylococcus aureus (MRSA) infection

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Purpose: A national Veterans Affair (VHA) vancomycin de-escalation policy was developed to enhance the appropriate and safe use of antimicrobials in patients at low-risk for MRSA infections. Recent data suggest that nares surveillance cultures may be used to identify patients at low-risk for clinical MRSA infection and subsequently guide vancomycin de-escalation. In 2007, VHA implemented a MRSA nares screening to reduce the rates of healthcare associated MRSA transmission. Although transmission decreased, vancomycin days-of-therapy exceeded all other antimicrobial therapy within the VHA. The purpose of this project is to identify how many patients continue to receive vancomycin despite meeting the de-escalation criteria.

Methods: A retrospective chart review will be performed on patients that received vancomycin therapy from September 1, 2012 to August 31, 2013 for greater than 72 hours with a negative MRSA screen upon admission. Data collection points will include: days of vancomycin therapy, medication allergies, MRSA admission and discharge swab results, hospitalization within 12 months, culture pathogen and susceptibility and site of infection. The data will be analyzed to identify the proportion of patients that met the vancomycin de-escalation policy but were treated with vancomycin for longer than 72 hours.

7-232

Title: Healthcare consumption and characterization of veterans receiving high dose opioid therapy: identification of opportunities for system improvement

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Purpose: The management of pain represents a national challenge. A recent report from the Institute of Medicine (IOM) shows that over $635 billion is spent annually on medical treatment for 100 million American chronic pain sufferers. Chronic pain affects more people than heart disease, cancer and diabetes combined. Moreover opioid dependence and addiction have become a major public health concern. The objective of this study is to improve safe prescribing practices of opioids and to identify healthcare resource consumption in high dose opioid therapy patients.

Methods: Prior to implementation, the Institutional Review Board will evaluate this project for approval. The primary outcome of this study is to characterize common traits shared by veterans receiving high dose opioid therapy and to identify variables that may impact their consumption of healthcare resources. Historical data obtained from the Veterans Integrated Service Network (VISN) 1 Opioid Safety Report will be used to identify patients taking greater than 100 mg morphine equivalents per day. Data collected will include: patient demographics, medication history, medication allergies, urine toxicology screens, pill counts, presence of narcotic contract, comorbidities/past medical history including medical, psychiatric and substance abuse, emergency department visits, primary care provider visits and pain clinic visits. All data will be recorded without patient identifiers and maintained confidentially. A secondary outcome will be to identify opportunities for system improvements in the prescribing and monitoring of high dose opiate therapy.

7-233

Title: Efficacy of a nurse driven, electronic, diabetic ketoacidosis protocol: a comparative analysis

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Purpose: Eastern Maine Medical Center is a 411 bed tertiary hospital in Northern Maine. Using a standardized protocol for the treatment of diabetic ketoacidosis (DKA) has been shown to result in better patient outcomes and reduced treatment costs. Modeled after a protocol previously published by S. Bull et al. at a large teaching institution, EMMC implemented a nurse driven, comprehensive, electronic insulin infusion calculator and DKA orderset in November 2012. The purpose of this study is to evaluate whether our electronic insulin calculator and DKA orderset has non-inferior outcomes compared to the urban teaching hospital upon which our protocol was based.

Methods: This is a prospective, non-inferior, observational trial to be conducted between November 2013 and April 2014. Institutional Review Board approval will be obtained. All adult critical care patients will be reviewed daily; those admitted to critical care and prescribed the DKA protocol will be included in the study. Medication administration records will be reviewed for compliance to the protocol and the following patient data will be collected: age, gender, anion gap and blood glucose upon admission, time to anion gap closure, intensive care unit length of stay (LOS), hospital LOS, episodes of the anion gap reopening, and incidence of hypoglycemic episodes while on the protocol. Time to anion gap closure, episodes of hypoglycemia, and episodes of gap reopening will be analyzed and compared to the outcomes of the Bull article.

7-234

Title: Evaluation and impact of pharmacist interventions on prescribing habits for urinary tract infections (UTIs) in a walk-in care clinic

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Purpose: Urinary tract infections (UTIs) are a major source of antimicrobial exposure. Resistance rates to commonly used antimicrobials are rising. Fluoroquinolones are second-line therapy, but are often prescribed for this indication. Fluoroquinolones should be reserved for more serious infections. A pharmacist intervention can review the current guidelines and remind prescribers of proper antimicrobial selection. This study aims to ultimately lower resistance to fluoroquinolones by increasing utilization of first-line agents.

Methods: A retrospective review of prescribing habits were analyzed 3 months prior to a pharmacist intervention using the electronic medical record (EMR), and sorted by diagnosis codes for urinary tract infection. Prescriptions associated with those visits were also utilized and analyzed. A pharmacist intervention was given to the prescribers in the form of a presentation describing the current guidelines, as well as a treatment algorithm within the EMR. The treatment algorithm highlighted the use of first-line agents as appropriate agents. A post-intervention prospective analysis was performed over a period of 3 months after the pharmacist intervention analyzed the diagnosis codes and prescriptions associated with UTIs. Comparing prescribing habits before and after a pharmacist intervention allows for an assessment of the impact. Also, a survey was sent to prescribers to measure the impact and effectiveness of the intervention. This review was approved by an internal ethics committee.

7-235

Title: Medicare Part B licensure: evaluating its potential in a federally qualified health center (FQHC) outpatient pharmacy system

Primary Author: Kari L London**,** Penobscot Community Health Care, 992 Union Street, Bangor, ME 04401; **Email:** klondon@pchc.com

Purpose: Prescription costs in chronic diseases constitute a significant economic burden for the elderly population. Medicare Part B coverage is an important means of mitigating prescription costs on covered products. The most common Medicare Part B covered products filled in the outpatient pharmacy setting are diabetic testing supplies and nebulizer therapy. The purpose of this study is to determine if potential prescription capture of Medicare Part B eligible products is sufficient to justify the expense of Medicare Part B licensure in a small, FQHC associated outpatient pharmacy system.

Methods: A retrospective chart review of the FQHC electronic medical record (EMR) was conducted for the period from September 1st, 2012 to August 31st, 2013 to determine the size of the eligible patient population and total number of qualifying prescriptions. For inclusion into the study patients were required to have a healthcare provider at the FQHC, be 65 year of age or older, have Medicare Part B coverage, and have either a diagnosis of diabetes and prescriptions for diabetic testing supplies, or diagnosis of COPD and prescription for nebulizer medications. An EMR query was also performed to determine the volume of qualifying diabetic testing supply and nebulizer prescriptions sent to the FQHC associated pharmacies during the study period. This data was utilized to extrapolate the potential increase in qualifying prescription capture rate based on the pharmacy systems prescription capture rate on all FQHC provider prescriptions. Return on investment was determined by the potential increase in earnings on qualifying prescriptions from baseline, minus enrollment fees and administrative costs. This review was approved by an internal ethics committee.

7-236

Title: Medication use evaluation (MUE) of insulin glargine and neutral protamine hagedorn (NPH) insulin in patients with type 2 diabetes mellitus (DMII).

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Purpose: DMII is characterized by beta cell function impairment, insulin resistance and insulin deficiency. The American Diabetes Association recommends a target glycated hemoglobin (HgA1C) of less than seven percent for the majority of patients. This target is often achieved using basal insulin therapies such as insulin glargine and NPH insulin. Insulin glargine is preferred due to its ability to mimic physiologic basal insulin as well as its once daily dosing. The objective of this study is to retrospectively compare efficacy of insulin glargine and NPH insulin based on HgA1C lowering as well as the incidence of severe hypoglycemia with each agent.

Methods: A MUE will be performed, summarizing the use of insulin glargine and NPH insulin in patients 18 years or older with ICD9 codes for DMII listed as a diagnosis. Patients who received either insulin agent during the time period June 2012 to June 2013 will be randomly identified for enrollment into this review. Patients who have previously trialed alternate basal insulin therapies will be excluded. Data will be collected using Computerized Patient Record System and will include: Patient age, gender, weight, medication allergies, relevant comorbidities, medication history, a diagnosis of DMII, practice setting, type of insulin used, use of prandial insulin, use of oral diabetic agents, recent hospitalizations, HgA1C, blood glucose, serum creatinine, and blood urea nitrogen. The efficacy of above therapies will be evaluated based on percent of HgA1C lowering. Using the T test for statistical analysis. Safety will be assessed by incidence of severe hypoglycemia, defined as hospitalization for a hypoglycemic event. The results of the MUE will be used to assess the facilitys use of insulin glargine and NPH insulin and for identifying potential needs for changing providers prescribing practices.

7-237

Title: IV acetaminophen as a primary pain management strategy in postoperative cardiac surgery patients

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Purpose: The FDA approved IV acetaminophen in 2010 as a part of the multimodal approach for the management of mild to moderate pain, moderate to severe pain with adjunctive opioids and the reduction of fever. The objective of this study is to retrospectively evaluate the use of IV acetaminophen in the management of pain in post cardiac surgery patients as measured by a reduction in opioid use and thus prevention of opioid related adverse events.

Methods: Prior to initiation, the study will be submitted for IRB approval at our institution. All patients receiving IV acetaminophen following cardiac surgery; CABG or valve replacement/repair, from January 1 to May 31, 2013 will be included. This patient population will be compared with patients who underwent the same types of procedures from January 1 to May 31, 2012, prior to a standardized 72 hour course of IV acetaminophen being implemented. The following demographic data will be collected: age, gender, home pain medications, and type of procedure. The primary endpoint is defined as total consumption of opioids. Secondary endpoints include total length of stay, time to extubation, use of antinausea medications, number of episodes of vomiting, presence of delirium and days to bowel movement. The primary outcome of the study is a reduction of rescue opioid use between the two comparison groups.

7-238

Title: Clinical characteristics of patients requiring blood transfusions in total hip and total knee arthroplasty: a case control study

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Purpose: Tranexamic acid, an antifibrinolytic, was added to our hospital formulary for prevention of perioperative blood loss and blood transfusion in total hip (THA) and total knee arthroplasty (TKA). Our orthopedic surgery department historically transfuses < 3% of patients undergoing THA or TKA. The objective of this study is to identify those patients undergoing THA or TKA who are most at risk for blood transfusion and may benefit from tranexamic acid use perioperatively.

Methods: A matched-case control study will be performed by identifying patients who have received blood transfusions in the past 3 years and comparing them to control subjects who have not received transfusions. This study will be submitted to the Institutional Review Board for approval. An electronic financial database and a single surgeons database will be used to identify patients who underwent a THA or TKA from August 1st 2010 to July 31st, 2013. The following data will be collected: patient age, gender, race, BMI, comorbidities, creatinine clearance, type of surgery, American Society of Anesthesiologists physical status class, type of anesthesia, pre-operative medications, pre-operative hemoglobin, change in hemoglobin postoperatively, estimated blood loss, duration of surgery, occurrence of blood transfusion, type of product transfused, number of units transfused, and mortality. All data will be recorded without patient identifiers and maintained confidentially. Characteristics between both groups will then be compared and analyzed to establish a relationship between all independent variables and the need for postoperative transfusion.

7-239

Title: Pediatric specific or hospital wide antibiogram to determine empiric therapy in pediatric urinary tract infection

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Purpose: Urinary tract infections (UTI) occur in 2.6% of children, and result in more than 13,000 hospital admissions annually. Though common, treatment guidelines defer to local susceptibility patterns. Many pediatric hospitals within larger institutions have cumulative antibiograms combining pediatric and adult pathogen susceptibilities. Studies, however, suggest that adults and children can have different susceptibility patterns. The purpose of this study is to determine whether a pediatric specific antibiogram (PAB) is a more accurate predictor of urinary pathogen susceptibility than a hospital wide antibiogram (HAB), as well as to determine which antibiotic agents produce the best empiric coverage of UTIs in children.

Methods: This study will be submitted to the Institutional Review Board for approval. Pediatric patients treated for UTI will be identified through the medical records department via ICD 9 codes. Data will be obtained from the electronic medical record system. The following data will be collected: age, gender, location, allergies, comorbidities, urinary tract anomalies, presence of indwelling catheter, temperature, inflammatory markers, urine collection method, urinalysis results, presence of positive urine and/or blood culture, type of infection, hospital or community acquired infection, presence of sepsis, prior UTI, recurrence during study period, recent antibiotic exposure, UTI antimicrobial prophylaxis, pathogen isolated, pathogen susceptibilities to antibiotic agents, antibiotics used, treatment of colonization versus infection, treatment duration, time from conversion of intravenous to oral medication, and length of infection related hospital stay. All data will be recorded without patient identifiers and maintained confidentially. Susceptibility patterns of the three most common pathogens identified by data extraction will be compared to the HAB and PAB. The reviewers will also identify risk factors associated with infections involving pathogens resistant to empiric treatment. Data collected will be used to determine future empiric therapy of UTI at our institution.

7-240

Title: Naloxone administration used as a trigger to detect inpatient opioid induced adverse drug events

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Purpose: Adverse drug events account for up to 140,000 deaths in the United States each year. The Institute of Healthcare Improvement recommends using triggers to identify adverse drug events. An example of a trigger is administration of an antidote, such as naloxone, for opioid toxicity reversal. The 2012 Joint Commissions Sentinel Event Alert stated that opioids are one of the drugs most frequently associated with adverse drug events. The objective of this study is to evaluate the use of naloxone as a trigger drug to detect potential instances of opioid induced adverse drug events in hospitalized patients.

Methods: The electronic medical record system will be used to generate reports built to identify patients who have received naloxone from January 1, 2013 through August 31, 2013. The following data will be collected: patient age, gender, weight, hospital service, opioid and route of administration, opioid dose, cumulative opioid dose, number of naloxone doses and the dosages administered, and the respiratory rate just prior to naloxone administration. If available, creatinine clearance and whether or not the patient is opioid nave will be documented. Opioid nave will be defined as a patient who has not received chronic opioid treatment in the past or present and has not received acute opioid treatment for greater than 1 week. Multiple naloxone administrations for the same adverse drug event will count as one incident. Cumulative opioid dose will be the total oral morphine dose equivalent over the past 24 hours prior to naloxone administration. All data will be recorded without patient identifiers and maintained confidentially. The positive predictive value of naloxone as a trigger for an opioid induced adverse drug event will be calculated based on the data collected and patient chart review.

7-241

Title: Implementation of a pharmacy led medication education and post-discharge follow-up service

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Purpose: Pharmacy driven transitions of care models are shown to significantly improve quality of care and reduce 30-day hospital readmissions. Faced with uncertainty and declining reimbursements, dedicating new full time pharmacist positions for medication counseling services is prohibitive for many health care facilities. The purpose of this project is to develop and implement a high quality, comprehensive pharmacy medication education service through the coordination of pharmacists, pharmacy residents, technicians and student pharmacists.

Methods: Prior to commencement, this administrative project will be submitted to the Institutional Review Board for approval. The medication counseling service will be comprised of a pharmacy team including pharmacists, residents, technicians and student pharmacists to provide comprehensive medication education and post-discharge follow-up. Patients will be identified based on an admitting diagnosis of CHF, COPD, or pneumonia. The data to be collected include: date of admission, previous hospitalization dates, admitting diagnosis, room number, medical record number, and enrollment in an Accountable Care Organization. This information will be stored electronically and updated daily to track new admissions, completed education, and discharges. Pharmacy technicians and student pharmacists will conduct medication reconciliation for the identified patients. Counseling services will be provided by the pharmacy team members using established medication education materials and will involve an overview of the disease state, medication review, lifestyle modifications, and an assessment of medication adherence. Documentation of education and interventions will occur in the electronic medical record. A follow-up phone call will be provided within 72 hours of discharge. The number of counseling sessions and interventions will be quantified using descriptive statistics.

7-242

Title: Serum clozapine levels: Whats their function? An exploratory study of the clinical utility of serum clozapine levels and their association with outcomes and adverse effects.

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Purpose: Clozapine therapy still remains the gold standard in treatment refractory schizophrenia, however, its use is limited secondary to adverse effects and a paucity of knowledge on its proper optimization. Clozapine and norclozapine levels are routinely utilized in the monitoring of patients on this medication. While consensus on a lower therapeutic threshold exists, there is no such evidence to support an upper threshold (i.e. the level past which no additional clinical benefit is gained in proportion to the additional side effect burden). This becomes clinically relevant when contemplating the cut-off for non-responders and timing the necessity of augmentation.

Methods: Serum clozapine and nor-clozapine levels will be drawn at least yearly on veterans (currently n=24) entering the outpatient clozapine clinic. The most recent serum clozapine level will be dichotomized into two groups of higher and lower serum clozapine/norclozapine levels via a median split. We will examine the differences between the low and high clozapine serum level groups in adverse effects using the Treatment emergent Symptom Scale (TESS), schizophrenic symptomatology via the Brief Psychiatric Rating Scale (BPRS), depression using the PHQ-9, and on the frequency of psychoactive drug augmentation, re-hospitalizations, and visits to emergency services. We will also compare the indices of metabolic and other possible clozapine related adverse effects between the groups. Frequency data will be analyzed using chi-square goodness of fit and serum level group differences on interval level data will be examined using analysis of variance. The critical alpha-level will be set at $p < .05$. Discriminant function analysis (or logistic regression analysis as appropriate) can also be used to determine which factor relates most to the difference in serum drug levels. Finally, we will examine the relationship between serum drug levels and interval level measures to determine if the relations of interest are linear or curvilinear.

7-243

Title: Utilization of pharmacy residents to provide technician-based continuing education

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Purpose: In 2014, the Pharmacy Technician Certification Board (PTCB) continuing education (CE) requirements will be changing for certified pharmacy technicians that need recertification. State regulations also requiring technician-specific CE have created a need for technician based education programs. This unique scenario provides an opportunity for a State affiliate of ASHP to utilize PGY1 Residents to provide educational training for technicians while having the residents work towards a required accreditation goal centered on medication-related training.

Methods: Two hospital PGY1 Residents were invited by the Rhode Island Society of Health-System Pharmacists (RISHP) (the ASHP state affiliate) to participate in a partnership with a chain drugstore in providing a technician-based CE program. The pharmacy had a goal of providing continuing education to its technician staff in support of the changing technician recertification and Rhode Island licensure requirements. RISHP provided the residents with a technician membership needs assessment survey that indicated a need for educational training in the area of immunizations and the Rhode Island Prescription Monitoring Program. A 2 credit Accreditation Council for Pharmacy Education (ACPE) accredited program was developed with RISHP that centered on a Review of Controlled Substance Prescribing laws, the Prescription Monitoring Program, and Preventing Drug Diversion and Pharmacy Driven Immunizations that was offered at the chain drugstores regional office. The Residents worked in conjunction with their Residency Program Director to achieve compliance with ASHPs Residency Learning System (RLS) required Outcome R5: Provide medication and practice-related education/training. The program was offered to the chain drugstores employees, the RISHP technician membership, and non-member technicians.

Results: The CE program was attended by 18 pharmacy technicians. Each presentation was approximately 55 minutes in length and allowed for a discussion period at the end. The program was generally well received. The learning objectives were met based an evaluation survey. The technicians accurately completed the self-assessment questions. The RISHP Director for Program Development has requested the residents participation in future CE programs.

Conclusion: A residency program is designed to provide residents with different teaching experiences, including providing education for technicians. Changing requirements for technician-based Continuing Education provided a way for PGY1 Residents to meet one of their RLS goals and work in conjunction with an ASHP State affiliate that is in support of the ASHP strategy for developing a qualified pharmacy technician workforce. Statewide pharmacy organizations are a major source of live CE sessions. By

providing CEs, residents not only gain valuable teaching experience, but also bring positive attention to their residency program and their institution.

7-244

Title: Duration of abstinence from smoking with bupropion versus varenicline in a VA tobacco cessation clinic: an evaluation of efficacy and cost-effectiveness

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Purpose: To determine which treatment option for smoking cessation, sustained-release bupropion or varenicline, is more cost effective, as well as to analyze which medication is associated with longer abstinence from tobacco use after completion of a single treatment course.

Methods: A retrospective chart review of patients who received bupropion sustained-release (SR) or varenicline from January 2008 to January 2013 at a Veterans Affairs (VA) tobacco cessation clinic. A follow-up telephone survey will be conducted to determine the duration of abstinence from tobacco use after completion of treatment. The primary endpoint will be the duration of abstinence from smoking. Secondary endpoints will include monthly medication costs, medication completion rates, and treatment failure (defined by relapsing tobacco use).

Results: In progress.

Conclusion: In progress.

7-245

Title: Medication adherance and the effect on metabolic parameters in schizophrenic patients in a veteran population

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Purpose: To assess the effect of medication adherence on metabolic parameters in schizophrenic patients in the veteran population.

Methods: This pilot study will be a retrospective electronic chart review of data collected from veterans with co-morbid diagnoses of schizophrenia presenting with either disorganized thoughts and/or positive symptoms and diabetes mellitus type II (DMII) or hyperlipidemia (HLD) between September 2012 to September 2013. The primary outcome of this study is to assess the effect psychosis has on medication adherence as illustrated through management of metabolic disturbances common in this patient base. Parameters to be looked at include; refill history for psychotropic, antidiabetic and antilipidemic medications, BPRS scores, HbA1c, fasting lipid panels, liver function tests, and body mass index. Secondarily the study would assess admission rates to an inpatient psychiatric facility, the use of assistive devices, (such as applications for smart phones,) and enrollment in assistive programs. Patients must carry a diagnosis of schizophrenia along with at least one metabolic diagnosis, (DMII or HLD.) Patients will be excluded if they never presented with positive schizophrenic symptoms or disorganized thought, active illicit drug use, or reside in an assisted living community.

7-246

Title: Flaws within medication reconciliation: a concern for patient safety

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Case Report: This case report highlights the importance of proper medication reconciliation upon admission to the hospital and the potential for gaps in the medication reconciliation process. Patient MT was admitted to the hospital for a fall and subsequently had surgery. MT presented with a past medical history of atrial fibrillation. No medication reconciliation was entered by nursing at admission, but a medication list populated the medication history field from a previous admission. This should have been deleted upon admission per hospital policy and a new medication list should have been entered. The current hospitals electronic medical record allows for evergreening or pulling forward of a patients past medication history from a previous admission, policy dictates that the previous medication history should be deleted to allow for an accurate list displaying the current admission. The medication reconciliation process at this small community based hospital is a team effort that is the responsibility of nurses, pharmacists and physicians. In an effort to provide more accurate and timely medication histories, pharmacists work on medication reconciliation during weekdays. Priority is placed on obtaining and verifying medication histories obtained during off-hours. MT was prescribed amiodarone for her hospital stay, but dronedarone was documented in her home medications from a year prior. MT was a poor historian due to dementia and could not verify her medications. MTs husband was also hospitalized and could not provide any information at the time. MTs son was contacted and provided information that MTs medications were brought to the hospital for review. Pharmacy reviewed the medications and determined the patient was currently taking dronedarone as prescribed by her cardiologist. Her retail pharmacy was contacted to verify the prescription was filled consistently. The pharmacy also verified amiodarone had not been filled for more than a year. Upon examination, it was determined the physician who ordered the amiodarone had used an outdated list provided by MTs primary care provider. MTs atrial fibrillation was poorly controlled during her hospital stay and this could have been the contributing factor. EKG initially showed normal sinus rhythm shortly after admission without ST changes. The second EKG revealed atrial fibrillation with rapid ventricular rate and probable ischemic ST depressions. A 2008 Sentinel Event Alert from the U.S. Joint Commission, the organization that accredits American hospitals to provide healthcare services, states that "As health information technology (HIT) and 'converging technologies'the interrelationship between medical devices and HITare increasingly adopted by health care organizations, users must be mindful of the safety risks and preventable adverse events that these implementations can create or perpetuate. Technology-related adverse events can be associated with all components of a comprehensive technology system and may involve errors of either commission or omission. As this case suggests, even with a medication reconciliation program in place, many shortcomings remain within the protocol if prescribers and other team members are not following the approved policies and procedures. HIT

systems needs to understand the danger pull-through information can present in a clinical setting and errors of commission can dangerously affect patient outcomes. Further education needs to be given to providers and care givers to highlight the discrepancies found between lists provided by the primary care physician, medication claims data, specialists and patient/caregiver reported medications. An emphasis needs to be placed on listening to the patient or the patients caregiver because it is a true reflection of what the patient takes at home and could have a direct effect on the approach to care within the hospital as well as instructions given at discharge. Prescribing inappropriate medications based on misinformation could have a very detrimental effect on a patients health.

7-247

Title: Pharmacy resident (PGY-1) assists in an antimicrobial stewardship program at a Veterans Affairs hospital

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Purpose: Antimicrobial stewardship (AMS) is a program that strives to improve the care of patients treated with antimicrobial agents by maximizing efficacy and minimizing toxicity. It also protects the public health by promoting practices that increase likelihood of infection resolution and prevent the emergence of antibiotic resistance. By optimizing drug choice, dose, route, and duration of therapy, AMS programs aim to improve patient outcomes, reduce costs, and decrease emergence of antibiotic resistance. The objective of this project is to assess the interventions made by a PGY-1 pharmacy resident participating in AMS over a 6 week period.

Methods: Project is in progress and resident is currently on week 5 of 6. PVAMC is a teaching hospital with 119 beds. The AMS team consisted of two pharmacy infectious disease (ID)fellows, one ID attending physician, one PGY-1 pharmacy resident, one professional year 4 pharmacy student, and one ID pharmacist. The resident, first year ID fellow, and pharmacy student performed prospective chart reviews of all patients in the hospital on antimicrobial therapy. Clinical data such as lab work, culture results, prior antibiotic use or hospitalizations, allergies, diagnostic tests, and patient history and symptoms were collected and reviewed. Interventions were identified and then presented first to the pharmacy team and then to the ID physician. Interventions that were accepted were communicated to the patients care team via documentation in the electronic medical record. The pharmacy resident followed up to determine if recommendations were accepted. This project will present the results of the pharmacy resident's efforts on the AMS team.

Results: Work in progress. As of week 4 of 6, pharmacy resident has reviewed 37 patients and made 18 interventions that were implemented by the team. A complete presentation and assessment of these interventions will be present in the final work.

Conclusion: Work in progress

7-248

Title: Comparative analysis of glycemic control in diabetic patients followed by primary care physicians, pharmacists, home based primary care, and an interdisciplinary diabetes care team.

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Purpose: There is a growing need for interdisciplinary teams in health care. Such teams improve coordination of services for complex patients and empowers patients to become more active in their own care. Diabetes is the 7th leading cause of death in the United States and treatment is often difficult since positive outcomes are closely related to patient behaviors. For successful treatment, many patients require intensive therapies using a team based approach. This retrospective chart review will compare glycemic control in patients followed by physician, pharmacist, and nurse practitioner run clinics and compare the results with an interdisciplinary diabetes care team.

Methods: Medical records of patients with diabetes who were treated with oral anti-diabetics and/or insulin from September 1, 2012 to September 1, 2013 and followed by home based primary care clinics, pharmacist run metabolic clinics, primary care physician clinics, and interdisciplinary diabetes care team were reviewed. For the primary objective, each patient chart was evaluated for glycemic control based on the change in glycosylated hemoglobin level from the beginning to the end of the study period. Patients were categorized as reaching their goal using age specific glycosylated hemoglobin levels of less than 7% for patients less than 80 years old, less than 8% for patients 80-89 years old, and less than 9% for patients 90 years old or greater. Average decrease in hemoglobin was also recorded for each group at the completion of the study. Secondary objectives included an analysis of lipid profile and blood pressure from the beginning to end of the study. For lipid profile, patients were reported as being at goal based on low density lipoprotein less than 100mg/dl, high density lipoprotein greater than 40 mg/dl, triglycerides less than 150mg/dl, and total cholesterol less than 200 mg/dl. Blood pressure characterized as at goal if less than 140/80mg/dl.

Results: In progress

Conclusion: In progress

7-249

Title: Evaluation and implementation of best practices for intravenous admixture and drug distribution in a community hospital setting

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Purpose: Best practice is defined as a set of guidelines, ethics, or protocols that represent the most efficient and safe course of action. Authorities such as the Institute for Safe Medication Practices (ISMP), United States Pharmacopeia (USP) Chapter 797, and the American Society of Health-System Pharmacists (ASHP) have released evidence-based best practice guidelines that emphasize patient safety in a health care setting. The purpose of this project is to evaluate the current policies, procedures, and practices in intravenous (IV) admixture preparation and drug distribution and implement sustainable best practice models in a community hospital setting.

Methods: Initial exploration of current best practices will include data review from the ISMP, ASHP, and USP Chapter 797 for background of current literature. After review, a risk identification phase will evaluate areas for improvement and best practice implementation. To accomplish this task, a survey will be given to pharmacy staff to gather information concerning areas of possible risk. After collection of data, a gap analysis will be conducted to identify and assess for possible improvement in best practice and standardization of medication preparation and distribution. Gathering information from all stakeholders and constructing a cost verses benefit analysis will take place in this stage. After planning and assessment, the implementation phase will consist of the creation and augmentation of policies, procedures, competencies, and standardization of IV admixture and drug distribution processes. Outcome measures include number of: risks to patient safety identified, policies and procedures created and changed, and pharmacy staff competencies implemented. Future dates will be set to assess the ongoing value of this project.

7-250

Title: Pharmacist management of uncontrolled hypertension though collaborative agreement

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Purpose: Hypertension (HTN) is the most common chronic disease treated by primary care physicians (PCP). HTN affects about 30% of US adults, with an estimated annual cost of $50 billion due to cost of care and complications. There is clear evidence that controlling HTN prevents cardiovascular events and decreases mortality and morbidity. There are many medication treatment options that are well tolerated, effective, and inexpensive. Unfortunately, only about 50% of treated patients are within recommended goals for therapy. This study is to evaluate the clinical and cost reduction impact of pharmacist practicing in a collaborative agreement with PCP.

Methods: Utilization of a pharmacists intervention to optimize drug therapy will help patients reach treatment goals. Cost reduction may be achieved through increased prescribing of lower cost medications when appropriate. The physician will select patients not at HTN goals for inclusion in the study. Exclusion criteria will include, but not limited to: Alter mental status, hospice, active drug abuse, or any other patient deemed not appropriate for the program by the pharmacist. Patients will have an initial telephone interview with the pharmacist to explain the purpose of the program and to obtain consent for participation. Patients will then be scheduled for a pharmacist visit, where patient education and drug regimen optimization will be performed. A follow up visit will be scheduled monthly. Each patient will be contacted twice via telephone to assess adherence, ADRs, and current blood pressure between follow up visits. Patients will be followed for 3 months and will be evaluated for change in blood pressure over the course of the intervention as well as rates of adverse drug reactions and satisfaction with the program.

7-251

Title: Implementation of clinical pharmacy services in the emergency department of a community hospital

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Purpose: The Emergency Department (ED) is considered a high-risk environment for many reasons. The healthcare team is usually unfamiliar with the patient and may not have a complete medical record. Many patients present with urgent problems that are time-sensitive. Medication orders are often verbal, and are dispensed directly without prospective pharmacy review of orders. This challenging and high-stress environment can lead to drug errors. I plan to conduct a one month quality improvement study to analyze the presence of a pharmacist in the ED. The purpose of this study is to pilot and introduce clinical pharmacy services to the ED.

Methods: The approval of this project was waived by the Institutional Review Board because it is a quality improvement project. The ED pharmacist will provide services to help reduce medication errors, while meeting the institutions specific needs including: involvement in all code blue (advanced cardiac life support), rapid response, and stroke situations; patient assistance program identification; selection of patients for Project RED (Re-Engineered Discharge) monitoring and follow-up; provision of drug information; contribute to Antimicrobial Stewardship Program; medication reconciliation; ED order entry, including prospective and retrospective reviews; staff and patient education; and monitor medication related adverse events. Pharmacist interventions and time spent in each activity will be tracked. Each intervention will be assigned a soft dollar amount to aid in the business proposal of instituting a permanent ED pharmacist position. After the month long pilot, a short survey will be administered to emergency department staff regarding their perception of pharmacy services rendered during the pilot program.

7-252

Title: Evaluation of glycemic control methods in patients receiving total parenteral nutrition

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Purpose: Total parenteral nutrition (TPN)-induced hyperglycemia has been associated with increased complications and mortality in hospitalized patients. Improved glycemic control can be achieved through the use of insulin, but it is unclear if the best method is utilizing a sliding scale regimen, a basal/bolus regimen, or admixed into the TPN formulation. The purpose of this study is to assess the relationship between method of insulin administration, carbohydrate load, and glycemic control in patients receiving TPN.

Methods: This study will be submitted to the Institutional Review Board for approval. From January 1, 2013 to June 30, 2013, 141 patients 18 years and older were admitted at a 336-bed, private non-profit teaching hospital. Fifty patients will be randomly selected and evaluated on glycemic control while receiving TPN. The following data will be collected: patient age, gender, TPN duration, TPN volume, dextrose content of TPN, steroid use, diabetes mellitus status, blood glucose readings, and amount and type of insulin used. Patients will be excluded from the study if they received an insulin infusion while on TPN. A protocol change is currently being implemented at our hospital which places insulin directly into the TPN solution. A second retrospective analysis will be conducted, using the same parameters, evaluating the glycemic control following the practice change.

7-253

Title: Pharmacist collaboration in a perioperative clinic for elective orthopedic surgeries

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Purpose: Non-emergent, elective surgery permits clinicians to thoroughly screen patients preoperatively, and allows for collaboration amongst healthcare professionals to provide safe and effective care. Beginning in September 2013, elective orthopedic surgery patients with moderate- to high-risk of cardiovascular complications were referred to a hospitalist-managed perioperative clinic. The purpose of this quality improvement project is to demonstrate the added value of pharmacy services. An initial focus will be placed on collecting accurate medication lists, optimizing pain management, and increasing pain therapy education in efforts to decrease length of stay and readmission rates, minimize postoperative complications, and improve patient satisfaction.

Methods: This quality improvement project will be submitted to the Institutional Review Board for approval. Patients referred to the perioperative clinic will undergo presurgical assessment via phone or in person. At that time, pharmacy staff will perform medication reconciliation. Emphasis will be placed on identifying medications to be held prior to surgery, collecting an accurate history of pain medication usage, and educating patients on pain management throughout the surgical process. Immediately following surgery, the pharmacist will monitor pain management and provide therapy recommendations based on patient history and clinical improvement. Prior to discharge, comprehensive discharge pharmacy services will be offered. This service includes medication reconciliation of discharge medications, filling prescriptions at the outpatient pharmacy, and discharge medication education. Any recommendations or successful interventions made by pharmacy staff will be documented in the electronic medical record and coded using a specific intervention type to allow for data extraction. A retrospective analysis conducted by pharmacy staff will compare patients seen before and after the implementation of the perioperative clinic. Subgroup analyses will be performed on those patients seen in person preoperatively versus those called by telephone, and on those who accept comprehensive discharge pharmacy services versus those who do not.

7-254

Title: Evaluation of treatment and clinical outcomes for patients with primary and secondary plasma cell leukemia- A retrospective single-center study

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Purpose: The purpose of of our study is to conduct a retrospective survey of patients with primary and secondary plasma cell leukemia treated at UW Medicine. The primary objective is to report the chemotherapy treatment regimens utilized to treat plasma cell leukemia and the associated clinical outcomes. Secondary objectives include identifying the dosing and adverse effects associated with the chemotherapy regimens. There are currently no standard regimen-specific guidelines, so this data will benefit the institution by identifying agents, regimens, and doses that have been utilized safely and/or effectively in this patient population.

Methods: We are conducting a retrospective chart review of patients with primary and secondary plasma cell leukemia who were treated at the University of Washington Medical Center, Harborview Medical Center, and Seattle Cancer Care Alliance over a 10-year time span. The International Myeloma Working Group consensus guidelines recommend treating plasma cell leukemia with intensive bortezomib-based treatment, so retrospective data collection will start at the time of bortezomib's FDA approval in September 2003 and continue through September 2013. Subjects will be identified through diagnosis codes of multiple myeloma or plasma cell leukemia, and a circulating plasma cell count >20% and/or an absolute count greater than 2 X 10^9/L plasma cells in peripheral blood. Data collection will include patient demographic information, diagnosis and staging, chemotherapy regimens received, and clinical outcomes of therapy. Data regarding chemotherapy agent dosing, tolerability, and adverse effects will be collected. Specific clinical outcomes include disease status after treatment, time to disease progression, time to death, and whether patient proceeded to hematopoietic stem cell transplant.

7-255

Title: Implementation and evaluation of a discharge pharmacy service at a community hospital

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Purpose: As hospitals face changes in insurance reimbursement models, reducing patient readmissions has become a national and local priority. Pharmacy involvement in transitions of care processes have been shown to be beneficial in reducing hospital costs and improving patient outcomes. The purpose of this project is to identify feasible pharmacy interventions based on best practices in transitions of care literature, implement selected interventions among high-risk patients, and examine the value that pharmacy brings to the patient discharge process.

Methods: This study will be submitted to the Institutional Review Board for approval. The initial phase of this project is to conduct a pilot program among patients at high-risk for hospital readmissions. The pilot program will utilize clinical pharmacy services to provide discharge medication reconciliation and counseling. Additionally, the program will conduct post-discharge follow-up telephone calls to answer patient questions and identify areas for pharmacy interventions. The second phase of this project will be to quantify the value of pharmacy services in the discharge process. The following data will be collected: 30-day readmission rates at baseline and after implementation of the pilot program, patient satisfaction scores in regards to pharmacy services during hospitalization, and the quantity and type of pharmacy interventions performed. All data will be recorded without patient identifiers and maintained confidentially. The results of the pilot program will be utilized to justify a pharmacy discharge service within a community hospital setting.

7-256

Title: Prevalence of serotonin syndrome in patients taking tramadol and antidepressants in a patient population at a Veterans Affairs Health Care System

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Purpose: Tramadol is frequently prescribed with antidepressants such as serotonin reuptake inhibitors to control pain. A possible side effect of this combination is serotonin syndrome (SS), a potentially life-threatening toxic state characterized by a triad of symptoms - altered mental status, neuromuscular tone abnormality, and autonomic hyperactivity. The incidence and severity of SS in patients taking tramadol and antidepressants are of clinical interest to prevent adverse reactions. The purpose of this study is to evaluate the rate and severity of SS in a patient population at a Veterans Affairs Health Care System (VAHCS) who take tramadol and antidepressants concurrently.

Methods: This project has been submitted to the Investigational Review Board for approval. A retrospective chart review of Fiscal Year (FY) 2011-12 will identify patients at a VAHCS who were prescribed tramadol with one or more of the following antidepressants: citalopram, fluoxetine, paroxetine, sertraline, mirtazepine, and venlafaxine. Adherence to agents in the identified population will be assessed by refill data. Adherence to regimen is defined by filling medications greater than or equal to 75% of the time during FY 2011-12. Progress notes in the electronic health records of identified patients will be reviewed for the incidence and severity of SS. The following data will be collected: patient age, gender, doses of tramadol prescribed, doses of antidepressants prescribed, and the presence and the severity of SS, if present. All data will be recorded without patient identifiers and maintained confidentially. Data collected in this project will elucidate any association between severity of SS and dosages of tramadol and antidepressants in this patient population. Descriptive statistics of the rates of SS and corresponding doses at which SS occur for each antidepressant and for tramadol will be generated and analyzed.

7-258

Title: Increasing hydroxyurea adherence in children with sickle cell disease

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Purpose: Hydroxyurea use has proven beneficial in children with sickle cell disease, leading to decreased disease related complications and lower health care costs. Medication non-adherence is a problem throughout the United States, and pediatric populations with chronic diseases are no exception. The objective of this study is to improve adherence and prescription refill rates of hydroxyurea therapy through the use of a pharmacist driven intervention.

Methods: This prospective study is in the process of going through the Institutional Review Board for approval. A local pediatric ambulatory clinic provides care for a population of children with sickle cell disease and those patients who have been actively prescribed hydroxyurea will be eligible for this study. After gathering informed consent from all participants, the following baseline data will be gathered: adherence rates based on prescription fills per year, hospitalizations, and emergency department visits. All the information recorded and presented will be de-identified and kept confidential. Patients will then participate in an educational meeting during which they will receive an electronic pill bottle which will be programmed to issue a variety of reminders set to their desired daily dosing time. Data will then be reassessed four months later to determine the impact of the intervention and track changes in adherence rates from baseline data.

7-259

Title: Developing an inpatient pharmacist competency model for accountability and growth

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Purpose: Healthcare practitioners should achieve and maintain relevant, up to date clinical competencies, and be able to perform within their scope of practice to ensure delivery of the highest quality, safety, and care for each patient. Currently no formal ongoing competency assessment of inpatient pharmacy protocols and standards of practice exists at our 336-bed tertiary teaching hospital. This process improvement project will develop a continuing professional development (CPD) program to assess pharmacists baseline knowledge of a protocol, identify areas for improvement, create educational tools, and then measure success of interventions for our institution to optimize standard of care among pharmacist.

Methods: This study is exempt from Institutional Review Board approval. The goal of this project is to design and implement an inpatient pharmacist competency program focusing on prescriptive authority protocols. The concepts of continuing professional development, Plan-Do-Study-Act (PDSA), and peer-review process will provide the framework for program delivery. The institutions argatroban protocol will be used for a pilot to design learning activities and interventions. An experienced-based design survey will be conducted to assess baseline working knowledge and feelings associated with protocol use. Pharmacist documentation will be reviewed to determine if reasons for non-compliance with protocol are documented. Data will be compiled to determine areas of opportunity and need for educational tools. After completion of educational interventions, several PDSA cycles, and peer-review process the pharmacists will be re-evaluated on knowledge level and feeling toward protocol use. Implementation of this process improvement will prove beneficial to reduce pharmacist variation in protocol use and improve overall patient outcomes as well as provide the platform for future pharmacist competency assessments.

7-260

Title: Prescribing patterns, safety and efficacy of U500 insulin in a veteran population

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Purpose: The increasing prevalence of diabetes and severe insulin resistance create a growing need for use of concentrated U500 insulin. Although several algorithms for U500 exist in literature, there are no established guidelines for U500 insulin use. Criteria for use of U500 insulin varies from site to site. The objective of this study is to assess prescribing patterns, safety and efficacy, and to provide guidance for appropriate use of U500 insulin.

Methods: This retrospective chart review study has been submitted to the Institutional Review Board for approval. The electronic medical record will identify patients with diabetes that are using U500 insulin. For safety analysis, the following information will be collected: evidence of hypoglycemic events, patient understanding of their regimen, and patient adherence to their regimen. For patient demographics and efficacy analysis, the following information will be collected: patients age, gender, ethnicity, duration of diabetes, insulin regimen prior to U500, U500 insulin dose, A1c, and weight. Provider documentation and electronic U500 medication request consults will be reviewed to determine rationale for U500 initiation, initial dose conversion, titration patterns, frequency of patient follow-up, and patient reported satisfaction post U500 insulin conversion. Documentations of pharmacy education will be assessed. Information collected will help determine whether U500 is utilized appropriately, and will provide direction on updating criteria for use, and monitoring parameters. The results of this study will also aid in producing standardized templates, for providers and pharmacists who are involved in the care of patients on U500 insulin.

7-261

Title: Evaluation of newly implemented neonatal abstinence syndrome (NAS) treatment protocol using clonidine as an adjunct therapy to morphine in a community hospital: a retrospective review

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Purpose: Evidence suggests the addition of clonidine to opiate therapy for the treatment of neonatal abstinence syndrome (NAS) may reduce length of treatment and total opiate dose requirement. This study aims to compare the effectiveness of our institutions historic use of morphine monotherapy to the new protocol implementing morphine-clonidine dual therapy. We intend to determine if the addition of clonidine to morphine for the treatment of NAS is associated with a decrease in length of therapy and an overall reduction in the total amount of morphine a neonate will require during hospitalization.

Methods: This study is in the process of being reviewed by the Institutional Review Board. The electronic medical record (EMR) will identify patients with NAS via diagnosis related group (DRG). Neonates with a DRG related to NAS born at our institution between January 1, 2011 and May 31, 2014 who received treatment with morphine, with or without clonidine, will be included. Neonates will be excluded for iatrogenic NAS. The following data will be collected retrospectively from the EMR: patient age, gender, weight, maternal age, maternal drug use history, maternal urine toxicology, neonate urine toxicology, meconium toxicology, NAS scores, vital signs, day of life treatment initiated, length of treatment, doses of morphine and clonidine administered, required morphine dose escalations, and concomitant disease states. All data will be recorded without patient identifiers with confidentiality maintained. Mean length of treatment and total morphine requirements will be compared between neonates receiving morphine and neonates receiving both morphine and clonidine. The data analyzed will then be used to validate or optimize our NAS protocol.

7-262

Title: Evaluation of pharmacist intervention at discharge on reducing medication adverse events and 30-day readmission rates

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Purpose: Transitions of care are at the forefront of improving health outcomes and reducing health care costs in the United States. Pharmacists are the ideal health care professional to identify and resolve medication-related problems that occur as patients transition between health care settings. Medical inpatients are at high risk for medication related errors at discharge due to changes in drug therapy treatment plans during hospitalization. Medication errors can cause adverse events resulting in readmissions to the hospital. The purpose of this study is to determine if pharmacist intervention can effectively reduce medication adverse events and 30-day readmission rates.

Methods: This study will be submitted to the Institutional Review Board for approval prior to initiation. The pilot study will include adult internal medicine patients discharged from a medical residency teaching service at a community hospital. Patients will be excluded if they do not receive primary care at the residency affiliated family medicine clinic or if they are not being discharged to home. Upon discharge, a pharmacist will accurately and completely reconcile medications, identify barriers to medication adherence, educate patients and caregivers about the drug therapy treatment plan, and supply a pharmacy to pharmacy discharge summary of medication therapy problems. Additionally, the pharmacist will assist with transition to outpatient follow-up appointments in collaboration with medical residents to provide an electronic hand-off that will summarize the hospital course, detail medication changes and provide monitoring requirements. The number, type, and importance of pharmacist interventions will be described. Study patients will be followed for 30-days to calculate readmission rates. Rates for study patients will be compared to the hospital baseline readmission rate for the same time period.

7-263

Title: The impact of opioid quantity limits on claim volume and drug spend in a Medicare Part D population: the experience of a regional HMO.

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Purpose: In 2012, amid growing concerns of unsafe opioid use, CMS established health plan requirements for opioid utilization management in Medicare Part D (MPD) populations. In preparation, Group Health (GH) implemented opioid quantity limits (QL) within the MPD formulary. The objective of this study was to assess the effectiveness and financial impact of QLs on opioids including acetaminophen (APAP)-containing opioid products.

Methods: GH established QLs using FDA-approved maximum doses (as stated in the prescribing information), dosing frequencies, and clinical recommendations. Prior to implementation of the QL, GH did not have any limits for opioid medications. Starting January 1, 2013 QLs were applied to GHs MPD formulary. Pharmacy claims data were used to estimate the impact of opioid and APAP-containing opioid QLs in the GH MPD population from the health plan perspective. Three months of pharmacy claims data were collected before and after QL implementation. The primary outcomes of interest were the absolute changes in the proportion of opioid prescription claims above the QL, the proportion of patients with opioid claims above QL, and the proportion of total drug spend for claims above the QL. The secondary outcomes of interest were the absolute changes in the proportion of opioid claims above QL and the total drug spend for claims exceeding the QL for select opioids: APAP-containing opioid products, fentanyl patches, oxycodone immediate release (IR) and extended release (ER) products, and methadone.

Results: Before the QL implementation, 11.6 percent of all opioid claims exceeded the QL. After implementation, 2.8 percent exceeded the QL, showing an absolute decrease of 8.8 percent. The proportion of patients with opioid claims above the QL decreased by 9.2 percent. Total drug spend on claims above the QL decreased by 12.5 percent. Among all claims for APAP-containing opioid products, the proportion of claims above QL decreased by 4.1 percent. Total drug spend on claims above QL decreased by 2.8 percent. Fentanyl patch claims above QL decreased by 3.4 percent. Total drug spend for fentanyl patch claims above QL decreased by 9.5 percent. Of all claims for oxycodone IR and ER products, the proportion of claims above the QL decreased by 26 percent. Total drug spend for claims above the QL decreased by 20.1 percent. Methadone claims above the QL decreased by 2.7 percent. Total drug spend for methadone claims above the QL decreased by 9 percent.

Conclusion: Quantity limits were effective in decreasing the proportion of claims exceeding the QL which translated to a considerable decrease in number of patients and drug spend associated with those

claims above the QL. QLs on the fentanyl patch and oxycodone products were the greatest drivers affecting drug spend. The decrease in the proportion of patients above the QL suggests a possible avoidance of adverse events associated with the use of higher quantities of opioids and APAP. Using this data, GH will be expanding similar QLs to our non-MPD plans.

7-264

Title: Target drug evaluation pre and post implementation of cost data into a computerized prescriber order entry system

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Purpose: Purpose: Managing the rising costs of prescription medication is a constant challenge. This study assesses the effectiveness of alerts displaying medication cost information to prescribers at the time of order entry. These alerts have been incorporated into the hospital's computerized provider order entry (CPOE) system in an effort to promote more cost-effective prescribing of three high cost medications. A follow up survey will evaluate provider perception of these alerts. This information will allow for improvement of current CPOE interventions and streamlining of future alert implementation.

Methods: Methods: This study will be submitted to the Institutional Review Board for approval. Using a pre-post test study design we will evaluate drug dispensing records for intravenous chlorothiazide, ipratropium and fluticasone HFA formulation of meter dose inhalers. Data collection will include: Medication dispensed, dose, route, frequency, cost of medication, date of dispense, patient demographics, patient's airway status, previously received medications, frequency of alert firing, rates of alert override, and reason for alert override. Target drug utilization data prior to alert implementation will be compared to utilization after implementation. A chart review will be performed to assess appropriate drug use for overridden alerts on a sample of patients. Appropriately overridden alerts will be defined using current Pharmacy and Therapeutics Committee approved criteria for target drug substitution. Prescribers who received an alert during order entry will receive a survey assessing prescriber perception of CPOE cost alerts with focus placed on effectiveness, ease of use, clarity of alert message, impact on patient care, workflow disruption, and overall satisfaction.

7-265

Title: Assessing antimicrobial stewardship metrics: a national survey

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Purpose: Currently, there is a deficiency in national infrastructure needed to benchmark antibiotic use and antimicrobial resistance across the country. Multiple metrics to compare antibiotic consumption have been proposed in the literature. However, the prevalence of use and utility of these metrics are undefined. The purpose of this project is to clarify which antibiotic-related metrics are in use across the United States, describe the characteristics of facilities utilizing metrics and to determine which metrics could be uniformly and feasibly implemented.

Methods: This study will be submitted to the Institutional Review Board for approval. An electronic survey tool will be developed with input from members of the America Society of Health System Pharmacists (ASHP), Society of Infectious Diseases Pharmacists, and Society for Healthcare Epidemiology of America. Data collected by the survey will include: presence of an antibiotic stewardship program, antibiotic use metrics (e.g. defined daily dose), and facility characteristics such as bed size, resource allocation for stewardship, and informatics technology (e.g. barcode administration). The survey will be sent via email in January of 2014 through the ASHP membership directory specifically to individuals who have identified infectious disease and/or antibiotic stewardship as practice interests. Responses will be anonymous and data aggregated for analysis, reporting, and publication.

7-266

Title: Glycemic Control in Surgical Patients through Basal-Bolus Order Set/Protocol Implementation at MultiCare Good Samaritan Hospital

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Purpose: According to the CDC, over 20 million people have diabetes. Diabetic patients have an increased risk for post-surgical site infections especially when diabetes is uncontrolled. Additionally, adding stress during surgery increases the risk for hyperglycemic episodes. This can lead to complications during and after surgery including surgical site infections, extended length of hospital stay and mortality. For this reason, many institutions have taken a closer look at glycemic control in general surgery patients. The objective is to implement a basal-bolus order set in general surgical patients and compare findings with retrospective data collected prior to order set implementation.

Methods: The current protocol for MultiCare Good Samaritan Hospital is to change patients from oral antidiabetic agents to sliding scale insulin (SSI). If the patient is diet controlled or not diagnosed as a diabetic, they are put on an SSI regimen during their hospital stay for hyperglycemia. MultiCare Good Samaritan Hospital does not have an order set that enables providers to easily order basal-bolus insulin and sliding scale based on the total daily dose needed for the patient. Methods: First, a retrospective review of general surgical patients during the timeframe of January through March of 2013 will be conducted. Next, a basal-bolus order set will be developed during the months of October and November 2013. Education of the new protocol will be provided to all staff on the general surgical units during the month of December 2013. The staff would include but not limited to nurses, hospitalists, surgeons and pharmacists. The basal-bolus order set will be implemented early in 2014 with prospective data collection for three months. The prospective data collected post order set implementation will be compared to the retrospective review for hyperglycemia and/or hypoglycemia incidence.

7-267

Title: Evaluation of pharmacy services in outpatient cancer care clinics at a Veterans Affairs medical center

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Purpose: The use of oral chemotherapy for the outpatient management of cancer has significantly increased since 2003, following the implementation of oncology pharmacy services at a Veterans Affairs (VA) medical center cancer clinic. These services focused on intravenous chemotherapy administration, omitting a growing patient population receiving only oral chemotherapy. The purpose of this study is to perform a gap analysis of the pharmacy services provided in an outpatient cancer care program at a VA medical center that lacks an established ambulatory oncology pharmacist. The results of this study may be used to support the justification for an outpatient oncology pharmacist.

Methods: This study has been submitted to the Institutional Review Board for approval. The electronic medical records system will be used to identify the number of patients seen in the outpatient cancer clinics and the absolute number of oral chemotherapy prescriptions processed by pharmacy since 2003. The following data will be collected via retrospective chart reviews: number of oral chemotherapy related hospital admissions, emergency department visits, and deaths; number of chemotherapy prescriptions dosed inappropriately; delays in therapy due to adverse events and non-formulary drug request (NDR) processing; number of patients receiving five or more chronic medications; and number of patients taking medications listed as having a significant or critical interaction with the prescribed oral chemotherapy. This study will also evaluate data related to pharmacoeconomics, including the number of non-formulary drug requests (NDRs); costs associated with the ten most commonly prescribed oral chemotherapy agents; and inappropriate dispensing of chemotherapy including greater than 30 day supply and refills on first fill. All data will be recorded without patient identifiers and managed confidentially.

7-269

Title: An Evaluation of Electronic Formulary Drug Requests in a Veteran Affairs Health Care System Facility

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Purpose: The Department of Veteran Affairs (VA) National Formulary process provides prescribing guidance with a focused goal of improved patient safety, appropriate drug use, improved access to pharmaceuticals, promotion of a uniform pharmacy benefit, and reduction in the acquisition cost of drugs when feasible. Medications not identified as open formulary require the submission of an electronic drug request form by the provider with subsequent review and approval or denial by the pharmacist. The objective of this study is to evaluate the accuracy and documentation of the drug request forms for compliance with the VA National Formulary.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify a study subset of 100 consecutive drug request forms completed between July 1, 2013 and September 30, 2013. The following data will be collected: requested drug, justification, therapeutic failure, adverse reactions, contraindications, formulary alternatives, medication compliance, appropriate laboratory data, and past medical history. Electronic drug request forms will be reviewed to determine if appropriate justification and documentation is provided by the pharmacist. In addition, the collected data will be reviewed to determine if the decision made by the pharmacists is consistent with the VA National Formulary. All data will be recorded without patient identifier to maintain confidentially.

7-270

Title: The impact of a multicomponent intervention to reduce bivalirudin waste

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Purpose: To evaluate the effectiveness and cost savings from a multicomponent intervention to decrease inappropriate prescribing of bivalirudin for the treatment of heparin-induced thrombocytopenia (HIT). A prior study of bivalirudin use in our academic health system revealed significant waste of this costly medication. Underlying causes included variation in the performance of pre-test probability calculations and lab tests for HIT, as well as delays in stopping bivalirudin when lab tests do not support a diagnosis of HIT. A multidisciplinary task force including hematology, pharmacy, bioinformatics, and laboratory medicine was formed to improve the process of HIT testing and treatment.

Methods: We will conduct a pre-post study of a multicomponent intervention at two academic hospitals that share a common electronic health record. Multidisciplinary stakeholders met to craft institutional HIT guidelines and education was provided to clinicians on services with high utilization of bivalirudin. We will embed decision support within our computerized order set, including hyperlinks to institutional guidelines and a requirement to calculate the probability of HIT with the 4T score. Lab testing was simplified by creating reflexive panels to eliminate use of the SRA assay when the ELISA is negative, and alerts were designed to recommend management pathways based on the 4T score. We developed alerts to pharmacists when patients are receiving bivalirudin without ELISA testing or when the ELISA is negative. Outcomes of interest include bivalirudin expenditures, appropriateness of therapy, duration of therapy, and hematology consultation utilization. Patients receiving bivalirudin for indications other than HIT will be excluded. Electronic medical records and laboratory values will be used to calculate the 4T assessment score. Appropriateness of therapy, defined as a moderate to high pre-test probability of HIT, and cost savings for a three-month period after implementation of strategies will be compared to a medication use evaluation done in 2012.

7-271

Title: Development and implementation of an alcohol withdrawal syndrome management protocol

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Purpose: Alcohol withdrawal syndrome (AWS) is present on admission in approximately 15% to 20% of hospitalized inpatients. AWS can range from mild to potentially life-threatening in severity, and its management is often challenging. The objective of this study is to develop and implement a proactive, preventative approach to the management of AWS in our healthcare system.

Methods: An interdisciplinary team will be formed to facilitate assessment of current clinical practices as well as development of an alcohol withdrawal syndrome (AWS) management protocol. Initial analysis will be performed to evaluate baseline compliance with the existing AWS protocol as well as patient outcomes and length of stay. Review of literature will be completed to determine best practices with regard to AWS management. An AWS management protocol will be developed with the input of the interdisciplinary team, and an order set will be created in the electronic medical record system. Prior to updated protocol implementation, written educational materials and informational sessions will be provided to physicians, mid-level practitioners, nurses, and pharmacists in preparation for protocol introduction into clinical practice. Data prior to and after protocol initiation will be assessed and compared for rates of protocol compliance as well as patient-related factors.

7-272

Title: Medication therapy management services after discharge for heart failure and COPD patients

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Purpose: The goal of this project is to retrospectively evaluate the effect of a pharmacist-driven medication therapy management (MTM) pilot service for recently hospitalized patients in identifying and resolving drug therapy problems and reducing readmission rates. While studies have shown that MTM appointments after discharge can prevent medication therapy problems, it is not known yet if this service will reduce readmission rates. This project will investigate the potential benefits of MTM services as well as the institution-specific needs of recently discharged patients.

Methods: Hospitalized patients are eligible if they have a diagnosis of heart failure or COPD and they speak English. After discharge, enrolled patients are seen by a pharmacist for a 60 minute appointment at the clinic. Patients are asked to bring all of their medications from home with them. The pharmacist assesses the patients current knowledge about their medications and heart failure or COPD, then counsels the patient on his or her medications. The pharmacist also evaluates the patients medication regimen for clinical appropriateness of each medication, any missing medications from therapy, therapeutic duplications, adherence improvement opportunities, and cost saving opportunities. Any changes to the patients medication regimen are approved by the physician prior to implementation of the recommended change and are documented in the patients medical record. The identification and resolution of drug therapy discrepancies during the transition of care and the incidence of readmission will be assessed retrospectively to evaluate the impact of this pilot project. After IRB review, this project was determined to be Quality Improvement. The IRB provided both Waiver of HIPPA Authorization and a Waiver of Informed Consent.

7-273

Title: Evaluation of Opiate Safety Review Board (OSRB) recommendations in a veteran population

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Purpose: A newly established local Opiate Safety Review Board (OSRB) was formed and tasked with providing safe and sound clinical recommendations to improve current pain management practices in a veteran population. The objective of this study is to determine the rate of acceptance and outcomes of OSRB recommendations.

Methods: This study was submitted to the institutional review board for approval. The electronic medical record system will be used to conduct a retrospective chart review that will include patients who have undergone OSRB review. The following data will be collected: the number of providers that accept the recommendation, the number of providers that appeal the recommendation, the number of appeals from patients, and the success or failure of tapering the medications as recommended. Patients internal and external opiate refill history will be reviewed. Data collection will occur at one month and three months following an OSRB recommendation provided to the patients prescriber via the electronic record. All data will be recorded without patient identifiers to maintain confidentially. The collected data from patient charts will be reviewed to determine compliance and maintenance of treatment recommendations. The reviewers will categorize each patient as compliant with the recommendation, noncompliant but clinical modification is appropriate, or noncompliant at 3 months.

7-274

Title: Comprehensive discharge pharmacy services: retrospectively measuring outcomes related to transition of care for heart failure

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Purpose: In January 2013, our institution implemented a new Transition of Care Pharmacy Service. Growth opportunities exist within this service to assist patients who are being discharged from the acute care setting. The Comprehensive Discharge Pharmacy Service will focus on discharge counseling and prescription filling for heart failure patients. This patient population was selected because of the high readmission rate compared to other patient populations. The projects goal is to determine if implementation of this service will increase the number of prescriptions filled, discharge counseling, and patient satisfaction, while at the same time decreasing 30 day readmission rate.

Methods: This project has been approved by the Institutional Review Board as a Quality Improvement project. Patients will be stratified by the transition of care pharmacy team and scored to determine their risk of readmission. This project will include patients with a diagnosis of Heart Failure and a complexity score of > 3, who are being discharged from our institution. Patients who meet the inclusion criteria will be offered the opportunity to accept this service. Prior to discharge, a pharmacist will perform a thorough review of all the medications for each patient who has accepted the service. In addition, all new medications will be filled by the outpatient pharmacy and patient education will be provided by a pharmacist or pharmacy resident. Participants medical records will be reviewed 30-days post discharge to determine readmission rates and compare to a matched patient population from a year prior to implementation of this project. The same analysis will be done for HCAHPS scores assessing patient satisfaction.

7-275

Title: Association of vancomycin loading dose administration with time to therapeutic level

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Purpose: The Infectious Diseases Society of America considers administration of vancomycin loading doses an accepted practice in seriously ill patients. A pharmacist managed pharmacokinetic dosing service in a community hospital sought to evaluate the outcomes of administering loading doses to all patients receiving vancomycin regardless of illness severity. The objective of the study is to determine if loading dose administration of vancomycin will result in difference in time to therapeutic levels and incidence of adverse effects.

Methods: Approval for this study was obtained from the Pharmacy and Therapeutics committee and approval is pending with the Institutional Review Board. The study is retrospective and compares traditional vancomycin dosing with loading dose administration after a completion of a 3 month pilot program. All adult patients on the pharmacist managed pharmacokinetic consult service receiving vancomycin on specified nursing units will be included. Patients less than 18 years, patients receiving “pulse” dosing due to renal dysfunction, and vancomycin dosing consults received after administration of the first dose of vancomycin will be excluded. During the pilot program, patients will receive a weight based loading dose of 25 milligrams per kilogram with a maximum loading dose of 2 grams. Seventy five patients from the pilot group will be compared to an identical number of patients from the same nursing units prior to initiation of the pilot. Following pilot completion, patient data will be examined to determine if loading dose administration resulted in any change in the percentage of patients in therapeutic range by the first and subsequent troughs. Patient data will be reviewed to evaluate incidence of adverse renal effects.

7-276

Title: Impact of a procalcitonin algorithm in septic intensive care unit patients on antimicrobial duration and de-escalation

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Purpose: Procalcitonin is an inflammatory marker that has been shown to correlate with bacterial infections. The most recent Surviving Sepsis guidelines suggest the use of procalcitonin levels to discontinue antibiotics in septic patients when a source of infection has not been found. More research needs to be completed to assess the utility of procalcitonin levels to guide antimicrobial decisions. The primary objective of this study is to evaluate the impact of a procalcitonin algorithm in septic intensive care unit patients on antimicrobial duration and de-escalation.

Methods: This study will be submitted to the pharmacy and therapeutics committee for approval. Inclusion criteria include patients greater than 18 years old, admitted to the ICU with a diagnosis of sepsis. Patients from September 2012 to August 2013 will be identified using ICD9 codes. Data on antimicrobial duration, time to de-escalation, IV to PO conversion, ICU length of stay, hospital length of stay, re-infection rates, re-admission rates, and antimicrobial costs will be collected. A procalcitonin algorithm will be developed based on current literature. Education of providers, nurses and pharmacists will be performed prior to algorithm implementation. The same data will be collected on post-implementation patients using the same inclusion criteria and compared to pre-implementation data.

7-278

Title: Implementation of an antimicrobial stewardship program with a focus on pharmacist and physician education

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Purpose: The purpose of this project is to design an antimicrobial stewardship program (ASP) to promote appropriate use of antimicrobial agents and to evaluate its effects on patient outcomes and cost savings. Initial data and local resistance patterns show a need for improved antimicrobial management. To improve the use of these agents, an ASP will be established focusing on implementation of pharmacy-driven protocols and education of practitioners. The aims of this project will be to implement protocols to promote appropriate antimicrobial use, create educational materials for practitioners, limit use of intravenous antimicrobial agents, and decrease current spending on antimicrobial agents.

Methods: The proposed project will be submitted and reviewed by the institutional review board prior to initiation. The first step will be to gather and analyze information on current antimicrobial usage patterns. This will establish a baseline for antimicrobial use from which change can be measured. In addition, an initial retrospective medication use evaluation (MUE) will be conducted. This will evaluate the feasibility and cost savings potential of a pharmacist-driven intravenous to oral (IV to PO) conversion protocol. Following the MUE, an IV to PO protocol will then be implemented at the hospital and usage of intravenous antimicrobial agents will be followed. In addition to protocol implementation, educational materials will be designed to encourage appropriate antimicrobial prescribing habits among practitioners. Information provided will include appropriate therapy for select disease states based on available formulary agents, appropriate doses, appropriate treatment duration, and local resistance patterns. Other strategies to be utilized for improvement of antimicrobial use include further restriction of formulary agents, education of pharmacists, education of new providers, and improving pharmacist utility at existing infectious disease rounds. These strategies will be used to limit inappropriate use of antibiotics, provide cost-savings, and improve patient care.

7-279

Title: A Retrospective Reivew of Transplant-associated Thrombotic Microangiopathy in Patients Receiving Cyclosporine with Sirolimus Following Allogeneic Stem Cell Transplantation: Incidences, Risk Factors and Outcomes

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Purpose: The primary objective of this study is to assess the incidence of probable TA-TMA by using the proposed diagnostic criteria from a validation study for patients who have undergone allogeneic HSCT at the Seattle Cancer Care Alliance (SCCA). As a secondary objective, the investigators will assess the presence of other published risk factors of TA-TMA, such as the transplant type, concurrent acute GVHD,viral infection and therapeutic levels of cyclosporine and sirolimus, as well as management and outcomes for those patients with TA-TMA.

Methods: The study will be done via retrospective chart review of patients who have undergone nonmyeloablative HSCT receiving cyclosporine with sirolimus for GVHD prophylaxis post HSCT. Patients will be identified from a patient list maintained by the SCCA transplant database. Data will be collected from electronic medical record as well as paper record. Demographic data such as age, underlying diagnosis, types of transplant, presence of acute GVHD, bacterial or viral infection, onset of TA-TMA, management of TA-TMA and survival status will be captured. In addition, diagnostic criteria for TA-TMA proposed by the validating study will also be captured to identify patients with probable TA-TMA. Data will be analyzed to determine the incidence of TA-TMA using the diagnosis criteria from the validating study conducted by Cho et al. Additional analysis will be performed on patients with TA-TMA by evaluating other risk factors, such as supra-therapeutic cyclosporine and sirolimus levels, presence of concurrent bacterial or viral infection, and acute GVHD. Clinical management as well as survival status will also be evaluated upon for those patients.

Results: Data collection is ongoing and preliminary result will be reported at the conference.

Conclusion: Conclusion will be made after data collection and analysis are done.

7-280

Title: Evaluation of novel anticoagulation therapy for prevention of thromboembolism in orthopedic surgical patients

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Purpose: With the availability of novel oral anticoagulants, it is now possible to offer additional methods of anticoagulation for thromboprophylaxis after orthopedic surgery. Pharmacists are essential personnel making post-operative care of patients as smooth as possible, assisting in the transition of care to the next provider. The objective of this quality improvement project is to compare the efficacy of conventional anticoagulation therapy with the use of a novel oral anticoagulant, rivaroxaban (Xarelto), for the prevention of venous thromboembolism (VTE) in orthopedic patients. This project will assess the impact of utilizing rivaroxaban compared to conventional therapy.

Methods: This project will be submitted to the Institutional Review Board for approval. Perioperatively, patients who are scheduled to have total joint replacement will visit the orthopedic healing center (OHC) and have labs drawn at that time. Patients who are eligible to receive rivaroxaban are those who have no hypersensitivity to rivaroxaban or components of its formulation, and who have a calculated creatinine clearance of greater than 30mL/min. Those who do not qualify will receive their surgeon's conventional therapy of choice. Once the therapy is determined, patients will receive essential education regarding their therapy from pharmacists. Postoperatively, clinical pharmacists will monitor for venous thromboembolism (VTE) and bleeding throughout the patient's surgical stay. Prior to discharge, patients will be offered a comprehensive discharge service that includes medication reconciliation, filling prescriptions at the hospital pharmacy, ensuring a sufficient supply of medications or refills, and discharge education. Through retrospective chart review conducted by pharmacy staff and postoperative phone and in-person follow-ups, VTE and bleeding rates between the two groups of patients will be compared and the impact of rivaroxaban use will be assessed.

7-281

Title: Development and implementation of pharmacy services for cardiovascular specialty clinic

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Purpose: Pharmacists have been recognized as a critical component of a health care team in the ambulatory setting. Evidence has shown that pharmacist interventions have resulted in optimization of blood pressure, glycated haemoglobin (HbA1c), and low-density lipoproteins levels, increased medication adherence, and decreased cardiovascular related events. The objective of this project is to assess the feasibility of clinical pharmacy services in a cardiovascular specialty clinic and evaluate areas for collaborative drug therapy agreements.

Methods: Prior to implementation, this study will be submitted to the Institutional Review Board for approval. The primary phase of this project is to develop and implement a physician referred medication therapy management (MTM) pilot program for a selected patient population in a cardiovascular clinic. MTM encounters will include patient education, medication reconciliation, evaluation of appropriateness of therapy, adverse drug reactions, drug-drug or drug-disease interactions, medication monitoring, and recommendations to physicians. The pharmacist will conduct MTM encounters via face to face meetings or telephonic interventions with select patients. Data collected and evaluated during the pilot program will include cardiovascular conditions, medication related problems, patient interventions, duration of visits, number of recommendations, and outcomes of recommendations. Evaluation of data will be utilized for cost-justification analysis and future collaborative practice agreements to determine feasibility of expanding clinical pharmacy services in an outpatient cardiovascular clinic.

7-282

Title: Evaluation of outcomes related to three-factor prothrombin complex concentrate administration versus the use of fresh frozen plasma in situations of clinically significant bleeding

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Purpose: Three-factor prothrombin complex concentrate (PCC) is a product containing coagulation factors II, IX and X. This product has been used at our institution to treat patients who present with clinically significant bleeding and confirmed or suspected elevations in the International Normalized Ratio (INR). The objective of this study is to determine whether the use of three-factor PCC is associated with significant differences in clinical outcomes when compared to the use of fresh frozen plasma alone in the setting of trauma or bleeding with confirmed INR elevations.

Methods: This retrospective study will be submitted to the International Review Board for approval. All data will be kept confidential and without patient identifiers. The electronic medical record will be used to isolate cases from the past three years in which three-factor PCC was given at our hospital to trauma patients or to those with bleeding and confirmed elevations in INR. A separate report will identify similar cases over the same three-year time period in which fresh frozen plasma was administered without the use of PCC. Baseline characteristics including patients' age, sex, admitting diagnosis, baseline INR, use of vitamin K antagonists, and the administered amount of three-factor PCC or fresh frozen plasma will be recorded for each event. Cases will be reviewed to determine clinical outcomes associated with the use of these products. Evaluated outcomes will include: survival to hospital discharge, 48 hour survival rate, reversal of INR, and the development of adverse events including thrombosis or death. These outcomes will then be evaluated to determine whether three-factor PCC is associated with differences in outcomes compared to the use of fresh frozen plasma alone.

7-283

Title: Gap analysis of solid organ transplantation clinical pharmacy services at a Veterans Affairs health-system

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Purpose: The purpose of this project is to complete a gap analysis to review how solid organ transplantation (SOT) pharmacotherapy services are currently provided at a Veterans Affairs (VA) health-system relative to current standards of practice at established solid organ transplant centers and in published literature. The results of the project may be used to support the justification for dedicated solid organ transplantation clinical pharmacy services at this health-system.

Methods: This study has been submitted to the Investigational Review Board for approval. The health-system currently provides health care services to more than 200 veterans who received kidney, liver, heart, or lung transplantation either in house or at other facilities. The review of current SOT services at this health-system will include retrospective chart reviews of a select number of SOT veterans. The electronic medical record system will identify patients who have an ICD-9 code for SOT. The following data will be collected: patient age, gender, city patient resides, physical examination findings, dates of hospital admission and discharge, current medications, reported adverse medication events, calcineurin inhibitor serum levels, presence of drug-drug interactions, documentation of medication education, and ICD-9 code relating to diagnoses of hypertension, diabetes, and/or hyperlipidemia. If available, dates of death of SOT veterans within the past 10 years will be collected. All data will be maintained confidentially. Data of hospital admissions will be reviewed for presence of medication-related etiology and cost per day of hospital stay will be extrapolated. FK506 and cyclosporine serum levels will be reviewed for occurrences outside of therapeutic range. Presence of new ICD-9 codes will be reviewed for appropriate disease state management.

7-284

Title: Impact of implementing pharmacist pain management guidelines

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Purpose: Providing appropriate assessment and management of pain is one of the Joint Commission standards for accreditation that hospitals must meet. Additionally, the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey includes patients perspective of pain management during hospital stay. HCAHPS performance is included in the calculation of the hospitals value based purchasing program. Pharmacists play an important role in managing patients pain and it is important that they have appropriate training. The objective of this study is to evaluate the impact of implementing pharmacist pain management guidelines with an emphasis on developing a standardized approach.

Methods: The study will be submitted to the Pharmacy and Therapeutics Committee (P&T Committee) for approval. Patient encounters from September 1st 2012 to September 1st 2013 will be evaluated. Patients included are greater than 18 years old, received postoperative or chronic pain management per pharmacist and had at least 3 patient documented encounters. Data collection includes survey to assess pharmacists understanding of his or her role in pain management, documentation of pain goal and scale, vital signs, and frequency of documented encounters. Pain management guidelines with an emphasis on a standardized approach will be developed and implemented. Pharmacists will complete a competency prior to implementation. Pre and post data will be evaluated using the same criteria.

7-285

Title: Early discharge of liquid tumor patients with no evidence of infection after hospital admission for neutropenic fever

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Purpose: Liquid tumor patients with neutropenic fever (NF) are initially treated with broad spectrum antibiotics. If no source is identified and the patient becomes afebrile and clinically stable, these patients may be discharged on de-escalated therapy while still neutropenic. The purpose of our two-part study will be to characterize the current practice of discharging these patients at our institution. We will retrospectively compare readmission rates and other outcomes between these practices for the first part of the study. For the second part of the study, we will develop and evaluate a prospective trial comparing the safety and efficacy of various practices.

Methods: Patients to be included in this study will be liquid tumor patients aged 18 and older admitted for NF who defervesce within 48-72 hours of admission with no evidence of infection. Patients will be excluded from this study if they are using a study drug, cannot be managed as outpatients, or have an infection prior to the development of neutropenia. Part I of this study will be a retrospective, single-center, cohort study. Data will be collected through review of electronic medical records (EMR) from July 2010 to June 2013. Groups will be assigned based on treatment regimen. Part II will be a prospective, randomized, open-label cohort study. Data will be collected prospectively through review of EMR from July 2013 to June 2014. Patients will be categorized based on treatment with various intravenous and/or oral antibiotic regimens at discharge. For both parts of the study, regimens will be compared using chi-squared tests and t-tests for the outcomes of readmission, death, and presence of resistant infection upon readmission. Descriptive statistics will also be performed to characterize the reasons for readmission, causes of death, and types of organisms cultured on readmission. Investigational Review Board approval is currently being sought.

7-286

Title: Effects of pharmacist interventions on adherence to oral chemotherapy

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Purpose: Currently there are over fifty approved oral chemotherapy agents and almost thirty percent of drugs in the pipeline are oral medications. Although oral chemotherapy offers flexibility, convenience, and improved quality of life, the increased responsibility of medication adherence can be challenging for patients. Limited studies focus on medication adherence to chemotherapy agents. However, interventions that incorporate education, early symptom identification and reminder prompts have been shown to improve adherence in other chronic disease states. The primary objective of this study is to evaluate whether a pharmacist developed intervention tool can contribute to optimization of oral chemotherapy medication adherence.

Methods: This study will be submitted to the Institutional Review Board for approval. Electronic records will be used to identify patients that started their first cycle of oral chemotherapy within the last six months. Patients less than eighteen years of age and patients on hormonal agents will be excluded. A random sample of thirty patients will be surveyed via questionnaire to determine baseline medication adherence and patient satisfaction with the current level of drug therapy support. The questionnaire will be adapted from the Morisky eight item medication adherence scale. Patients will be contacted once weekly for four weeks and then once monthly for a total of ninety days to screen for adherence barriers using the pharmacist intervention tool. Pharmacist interventions will focus on personal, treatment and system factors that affect adherence. Following the ninety day intervention period, patients will be asked to complete a follow-up survey using the initial medication adherence questionnaire. Data from questionnaires will be analyzed to determine whether pharmacist interventions increased patient adherence and overall satisfaction with support.

7-287

Title: Implementation and Impact of Transition of Care Services to Reduce Readmission in a Community Hospital

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Purpose: Providence St. Mary Medical Center (PSMMC) is implementing a Re-Engineered Discharge process, Project RED, to reduce readmission of patients diagnosed with acute myocardial infarction (MI), congestive heart failure (CHF), or pneumonia (PNA). A Transition of Care (TOC) pharmacist will play a key part during both admission and post-discharge. The purpose of my quality improvement project is to document the role and influence of a transition of care (TOC) pharmacist in Project RED.

Methods: PSMMC has a Transition of Care pharmacist that facilitates patient transitions between outpatient and inpatient settings. This project will focus on the role and influence of the TOC pharmacist in reducing 30-day readmission of patients with HF, PNA, and MI. Patients will be identified at admission and a pharmacy technician will perform admission medication reconciliation in conjunction with a clinical pharmacist. The TOC pharmacist will attend daily multidisciplinary huddles to review Project RED patients and discuss possible discharge barriers. Patient education on diagnosis and medications will be performed by a novel virtual discharge advocate named Louise. This interactive tablet program will utilize the teach-back method and will be reinforced by the TOC pharmacist. Within 48-72 hours post-discharge, the TOC pharmacist will perform a follow-up phone call assessing the patients knowledge of diagnosis and medications, as well as identifying barriers to attending follow-up appointments or obtaining prescriptions. The primary outcome of this project will be 30-day readmission rates. Secondary outcomes will include percent of patients that attend a follow up appointment with their PCP, pharmacist involvement in obtaining medications, patient understanding of diagnosis/medications, patient satisfaction, and pharmacist interventions on drug therapy. This project has IRB approval waived.

7-288

Title: Analysis of the impact of pharmacist involvement in transitions of care for heart failure patients

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Purpose: Heart failure is one of the most expensive chronic illnesses in the United States. Clinical pharmacist involvement in the direct care of heart failure patients has been shown to decrease costs and improve patient outcomes. The purpose of this study is to assess the impact of the addition of a pharmacist to the multidisciplinary heart failure team on readmission rates and overall costs associated with this patient population.

Methods: This study is exempt from Institutional Review Board approval because it is a quality assurance project. The study will take place at an acute care tertiary facility and will include all patients admitted to the heart failure service. A self-report survey will be used to gather baseline data on the current level of involvement that clinical pharmacists have in the care of heart failure patients. From November 2013 through January 2014 a pharmacist will begin participating in rounds and monitoring patients admitted to the heart failure service. Pharmacists will also provide discharge counseling to all heart failure patients, create individualized outpatient medication titration plans, and complete follow-up phone calls to all patients within thirty days of discharge. During these interventions, the following outcomes will be documented: medication errors identified, pharmacotherapy recommendations made and accepted, alterations to discharge medication lists, implementation of outpatient titration plan, hospital readmissions within thirty days, and total time spent caring for heart failure patients. These outcomes will be analyzed to determine the impact on both hospital costs and the quality of patient care associated with the addition of a clinical pharmacist to the multidisciplinary heart failure team.

7-289

Title: Shared medical appointments for cardiovascular risk reduction in a patient centered medical home

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Purpose: To reduce risk of cardiovascular events, our patient centered medical home (PCMH) has implemented a quality improvement project to increase the percentage of patients meeting low-density lipoprotein cholesterol (LDLC) and blood pressure (BP) goals. The quality improvement project includes a shared medical appointment (SMA), clinical pharmacist visits, and registered nurse involvement in contacting and identifying target patients, in addition to traditional provider visits. Using this team based approach, our PCMH expects to efficiently increase the percentage of patients with BP and LDLC at goal, increase patient education, and demonstrate patient satisfaction with the SMA.

Methods: Patients over the age of 18 years with a diagnosis of coronary heart disease (CHD), CHD equivalent, or a calculated Framingham 10-year risk >20% will be identified. Patients with a systolic BP >140 mmHg, diastolic BP >80 mmHg, and/or LDLC >100 mg/dL will be included. Patients who are pregnant, already at their personal goals, or not likely to benefit from a SMA according to their primary care provider will be excluded. Eligible patients will be invited to participate in one SMA. Upon arrival they will sign a confidentiality agreement in order for all attendees to be able to share their protected health information with the group. The appointment will include education, as well as collecting and sharing vital signs, lab results, and goals. Medication changes, laboratory orders, and follow-up appointments will be made. Invited patients will be followed to assess for changes in BP and LDLC. Patients will be given a brief questionnaire before and after the SMA to assess their previous education of CHD and their comprehension of the education provided. The post survey will include questions pertaining to their satisfaction with the service. This project is pending a quality improvement determination by the Institutional Review Board (IRB).

7-290

Title: Pharmacy-Led Palliative Care Pain Management Services in the Hospital Setting

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Purpose: Palliative care is a key component in providing patient care and improving quality of life. Pain control and side-effect management can often be complex and difficult to balance. Pharmacists are trained medication experts who should be an integral part of the palliative care team. The focus of this project is to observe patient outcomes with integration of pharmacy services in palliative care.

Methods: Inclusion of patients into the data pool will be initiated with a pain and side-effect screening assessment. The initial pain screening will identify patients who are currently experiencing pain symptoms and are not at goal and/or have uncontrolled side-effects. Initial pain screening will be performed using the Wong-Baker Faces pain assessment tool. The following side-effects will be monitored for the project: constipation, nausea, and drowsiness. After inclusion into the project, patients will be followed daily by a pharmacist to assess treatment status. Pharmacists will work with a multidisciplinary team, including a palliative care physician, and document recommendations to improve patients' drug therapy. Patients will be assessed for improvement in pain and side-effect management by using the Patient Assessment Tool, which includes a scale, ranging from 0-10, where increasing values correlate to worsening symptoms. All data will be recorded into an electronic spreadsheet for recordkeeping and review. Analysis will be performed to assess the correlation between pain/side-effect scores and pharmacist intervention. Patients will also be administered a survey to reflect upon their satisfaction of pharmacy services, quality of pain/side-effect treatment, and potential improvement of pain management therapy comprehension. This quality improvement project is pending approval from the Institutional Review Board.

7-291

Title: Medication utilization review of Risperdal Consta: focus on adherence and safety

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Purpose: Risperdal Consta long-acting injection (RLAI) is prescribed to patients with a diagnosis of schizophrenia or schizoaffective disorder and a history of non-adherence to oral antipsychotics. This is based on the belief that RLAI may improve adherence to treatment and hence lead to better symptom control. The purpose of this study is to assess adherence and safety of RLAI within a Veterans Affairs mental health service. It is our hope that a better understanding of prescribing, dispensing, and the use of this medication, specifically in regards to adherence and safety, will optimize patient care and outcomes.

Methods: We will perform a retrospective chart review in the Veterans Affairs computerized patient record system (CPRS) for patients with any history or current use of Risperdal Consta. Patients with prescriptions for RLAI that were ordered but never dispensed or administered will be excluded. For all other included patients, the following data will be collected: age, sex, psychiatric diagnosis, dose, start and end dates of use, reason for starting and reason for stopping medication, number of weeks between injections, number of psychiatric hospitalizations while receiving medication, other psychiatric medications used, clinical impression, and any adverse effects from the medication. Data collected will be analyzed using descriptive statistics, summarizing outcomes in mean and median averages and percentages. This study has been submitted for review.

7-292

Title: Comparison of two prothrombin complex concentrate products for formulary status at a community teaching hospital

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Purpose: Bebulin, a three-factor prothrombin complex concentrate (PCC), was approved by the institutions Pharmacy and Therapeutic Committee for use in patients experiencing an intracranial hemorrhage while on a vitamin K antagonist (VKA) in 2010. In April 2013, Kcentra, a four-factor PCC product, was FDA approved for reversal of acute major bleeding secondary to VKA therapy. This project encompasses a current state analysis, comparative formulary review of factor efficacy and safety, and creation and expansion of evidence based protocols for VKA associated bleeding.

Methods: This study will be submitted to the Institutional Review Board for approval. 1. American Heart Association (AHA) guidelines on the reversal of VKA therapy were updated in 2012. A retrospective chart review for patients who received Vitamin K from January 1, 2013 to June 30, 2013 (n=417) will be completed. Fifty of these patients will be separated from the data set via a random number generator to analyze compliance with AHA guidelines according to indication and dose of Vitamin K given. 2. Factor efficacy and safety will be evaluated on time to INR reversal, percentage of patients reversed, and rate of adverse events including thrombosis and transfusion related acute lung injury (TRALI). Information for comparison will be compiled through an evidence-based literature search including PubMed. 3. Upon recommendation and approval by the institutions Pharmacy and Therapeutics Committee protocol development will commence using evidence based literature identified in the efficacy and safety search.

7-293

Title: Implementation of an adult pneumonia treatment order set in a small community teaching hospital setting

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Purpose: Standardize inpatient treatment of pneumonia according to the Infectious Disease Society of America (IDSA) and American Thoracic Society (ATS) guidelines. The objective of this study is to improve compliance with Centers for Medicare and Medicaid Services (CMS) Core Measures, minimize inappropriate antimicrobial use, and lower 30-day pneumonia readmission and mortality rates.

Methods: This study will be submitted to the Institutional Review Board (IRB) for approval. Baseline knowledge of the treatment of pneumonia will be assessed through a survey of physicians and designated trainees. An order set for community-acquired and healthcare-associated pneumonia will be developed based on the current IDSA/ATS and CMS guidelines. After education on recommended pneumonia treatment is provided, the order set will be implemented. The electronic medical record system will identify patients with a diagnosis code of pneumonia over at least the past year. We will track outcomes of the planned interventions comparing 30-day readmission rates, 30-day mortality rates, Core Measure compliance, average length-of-stay, and use of the order set. Post-implementation knowledge on pneumonia treatment will be reassessed with a survey and evaluation of appropriate antibiotic selection and duration. All data will be recorded without patient identifiers and maintained confidentially.

7-294

Title: Patient assistance program use in the inpatient and outpatient oncology settings of a community hospital

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Purpose: At Providence St. Mary Medical Center, over $500,000 in medications were provided at no cost to indigent patients in 2011. In March 2013, administration approved a dedicated pharmacist and technician to the development and implementation of a Patient Assistance Program (PAP) enrollment program. Enrollment into PAPs will focus on the oncology outpatient population and inpatients with limited income. The goals of this program are to reduce the financial burden of charity care and to ensure that patients have consistent access to necessary medications, thereby possibly decreasing 30-day hospital readmissions. This quality improvement project is IRB exempt.

Methods: Caseworkers and physicians will identify patients who may be self-insured, uninsured, or who have a coverage gap in their medical care. The pharmacist will use the PAP clearinghouse website http://www.NeedyMeds.org to determine which of the prescribed medications are available from PAPs. The pharmacist will visit with the patient and help to fill out enrollment forms for the PAP(s) which cover required medications. The enrollment forms will be faxed to the PAP address provided. The patient and the primary care provider or oncologist will be notified by the pharmacist regarding acceptance into the PAP. Value of the program will be tracked by the pharmacist. This includes medication(s) ordered, wholesale cost of the medication received, rate of patient acceptance into PAP, and dates medications are delivered to the providers office and picked up by the patient. Tracking will take place in an internal software program available only to those involved in the project. Follow-up regarding the ease of use of the PAP, outpatient medication adherence, and thirty-day hospital readmission will be reviewed with the patient at three months post-discharge. The impact on medication adherence, cost savings, and readmissions will be provided to administration via quarterly reports. Cost to patients will be free.

7-295

Title: Implementation of an adult pain order set in a small community teaching hospital setting

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Purpose: Current HCAHPS (Hospital Consumer Assessment of Healthcare Providers and Systems) scores for pain management reflect poor control of pain during patients hospitalization in this institution. The objective of this study is to implement a pain management order set in the acute care setting in order to improve pain management.

Methods: This study will be submitted to the Institutional Review Board for approval. An adult pain order set will be constructed using current guideline recommendations for the management of acute pain. An inpatient service will be provided for all prescribers and nursing staff in the institution to familiarize them with the order set and answer any questions pertaining to its use. The following data will be collected: patient age, gender, ethnicity, current medications, allergies, admission diagnosis, pain scores, use of the order set by prescribers, adjustments made to order set, and HCAHPS scores for pain management. All data will be recorded without patient identifiers and maintained confidentially. Average patient reported pain scores and HCAHPS scores will be reviewed and classified as controlled or uncontrolled based on patients satisfaction.

7-296

Title: Identification of gaps and immunization of eligible adults in the emergency department with pneumococcal, influenza and pertussis vaccines

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Purpose: The Emergency Department has been identified as an opportunistic location within the hospital setting to provide immunizations and ultimately prevent outbreaks in the community. We plan to implement a quality improvement program within the Emergency Departments of two acute care hospitals to increase adult vaccination rates of influenza, pneumococcal, and pertussis (Tdap) and assess the impact of the program.

Methods: This project will be conducted in a collaborative manner with Pfizer. We will attempt to gain a waiver of authorization from the Institutional Review Board (IRB) to collect and analyze data for the purposes of quality improvement. Within two acute care emergency departments (ED), a pharmacist driven immunizations program will be implemented during the fall of 2013. The pharmacy resident/clinical research coordinator will retrospectively collect data on the immunization status, including reason for refusal if available, of 480 adult patients between October and December 2012 as the pre-intervention group. After the implementation of the pharmacist driven immunizations program a post intervention group of 480 adults patients that came to the ED between October and December 2013 will similarly be analyzed for immunization status. The quality improvement program will focus on influenza, pneumococcal, and pertussis (Tdap) vaccinations. Patients being admitted will have vaccination orders generated upon admission while patients not being admitted will have vaccines administered prior to ED discharge. Missed opportunities will be assessed for the pre and post intervention groups to determine the impact of the pharmacist driven program.

7-297

Title: Improving glycemic control in post-operative cardiac surgery patients: a pharmacist-led initiative

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Purpose: Post-operative hyperglycemia is recognized as an independent risk factor for sternal wound infection, increased length of hospital stay, and poor surgical outcome in cardiac patients. The Centers for Medicare and Medicaid Services (CMS) support appropriate glucose management in these patients via the implementation of the Surgical Care Improvement Project (SCIP) Inf-4 core measures. The objective of this study is to evaluate the impact of pharmacist-driven post-operative glucose management on compliance with SCIP Inf-4 core measures and overall surgical outcome for cardiac patients in an acute care tertiary facility.

Methods: This study is a quality assurance project and is therefore exempt from Institutional Review Board approval. The pharmacist-led initiative on glucose management will include the implementation of the following: insulin drip order-sets specific to cardiac surgery, protocol for transition from insulin drip to subcutaneous insulin, and adjusted protocol for hypoglycemia management. These order-sets and protocols will be modified as necessary to optimize patient care. Any modifications will be assessed during evaluation of study results. Primary outcome is percentage compliance to 2014 SCIP Inf-4 core measures. Secondary outcomes include percentage of blood glucose measurements that are within specified ranges, number of hypoglycemic episodes, lengths of stay in the Cardiovascular Intensive Care Unit and in the hospital, and sternal wound infection rates. The following data will be collected: hemoglobin A1c, body mass index, age, gender, diabetes diagnosis, medications, type of surgery, length of stay in each unit, time on insulin drip infusion, post-operative infection, and blood glucose measurements through metabolic panels and point-of-care bedside testing. All data will be recorded without patient identifiers to maintain confidentiality.

7-298

Title: Evaluation of bedside medication delivery process using lean management system methodology

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Purpose: The provision of delivering medications to a patient's bedside and counseling by a clinical pharmacist can be a time consuming but a vital step toward ensuring patient safety prior to discharge. Studies suggest that readmission rates can be improved if patients are prepared for discharge. The objective of this study is to identify areas of improvement in the current bedside medication delivery process by using lean management system methodology and create a standardized workflow that will decrease turnaround time.

Methods: This study will be submitted to the Institutional Review Board for approval. The bedside medication delivery service will be offered to inpatients who are managing their own medications in the outpatient setting. This study will exclude patients who are discharged to long term care facilities or nursing homes. Participants will receive a 30 day supply of medications directly at their bedside and receive counseling by a clinical pharmacist. The lean management system will be launched to quantify the efficiency of the current bedside medication delivery process. Members of the team will follow the pharmacist throughout the current process, documenting steps involved in the process, and time associated with each step. The team will then identify ways to decrease waste, increase efficiency, remove non-value added activities, and create a standardized work flow. After identifying areas of improvement and implementing a standardized work flow, the team members will repeat the observation process to gather new data. The goal of the project is to decrease turnaround time.

7-299

Title: Impact of pharmacist driven medication reconciliation and fulfillment of core measures at discharge

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Purpose: Pharmacists can make a large impact in patient care when transitioning patients from the hospital to their primary care settings. This can be done in a variety of ways, including compliance with core measures, offering comprehensive discharge pharmacy services, medication reconciliation, and communicating patient discharge medications to the primary care physicians, which can impact provider satisfaction as well as hospital readmission rates. The primary purpose of this quality improvement project is to evaluate the impact that pharmacists have in the transition of care of a subset of patients from the inpatient setting to the primary care setting.

Methods: This quality improvement project will be submitted to the Institutional Review Board for approval or waiver. The project will include a manageable subgroup of patients admitted that are at high risk of readmission. The core measures of acute myocardial infarction, pneumonia, and heart failure were chosen for data analysis. All patients will have medication reconciliation done at discharge by a pharmacist regardless of diagnosis. Medication discrepancies found will be addressed by the pharmacist before the patient discharges. A work flow will be made for pharmacists to follow that will allow them to perform medication reconciliation at discharge, ensuring maintenance of core measure compliance at discharge, offering comprehensive discharge pharmacy services to high risk patients, and communicating an after visit summary on a daily basis to the primary care physicians. Anonymous provider satisfaction surveys will be collected from providers at the end of the project. All project related data, HIPAA de-identified, will be stored on a secured server.

7-300

Title: Lean management system methodology to improve hospice prescription process

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Purpose: The current process for admitting new patients to hospice frequently results in a delay in care as delivery of medication emergency kits can take anywhere from one to six days. Medication emergency kits were developed to treat standard symptoms of terminally ill patients in the interim while waiting for prescriptions to be filled. This project was designed to identify the barriers in the current hospice prescription workflow and reduce waste, redistribute the workload, and create standard work in order to improve hospice patient care.

Methods: This study is pending Institution Review Board approval. The study will be designed to incorporate lean methodology to help streamline the process and reduce turn around time for delivery of medication emergency kits. The project will evaluate the current workflow beginning from the time the patient gets admitted to hospice service to the time the patient receives their emergency kit. A 5S analysis (sort, simplify, sweep, standardize, and self-discipline) and value stream mapping of the process will be performed to identify areas of improvement. The team will include the retail pharmacy manager, director of home care services, a retail pharmacy technician, a home care nurse, a physician, a home care system administrator, a home care clinical supervisor, and a patient family member. The goal of the project is to reduce the time it takes to receive a medication emergency kit from multiple days to less than 24 hours.

7-301

Title: Validation of the length of stay, acuity, comorbidity, emergency department use (LACE) index for prediction of death or readmission at a community hospital

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Purpose: Accurate tools are needed to assess a patients risk of readmission within 30 days. Centers for Medicare & Medicaid Services (CMS) ties readmission rates to reimbursement, so hospitals need risk-stratification methods that are validated in their patient population. The LACE index was originally derived and validated in Ontario, Canada to predict death or unplanned readmission. This study aims to validate use of the LACE index within an automated alert workflow to identify patients at high risk for readmission or death at a 225 bed community hospital.

Methods: This study will be submitted to the Institutional Review Board for approval prior to initiation. The electronic medical record will be used to identify a cohort of patients discharged alive in January of 2014. This cohort of patients will be followed for 30 days after discharge. Readmission and death rates will be compared between patients with a computer-generated LACE score greater than 10 and those without a LACE alert. Sensitivity and specificity of the automated alert will be calculated. Additionally, a LACE score and Charlson comorbidity score will be manually calculated for each patient in the cohort and compared to the computer-generated alerts to identify a predictive LACE break point.

7-302

Title: Evaluation of patients admitted to the hospital for febrile neutropenia (FN): identification of patients not meeting FN criteria and low-risk patients

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Purpose: Febrile neutropenia (FN) is a potentially life-threatening complication routinely managed by hospitalization for intravenous antibiotics. Recent studies demonstrated that outpatient management is acceptable in low-risk patients. The Multinational Association for Supportive Care in Cancer Risk (MASCC) Index is an internationally validated score used to identify low-risk patients who may be candidates for outpatient therapy. The primary objective for this evaluation is: to determine how many patients are admitted with a primary diagnosis of FN that do not meet established criteria; of patients meeting criteria for FN, how many could have been considered for outpatient management according to the MASCC score.

Methods: This study was approved by the Institutional Review Board. This retrospective chart review utilized the electronic medical record system to identify patients admitted to an oncology service at a large academic medical center between January 2012 and January 2013 with a primary admission for fever or neutropenia. Patients less than 18 years of age and those developing febrile neutropenia during an admission for a different indication were excluded. The absolute neutrophil count (ANC) and temperature upon admission were collected to determine if patients met established criteria for febrile neutropenia (FN). Additional demographic data collected for patients meeting established criteria for FN include: age, gender, cancer diagnosis, history of COPD, blood pressure, dehydration status, burden of febrile neutropenia, positive cultures, antibiotic therapy within two weeks prior to admission, history of previous stem cell transplant, and length of stay. This data is used to determine if the patient was a candidate for outpatient management based on the MASCC risk index.

7-303

Title: Pharmacist's conducted Complete Medication Review (CMR) impact on 30-day and 90-day readmission ratesreadmission rates and unscheduled visits

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Purpose: Currently, the Agency for Healthcare Research and Quality (AHRQ), reports that almost one in five medicare patients are readmitted to the hospital within thirty days of discharge. The objective of this study is to see if pharmacist-provided comprehensive medication review (CMR) can help to reduce these readmission rates and unscheduled physician office visits out to ninety days.

Methods: This study has been submitted to the Institution Review board for approval. Following discharge from a 100 bed hospital, patients with a diagnosis of Congestive Heart Failure (CHF), pneumonia, or Myocardial Infarction (MI) were contacted by a pharmacist and provided a CMR after discharge. These patients were then contacted again by telephone and their electronic medical record checked to see if the patient was readmitted to the hospital for the same diagnosis within 30 days. These participants will now be contacted again via telephone to complete a four question survey to determine if an unscheduled physician visit or hospital admission has occurred within 90 days of pharmacist provided CMR. If an unscheduled physician visit or hospital admission occurred, the participant will then be asked to determine if the reason of the visit or admission matched the previous emergency department admission. The reason behind the survey questions is to identify a correlation between a pharmacist provided CMR and a reduction in readmission rates or unplanned physician visits.

7-304

Title: Use of enoxaparin in low weight medical patients

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Purpose: The primary purpose of this study was to evaluate the dosage of enoxaparin utilized for VTE prophylaxis, associated monitoring, and adverse events in low weight medical patients.

Methods: This study approved by the Institutional Review Board. A retrospective chart review was conducted for patients admitted between January 2011 and June 2013. Patients were included if they were 18 to 64 years old, received at least 24 hours of enoxaparin therapy dosed once daily for VTE prophylaxis, weighed less than 45 kg (females) or less than 57 kg (males), and were admitted to a medicine service. Exclusion criteria included documented diagnosis of VTE or acute coronary syndromes, trauma, orthopedic, and surgery patients, patients with active malignancy, patients admitted to a nephrology service or with an estimated creatinine clearance of less than 30 mL/minute. If patients were found to have multiple admissions, data from the most recent admission was used. Creatinine clearance was estimated using the Cockcroft-Gault equation and the serum creatinine value from the date of the initiation of enoxaparin. Results were analyzed using descriptive statistics.

7-305

Title: Evaluation of glycemic control in an intensive care unit of South Africa

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Purpose: In South Africa, the Society for Endocrinology, Metabolism and Diabetes of South Africa (SEMDSA) has released guidelines to reflect evidence regarding glycemic control and to address the management of hyperglycemia in the intensive care setting. They recommend initiating insulin therapy at a threshold of 180 mg/dL and targeting a range of 140 to 180 mg/dL. In the underprivileged public sector of South Africa, it is not always feasible to follow guidelines exactly. The goal of this evaluation is to examine how insulin therapy is approached in critically ill patients in a public sector hospital of South Africa.

Methods: Data collection was conducted from patients admitted to the intensive care unit (ICU) and was done through a retrospective chart review. Information regarding the use and safety of insulin therapy in critically ill patients in South Africa will be gained by examining the following variables: Insulin regimen implemented (including method of insulin administration, target blood glucose range, and drip rate if applicable); number of hypoglycemic events (blood glucose < 60 mg/dL); number of severe hypoglycemic events (blood glucose < 40 mg/dL); and number of hyperglycemic events (blood glucose > 180 mg/dL. Additionally, the potential benefits and harms associated with a given blood glucose range will be studied by examining: Length of stay in the intensive care unit; presence of bacteremia; duration of mechanical ventilation; duration of renal replacement therapy; and days of vasopressor and/or inotropic support. Patients will be included if they meet the following criteria: Admitted to intensive care unit, received insulin therapy for at least 3 days, and age greater than 18. Patients will be excluded if they meet any of the following criteria: Patients tolerating oral nutrition or length of stay in intensive care unit less than 3 days.

Results: Results will be discussed at the poster presentation.

Conclusion: Conclusions will be discussed at the poster presentation.

7-306

Title: Acid suppression therapy in pediatric patients

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Purpose: Recent studies have drawn attention to the overutilization of acid suppressants in adults, raising the concern for serious adverse effects associated with therapy. Similar issues with acid suppression therapy have been reported in pediatric patients. Pharmacologic acid suppression therapy is commonly utilized in the pediatric population, often for indications with no clear benefit. In addition, there is a concern for long term risks associated with therapy in children. The primary purpose of this medication use evaluation is to evaluate the indications for use of histamine-2 receptor antagonists (H2RA) and proton pump inhibitors (PPIs) in pediatric patients at our institution.

Methods: This is a medication use evaluation conducted as a retrospective chart review in pediatric patients. A report will be generated using the electronic medical record to randomly select 100 patient encounters of pediatric patients between the ages of 0-18 years old receiving IV or oral therapy with a H2RAor PPI. All in-patients receiving acid suppression therapy for greater than or equal to 24 hours will be eligible for inclusion. Patients will be excluded if they are admitted to the neonatal intensive care unit or the new born nursery. Data to be collected will include: patient demographics, weight, prescribing service, acid suppressant therapy (dose, route, frequency and duration), and adverse effects including hospital acquired pneumonia and clostridium difficile. Patient documentation will be reviewed to determine the indication for therapy, the appropriate switch of IV to oral substitutions, and the initiation of therapy (continuation of out-patient medication or in-patient start). Descriptive statistics will be used to determine the primary outcome. All data will be de-identified. This study was approved by the Institutional Review Board.

7-307

Title: Survival analysis of cancer chemotherapy patients by insurance category

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Purpose: Breast, lung, and colon cancers account for a significant amount of morbidity and mortality in patients nationwide. Chemotherapy can slow disease progression and decrease tumor burden; however, therapy is often expensive, creating a barrier to care. As healthcare in the United States changes due to the passage of the Affordable Care Act, insurance status will likely change for a majority of patients. The purpose of this study is to compare survival of cancer chemotherapy patients stratified by insurance category to determine if any disparities exist.

Methods: This study will be submitted to the Institutional Review Board for approval. Patients seen at our institution between 1995-2012 with breast, lung, or colon cancer that received chemotherapy will be included in this analysis. Exclusion criteria will include those patients whose insurance category is unknown or if the insurance category contained less than 5% of the patient population, making it unable to be analyzed (such as Managed Care, Indian Health/Public Health Service, Tricare/Military). Basic demographic information will be collected from the electronic health record that will include age, sex, stage of cancer based on American Joint Committee on Cancer guidelines, use of radiation, and surgery treatments. Patients will be stratified into five groups: uninsured/cash paying, private insurance, Medicaid, Medicare, and Medicare with supplement. A multivariate analysis will be performed to account for differences in patient demographics between groups. The primary outcome of median overall survival will be assessed for each insurance category within each cancer type. The secondary outcomes assessed will include median survival time from diagnosis until death stratified by insurance carrier and two and five year survival rates.

7-308

Title: Evaluation of peripheral neuropathy associated with fluoroquinolone use

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Purpose: Fluoroquinolone therapy has recently been associated with an increased risk of peripheral neuropathy. This adverse event may occur during injection or oral administration and may be permanent. The purpose of this study is to determine if patients have experienced peripheral neuropathy associated with fluoroquinolone use and identify potential contributing factors.

Methods: The Institutional Review Board as well as the Research and Development committee approved this retrospective chart review study. Patients with documented peripheral neuropathy who received oral or parenteral fluoroquinolones will be identified. Data to be extracted from the computerized record system will include: medication, strength, route of administration, directions for use, date of fluoroquinolone use, indication, date of peripheral neuropathy diagnosis, patient reported symptoms of peripheral neuropathy, time until adverse event onset, history of diabetes mellitus, serum creatinine, sex, age, height, and weight. Acceptable symptoms of peripheral neuropathy include sensory abnormalities (i.e., tingling, numbness, prickling, burning pain). Medications known to be associated with peripheral neuropathy will be documented; these include: amiodarone, chloramphenicol, cisplatin, hydralazine, isoniazid, metronidazole, nitrofurantoin, phenytoin, and vincristine. To determine if the fluoroquinolone administered was renally adjusted, creatinine clearance will be estimated via the Cockcroft and Gault equation or Salazar-Corcoran equation if greater than 30% of ideal body weight (IBW). If actual weight is less than IBW, actual weight will be utilized in the Cockcroft and Gault equation. Renal adjustment will be determined based upon manufacturer recommendations. All data will be recorded without patient identifiers and maintained confidentially.

7-309

Title: Evaluation of empiric gram positive coverage and de-escalation practices for patients with suspected ventilator-associated pneumonia in an adult intensive care unit

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Purpose: Ventilator-associated pneumonia (VAP) is a common complication encountered in the intensive care unit (ICU). Due to the high risk for multi-drug resistant pathogens, it is recommended to treat empirically with broad spectrum antibiotics. However, overuse of these agents may lead to antibiotic resistance. It is therefore recommended to consider antibiotic de-escalation at 48 to 72 hours of therapy. Studies evaluating this practice have shown antibiotic de-escalation to be safe and effective, but not always used consistently. The purpose of this study is to evaluate de-escalation practices regarding empiric gram positive coverage for patients with suspected VAP in the ICU.

Methods: This retrospective review was approved by the Institutional Review Board. It was conducted by review of the electronic medical record over a period of 6 months (January 1st, 2013 to June 30th,2013). All patients admitted to an adult ICU that were mechanically ventilated, received a quantitative bronchoalveolar lavage (BAL) and/or protected specimen brush (PSB), and received at least one dose of vancomycin or linezolid within 24 hours of the BAL or PSB were included in the review. Exclusion criteria included pure gram negative culture results on the BAL and/or PSB, positive cultures from other sites within 72 hours of the BAL or PSB being performed, and patients in septic shock. The primary outcome is defined as time to discontinuation of vancomycin or linezolid from non-methicillin-resistant Staphylococcus aureus (MRSA) culture report finalization or no growth at 72 hours. Secondary outcomes include patient demographics, rates of bronchoscopy with a BAL compared to a blind BAL and PSB, antibiotics used for de-escalation, rate of MRSA pneumonia, and cost of empiric gram positive coverage.

7-310

Title: Evaluation of the use and financial impact of bone-modifying agents in an outpatient academic cancer center

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Purpose: Bone involvement frequently occurs in patients with advanced solid tumors or multiple myeloma. The associated skeletal-related events (SREs) decrease quality of life and may lead to substantial morbidity. While the use of bone-modifying agents such as pamidronate, zoledronic acid and denosumab have been shown to decrease SREs, careful monitoring of renal function and serum calcium levels must be maintained to ensure safe medication use. The primary objectives of this evaluation are to determine current outpatient use, assess current monitoring practices, and analyze the financial impact of each agent.

Methods: This study was approved by the Institutional Review Board. A retrospective chart review was conducted using West Virginia University Hospitals (WVUH) electronic medical records system to collect patient data. Patients 18 years of age or older with a cancer diagnosis and bone involvement were included if they received pamidronate (Aredia), zoledronic acid (Zometa) or denosumab (Xgeva) for skeletal-related event (SRE) prevention between January 2012 and June 2013. Patients receiving a first dose within the study period were identified and followed for the course of their treatment to assess dose appropriateness and monitoring practices in an outpatient academic cancer center. Data collected included medication, dose, date of administration, cancer diagnosis, patient height, weight, age, gender, serum creatinine, calcium, and albumin. Then, the margins between average sales price (ASP) and Medicare's reimbursement rate (ASP + 4%) for the total use of each drug between January 2012 and December 2012 were analyzed to provide a conservative measure of acquisition cost versus reimbursement.

7-311

Title: Evaluation of follow up for prevention and screening of late complications in hematopoietic cell transplant (HCT) survivors

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Purpose: Late complications after hematopoietic cell transplantation can result in decreased quality of life, patient morbidity and mortality. Transition of care for survivors has recently shifted to follow up with primary physicians and community facilities. Prevention and screening tools are important practices, however, literature supporting them is lacking. This retrospective study aims to evaluate screening and prevention practices according to recently published guidelines for immune, hepatic, endocrine, respiratory and skeletal complications among HCT survivors at baseline, 6-months, and 1-year. Secondarily, it will assess opportunities to optimize follow up regarding consistency with screening and monitoring after transplant.

Methods: This is a retrospective, Institutional Review Board approved, review of 50 allogeneic and 50 autologous HCT patients to determine current screening/prevention practices and whether current practice conforms to recommendations from the American Society for Blood and Marrow Transplantation (ASBMT) survivorship guideline. The evaluation was conducted through a chart review of all HCT patients transplanted from December 2009-2012. Patients were randomly selected to obtain 50 allogeneic and 50 autologous patients. Patients under the age of 18 and those without a 6-month follow-up were excluded. Allogeneic transplant patients were reviewed for baseline, 6-month and 1-year cytomegalovirus screening. Both allogeneic and autologous HCT patients were evaluated for baseline and 1-year thyroid stimulating hormone levels; 1-year serum ferritin level; and baseline, 6-month and 1 year pulmonary function testing. One-year bone density testing was reviewed for allogeneic transplant patients and all female regardless of transplant source. Information collected included malignancy, age, gender, source of transplant and conditioning regimen, 6-month/ 1-year follow-up and primary oncologist. Data collected will be analyzed using descriptive statistics to determine inconsistencies with best practice and opportunities to optimize and provide consistent practices during outpatient follow-up for all HCT survivors.

7-312

Title: Effect of pharmacist-driven discharge counseling and follow-up on 30-day readmission rates among patients admitted for myocardial infarction

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Purpose: The purpose is to evaluate the effectiveness of pharmacist discharge counseling and follow-up telephone calls at suppressing 30-day readmission rates among adult patients admitted for acute myocardial infarction. The primary endpoint is the percentage of counseled patients readmitted for all causes. The secondary endpoint is the percentage of counseled patients readmitted for cardiac-related causes. Barriers to compliance including, but not limited to, insufficient funds, lack of transportation, and lack of understanding medication regimens will be evaluated. The need for a medication delivery service at the time of discharge to increase compliance will also be assessed.

Methods: This study will be submitted to the Institutional Review Board for approval. The pharmacy resident will be notified of admissions for acute myocardial infarction between October 2013 and March 2014. Patients will be asked standardized questions to determine orientation. Discharge counseling will be provided by the resident or co-investigator if the patient is oriented to person, place, and time. Only oriented patients being discharged to a home setting will be included. Prisoners and patients unable or unwilling to participate will be excluded. Approximately 20 patients will be educated each month about mechanism of action, side effects, and importance of adherence. Patients will also be asked if they feel a medication delivery service at the time of discharge would be beneficial. Within the first ten days after discharge, patients will be contacted and asked a predetermined series of questions to assess adherence and access to medication. Additional counseling will be performed during the follow-up if the pharmacist determines it is warranted. The resident will perform chart reviews 30 days after discharge to determine whether patients have been readmitted. Patients with no documented readmissions will be contacted again to determine whether they have visited another health care facility during that time.

7-313

Title: RIIFLE Trial: retrospective analysis of the incidence and implications of false positive blood cultures

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Purpose: Coagulase-negative staphylococcus is responsible for up to half of contaminated blood cultures collected in the clinical investigation of suspected bacteremia1. The preliminary results of said cultures often initiates a chain of events involving antibiotic therapy, additional laboratory testing, and clinical monitoring. Intravenous vancomycin is frequently employed for treatment of such gram positive infections. As with any drug that is administered to a patient, adverse drug reactions can occur and cause unwanted and sometimes detrimental side effects. The rate of false-positive blood cultures at HVAMC is currently unknown, thus the monetary and clinical consequences remain unknown.

Methods: A retrospective chart review will be performed on blood cultures positive for coagulase-negative staphylococci, viridans group streptococci, diphtheroids, bacillus species other than B. anthracis collected from 01/01/03 to 01/01/13 at HVAMC. Inclusion criteria include the following: patients were 18-89 years of age, 1 out of 2 specimen collection sites grew coagulase-negative staphylococcus, viridans, group streptococci, diphtheroids, or bacillus species other than B. anthracis, the providers progress note did not identify any clinical signs/symptoms of blood stream infection, and IV antibiotic therapy discontinued within 72 hours after initiation. Of the false-positive blood cultures obtained, the number of patients that received IV vancomycin treatment will be identified and assessed for therapy duration and adverse drug events. The primary endpoints of this study are 1) Rate of false-positive blood cultures owing to contamination with coagulase-negative staphylococcus, viridans, group streptococci, diphtheroids, bacillus species other than B. anthracis, 2) Percentage of patients receiving vancomycin therapy to treat false-positive bacteremia, and 3) Rate of adverse drug events due to unnecessary vancomycin therapy.

7-314

Title: Medication costs associated with non-optimal dosing orders for atypical antipsychotics

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Purpose: National spending on prescription medications continues to increase every year. Atypical antipsychotics represent a high cost burden which may be further increased by dose titrations and computerized default entries at this facility. The purpose of this study is to assess the prescription medication cost associated with non-optimal dosing for atypical antipsychotics.

Methods: The study was approved and granted exemption by the Institutional Review Board due to lack of direct involvement with research subjects. A query of the electronic prescription records will be run daily between October 1, 2013 through March 31, 2014 to identify prescriptions for selected atypical antipsychotics (aripiprazole, olanzapine, quetiapine, or ziprasidone) for which refills have been requested. Prescriptions with non-optimal dosing of these atypical antipsychotics will be included in the study. The following data will be collected to quantify the annual cost associated with each prescription: date, prescription number, drug name and strength, directions for use, cost per dosage unit, number of dosage units per day, day's supply, and number of dosage units per prescription. The only Protected Health Information to be used in the data extraction will be the prescription numbers. All data will be recorded without patient identifiers and maintained confidentially. The study investigator will make appropriate interventions, updating prescriptions to minimize the annual cost associated with each prescription. The annual cost of the updated prescription and the difference between the cost of the updated and original prescription will be calculated and recorded in the same data extraction sheet to determine cost savings.

7-315

Title: Evaluation of pharmacological thromboprophylaxis (DVTP) in traumatic brain injury (TBI) patients

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Purpose: Our trauma data show that TBI patients have a higher risk of developing a deep venous thromboembolism (DVT) than the general trauma population. The Brain Trauma Foundation, American College of Chest Physicians, and others have addressed this issue with no universal recommendations. Our current standard is to assess TBI by computed tomography (CT) scans obtained 12 hours apart on day of injury and initiate weight-based enoxaparin or heparin prophylaxis 72 hours after injury if stable. The primary objective is to evaluate if the standard was followed. Secondary objectives are to evaluate timing of mechanical prophylaxis and dosing of DVTP.

Methods: Prior to commencement, the Institutional Review Board approved this study as exempt. The inclusion criteria consisted of TBI patients that were 18 years old or older. The exclusion criteria were patients with solid organ injury (spleen, liver, and/or one or both kidneys), epidural anesthesia, aneurysmal head bleeds, heparin-induced thrombocytopenia patients, stroke, or coagulopathies. The trauma database was queried for patients from January 2012 to July 2013. Patients were sorted into two groups: those with and without craniotomies. A random sample from each group was chosen to evaluate. The following information was collected: age, sex, hospital admission/discharge date, length of stay, weight, height, serum creatinine, surgical procedures including external ventricular drain placement, injury severity score, mechanical prophylaxis order date, pharmacological drug and dose, initiation/discontinue date of the drug, and inferior vena cava filter placement. The creatinine clearance will be calculated and used to evaluate the dose of DVTP. The appropriate statistics will be calculated between the two groups.

7-316

Title: Diabetic ketoacidosis in pediatric patients: a survey of guideline compliance and a retrospective review of a guideline based approach to management

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Purpose: Diabetic ketoacidosis (DKA) is characterized by hyperglycemia, acidosis, and ketonuria. Improper management may result in detrimental consequences. The International Society for Pediatric and Adolescent Diabetes (ISPAD) has published guidelines for the proper management of DKA in children and adolescents with diabetes. The purpose of this study is to assess understanding and compliance of these guidelines within Huntington, WV and the surrounding area as well as to assess the outcomes of pediatric patients treated with a guideline based approach to DKA management.

Methods: The study protocol will be submitted to the Institutional Review Board for approval prior to commencement. A questionnaire will be sent to emergency department physicians that practice in 14 hospitals surrounding Huntington, WV. The survey will assess awareness of DKA clinical practice guidelines, which specific guidelines are utilized, and current management of DKA. Additionally, a retrospective chart review will be performed on pediatric patients, ages 0-18 years of age, who were admitted to the pediatric intensive care unit (PICU) with a diagnosis of DKA between January 2010 and June 2013 at our institution. Pregnant patients will be excluded. The primary endpoint will be time to resolution of DKA. Secondary endpoints will include length of stay in the PICU, total length of stay in the hospital, severity of DKA upon admission, incidence of adverse effects, and time to resolution of DKA components including: hyperglycemia, anion gap and acidosis. The management of DKA at our institution and the survey results will be compared to the recommendations provided by the ISPAD to assess outcomes.

7-317

Title: Performance Evaluation of Updated Vancomycin Dosing Monitoring Recommendations in Obese Patients

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Purpose: In April 2013, WVUH updated the vancomycin dosing guidelines and therapeutic drug monitoring recommendations. The recommendations for the obese patients (BMI>=30 kg/m2) are to use the adjusted body weight and usually a loading dose is administered to reach the desired AUC/MIC faster. There are still uncertainties that remain in this patient population that would lead us to question the appropriate dosing and TDM of vancomycin in these patients.This study will compare an original and a revised vancomycin dosing protocol for obese patients with respect to attainment of target serum trough vancomycin concentrations and the occurrence of nephrotoxicity.

Methods: We performed a retrospective chart review in patients with BMI>=30 kg/m2 who received vancomycin for at least 72 hours to analyze the obtained troughs and any occurance with nephrotoxicity. The data collected included the patients in pre-implementation of the guidelines and post-implementation of the guidelines. The primary outcome measure was the frequency of the first measured vancomycin trough being within the target range of 10-20 g/mL. The frequencies of below-target (<10 g/mL) and above-target (>20 g/mL) trough concentrations will also be determined. Secondary outcome included the occurrence of nephrotoxicity within three and seven days of therapy initiation and its correlation with the first trough obtained. These outcomes will be evaluated among the entire cohort of patients and a subset of ICU patients.

Results: To be presented with the poster.

Conclusion: To be presented with the poster.

7-318

Title: Second Victims: Pharmacy Staff Perceptions of a Support Program at a Pediatric Hospital

Primary Author: Kara D Krzan**,** Nationwide Children's Hospital, 700 Children's Drive, Columbus, OH 43205; **Email:** kara.krzan@nationwidechildrens.org

Purpose: This study aims to determine the impact of implementing a second victim program on staff perception of support following an adverse drug event. Specific Aims: 1.Conduct a survey to identify the need for a second victim program that supports pharmacy staff following an adverse event. 2.Design, validate, and implement a second victim program that supports pharmacy staff following an adverse event. 3.Assess the impact of the second victim program in providing support to pharmacy staff after an adverse event.

Methods: A survey will be distributed to all pharmacy employees at a free-standing academic pediatric hospital to evaluate the staff perception of support following an adverse drug event. After analyzing the survey results, a second victim program will be implemented to provide support for those employees involved in adverse drug events. The program will consist of trained peer supporters who will serve as first responders. If a staff member requires support beyond what is provided by peer supporters, a chain of escalation will be followed. After implementation of the program in the pharmacy department, a second survey will be given to staff to evaluate their perception of support following involvement in an adverse drug event.

7-319

Title: Waste not, want not: On-demand dispensing of intravenous fluids

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Purpose: Historically, Nationwide Children's Hospital has prepared a 24 hour batch of intravenous (IV) fluids. With challenges from drug shortages, expanding to a new hospital, and significant cost of waste from the daily IV batch products, an on-demand request system was developed to address these issues. The objective of this study is to compare the cost effectiveness and waste reduction of an on-demand system for preparing and dispensing maintenance fluids and continuous intravenous infusions.

Methods: This study will be a retrospective chart review utilizing the electronic medical record to audit the number of continuous IV infusions and maintenance fluids dispensed before and after implementing an on-demand request system. The date, description of fluid, volume, dispensing pharmacy, order number, patient name, and medical record number will be extracted for any IV fluid dispensed. Data will be collected for July 2011 to January 2012, and July 2012 to January 2013, to compare pre-implementation and post-implementation of the on-demand system. IV fluids obtained from automated dispensing cabinets will be excluded from this analysis. The number of dispenses will be adjusted for number of patient days between the two time periods to account for an increase in patient admissions. Cost will be calculated based on actual pharmacy acquisition cost and will be corrected to 2013 dollars. Cost-effectiveness will be determined based on the total pharmacy acquisition cost to provide one course of IV therapy. Annualized waste reduction will be calculated by comparing the pharmacy acquisition cost of returned IV fluids between the two time periods. Data will be further analyzed by date, dispensing pharmacy, and type of solution in order to effectively compare results between the two periods.

8-001

Title: Management of pheochromocytoma with oral medications: a case report

Primary Author: David Dinh**,** Christiana Care Health System, 4755 Ogletown-Stanton Road, Wilmington, DE 19718; **Email:** ddinh@christianacare.org

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Case Report: This case report illustrates the management of a patient with pheochromocytoma in hypertensive crisis using oral and intravenous medications. A 33-year-old African American male with a past medical history of hypertension, chronic kidney disease, and Crohns disease was diagnosed with pheochromocytoma two months prior to presentation at the emergency department (ED). Pheochromocytoma is a tumor of chromaffin tissue, which synthesizes and secretes catecholamines, resulting in profound hypertension. Management of pheochromocytoma includes blood pressure control, but definitive treatment requires surgical removal of the tumor. The patient was initiated on an oral regimen of nifedipine extended-release 60 mg in the morning and 90 mg in the evening, labetalol 600 mg twice daily, and phenoxybenzamine 10 mg twice daily in the outpatient setting. He had a documented adverse drug reaction to lisinopril (angioedema) and was not prescribed an angiotensin converting enzyme inhibitor or angiotensin receptor blocker. Over the few days prior to the presentation, he experienced progressive malaise, fatigue, shortness of breath, nausea, vomiting, abdominal pain, palpitations, and increased bilateral throbbing headaches without aura. He denied any chest pain and stated he was compliant with all of his medications aside from the phenoxybenzamine which was not covered by his insurance. Upon arrival to the ED, he had a blood pressure of 227/137 mm Hg and his serum creatinine was 8 mg/dL (from a baseline of 5 mg/dL), which suggested target organ damage. He was diagnosed with hypertensive emergency and was started on an aggressive intravenous antihypertensive regimen which included esmolol 125 mcg/kg/min (later switched to labetalol 1 mg/min for additional alpha blockade), nicardipine 15 mg/hr, and phentolamine 5 mg/hr. Despite the use of multiple high-dose intravenous agents, he continued to have erratic elevated blood pressures with systolic blood pressures (SBP) ranging from 120-160 mm Hg and diastolic blood pressures (DBP) ranging from 60-90 mm Hg. The course was complicated by the unexpected, immediate unavailability of phentolamine, an intravenous alpha-1 blocker used for the management of pheochromocytoma. We opted to increase the infusion rates on the labetalol and nicardipine infusions up to 1 mg/min and 15 mg/hr, respectively, and initiated him on oral agents to preserve the phentolamine. He was started on an aggressive oral antihypertensive regimen, including a one-time dose of doxazosin 4 mg, labetalol 600 mg every 12 hours, nifedipine extended-release 90 mg every 12 hours, and phenoxybenzamine 10 mg twice daily. Over the next 2 days, he was still hypertensive with erratic blood pressures up to 180/140 mm Hg. The surgery service required him to have adequate blood pressure control (SBP < 160 mm Hg, DBP < 100 mm Hg) for at least a week before tumor removal could occur and he was required to remain hospitalized to prevent interruption of therapy. We gradually titrated the labetalol to 600 mg three times a day and the phenoxybenzamine to 40 mg three times a day, achieving adequate blood pressure control (SBP 120-160 mm Hg, DBP 80-100 mm Hg) which allowed all intravenous antihypertensives to be

titrated off. Aliskiren 150 mg daily was initiated two days prior to surgery without any adverse reactions. He was eventually taken to surgery where the left adrenal gland was removed. During the procedure, his blood pressure was adequately controlled with boluses of labetalol 5 mg and hydralazine 5 mg every 5-10 minutes. After surgical removal of the adrenal gland, he was started on an oral regimen of clonidine 0.3 mg three times a day, doxazosin 8 mg daily, labetalol 800 mg twice daily, metoprolol succinate 200 mg daily, and nifedipine extended-release 90 mg twice daily. The patient was eventually discharged home without complications.

8-002

Title: Effects of a pharmacist-run consultation service on oncological pain management, medication safety, and patient satisfaction in a community hospital

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Purpose: Previous studies have documented decreased length of hospital stay, increased patient satisfaction, and improved recognition and management of oncology patient needs following the initiation of consultation services by inpatient palliative care teams. Furthermore, many studies have shown improvements in pain control, medication safety, and patient satisfaction after implementing pharmacist-run pain services. Considering the prevalence and complexity of cancer-related pain, this study will aim to evaluate the effects of a pharmacist-run pain service on pain management, medication safety, and patient satisfaction in patients with oncological pain.

Methods: This prospective, cohort study will obtain approval from the hospital research council to evaluate the effects of a pharmacist-run pain service on clinical outcomes and patient satisfaction in oncology patients. Inpatients with oncological pain will be eligible for inclusion. Patients will be excluded for age less than 18 years old, hospital stay less than 3 days, or lack of pain score documentation. The treatment group will be seen by the pain pharmacist, whereas the control group will not. Clinical data collection will include daily vital signs, average daily pain scores, daily dosages of pain medications and naloxone, average time between bowel movements, bowel regimen prescribed, and length of hospital stay. Satisfaction surveys will be administered to all oncological pain patients on the date of discharge. The primary endpoint of this study will be average percent change in pain score from baseline. Secondary endpoints will include average percent change in pain score from days 1 to 3 and day 3 to discharge, average dosage of morphine equivalents administered from day 1 to discharge, average dosage of naloxone administered from day 1 to discharge, initiation of a bowel regimen, length of hospital stay, and patient satisfaction.

8-003

Title: Impact of certified diabetes educators on clinical outcomes and patient understanding of their disease

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Purpose: Diabetes is the seventh leading cause of death in the United States, as well as, the leading cause of kidney failure, non-traumatic lower limb amputations and new cases of blindness. Diabetes currently affects roughly 25 million people in the United States. In Delaware alone the number of people living with diabetes has risen to approximately 57,000. The Standards of Care suggested that people with diabetes should receive both diabetes self-management education (DSME) and diabetes self-management support (DSMS). This study is designed to evaluate the impact of education from a Certified Diabetes Educator on hemoglobin A1c (HbA1c) and other clinical outcomes.

Methods: This prospective cohort study will be conducted at a Diabetes Wellness Center serving the Central Delaware Region. Patients will be included if they are greater than 18 years of age, have a diagnosis of diabetes and a referral from a physician to attend education sessions at the Diabetes Wellness Center. Upon entering into the program at the Diabetes Wellness Center, referring physicians are required to submit the patient's most current HbA1c, fasting blood glucose and lipid panel labs. Patients will serve as their own control. The primary outcome of this study is change in HbA1c from baseline. The secondary outcomes of this study include change in weight, change in blood pressure, patient's knowledge growth and overall satisfaction with their care. The paired t-test will be used to compare the change in HbA1c from baseline, weight, and blood pressure before and after clinic attendance. Descriptive statistics will be utilized to report demographic data and the McNemar's test will be used for comparison of patient comprehension. This study is observational and will not impact patient care. This study will be approved by the Hospital Research Council; Investigational Review Board approval is not required.

8-004

Title: Management of acute toxicity following laundry detergent pod ingestion in two pediatric patients

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Case Report: There is a growing concern among national Poison Control Centers for pediatric ingestions of laundry detergent pods (LDPs). LDPs contain a concentrated detergent enclosed within a water-soluble membrane that is designed to dissolve in the presence of moisture. These products, introduced into the United States market in 2010, may be eye-catching to children due to their visual similarities with candy packaging. Retrospective analyses have also found a higher proportion of severe health outcomes in LDP ingestions as compared with traditional laundry detergent exposures. Two cases of accidental exposure to a LDP are reported here. The first case describes a 27-month-old male with a past medical history significant for G6PD deficiency who partially ingested a LDP. Following four episodes of vomiting, poison control was contacted. Due to the concern for aspiration and central nervous system (CNS) depression, the patient was referred to the emergency department (ED). Upon arrival to the ED, the patient was afebrile and lethargic, with increased oral secretions. His vital signs were as follows: heart rate 112 beats per minute, respiratory rate 38 breaths per minute, blood pressure 85/63 mm Hg, and oxygen saturation 96% on room air. The patient was irritable, drooling, and breathing with retractions on primary assessment. Rhonchi were heard bilaterally on physical exam, and two doses of albuterol 2.5 mg were administered via nebulizer. The patients chest x-ray was unremarkable. Significant laboratory values drawn on presentation to the ED include a serum bicarbonate of 15 mmol/L, anion gap of 26 mmol/L, and white blood cell count of 17.3/nL. Approximately one hour after arrival, the patient vomited twice and oxygen saturation decreased to 80%. The patient was suctioned and given one dose of ondansetron 2 mg intravenously. Oxygen saturation improved following suctioning, and the patient was transferred to a pediatric intensive care unit (PICU) for further observation and care. The patient continued to improve over 24 hours and was discharged. A less severe clinical scenario was observed in the second case, in which a 23-month-old male was also evaluated following ingestion of a LDP. Per the recommendations of poison control, his mother gave the patient water to drink while en route to the ED, during which time he experienced four episodes of vomiting. The patient exhibited coughing and drooling after vomiting, but no other signs of respiratory distress were observed. On arrival, the patient was afebrile and his vital signs were as follows: heart rate 127 beats per minute, respiratory rate 28 breaths per minute, blood pressure 85/54 mm Hg, and oxygen saturation of 98% on room air. Shortly after arrival, the patient experienced diarrhea and developed a maculopapular rash starting on his face as erythematous small bumps that spread down his back. No additional abnormalities were noted on physical exam. The chest x-ray showed hypoventilated clear lungs and laboratory evaluation was unremarkable. During the hospital course, the patients rash improved overnight and his drooling resolved. No respiratory distress was noted throughout the entire

hospitalization, and in the morning the patient was able to tolerate a small amount of food. He was discharged home the following morning and scheduled to follow up with his primary physician. These cases demonstrate a spectrum of clinical symptoms associated with LDP ingestion. Increased awareness and reporting of LDP exposures are warranted to further understand the management and long-term outcomes of toxicity.

8-005

Title: Comparison of sliding scale insulin lispro and regular insulin in hospitalized non-critically ill patients

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Purpose: Hyperglycemia is associated with poor outcomes in hospitalized medical and surgical patients. Hyperglycemia is observed in hospitalized patients with or without a history of diabetes. Poorly controlled blood glucose has been associated with increased costs, morbidity and mortality. Various regimens, such as sliding scale insulin, basal insulin dosing or correctional insulin have been used to control blood glucose in hospitalized patients. This study is designed to evaluate whether improved dosing flexibility of sliding scale insulin lispro leads to improved blood glucose control and less adverse effects compared to sliding scale regular insulin.

Methods: This will be a two hospital prospective cohort study accessing insulin regimens in non-ICU patients. The study will include adults at least eighteen years old who have received sliding scale insulin lispro or regular insulin for greater than 24 hours. Patients with diabetic ketoacidosis, hyperosmolar hyperglycemic nonketoacidosis, on total parenteral nutrition or receiving long acting insulin will be excluded. The control group will consist of patients treated with sliding scale regular insulin plus/minus oral hypoglycemic agents. The study group will include patients receiving sliding scale insulin lispro plus/minus oral hypoglycemic agents. Primary outcome will be the percentage of blood glucose values within the target range. For the purposes of this study the target range is 80-180 mg/dL. Secondary outcomes will include percentage of hypoglycemic events, length of hospital stay, average blood glucose, number of insulin units per day, and mortality. Categorical demographic data will be analyzed using chi-square. Analysis for continuous data will be performed using students t-test. Hypoglycemic events and mortality will be analyzed using relative risk. This study is observational and will not impact patient care. The study will undergo review by the hospital research council. Approval by the investigational review board is not required.

8-006

Title: Evaluation of medication reconciliation at a comprehensive cancer center

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Purpose: Medication reconciliation is a national patient safety goal set by The Joint Commission. Lack of a complete medication history heightens the risk of a patient receiving interacting medications or duplicative therapy, especially among patients seeing multiple providers. Oncology patients are at high risk of drug-drug interactions as they receive complex treatment regimens which often interact with medications prescribed for other comorbidities. This study aims to determine the impact of pharmacy-led medication reconciliation among oncology patients through analysis of medication discrepancies. Secondary objectives aim to improve quality of care through identification of drug-drug interactions, pharmacist recommendations, and resulting changes in medications.

Methods: This study has been submitted to the Institutional Review Board for approval prior to commencement. A retrospective, single center observational analysis of all oncology patients completing a medication reconciliation encounter with a pharmacy student between January 1, 2013 and December 31, 2013 will be conducted. Full completion of at least one medication reconciliation encounter facilitated through the pharmacy-led process will be required for patient inclusion in the study. The electronic medical record will be used to assess the results of medication reconciliation completed for each patient. Medication discrepancies including those resulting in dose changes, medication additions, herbal product additions, and medication deletions from each patient medication history will be collected and analyzed. Drug-drug interactions identified, severity of interaction found, provider notification of findings, and suggested medication related changes will also be assessed. Data collected will be analyzed using descriptive statistics.

8-007

Title: Evaluation of Bivalirudin Use in Patients with Acute Coronary Syndromes

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Purpose: Bivalirudin is a commonly used antithrombotic agent during cardiac catheterization. Early clinical trials with bivalirudin using primarily femoral access reported decreased risk of bleeding with similar efficacy as heparin. Recent registry findings have challenged the benefit of bivalirudin in the setting of radial access, which has recently become a common site for vascular access. The purpose of this project is to evaluate the use of bivalirudin in patients undergoing cardiac catheterization.

Methods: This study has been approved by the Institutional Review Board. This retrospective, observational, single-center study will review all patients for whom bivalirudin was prescribed during cardiac catheterization from January 2012 to August 2013. Data collected will include: baseline demographics, vascular access site, history of thrombocytopenia, creatinine clearance, and appropriateness of bivalirudin dose. The estimated risk of a procedure-related bleeding event will be evaluated using the National Cardiovascular Data Registry (NCDR) clinical risk algorithm. Timing and utilization of additional antithrombotic therapies will be assessed. The efficacy of bivalirudin will be assessed by the occurrence of stent thrombosis and provisional glycoprotein IIb/IIIa inhibitor use. Bleeding events will be classified based on TIMI and Blue Cross Blue Shield bleeding criteria. Data will be reported with descriptive statistics.

8-008

Title: Experience with dexmedetomidine for sedation of children undergoing imaging: a retrospective review

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Purpose: To evaluate the safety and efficacy of dexmedetomidine for sedation of children undergoing imaging at Children's Hospital of Michigan as measured by percent of children successfully completing imaging and the frequency and types of adverse events associated with dexmedetomidine.

Methods: An IRB approval is under review for this study. A retrospective review will be conducted from sedation flow sheets and electronic medical records for patients who had sedation for radiological imaging during January 1st through June 30th 2013. Inclusion criteria are all children who received 1 dose of IV dexmedetomidine for sedation for radiological imaging. Patients < 1 year and > 18 years will be excluded. Sedation efficacy will be determined by duration of induction time, recovery time, success in keeping patient immobile, need for rescue or additional medications, and successful completion of scan. Safety will be evaluated by the types and frequency of adverse events such as hypoxia, hypercarbia, hypotension, hypertension, prolonged sedation, need for airway management, need for general anesthesia to complete the scan, cancellation of the scan, and hospital admissions following sedation. Appropriate statistical tests will be employed for analysis. Findings will be used to improve sedation management practices in children.

8-009

Title: Antiviral prophylaxis for herpes zoster in patients with multiple myeloma or mantle cell lymphoma treated with proteasome inhibitors

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Purpose: Novel treatment options for multiple myeloma or mantle cell lymphoma include the proteasome inhibitors, bortezomib and carfilzomib. Proteasome inhibitors have been associated with an increased risk of varicella zoster virus reactivation with reports of incidence rates greater than ten percent compared to four percent in patients on other chemotherapy regimens. Acyclovir prophylaxis has shown to reduce the occurrence of herpes zoster, ranging from zero to ten percent in several retrospective and prospective studies. Our study is to evaluate the efficacy and safety outcomes with the use of antiviral prophylaxis in this malignant hematologic patient population.

Methods: This is a retrospective study in patients receiving bortezomib or carfilzomib at a comprehensive cancer center from January 2012 through July 2013. This study has obtained approval from the protocol review and monitoring committee and will be submitted to the Institutional Review Board for approval. A list of patients on bortezomib or carfilzomib will be generated from the pharmacy dispensing record for screening study patients eligibility. Patients between the ages of 18 and 90 with a diagnosis of multiple myeloma or mantle cell lymphoma will be included. Patients receiving less than two cycles of a chemotherapy regimen containing bortezomib or carfilzomib, an active autoimmune disease with ongoing treatment, hypersensitivity or contraindication to antiviral agents, pregnant or lactating women, and inability to tolerate oral antiviral medications are excluded from the study. Study objectives include the prevalence of herpes zoster in multiple myeloma and mantle cell lymphoma patients receiving bortezomib or carfilzomib and the adverse drug reactions associated with oral antiviral prophylaxis. Data will be summarized with the use of descriptive statistics.

8-010

Title: Assessment of anticoagulation in patients experiencing bleeding events following percutaneous coronary intervention

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Purpose: Anticoagulant and antiplatelet drugs are the standard of care for patients receiving percutaneous coronary intervention (PCI) to reduce ischemic complications. Whether drug therapy should be altered in the setting of new antiplatelet agents or procedural techniques remains to be answered. The goal of this study is to determine which anticoagulation and antiplatelet regimens were most frequently utilized in patients experiencing a bleeding event following PCI.

Methods: This study has been approved by the Institutional Review Board. This single center, retrospective, descriptive analysis will review all patients who experienced a bleeding event following percutaneous coronary intervention (PCI) from January 2011 to April 2013. An estimate of pre-procedure bleeding risk will be calculated for each patient using the National Cardiovascular Data Registry (NCDR) clinical risk algorithm. Each bleeding event will be classified according to Thrombolysis in Myocardial Infarction (TIMI) criteria, and the need for transfusion of packed red blood cells or fresh frozen plasma will be evaluated. Anticoagulant dose, timing, and duration of therapy will be assessed for each patient. Laboratory values associated with supratherapeutic anticoagulation will be collected. Furthermore, glycoprotein IIb/IIIa and thienopyridine usage and timing will be assessed. Procedural data related to arterial access site, catheter size, time to sheath removal and utilization of closure device will be collected. Finally, length of stay post-PCI and discharge disposition will be collected to assess the overall impact of the bleeding event. Data will be reported with descriptive statistics.

8-011

Title: Evaluation of the Use of Low-Dose Quetiapine and the Risk of Metabolic Consequences: A Retrospective Review

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Purpose: Current practices at many facilities utilize quetiapine for it's antipsychotic benefit and sedative properties. Many patients are started on quetiapine initially and not titrated upwards to maximum tolerance and benefit or are placed on low-doses to aid in insomnia. Data from small randomized and retrospective trials have identified that using low-dose quetiapine may lead to metabolic consequences, such as weight gain and elevated body mass index numbers. The purpose of this study is to evaluate the risks of developing metabolic consequences with the use of low-dose quetiapine.

Methods: Electronic medical records from Computerized Patient Record System (CPRS) and VISTA Fileman will be accessed retrospectively to obtain research data. The anticipated study period will cover patient charts from June 30, 2012 to September 1, 2013. Patients will then be selected based on inclusion and exclusion criteria. Patients greater than 18 years of age with a prescription for quetiapine at up to a maximum dose of 200mg will be included in the study. Progress notes, prescription history, and outside medical records will be reviewed to determine duration of therapy, concomitant antipsychotic use, dosing schedule, dose, before and after lipid levels, blood pressure, fasting blood glucose, weight and body mass index. Exclusion criteria will be any patient over 200mg of quetiapine and duration of therapy less than 3 months.

8-012

Title: Evaluation of prasugrel utilization at a community teaching hospital

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Purpose: Dual antiplatelet therapy, consisting of aspirin and a thienopyridine, is currently standard of care following acute coronary syndromes (ACS). Clopidogrel was the thienopyridine of choice until prasugrel was approved in 2009. Current evidence suggests prasugrel is more efficacious than clopidogrel, but confers increased bleed risk. The primary objective of this study is to evaluate the incidence of bleeding events observed with prasugrel utilization and characterize overall use at a community teaching hospital. The secondary objective is to compare prasugrel utilization and outcomes before and after implementation of a computerized physician order entry (CPOE) alert advising against use in high-risk populations.

Methods: This is an Institutional Review Board approved retrospective, observational cohort analysis. Adult patients who received prasugrel following an ACS and subsequent percutaneous coronary intervention (PCI) between June 2012 and May 2013 are eligible for inclusion. Exclusion criteria includes: age less than 18 years, pregnancy, or on prasugrel prior to admission. Planned outcomes to assess include documented bleed on prasugrel, number of transfusions required, hospital and ICU length of stay, in-hospital and 30-day incidence of nonfatal MI, nonfatal stroke, urgent revascularization, or death, and rehospitalization due to cardiac events within 30 days. Additionally, a CPOE alert was instituted in the electronic medical record in January 2013 advising against prasugrel use if age greater than 75 years, history of transient ischemic attack or stroke, or body weight less than 60 kg. Prasugrel utilization and outcomes before and after implementation of the alert will be compared. Descriptive statistics will be utilized to describe baseline characteristics. Pearsons chi-squared analysis and/or Fishers exact test will be utilized for categorical data. All continuous variables will be tested for normality. Students t-test will be used for normally distributed data and Wilcoxons rank-sum for non-normally distributed data. A p-value less than 0.05 will be considered statistically significant.

8-013

Title: Clinical Relevance of the HAS-BLED Scoring Tool as a Predictor of a Major Bleed

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Purpose: The HAS-BLED scoring tool has been validated to predict a major bleed in atrial fibrillation patients on an oral anticoagulant and/or antiplatelet agent(s). However, the HAS-BLED scoring tool has not been studied in patients on these agents for indications other than atrial fibrillation. The objective of this study is to retrospectively calculate the HAS-BLED score on patients admitted with an intracranial hemorrhage (major bleed) while on an oral anticoagulant and/or antiplatelet agent(s) on admission. Our working hypothesis is that these patients will have a calculated HAS-BLED score ≥ 3, regardless of indication of the agent(s).

Methods: This is a retrospective, observational, single-center study that will be submitted to the Institutional Review Board for approval. Electronic medical records of patients admitted with an intracranial hemorrhage will be reviewed to assess if they were on an oral anticoagulant and/or antiplatelet agent(s) on admission and the therapeutic indication of the agent(s). The agents included are warfarin, dabigatran, rivaroxaban, apixaban, aspirin, aspirin/dipyridamole, ticlopidine, clopidogrel, prasugrel, and/or ticagrelor. The identified records will be further reviewed to calculate the HAS-BLED score, which incorporates the following bleeding risk factors: uncontrolled hypertension, abnormal renal and/or hepatic function, previous stroke, previous bleeding history, labile INR, elderly, and concomitant medications that increase bleeding risk or alcohol use. The risk factors included in this scoring tool will be obtained from the admitting progress notes and available laboratory values. The percentage of patients with a HAS-BLED scores ≥3 will be described. The frequency and percentage of patients on an oral anticoagulant and/or antiplatelet agent(s) and their therapeutic indication will be described separately.

8-014

Title: Rivaroxaban use evaluation in an academic tertiary hospital

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Purpose: Rivaroxaban is a first-in-class direct factor Xa inhibitor currently FDA approved for thromboprophylaxis following hip or knee arthroplasty, stroke prevention in patients with non-valvular atrial fibrillation (NVAF) and treatment and secondary prevention of deep-vein thrombosis (DVT) and pulmonary embolism (PE). Our institution has approved guidelines for use of rivaroxaban in patients with NVAF and prevention of thromboembolism in patients undergoing hip or knee arthroplasty. Guidelines for use in DVT and PE treatment are currently under development. The objectives of this medication use evaluation (MUE) are to analyze prescribing practices of rivaroxaban in our institution and identify opportunities for improvement.

Methods: This study has received approval from the Human Investigation Committee. This is a single-center, retrospective, electronic chart review of patients who received at least one inpatient dose of rivaroxaban. Data will be collected for thromboprophylaxis and stroke prevention from patients treated in July of 2013. For DVT and PE treatment, data will be collected from May through September 2013. A goal of at least 100 patients will be targeted. Data collected will include: patient demographics, indication, dosing regimen, renal and hepatic function, interacting medications, transition between anticoagulants, therapy interruption, peri-procedural management, major bleeding events, pharmacist interventions, patient education, transitions of care and compliance with corporate guidelines.

8-015

Title: An antimicrobial stewardship assessment of a complicated intra-abdominal infection (cIAI) treatment guideline post-implementation

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Purpose: It has been established that the implementation of antimicrobial guidelines in individual institutions has clinical and economical benefit. Based on the Infectious Diseases Society of America (IDSA) guidelines for treatment of complicated intra-abdominal infections and community resistance rates from the local antibiogram, a 444-bed hospital implemented a complicated intra-abdominal infection (cIAI) treatment guideline in March of 2012 in hopes of experiencing these benefits. The purpose of this study will be to analyze the adherence to the treatment guideline and evaluate the impact of the intervention.

Methods: A retrospective comparative analysis of antimicrobial appropriateness will be performed including patients treated for complicated intra-abdominal infections during a three-month period before and after implementation of the cIAI guideline. Patients will be excluded if they are pregnant, less than 18 years of age, had less than 24 hour length of stay, diagnosed with neutropenic fever, or had another infectious process being treated with antimicrobials prior to the IAI diagnosis. The cIAI guideline divides patients into three treatment groups based on severity of presentation: community-acquired, community-acquired with high-risk factors, and healthcare-associated IAI. Treatment group will be included in the baseline demographic data as well as age, gender, creatinine clearance, antibiotic allergies, subset of IAI diagnosed, and abdominal surgery and/or procedure history. The primary endpoint will be initial antimicrobial regimen appropriateness determined by comparison of empiric antimicrobial choice to the cIAI guideline based on treatment group. Secondary endpoints will include dosing appropriateness, subset of IAI diagnosed, antimicrobial de-escalation following cultures, time to oral dosage form use, duration of therapy and length of stay. This study will be presented to St. Joseph Mercy Oakland Institutional Review Board prior to data collection.

8-016

Title: Comparison of intravenous and oral acetaminophen in the surgical hip fracture population

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Purpose: Acetaminophen is often used as an adjunct agent for management of postoperative pain to optimize the multimodal pain relief strategy. Intravenous acetaminophen has opioid-sparing effects when compared with placebo; however, few studies have compared intravenous to oral or rectal acetaminophen and the impact on opioid requirements or opioid-related adverse drug events. The objective of this study was to compare the efficacy of scheduled intravenous acetaminophen to scheduled oral acetaminophen in the postoperative hip fracture population.

Methods: Adult patients with a diagnosis of hip fracture who received scheduled acetaminophen were identified retrospectively between May 2012 and March 2013. Patients were stratified into those who received intravenous acetaminophen versus oral acetaminophen postoperatively. An a-priori sample size calculation determined 41 subjects were needed in each group to detect a 5 mg change in oral morphine consumption with a power of 80 percent and alpha level of 0.05. The primary endpoint was postoperative opioid requirements. Secondary endpoints included mean pain score, incidence of opioid-related adverse drug events, and hospital length of stay.

Results: The institutional review board approved this retrospective study. Eighty-two patients, 41 each in the intravenous and oral acetaminophen groups met inclusion criteria. Demographic characteristics were similar between groups. No statistical difference in postoperative opioid requirements was found between intravenous and oral acetaminophen in the first 24 hours postoperative (28 mg vs. 57 mg oral morphine equivalent dose, P equals 0.183). The subgroup analysis of opioid-naive patients also showed no statistical difference in oral morphine equivalent consumption between groups (28 mg vs. 35 mg oral morphine equivalent dose, P equals 0.357). There was no significant difference in the secondary endpoints of mean pain score (3.7 vs. 3.7, P equals 0.663), length of hospital stay (117.1 hours vs. 119.3 hours, P equals 0.862) or opioid-related adverse drug events (1 vs. 1, P equals 1).

Conclusion: Surgical hip fracture patients treated with scheduled intravenous or oral acetaminophen had similar use of narcotics for postoperative pain control. Intravenous acetaminophen did not improve pain scores or outcomes compared to oral acetaminophen.

8-017

Title: Comparison and alignment of an academic medical center's strategic goals with pharmacy practice model initiative (PPMI) recommendations

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Purpose: Healthcare reform is a high priority for hospitals nationwide requiring changes in pharmacy practice, including the redesign of pharmacist and technician roles and the increased use of technology to meet productivity and medication safety goals. ASHP's PPMI encourages pharmacy departments to evaluate their own practice model to determine if their resources are properly used to support institutional sustainability and patient care. This research project will compare and align an academic medical center's pharmacy practice model to help meet ASHP's PPMI recommendations while continuing to serve its mission.

Methods: This research project was deemed exempt from IRB review. A gap analysis will be performed to compare the current model with PPMI recommendations utilizing ASHP's Hospital Self-Assessment tool. Gaps will be prioritized by the Department's Pharmacy Practice Model Steering Committee (PPMSC) to determine potential areas where the Department's strategic goals should be focused. The PPMSC will then identify potential solutions to narrow the gaps utilizing a modified Nominal Group Technique. Solutions will be categorized by level of impact and feasibility (high/low), with the high impact/ high feasibility solutions being considered as top priority solutions. Priority solutions will be assigned to work groups to develop implementation plans. Implementation plans will consider resources needed, including staff, equipment, and finances, as well as training requirements. The work group will devise a structured strategic plan which will address the value of the service, contain a SWOT analysis, and provide an action plan containing a metric process for evaluating the outcome/success of the plan. Once completed, implementation plans will be communicated to stakeholders and employees to allow for feedback and revision before moving into the implementation phase. The final impact of the plans will be documented through assessment of the outcome metrics for implemented programs.

8-018

Title: Increased resistance at the end of life: IRATE with anti-infective use

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Purpose: Overuse of anti-infectives leads to long-term adverse consequences; hence, the Infectious Disease Society of America (IDSA) recommends implementation to initiate and strengthen antimicrobial stewardship programs. Curative outcomes are anticipated for patients given antimicrobials; however, this contradicts the goal of hospice and complicates the efforts of stewardship. There are currently no national guidelines addressing anti-infective use in end of life patients. This study aims to determine patterns of use, duration of therapy, length of survival, and cost of anti-infective agents at the end of life.

Methods: This study is a retrospective, cross-sectional study of anti-infective use in end of life patients admitted to Henry Ford Hospital from January 1, 2012 through July 31, 2013. This project is approved by the Institutional Review Board. Patients over the age of 18 with documented hospice or comfort care status who have received at least one dose of a systemic anti-infective agent after hospice or comfort care status will be included. In order to investigate the use of anti-infective agents in end of life patients, we will assess patient demographics, characterize anti-infective use, determine length of survival, and assess cost of anti-infective use. We will characterize anti-infective use by reviewing the anti-infective dispensed, infection indication, route, dose, total doses dispensed, and duration of therapy. We will also assess if cultures were obtained and by which care team, and documentation of infectious symptoms. Lastly, anti-infective cost will be assessed by obtaining the acquisition cost per dose and determining the total number of doses dispensed for the total duration of therapy. Descriptive statistics will be used to analyze collected data.

8-019

Title: The relationship between obesity and treatment outcomes in pneumonia, skin and soft tissue infection, and urinary tract infection

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Purpose: In the obese population, increased adiposity induces a pro-inflammatory state which leads to altered immune cell function and impaired immune response. Furthermore, obesity has been documented as a risk factor for increased susceptibility to several types of infections. However, few studies have examined treatment outcomes for infections in this patient population. The purpose of our study is to analyze treatment outcomes for pneumonia, skin and soft tissue infection, and urinary tract infection in the obese population to identify whether increasing body mass index (BMI) impacts antibiotic exposures.

Methods: This is a non-interventional, retrospective cohort study of patients treated at a large community research and teaching hospital in metropolitan Detroit. The study protocol has been submitted to our affiliated institutional review boards. We will evaluate infection outcomes in patients in different BMI categories (BMI of 25-29.9 kg/m2 is overweight, 30-39.9 kg/m2 is obese, and 40 kg/m2 or greater is severely obese) while assessing several covariates (examples include degree of infection severity, pre-existing lung disease, antimicrobial regimen, etc.). We will aim to include at least 90 patients, approximately 30 patients in each BMI category, in order to detect a 10% difference between endpoints with 80% power. Treatment outcomes (inpatient and 30-day all-cause mortality, inpatient length of stay, infection resolution, and readmission) will be analyzed by comparing applicable data at time of infection diagnosis, infection resolution, and antimicrobial therapy discontinuation. Patient demographics and clinical characteristics will be evaluated using the Students t-test for continuous variables and the Chi-squared test for categorical variables. For primary outcome analysis, multiple logistic regression will be applied, with the two main variables being BMI (independent) and treatment outcome (dependent).

8-020

Title: Evaluation of a pharmacist driven insulin education program on Internal Medicine resident knowledge

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Purpose: Diabetes mellitus (DM) affects over 25 million people in the United States. Insulin is the treatment of choice for management of type 1 DM, and an option for initial therapy in type 2 DM.With the rise in DM, physicianknowledge of insulin regimenswill continue to grow in importance. Pharmacists have long been involved as educators in medical resident training programs, although data evaluating the outcomes is limited. This study will assess the knowledge of Internal Medicine residents on insulin pharmacokinetics, and insulin and syringe prescribing before and after an educational session provided by a pharmacist.

Methods: This study will be submitted to the Institutional Review Board for approval. The medical residents will receive an information sheet describing the project goals and objectives during the first week of their clinic block rotation. Residents will be given a written pre-test prior to the educational session. This pre-test will assess their comfort level with insulin pharmacokinetics, comfort with writing insulin prescriptions, knowledge of insulin pharmacokinetics and of prescribing insulin and syringes. The pre-test will consist of multiple choice questions. Following the pre-test, a group educational session reviewing insulin pharmacokinetics and correct prescribing of insulin and syringes will be provided to the residents during their first week of rotation by a pharmacist. The educational session will be provided during the months of November 2013, December 2013, January 2014, and February 2014. A post-test will be given immediately after the educational session to assess if the educational session improved insulin regimen knowledge and then will be repeated during the last week of the rotation to assess retention of knowledge. Descriptive analysis will be conducted to evaluate the objectives. A paired difference test will be used to asses if a statistical difference exists between and pre-test and each of the post-tests.

8-021

Title: Pharmacist initiated depression screening in patients with diabetes in the patient-centered medical home

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Purpose: Despite high comorbidity of depression and diabetes, many patients remain undiagnosed with depression and untreated. Identification and treatment of depression are important not only to decrease depressive symptoms, but also to improve diabetes outcomes since depression is associated with increased rates of hyperglycemia, decreased adherence with medication, and increased complications of diabetes. Patients are often referred for clinical pharmacy services due to poor rates of glycemic control, but it is difficult for the pharmacist to assist when depression may be an underlying cause of this issue. This study aims to assess impact of pharmacist initiated depression screening.

Methods: Upon institutional review board approval as an exempt quality initiative project, adult patients with diabetes currently not being treated for depression with a pharmacy visit during a 4 month time period beginning in fall 2013 and extending to winter 2014 will be administered the PHQ2 screening tool. Pharmacists will use a standardized script to introduce screening to the patient. Screening results, regardless of the score, will be included in the patient's visit note. If the patient answers yes to either of the PHQ2 questions, the pharmacist will indicate this in the routing note to the physician for further diagnostic evaluation. The pharmacist will also recommend treatment options in case the physician wishes to use pharmacologic treatment. The following data will be collected for each patient: age, race, most recent hemoglobin A1c, and current diabetic pharmacologic treatment. The percentage of patients utilizing pharmacy services who are referred to their physician for further depression evaluation as well as the rate of acceptance of pharmacists' recommendations for pharmacologic treatment when pharmacologic treatment is used will be evaluated. The results of this project will allow clinics to determine if routine depression screening of patients with diabetes should be a part of pharmacy clinic visits.

8-022

Title: Daptomycin versus vancomycin for methicillin-resistant Staphylococcus aureus bacteremia with vancomycin minimum inhibitory concentration of 2 microgram per milliliter in patients with end stage renal disease

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Purpose: Methicillin-resistant Staphylococcus aureus (MRSA) is a common cause of bloodstream infections among patients with end stage renal disease (ESRD). Optimal treatment of such cases remains a concern particularly in the setting of decreased susceptibility to vancomycin (i.e. vancomycin minimum inhibitory concentration (MIC) of 2 mCg/mL. Considering decreased vancomycin clearance in this population, vancomycin exposure may adequately achieve the area under the concentration-time curve to MIC target to optimize patient outcomes. The objective of this study is to compare outcomes associated with vancomycin versus daptomycin for MRSA bacteremia when the vancomycin MIC is 2mCg/mL among patients with ESRD requiring hemodialysis.

Methods: This retrospective cohort study will be submitted to the Institutional Review Board prior to commencement. Patients with MRSA bacteremia and a vancomycin MIC of 2mCg/mL over a 7-year period at this academic teaching institution will be identified via the electronic medical record. Patients meeting the following criteria will be included: age 18 to 89 years with ESRD requiring HD, MRSA susceptible to the study agents, use of study agent for greater than 72 hours, and a known source of MRSA bacteremia. Patients will be excluded if they received treatment with an alternative agent (including comparator) as monotherapy for greater than 72 hours prior to initiation of study agent or pneumonia was the primary source of bacteremia. Data collected will include demographics, antimicrobial treatment, hemodialysis regimen, comorbidities, concomitant medications, and severity of illness. The primary outcome will be clinical success, defined as: clinical and microbiological signs and symptoms resolved without a need to change antimicrobial therapy due to failure. Secondary outcomes will include 30-day readmission, duration of hospitalization and antimicrobial therapy, days until clearance of bacteremia, emergence of decreased antimicrobial susceptibility, and adverse effects attributable to treatment. Logistic regression will be performed to assess for potential confounding variables.

8-023

Title: Cost-effectiveness of procalcitonin-guided antibiotic use in sepsis

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Purpose: Recently, procalcitonin has emerged as a promising biomarker of bacterial infection. Use of procalcitonin testing and an associated treatment pathway has been demonstrated to reduce duration of antibiotic therapy without impacting mortality in diseases like community-acquired pneumonia and sepsis. Procalcitonin testing, however, is an additional expenditure which may or may not be offset by gains in antibiotic cost reduction and decreases in bacterial resistance or the rate of antibiotic-related adverse events. The objective of this study is to determine the financial impact of utilizing procalcitonin to guide antibiotic use in the treatment of sepsis in health-systems in the United States.

Methods: This study is a pharmacoeconomic model simulation. Using available published clinical and economic data including length of antibiotic therapy, procalcitonin testing and antimicrobial costs, and adverse event incidence and associated costs, a decision analytic model will be developed to test the cost-effectiveness of using a procalcitonin algorithm. We will perform both a cost-effectiveness and cost-utility analysis for the use of procalcitonin in sepsis from the hospital perspective. Effectiveness and utility measures will be defined using cost-per-clinical episode and cost per quality-adjusted life years (QALYs). Upper and lower sensitivity ranges will be determined for all inputs. Univariate and probabilistic sensitivity analyses (Monte Carlo simulation) will assess the robustness of our model and model variables. To determine the cost per effect achieved, incremental cost-effectiveness ratios (ICERs) will be calculated and compared to a predetermined willingness-to-pay. Our model will provide health-system decision makers with a valuable guide when evaluating whether to implement procalcitonin testing in patients with sepsis at their institution.

8-025

Title: Evaluation of nebulized tobramycin in inner city intensive care units

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Purpose: Nebulized tobramycin is indicated for the maintenance therapy of cystic fibrosis patients with chronic Pseudomonas aeruginosa infection to improve lung function and reduce frequency of exacerbations. Clinical data regarding the use of nebulized tobramycin in patients with bronchiectasis or ventilator-associated pneumonia, have consisted of small sample sizes, short duration of follow-up, and have been non-conclusive. This study aims to evaluate the appropriateness of current prescribing practices of nebulized tobramycin in critically ill patients at Henry Ford Hospital (HFH) in order to identify potential opportunities for improvement and cost savings.

Methods: This is a retrospective, observational evaluation of the use of inhaled tobramycin in the intensive care units (ICUs) at HFH. This project has been reviewed and approved by the Institutional Review Board. Patients will be identified using the electronic medical record and pharmacy monitoring system at HFH. Patients over the age of 18 who are given at least one dose of inhaled tobramycin in the Medical ICU (MICU) or the Surgical ICU (SICU) between July 1, 2012 to June 30, 2013 will be included. To investigate the appropriateness of inhaled tobramycin use, patients past medical history, indication for inhaled tobramycin initiation, lab values, and cultured organisms, and dosing will be evaluated. Data will be reported as descriptive statistics.

8-026

Title: Evaluation of intravenous bumetanide in pediatric patients after cardiac surgery

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Purpose: Fluid overload is a common complication of cardiopulmonary bypass (CPB) and is associated with increased morbidity and mortality. CPB triggers an inflammatory response leading to capillary leak and edema. Fluid overload is further exacerbated by large volumes of fluids and blood products administered intra- and post-operatively. Finally, alterations to end-organ perfusion may lead to changes in renal function with subsequent fluid retention. Although furosemide is traditionally first-line in managing pediatric fluid overload, an increasing number of patients receive bumetanide. The purpose of this project is to evaluate dosing and safety of intravenous bumetanide in pediatric cardiac surgery patients post-cardiopulmonary bypass.

Methods: This project will be a retrospective chart review evaluating the response to intravenous bumetanide in pediatric patients following cardiac surgery who do not adequately respond to intravenous furosemide. Inclusion criteria include age less than 18 years old, admission to the Congenital Heart Center between January 1, 2008 and September 1, 2013, and treatment with intravenous bumetanide within 30 days of cardiopulmonary bypass. Exclusion criteria include extracorporeal membrane oxygenation and renal replacement therapy. Patient and surgical characteristics, medication history, as well as surrogate markers for fluid status and renal function will be collected from the electronic medical record. Occurrence of acute kidney injury and descriptive statistics characterizing bumetanide dosing will be reported. Continuous variables will be analyzed using a two-sided Student's t-test, while analysis of categorical data will be performed using a chi-squared test. Institutional Review Board approval is pending.

8-027

Title: C. difficile in ICU patients: analysis of clinical and molecular risk factors in patients with recurrent versus non-recurrent infection.

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Purpose: Over the last decade, Clostridium difficile infection (CDI) has become particularly problematic due to its increased mortality, incidence, and severity. Previous studies identified risk factors for recurrence in hospitalized patients but a gap exists in identifying recurrence risk factors in the intensive care unit (ICU) population. Also, the rate of recurrence in the ICU population has yet to be established. The proposed research project will evaluate and determine the ICU-specific risk factors associated with CDI recurrence. Furthermore, this study will define the rate of CDI recurrence in the ICU population.

Methods: A retrospective chart review study of risk factors for CDI in adult ICU patients admitted to a 925 bed University Medical Center. Patients were included if they were in the ICU between 2010 and 2013. Inclusion in the study required a positive CDI diagnosis in the ICU. CDI diagnosis was confirmed by the presence of diarrhea and positive PCR test or combination of positive antigen and enzyme immunoassay toxin tests. To evaluate whether a recurrent CDI occurred, patients were followed for 12 weeks post their index case. Patients were excluded if they died at the time of their index case or if they were transferred from an outside ICU with missing information about their index case. A multivariate analysis was performed to identify risk factors for CDI recurrence.

8-028

Title: Evaluation of combination drug therapy for Clostridium difficile-associated diarrhea

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Purpose: According to the Centers for Disease Control and Prevention (CDC), most types of healthcare associated infections (HAIs) are declining, but HAI caused by Clostridium difficile still remains at historically high levels. 2010 Society for Healthcare Epidemiology of America (SHEA) and Infectious Diseases Society of America (IDSA) guideline recommends a combination of oral (PO) vancomycin and intravenous (IV) metronidazole for the treatment of severe, complicated Clostridium difficile-associated infection (CDI) despite a paucity of outcome data. The objective of this study is to determine whether double coverage for CDI is statistically different from monotherapy treatment of a variety of CDI.

Methods: This retrospective, single-center study will be submitted to the Institutional Review Board (IRB) for approval. Between May 2009 to May 2013, 150 study subjects with documented CDI were be identified through electronic medical system reports and included in the study if they were older than 18 of age and if they received more than 72 hours of antimicrobial therapy. The following data are being collected: demographic information (including patient's age, gender, and residence), immunity status, renal function, chemistries, complete blood count (CBC) with differential, imaging, prior CDI, CDI symptomology and severity, concurrent antibiotic use, prior antibiotic exposure, prior and current acid suppressive therapy, dose of PO vancomycin and dose of PO and IV metronidazole, duration of therapies, alternative therapies, surgical intervention, and documented adverse effects. All data will be recorded without patient identifiers and with maintained confidentially. The primary outcomes of CDI-associated mortality and resolution of symptoms at the end of treatment will be evaluated using multivariate statistics, accounting for the potential covariates listed above.

8-029

Title: Impact of pharmacist interventions to improve patient satisfaction regarding knowledge of medications and hospital reimbursement

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Purpose: Beginning October 2012, the Center for Medicare and Medicaid Services imposed reimbursement penalties for hospitals based on performance. Part of this performance is determined by patient satisfaction according to the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey. The objective of this study is to determine whether pharmacist interventions improve patient satisfaction on the HCAHPS survey question, "When I left the hospital, I clearly understood the purpose for taking each of my medications".

Methods: This review was submitted to the institutional review board for approval. This retrospective review will be conducted with adult patients on four nursing units that received a pharmacy welcome card on admission. The card included the unit pharmacist's phone number instructing the patient to call with medication questions. Eligible patients were admitted for a minimum of one night. The following data will be collected without patient identifiers: percentage of eligible patients that received the intervention, number of patient medication questions, number of patients that complete the HCAHPS survey, and each units percentile rankings compared to similar sized hospitals.The primary outcome is the change in patients responding strongly agree to the HCAHPS survey due to the intervention. HCAHPS survey results will be evaluated monthly for each unit and compared to survey results prior to the intervention.

8-030

Title: N-acetylcysteine prophylaxis to prevent acute kidney injury in patients treated with liposomal amphotericin b during the 2012 fungal outbreak

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Purpose: Over the course of the 2012 fungal meningitis outbreak, 264 of the 750 identified cases have occurred in Michigan, the vast majority of which have been treated in our institution. Liposomal amphotericin B (LAmB) was used to treat many of the patients. In an effort to protect against the nephrotoxicity caused by LAmB, N-acetylcysteine (NAC) was employed as a prophylaxis agent in some patients. The purpose of this study is to determine if the NAC conferred a statistically-significant degree of protection against nephrotoxicity in these patients.

Methods: This is a retrospective cohort study which will compare the time to reach target serum creatinine (SCr) level (1.5x baseline) for patients who were administered NAC in conjunction with LAmB treatment versus patients who received LAmB alone. The following data will be collected: financial institution number, age, sex, race, weight, body mass index, series of SCr values, all doses of LAmB and NAC and associated date/time signatures of their administrations, and use of nephrotoxic medications/agents. Baseline variables will be summarized for each group using means, medians and percentages, as appropriate. We will determine whether NAC is associated with prevention of risk of acute kidney injury by fitting a time dependent Cox model with the time to 1.5x baseline creatinine as the dependent variable and daily NAC status as the time dependent covariate in the model, beginning on the day LAmB was started. Other non-time dependent covariates will include age, sex, race, BMI, and baseline creatinine. The outcome will be censored at the first of the following occurrences: death, discharge from the hospital, start NAC more than 48 hours after initiation of LAmB, or discontinuation of LAmB.

8-031

Title: Evaluation of apretitant for prevention of postoperative nausea and vomiting at a large, academic medical center

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Purpose: Postoperative nausea and vomiting occurs in approximately 30 to 70% of high risk patients within 24 hours after the emergence from anesthesia. High risk patients are defined as having any of the following validated risk factors: female gender, non-smoking status, history of postoperative nausea and vomiting or motion sickness, increased duration of surgical procedure (defined as greater than 3 hours), and use of volatile anesthetics or nitrous oxide. This evaluation will be utilized to determine the appropriateness of apretitant use based on institution-specific guidelines.

Methods: This retrospective chart review was approved by the Institutional Review Board. A pharmacy use report will be utilized to identify patients. All patients who have received the study drug between January 2012 and December 2013 and are over 18 years of age will be included in this chart review. Anesthesia records, electronic medical records, and/or paper charts will be reviewed to obtain specific information. Data collection will include patient-specific demographics (age, gender, height and weight), surgical procedure information (procedure type and duration), pharmacologic treatments (anesthesia type and opioids and antiemetics used perioperatively) and the presence of other risk factors (female gender, smoking status, history of postoperative nausea and vomiting). Descriptive and summative statistics will be used to analyze data.

8-032

Title: Evaluation of intravenous acetaminophen use and outcomes in pediatric patients

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Purpose: Intravenous (IV) acetaminophen is approved for use in adult and pediatric patients greater than 2 years of age. There is much interest in the use of IV acetaminophen, particularly in postoperative pain management. Studies have shown an opioid sparing effect of IV acetaminophen. The primary objective of this study is to evaluate the current usage patterns of IV acetaminophen in pediatric patients. A secondary objective will be to compare overall differences in opioid requirements and other measures in appendectomy and laparoscopic cholecystectomy patients treated with and without IV acetaminophen.

Methods: Prior to commencement, this study will be submitted to the Institutional Review Board for approval. The health systems electronic medical record system will be used to retrospectively identify pediatric patients who were prescribed IV acetaminophen between July 2012 and December 2013. Pediatric patients admitted between January 2011 and June 2012 for appendectomy or laparoscopic cholecystectomy, with no orders for IV acetaminophen will also be identified, for comparison as the control group. Patients greater than or equal to 18 years of age will be excluded from this study. All data will be recorded without patient identifiers so that confidentiality is maintained. The following data will be collected on all patients with orders for IV acetaminophen: indication, dose of IV acetaminophen (mg/kg), duration of therapy, prescriber ordering, unit location, other pain medications ordered and used, average pain scores before and after the dose of IV acetaminophen, and cost of pain medications. For the appendectomy and laparoscopic cholecystectomy patients with and without IV acetaminophen orders, additional comparisons between the groups will include: overall opioid medication use, use of IV ketorolac, oral and rectal acetaminophen, antiemetic medication administration, use of reversal medications, length of hospital stay, patient satisfaction, and cost of therapy.

8-033

Title: Prescribing patterns of aspirin for primary prevention of cardiovascular events in geriatric patients with diabetes: a self-reported survey

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Purpose: Primary literature and national guidelines provide conflicting recommendations regarding the use of aspirin for primary prevention of cardiovascular disease. Data is limited in geriatric patients with diabetes, a population at high risk for cardiovascular events and aspirin adverse effects. A 2013 report by the American Diabetes Association (ADA) and American Geriatrics Society (AGS) provides recommendations for this population. The objective of this study is to identify prescribing patterns of aspirin for primary prevention in geriatric patients with diabetes and determine if providers follow the 2013 ADA and AGS joint guidelines.

Methods: Prior to commencement, study will be submitted to Institutional Review Boards (IRB) at Wayne State University and the Detroit Medical Center. We will survey attending physicians, fellow physicians and mid-level practitioners of the internal medicine, family practice, geriatric, cardiology and endocrinology specialties, as well as, resident physicians rotating on primary care, family practice, geriatric, cardiology and endocrinology specialties. We will use a self-reported survey questionnaire based on a common patient case scenario. Surveys will be distributed to attending physicians, fellow physicians and mid-level practitioners at the beginning of the study period. Surveys will be distributed to resident physicians at the end of their primary care, family practice, geriatric, cardiology or endocrinology rotations. The study participants will fill out surveys independently and all surveys will be administered such that the individual provider responding cannot be identified, but survey respondents will indicate their medical specialty and level of training. In a retrospective fashion we will note compliance to the 2013 ADA and AGS joint guidelines and compare (1) aspirin prescribing patterns between specialties (2) aspirin prescribing patterns between physicians and mid-level practitioners and (3) aspirin prescribing patterns between attending physicians and trainees.

8-034

Title: Does a computerized risk assessment tool increase appropriate prescribing of pharmacologic venous thromboemobolism prophylaxis?

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Purpose: The Centers for Disease Control and Prevention estimate that venous thromboembolism (VTE) in adult patients is responsible for 547,596 hospitalizations and 28,726 deaths annually in the United States. Hospitalization is a significant risk factor for VTE development; however VTE is preventable through the proper administration of pharmacologic preventative therapy/prophylaxis. The objective of this study is to determine if the implementation of a VTE risk calculator tool within the electronic medical record has had an impact on the appropriate use of pharmacologic VTE prophylaxis in this academic teaching institution.

Methods: This study has been approved by the institutional review board as a Quality Improvement project. Patients aged 18-89 years who were treated as inpatients at this academic teaching institution by an internal medicine team between 10/2010 through 11/2010 or 10/2013 through 11/2013 are eligible for this study. Subjects will be excluded if they fail to meet any of the above criteria. The following data will be collected: patient demographics, whether risk assessment tool was applied, eligibility for pharmacologic VTE prophylaxis, type of VTE prophylaxis ordered, number of doses ordered and received, time from admission to administration of first prophylaxis dose, Charlson Comorbidity Index, safety data (rates of bleeding and clotting events), and 30 day readmission. We will also determine if the automatically calculated VTE risk assessment score is accurate as compared to hand-calculated score. Data will be collected on hard-copy paper forms and entered into an electronic master spreadsheet. All data will be recorded without patient identifiers and will be kept confidential. In regards to statistics used in this study, the Fishers exact test will be used for the categorical data and the unpaired t-tests will be used to analyze continuous, parametric data.

8-035

Title: Evaluation of intensive care unit (ICU) prescribing patterns of darbepoetin for acute kidney injury (AKI)

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Purpose: Darbepoetin is an erythropoiesis stimulating agent (ESA) that is approved at our institution for use in anemia of chronic renal insufficiency and chemotherapy-associated anemia. Usual doses range from 0.45-0.75 mcg/kg. Recently, nephrologists in the ICU have been prescribing darbepoetin in acute kidney injury patients where there is limited data for use. The purpose of this study was to evaluate the use of darbepoetin in intensive care patients with acute kidney injury.

Methods: The institutional review board approved this retrospective medication use evaluation project, which evaluated prescribing patterns of darbepoetin for acute kidney injury. Adult ICU patients ages 18-90 years with acute kidney injury (per AKIN criteria) who received darbepoetin from July to September 2013 were included. Exclusion criteria included patients with chronic kidney disease (CKD) on hemodialysis (HD), patients receiving darbepoetin for any other reason, patients less than 18 or greater than 90 years old, and pregnant patients. Data collected included demographic information, unit, hospital length of stay (LOS), characterization of kidney injury, dialysis if used, prescribing service, darbepoetin dosing regimen, associated lab values (hemoglobin upon initiation and at discharge, serum creatinine at baseline and in AKI), presence of iron studies, and supplemental iron and blood transfusions. Patients were divided into three categories based on the darbepoetin dosing regimen: High (over 200 mcg/wk), Medium (100-200 mcg/wk), and Low (less than 100 mcg/wk). Patients with darbepoetin doses spanning more than one group were included in the higher of the two groups. Adherence to institution prescribing policy, including Wednesday, December 11 administration, was assessed. Data analysis included descriptive statistics.

Results: Fifty patients (mean age and weight 66.6 years and 94.7 kilograms, respectively) were included. 80 percent of patients were male, with 64 percent in the SICU. Mean baseline serum creatinine was 1.3 mg/dL, reaching 4.0 mg/dL in AKI. The majority of patients did not have underlying CKD. 60 percent of patients needed dialysis, the majority receiving HD alone. In all cases except one, the prescriber was a nephrologist. The most commonly prescribed dose was 100 (25-300) mcg/wk. The mean dose was 1.26 mcg/kg. Hemoglobin was checked in 88 percent of cases and was less than or equal to 10 g/dL in 91 percent of cases. Iron studies were checked in 90 percent of patients, with 53.3 percent needing iron supplementation. In 24 percent of patients, initial iron studies were ordered without periodic follow-up. In 90 percent of patients, darbepoetin was given on a Wednesday, December 11. Hospital LOS was shortest in the low group (27.8 days). Blood transfusions were administered in 46.7 percent (7/15), 85.3

percent (29/34), and 100 percent (1/1) of patients in the low, medium, and high groups respectively. Mean change in hemoglobin from baseline to point of discharge in all groups was 0.4 to 0.5 g/dL.

Conclusion: AKI is not an approved indication for darbepoetin use at our institution, but nephrologists have been prescribing it in accordance with other institutional parameters. Prescribed doses, however, are higher than recommended. Further study is needed to assess the efficacy of darbepoetin at these doses in critically ill patients with acute kidney injury.

8-036

Title: Incidence of hemorrhagic events in patients with renal insufficiency receiving full-dose low-molecular weight heparin or unfractionated heparin

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Purpose: Current literature suggests low molecular weight heparins (LMWH) and unfractionated heparin (UFH) should be used cautiously in patients with renal disease due to the possibility of increased risk of hemorrhage. Since LMWHs are excreted renally, there have been concerns regarding the proper dosing and dosage adjustments in patients with varying degrees of renal impairment. Due to the use of both LMWH and UFH in patients with renal insufficiency, the incidence of major bleeding and thrombosis in these patients should be evaluated to better determine optimal anticoagulation dosing strategies in this population.

Methods: This study will be submitted to the Institutional Review Board for approval. It is the primary aim of this retrospective analysis to determine the incidence of hemorrhagic events in patients with renal insufficiency receiving full-dose enoxaparin or continuous infusion UFH at a 404-bed urban, community teaching hospital. All patients will be identified through medication reports based on ordered drugs and through total chart review. Patient charts will be used to identify the duration of therapy, indication for anticoagulation, renal function and incidence of hemorrhagic events. Additionally, this study will focus on a number of secondary endpoints including in-hospital and 60-day mortality, the need for infusion, the occurrence of thrombocytopenia, initiation of pantoprazole or octreotide continuous infusions, and HIT diagnosis. Data regarding the subjects age, body weight, severity of illness, and incidence of new thromboembolism, myocardial infarction, or ischemic stroke while on full anticoagulation will also be collected. The primary endpoint of this study will be analyzed using a 2-sided chi-square test, while secondary outcomes will be analyzed using the chi-square test for nominal data, students t-test for continuous data, and Cox regression, Kaplan-Meier survival curves for time data. Forward, step-wise logistic regression will be used to evaluate confounding variables.

8-037

Title: Busulfan therapeutic drug monitoring: a pilot study examining empiric dosing methods in patients undergoing allogeneic hematopoietic stem cell transplantation

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Purpose: Once daily I.V. busulfan combined with fludarabine is effective conditioning therapy for allogeneic hematopoietic stem cell transplantation. Patients may benefit from therapeutic drug monitoring (TDM) based on an area under the curve (AUC) of 3,500 to 6,000mmol/min. Many centers have standardized busulfan dosing based on ideal body surface area (BSA); others use an adjusted BSA. There is no established best practice for empiric busulfan dosing. This study will examine AUCs for patients originally dosed on ideal BSA or adjusted BSA to determine if adjusted BSA dosing would have achieved the desired target AUC of approximately 5,000mmol/min.

Methods: After receiving approval from the hospital IRB, data from patients who received once daily I.V. busulfan as part of a preparative regimen for allogeneic hematopoietic stem cell transplant will be used for analysis. The data collected will include patient demographics, diagnosis, targeted busulfan AUC, reported AUC, starting dose, adjusted dose, reported toxicities, days to engraftment, and hospital length of stay. Data will be retrieved form the hospital's electronic medical record system. Busulfan levels that will be used for analysis have been assayed at an outside facility and scanned into the hospital's electronic medical record. Original I.V. busulfan doses were calculated using ideal BSA unless the patient was more than 40 percent above their ideal BSA. In these cases, adjusted BSA was calculated utilizing the equation provided in the busulfan package insert. Ideal BSA, adjusted BSA and total BSA will be used to recalculate I.V. busulfan doses. These recalculated doses will be compared to each patients reported AUC to determine if busulfan dosing calculated from total BSA, ideal BSA, or adjusted BSA would have provided a better fit for the targeted AUC.

8-038

Title: Characterization of intravenous immune globulin (IVIG) use in adult inpatients at a tertiary, academic medical center

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Purpose: IVIG is used in treatment of immunodeficiency and autoimmune disorders. IVIG regimens are often weight-based, but there is no consensus regarding the appropriate weight to use for dose calculations. At our institution, IVIG is ordered via a placeholder, prompting providers to specify patient fluid restriction status, IgA sensitivity status, and the desired dose regimen. Pharmacists calculate weight-based doses and complete order entry after product selection. There has not been an evaluation of this process since implementation. The objectives of this study are to characterize product and dose selection practices by pharmacists at our institution and develop protocols to standardize practices.

Methods: This is a retrospective chart review approved by our Institutional Review Board. Utilizing the electronic medical record system, we will identify all adult inpatients who received at least one dose of IVIG from January 1, 2012 to May 21, 2013. The following patient data will be collected: age, gender, height, total body weight, ideal body weight, adjusted body weight (if total weight greater than 30 percent above ideal), blood urea nitrogen, and serum creatinine at the time of IVIG order initiation. Prescriber-specified information from the IVIG placeholder to be collected includes the weight-based dose regimen or specific dose ordered and the patient's IgA sensitivity and fluid restriction status. Final IVIG dose and product dispensed will also be recorded. The primary outcome will be to determine the appropriateness of the IVIG formulation selected and to characterize the weight-based dose calculation practices of pharmacists at our institution. Descriptive statistics will be used to analyze data.

8-039

Title: Appropriateness of chronic obstructive pulmonary disease (COPD) inhaled therapy in the inpatient setting: a retrospective analysis

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Purpose: The Global Initiative for Chronic Obstructive Lung Disease (GOLD) guidelines classifies the diagnosis, assessment, appropriate therapeutic regimens, and management of chronic obstructive pulmonary disorder (COPD). In 2010, COPD treatment resulted in 49.9 billion dollars in direct and indirect costs, and the number is continuing to increase. The objective of this study is to show if appropriate therapy, as defined by the GOLD guidelines and FDA approved indications, is being prescribed throughout a patients transition of care in the hospital setting.

Methods: This study has been submitted to the Human Investigation Committee and is pending approval. An electronic retrospective chart review will be conducted to assess the percentage of COPD patients prescribed appropriate inhaled therapy from July 1st, 2013 to August 31st, 2013. Patients with a primary or secondary diagnosis of COPD upon discharge will be identified and confirmed through chart review, as admission diagnosis is at times more dynamic throughout the patients hospital stay. This will ensure proper coding of the primary and secondary diagnoses. The appropriateness of therapy will be assessed prior to admission, throughout the inpatient stay, and upon discharge. The GOLD guidelines and FDA approved indications will be used to determine the appropriate dose and frequency of prescribed inhaled therapy. Data collection will include age, sex, order for pulmonary consult (yes/no), performance of incentive spirometry, COPD staging, inhaled medication(s) prescribed prior to arrival, as an inpatient, and upon discharge. The appropriateness of dose and frequency will be assessed prior to arrival, during inpatient stay, and upon discharge. All data will be recorded without patient identifiers and maintained confidentially.

8-040

Title: Evaluation of missed doses of self administered tumor necrosis factor (TNF) alpha inhibitors among patients enrolled in a psoriasis specialty care management program

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Purpose: Psoriatic disorders are chronic, immune mediated medical conditions that can significantly impact patient quality of life. When severity is moderate to high, tumor necrosis factor (TNF) alpha inhibitors such as adalimumab and etanercept are often used to manage these disorders. While numerous studies have been conducted evaluating adherence and discontinuation of TNF alpha inhibitors in psoriatic disorders, few have assessed reasons for gaps in therapy. The objective of this study is to determine the extent to which adalimumab and etanercept missed doses among patients with psoriatic disorders are medically justified or behaviorally motivated.

Methods: The specialty pharmacy currently utilizes patient care coordinators (PCCs) to conduct medication refills and patient follow up. Medication adherence assessment is initiated upon each refill via telephone, and counseling is provided by a pharmacist if nonadherence is reported. When applicable, reasons for each missed dose are documented during the pharmacist intervention. All data are stored in the pharmacy electronic database and will be extracted to calculate medication possession ratios (MPR) and reasons for nonadherence. This retrospective observational study will evaluate patients during a four month period who received at least one refill for adalimumab or etanercept while enrolled in a psoriasis specialty care management program. Overall MPRs for adalimumab and etanercept will be calculated, as well as MPRs specific to patients whose nonadherence is deemed medically justified versus behaviorally motivated. This study will be submitted to the Institutional Ethics Committee for approval.

8-041

Title: Understanding the effect of a clinical pharmacist on the medication burden of patients in a Program for All-Inclusive Care of the Elderly (PACE) program

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Purpose: With the population living longer, the amount of chronic conditions that befalls them has increased substantially. Medication burden and potentially inappropriate medications has been researched in this population and found to occur in as high as 60% of patients. Pharmacist involvement with ambulatory care facilities has shown to have positive benefits in these areas for this patient demographic. This ambulatory practice has a pharmacist involved in medication evaluation during the initial assessment and reassessments. This study examines the changes in medication burden for an ambulatory facility with pharmacists as part of their multidisciplinary teams.

Methods: This drug utilization evaluation received institutional review board approval. Patients were included if they were enrolled from December 2011-August 2012 and having at least one annual reassessment completed by September 1st 2013. Exclusion criteria was anyone without complete admission assessment or annual reassessment, those whose drug profiles were inaccessible, patients disenrolled from PACE program prior to yearly reassessment or patients on comfort measures during yearly assessment. Over-the-counter medications used on as needed basis, vitamins, supplements, and anti-infectives were not included in evaluations. The primary endpoint is the change in the number of medications from initial enrollment to one-year after enrollment. Secondary endpoints include the change number of BEERS criteria medications prescribed from admission to the first annual follow up assessment and change in cost of medications.

Results: A total of 36 patients were reviewed. The average amount of medications upon admission in to the program was 8.6 per patient with a median of 9. Upon reassessment the average number of medications was 7.7 per patient with a median of 8. The cost savings shown by medication reduction was $1623 per month for all 36 participants. Beers list medications decreased from 20 to 18 total for all patients from admission to reassessment.

Conclusion: Having a pharmacist involved in multi-disciplinary team contributes to medication reduction. There was a considerable cost savings seen with medication reduction. When extrapolating these results to all participants in the PACE facility a $120,000 per year cost savings would be anticipated. There was no significant change in the amount of BEERS criteria medications prescribed over the time period although it was reduced. Limitations include accuracy of initial medication list, since after patients enroll they may have had medication changes or omitted medications they had been taking prior to enrollment.

8-042

Title: Evaluation of various heparin dosing nomograms

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Purpose: Unfractionated heparin (UFH) is an intravenous anticoagulant routinely utilized to prevent and treat venous thromboembolism (VTE) and cardiac conditions (such as acute coronary syndromes and atrial fibrillation). Intravenous UFH is most commonly monitored using the activated partial thromboplastin time (aPTT) with a therapeutic range correlating to an anti-factor Xa level of 0.3 to 0.7 units/mL. Our institution utilizes indication-specific, nurse-driven nomograms for both initiation and maintenance of intravenous UFH. The purpose of this study was to determine if our current nomograms were effective in achieving and maintaining a therapeutic aPTT for our patient population.

Methods: This was a retrospective chart reviewed study approved by our Institutional Review Board. Patients who received continuous UFH infusion between January 1, 2013 and June 30, 2013 were identified through the electronic medical record system. Patients were excluded if they recently received other anticoagulants, were on UFH infusion for less than 12 hours or had less than 1 aPTT evaluation. A total of 120 patients were included in the final analysis. Pertinent data included patient age, gender, indications for heparin use, length of heparin administration, baseline coagulation labs, UFH bolus and starting doses, all aPTTs documented during UFH infusion time, evaluations and responses to the aPTTs, and adverse events (bleedings or new/extended thrombosis). Time to attain therapeutic aPTTs and time to respond to aPTTs were calculated for each patient. All non-nomogram aPTT evaluations were recorded separately. The endpoints were the percentage of patients who achieved therapeutic aPTT with UFH starting dose and within 24 hours of UFH infusion start time, the percentage of aPTT evaluations that results in a subsequent therapeutic aPTT, and the overall time patients were therapeutic.

8-043

Title: Risk factors for piperacillin/tazobactam-resistant gram-negative bacteria in hematology/oncology patients with febrile neutropenia

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Purpose: Febrile neutropenia (FN) is a frequent complication of cancer therapy and is considered a serious medical emergency. IDSA guidelines recommend that empiric therapy with an anti-pseudomonal β-lactam agent, such as cefepime, a carbepenem, or piperacillin/tazobactam, be initiated within two hours of presentation; however, a preferred agent is not identified. In this setting, inappropriate empiric antimicrobial therapy has been associated with poor outcomes. The purpose of the current study is to identify risk factors for piperacillin/tazobactam-resistant gram-negative bacterial infections in hematology/oncology patients with FN to potentially help better guide empiric therapy in this setting.

Methods: The current study will be a retrospective, case-case-control study and was approved by the Institutional Review Board. Hematology/oncology inpatients at our institution who developed FN from 2007-2012 will be divided into three groups: those with piperacillin/tazobactam-resistant gram-negative infections (PipTazR), those with piperacillin/tazobactam-sensitive gram-negative infections (PipTazS), and those without a positive culture during their FN episode (CultureNeg). Patients less than 18 years of age, patients with positive cultures obtained from outside hospitals with incomplete records, and bone marrow transplant recipients will be excluded from the study. Patient demographics, clinical outcomes, traditional risk factors for piperacillin/tazobactam resistance, and potential hematology/oncology-specific risk factors for antibiotic resistance will be retrospectively collected from the medical record. Unconditional logistic regression analysis will be conducted to determine risk factors for piperacillin/tazobactam resistance. Clinical outcomes including 30-day all-cause mortality, ICU admission, and hospital and ICU length of stay will be compared between the PipTazR and PipTazS groups. Finally, a dual-axis antibiogram will be created to characterize the resistance pattern of piperacillin/tazobactam-resistant gram-negative bacteria in this population. Data collection and evaluation are ongoing.

8-044

Title: Assessment of filgrastim utilization based on appropriate-use criteria

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Purpose: Filgrastim is a granulocyte colony-stimulating factor (G-CSF) indicated to reduce the duration of neutropenia and the incidence of infectious complications associated with dose-dense chemotherapy, human immunodeficiency virus (HIV) infection, and myelodysplastic syndrome (MDS). However, G-CSFs carry a heavy cost burden, and not all neutropenic patients require a G-CSF. While previous research has validated the cost-effectiveness of filgrastim when used appropriately, the extent of inappropriate use in clinical practice is unclear. Therefore, the purpose of this study is to characterize filgrastim use at our institution as clinically indicated or not indicated based on appropriate-use criteria.

Methods: The institutional review board approved this retrospective chart review to evaluate the use of filgrastim. Men and women at least 18 years of age who received at least one dose of filgrastim were included. Pregnant females and patients who received filgrastim for bone marrow transplantation were excluded. A sample of 150 filgrastim orders from July 2012 to June 2013 was obtained from electronic medical records. Patient demographics, admitting diagnosis, length of stay, cancer regimen, absolute neutrophil count, and treatment indication and duration were collected. These orders were then assessed for appropriateness using our predetermined criteria, which included febrile neutropenia, prophylaxis in the setting of chemotherapy, primary prophylaxis in myelodysplastic syndrome, and HIV-related neutropenia. The data collected will be analyzed using descriptive statistics, with a cost analysis to follow.

8-045

Title: Evaluation of admission medication reconciliation accuracy at an academic medical center

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Purpose: Prevention of medication errors, through the process of medication reconciliation, is one of the National Patient Safety Goals outlined by the Joint Commission. Discrepancies are highly prevalent, with up to 70% of inpatients having at least one error documented at the time of admission. Almost one-third of these discrepancies have the potential to cause harm. The purpose of this study is to evaluate the completeness, accuracy, and other factors affecting the admission reconciliation process. The study will also provide baseline data before the implementation of an electronic continuous care record, one component of becoming an Accountable Care Organization.

Methods: This study has been approved by the Investigational Review Board. This is a single center, prospective medication reconciliation review. Adult patients will be included if they are admitted to a general medicine floor between September 2013 and November 2013 and use at least one medication prior to admission. Patient interviews and data collection will be performed by members of the pharmacy department. Admission medication lists will be evaluated for discrepancies in terms of the medication, dose, route, and frequency. The sources of information used will be the electronic medical record, medication vials, patient or caregiver interviews, and/or contact with outpatient prescribers and pharmacies. Verified discrepancies will be categorized according to drug class and potential to cause harm. The potential for harm will be assessed by identifying discrepant drugs which are included on the Institute for Safe Medication Practices (ISMP) high alert list or the North Carolina Narrow Therapeutic Index (NTI) list. Patient demographics and characteristics associated with reconciliation discrepancies will be evaluated.

8-046

Title: Advancing the application of information technology to impact safe and effective medication use through implementation of the pharmacy practice model initiative (PPMI)

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Purpose: A multi-patient task list was implemented at our institution alerting pharmacists of new dosing consults and out of range critical laboratory results. This study evaluates the effectiveness of this technology in the medication workflow process to improve the management of high-risk drugs. We will assess whether implementation of this multi-patient task list decreases time to response to critical alerts and therapeutic anticoagulation within 24 hours for heparin and argatroban. Time to initial dose of vancomycin, and magnitude by which documentation rates for pharmacy clinical interventions and counseling improve after implementation of the multi-patient task list will also be assessed.

Methods: This retrospective, quasi study will be submitted to the Institutional Review Board for approval. The following data will be collected: evaluate the drug that caused the alert, the value reported, time the alert was received, time of intervention (heparin/argatroban) or initial dosing (vancomycin), time required for clinical pharmacist to document the action. Documentation will include time to therapeutic anticoagulation, indication for anticoagulation (heparin or argatroban), if a bolus dose was ordered, time of first therapeutic result, difference between the time of first therapeutic result and the time pharmacy was consulted, and assessment if patient was in the therapeutic range 24 hours from time of consult. Patients will be excluded if they are on anticoagulation due to an admission of acute coronary syndrome. Statistics used in this study include: Descriptive statistical analysis, t test and chi squared test. All p values less than 0.5 will be considered statistically significant. The goal of the study is to provide information on the benefits of technology using the multi-patient task list and its influence on patient safety regarding the management of high-risk drugs.

8-047

Title: Assessment of vancomycin therapeutic drug monitoring in dialysis patients before and after implementation of a pharmacy protocol

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Purpose: The Detroit Medical Center (DMC) has established guidelines for dosing vancomycin in hemodialysis (HD) patients, however, no recommendations exist for vancomycin serum monitoring in this population. The estimated cost of one vancomycin level in the United States is $25. Last year, the DMC spent over $100,000 on vancomycin levels in the intensive care units alone, with estimates of 2-3 times that for the entire DMC. Vancomycin serum monitoring in HD patients appears excessive, and over-utilized. The primary goal of this study is to assess our current practice, implement guidelines to standardize vancomycin monitoring, and reduce unnecessary drug levels by 25%.

Methods: The study was exempted by the investigational review board since it was considered a quality improvement project. Data will be collected from the electronic medical record in 2 phases. First, a retrospective review of HD patients admitted to any of 5 adult hospitals at DMC and receiving intravenous vancomycin for documented or suspected infection will be conducted. Patients who received at least 2 doses of vancomycin and currently on HD using a high flux dialyzer (Fresenius Optiflux F160NR, F180NR or F200NR) will be included. Pharmacy must be consulted for dosing. Patient characteristics will be collected including: demographics, number of vancomycin levels ordered and documented, number of doses received, number of pharmacokinetic notes written in the medical record, duration of HD session and outcomes information including infection location, cultures, temperature, white blood cell count, duration of therapy and length of stay. Any adverse effect will also be recorded. After analysis of the retrospective data, areas for improvement will be identified and staff will be educated on the findings. The second phase will consist of pharmacy staff education and review of recommendations with nephrology and infectious disease physicians. A prospective evaluation of patients will follow with the same patient information collected.

8-048

Title: Effect of over-sedation in inhalation injury patients being treated with hyperbaric oxygen

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Purpose: Symptomatic presentation of carbon monoxide poisoning and inhalation injury can be treated therapeutically with hyperbaric oxygen (HBO). Though a relatively safe option to reverse cardiac and neurological damage, HBO therapy is not without inherent risk. An often overlooked consideration is the increased use of analgesic and sedative medications surrounding HBO sessions. The purpose of this study is to compare clinical outcomes in patients that received as needed analgesia and sedation to patients that received continuous sedative and opioid infusions during HBO therapy. Results of this study will provide direction in managing analgesia and sedation for patients requiring HBO therapy.

Methods: The Institutional Review Board approved this single center, retrospective study. Patients will be identified using admission log books at this teaching institutions burn intensive care unit (ICU). Patients will be included if they were diagnosed with smoke inhalation, inhalation injury, or carbon monoxide poisoning between January 2008 and July 2013. Exclusion criteria include patients less than 18 years of age, do not resuscitate orders, or made comfort/palliative care within 24 hours of admission. Relevant information pertaining to HBO therapies, demographics, medical history, laboratory data, toxicology, and carboxyhemoglobin levels will be collected. Medical records will be examined to obtain total quantity of analgesia (fentanyl, hydromorphone, and morphine) and sedation (diazepam, lorazepam, midazolam, and propofol) received, and converted to morphine or benzodiazepine equivalents. Corresponding pain and sedation scores will be recorded for each dose administered. Clinical outcomes to be evaluated include ICU and hospital length of stay, mechanical ventilation duration, disposition after discharge, and development of nosocomial infections or complications. Mean medication doses, length of stays, and mechanical ventilation duration will be compared using Students t-tests. Nominal data will be compared using Pearsons chi-square. P-values less than 0.05 will be considered statistically significant. Statistical analysis will be completed utilizing SPSS version 12.

8-049

Title: Development of a pharmacist-based medication education program for patients with systolic heart failure

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Purpose: Several studies have been published illustrating the impact pharmacists can have on reducing hospitalizations and improving care in heart failure patients. Recent studies have suggested that multidisciplinary disease management programs can reduce the risk of readmission by as much as 56%. The primary objective of this pilot project is to develop a pharmacist-based medication education program and to determine the feasibility of adopting this program at Munson Medical Center.

Methods: Prior to initiation, the project will be submitted for review to the Institutional Review Board. Chart review will be conducted to determine the diagnosis of heart failure defined as a left ventricular ejection fraction < 0.40. Exclusion criteria include adults unable to consent, patients <18 years of age, pregnant women, prisoners, evaluation for cardiac surgery, non-cardiac illness likely to increase 6-month mortality or hospitalization risk, patients admitted from and returning to a nursing home, patients enrolled in a Heart Failure Clinic, patients under evaluation for transplant, patients enrolled in palliative care or hospice. A pharmacist will provide medication education for the duration of the hospital stay and provide recommendations to the health care team to improve therapy. A pharmacist will then follow the patient after discharge for a period of time to reinforce medication education and assess compliance. A measuring tool will be developed to assess patient knowledge of medication at baseline and at the end of the intervention period. Trends in readmission rates will be compared using a retrospective control group. Resources and time dedicated to implementing this pilot program will also be recorded to determine the feasibility of continuing such as program in the future.

8-050

Title: Delay in antibiotic administration in septic patients with atypical presentation

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Purpose: The presence of fever often prompts clinical evaluation for sepsis and empiric administration of antibiotics. Atypical presentation of sepsis, such as lack of fever, may result in patients experiencing a delay in therapy. Current literature identifies atypical presentations of sepsis in various cohorts of patients, including pneumonia, but does not address patients with bacteremia. Our primary aim is to evaluate the difference in time to antibiotic administration in this patient population. The null hypothesis is that there is no difference in the time to antibiotics between febrile and afebrile septic patients with bacteremia.

Methods: This study has been approved by the Institutional Review Board. The study design will evaluate a retrospective cohort of inpatients greater than 18 years old hospitalized at an academic teaching hospital with sepsis and positive blood cultures between January 1, 2010 and August 30, 2013. Febrile patients with positive blood cultures will serve as the control group. Baseline demographics, vitals, and pertinent laboratory parameters, will be recorded. The primary outcome to be assessed will be the time to first antibiotic dose (TFAD) in bacteremic patients with and without fever. Secondary outcomes are time to appropriate antibiotic therapy (TAAT), need for intensive care unit (ICU) admission, use of antipyretics, cooling and warming measures, duration of mechanical ventilation, the use of vasopressors, ICU and hospital length of stay (LOS), mortality, and other prognostic factors. Data will be evaluated between groups using the Students t-test (for continuous parametric data) or the Mann Whitney-U test (for continuous non-parametric data). Dichotomous data will be compared using either Pearsons chi-square or Fishers exact test. A p-value of 0.05 will determine statistical significance.

8-051

Title: Evaluating the general practice unit (GPU) electrolyte replacement protocol in patients on intravenous (IV) loop diuretics

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Purpose: Hypomagnesemia, hypokalemia, and hypophosphatemia are common adverse effects of loop diuretic therapy. Electrolyte abnormalities may lead severe adverse outcomes such as sudden cardiac death if left uncorrected. As a result, many institutions have successfully implemented multidisciplinary electrolyte replacement protocols to minimize the delay in correcting electrolyte imbalances. The evidence of evaluation of these protocols in non-intensive care units is lacking, particularly in patients receiving IV loop diuretics where electrolyte losses are significant. The objective of this study is to determine the effectiveness of the GPU electrolyte replacement protocol in a population of patients on IV loop diuretics at our institution.

Methods: This retrospective chart review has been approved by the Institutional Review Board. The electronic medical record system will be used to identify patients who were on the GPU electrolyte replacement protocol and IV furosemide or bumetanide for a continuous 72 hours from January to June 2013. Indications for supplementation based on the protocol include a serum potassium less than 4.0 mmol/dl, serum magnesium less than 1.9 mg/dl, or serum phosphate less than 2.6 mg/dl. Patients will be excluded if they have incomplete data available or loss of eligibility to be enrolled under the protocol (defined as SCr greater than 2.5 mg/dl, oliguria, end stage renal disease (ESRD), or any form of hemodialysis (HD) at any time during the MUE evaluation period of 72 hours.) One hundred patients will be enrolled to evaluate the primary end point of percentage of time patients maintain adequate levels of potassium, magnesium, or phosphate. Secondary endpoints include average time required to achieve adequate electrolyte concentrations, percent of electrolytes within goal range, and number of times electrolytes were checked during the 72-hour time frame. Descriptive statistics will be used to analyze the data obtained to determine if modifications to the GPU electrolyte replacement protocol are needed.

8-052

Title: Clinical outcomes of gram-negative infections stratified by carbapenem MIC

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Purpose: The Clinical and Laboratory Standards Institute recommended lowering the minimum inhibitory concentration (MIC) breakpoints for meropenem and imipenem from 4 mcg/ml for all gram-negative bacteria to 1 mcg/ml for Enterobacteriaceae and 2 mcg/ml for Pseudomonas. Implementing lower breakpoints will eliminate the need for confirmatory testing of extended spectrum beta-lactamase and Carbapenem-Resistant Enterobacteriaceae. However, there is limited data evaluating clinical outcomes of the affected breakpoints, and the breakpoint changes may increase the use of colistin, aminoglycosides and tigecycline. Therefore, the objective of this study is to evaluate the difference in clinical outcomes of patients with gram-negative infections stratified by carbapenem MIC.

Methods: This study is a single center retrospective matched cohort analysis conducted at the University of Michigan Health System (UMHS). Patients will be matched based on age, charlson comorbidity index score, disease severity, source of infection, and pathogen. Patients will be included if they are ≥18 years old with a positive culture for Enterobacteriaceae or Pseudomonas and received a minimum of 48 hours of meropenem, imipenem, or doripenem. Patients will be excluded if they have documented bacterial colonization, transferred from an outside hospital with incomplete records, or if their gram-negative infection was treated with ertapenem. Information will be obtained from the patients medical record at UMHS and will be maintained confidentially. Data collected for each patient will include demographic, clinical and microbiological information. The primary outcome of this study will be all-cause 30-day mortality stratified by carbapenem MIC. Secondary outcomes include length of hospitalization, recurrence of bacterial infection, and hospital readmission stratified by carbapenem MIC. Additionally, patients will be evaluated for clinical and microbiologic cure as evidenced by temperature < 38˚C, WBC < 10,000 cells/mm3, and hemodynamic stability.

8-053

Title: Pharmacy transformation through workplace organization: a 6S story

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Purpose: Strategic growth as an organization requires an approach that is both innovative and flexible. To improve quality and safety while addressing rising healthcare costs requires modern tools. Our medication inventory represented 16% of the system supply expense. Consequently, this inventory was a primary target for improvement. Our main objectives were to increase patient safety, decrease on-hand inventory costs, decrease medication storage requirements, decrease time spent searching for products within the pharmacy, maximize credit for returned medications and minimize waste by identifying expiring medications.

Methods: Value Stream Analysis (VSA) is a process where systematic improvements are made to remove waste and create efficiencies within pharmacy departmental processes with the goal of improved quality and safety while decreasing cost. The pharmacys VSA was a year long process that began with a weeklong analysis, identifying areas of improvement and planning for improvement events. Rapid Improvement Events (RIEs) are used to target a specific process within our pharmacy value stream. An RIE is a four day event utilizing experts in the process. Customers of the process and fresh eyes to the process are also included and engaged to identify and remove waste. Our principal organizational strategy was 6S, a technique that focuses on safety, sorting, straightening, shining, standardizing and sustaining.

Results: During our RIEs, we targeted two areas within the pharmacy department; the medication stockroom and medication return area. Improvements in the organization of the medication stockroom include: freeing 500 square feet of space, improving staff safety by removing requirements of a hard hat area, decreasing costs by removing $10,000 of overstock, decreasing time spent looking for a product from 27 minutes per day to less than 5 minutes per day and decreasing product stock outs from 14 per week to 1 per week. Improvements made in the medication credit area included: preventing $66,000 of returned inventory from expiring or being reordered.

Conclusion: VSA, used to identify areas of improvement, plus well planned and executed RIEs created efficiencies to our pharmacy processes. Efficiencies were gained, waste removed, medication supply costs decreased and, most importantly, improvement in safety and quality for our patients.

8-054

Title: Evaluation of a weight-based dosing regimen for rabbit anti-thymocyte globulin induction in adult kidney transplant recipients

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Purpose: Rabbit anti-thymocyte globulin (rATG) induction is commonly used to prevent rejection after kidney transplantation. Contrary to previous studies showing comparable short-term outcomes among various dosing regimens of rATG (3-10.5 mg/kg cumulative dose), a recent report observed significantly greater incidence of biopsy proven acute rejection (BPAR) with < 6 mg/kg cumulative rATG dose. According to the current institution protocol, 5 mg/kg cumulative rATG dose is administered. However, due to dose capping at 500 mg, overweight patients may receive < 5 mg/kg. This investigation will evaluate the efficacy and safety of total rATG doses < 5 mg/kg compared to >/= 5 mg/kg.

Methods: This investigation is a single-center retrospective cohort study and has received Institutional Review Board approval. The study population will include adult kidney transplant recipients between July 2010 and December 2012 that received rATG induction with standard maintenance immunosuppression including tacrolimus, mycophenolate and steroids. Patients with positive crossmatch, receiving multiple organ transplants, alternative induction therapy or investigational medications, and who underwent desensitization will be excluded. Patients that received a cumulative rATG dose < 5 mg/kg based on actual body weight will be compared to those that received >/= 5 mg/kg. The primary endpoint of this study will be BPAR rate at 12 months post-transplant. Secondary endpoints will include incidences of cytomegalovirus (CMV) and BK virus infection and absolute lymphocyte counts. Patient data including age, race, gender, actual and ideal body weight, rATG dose, previous transplantation, panel reactive antibody, donor type, donor/recipient HLA mismatch, white blood cell, absolute lymphocyte and platelet counts, serum creatinine, kidney biopsies, CMV and BK infection, concomitant immunosuppression and tacrolimus levels will be obtained from institutional electronic medical records. Incidences of BPAR, CMV and BK will be compared using chi-square test and mean absolute lymphocyte counts will be compared using Student t-test with a significance level of 0.05.

8-055

Title: Enoxaparin prophylaxis interruption and risk of venous thromboembolism in adult trauma patients

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Purpose: Evidence supports routine venous thromboembolism (VTE) prophylaxis with low molecular weight heparins in all major trauma patients, but the optimal dosing regimen is controversial. An acute rise in VTE rate was observed in adult trauma patients on benchmark reports following a 40 mg subcutaneous once daily enoxaparin protocol at an academic level one trauma center. Suspicion that prolonged anticoagulant free intervals were associated with increased incidence of VTE resulted in a protocol change to enoxaparin 30 mg subcutaneously twice daily. This study will investigate the impact of the protocol change on incidence of VTE in adult trauma patients.

Methods: Our investigation is part of an ongoing, IRB approved study on outcomes in trauma, burn, and general surgery patients. This is a retrospective review of all trauma patients older than 18 years of age admitted to a level one trauma center between June 1, 2010 through June 1, 2011 and June 1, 2012 through June 1, 2013 who received at least one dose of enoxaparin for VTE prophylaxis. Exclusion criteria will include Injury Severity Score less than 5, discharge or death within two days of admission, receipt of more than one medication or dosing regimen for VTE prophylaxis during hospitalization, or development of VTE within 24 hours of admission. The following data will be collected: basic demographic information, dose, timing, and frequency of each enoxaparin dose provided, diagnosis of DVT or PE, laboratory measurements of renal function, blood products administered, and hemoglobin, hematocrit, and platelet counts. The primary outcome is incidence of VTE. Secondary outcomes include incidence of major bleeding and drug cost. We will perform a multivariate analysis to examine risk factors for VTE, including number of events and duration of enoxaparin interruption.

8-056

Title: Comparison of amiodarone monitoring compliance: usual care, electronic template prescribing, and pharmacist-managed clinic

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Purpose: Amiodarone is one of the most commonly prescribed antiarrhythmic in the U.S. Its complex pharmacokinetics, numerous organ toxicities and complicated dosing regimens make careful patient monitoring and follow-up necessary throughout the course of therapy. The primary objective of this study is to assess whether adherence to amiodarone monitoring differed post-amiodarone restriction template and for patients enrolled in the pharmacist-managed amiodarone-monitoring service (AMS) at the Veterans Affairs Ann Arbor Healthcare System. Secondary objectives include evaluating the incidence of amiodarone-related adverse events between the three groups, as well as examing the impact on identifying amiodarone drug-drug interactions at the first AMS visit.

Methods: This study has been submitted to the Institutional Review Board for approval. Veterans with an active prescription for amiodarone for at least 60 days between January 1, 2009 to August 31, 2013 and receiving primary care at the Veterans Affairs Ann Arbor Healthcare System will be eligible for inclusion in the study. Using a minimum 15% difference among rates in adherence to amiodarone monitoring, alpha level 0.05, and 80% power, the required sample size is 300 total patients. Data collected will be from the computerized patient record system (CPRS), Vista Imaging and Vista Web. Descriptive statistics will be used to report demographic information and results. If the number of monitoring rates and amiodarone-related adverse events allow, further statistical analysis with significance tests (Pearsons chi-squared test or Fischers exact test) will be performed.

8-057

Title: Evaluating the Efficacy of Reduced Dose Zolpidem for Treatment of Insomnia: A Retrospective Review

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Purpose: In January of 2013, the FDA required the manufacturers of zolpidem to lower the recommended doses for patients due to detectable drug levels the morning after taking the sleep aid. The FDA stated that the 5mg dose should be effective for most patients using zolpidem. Unfortunately, there is no literaure to support that statement. The purpose of this study is to assess the effectiveness of zolpidem 5mg. The primary goal and objective is to assess the treatment failure rates among patients using the 5mg dose of zolpidem.

Methods: Electronic patient charts will be accessed retrospectively for data. The study period will cover March 1, 2012 to March 1, 2013. Patients will be assessed for meeting inclusion criteria. Laboratory data, progress notes, and outside medical records will be reviewed to determine if patients experienced a treatment failure, defined as: a prescription for an increased dose of zolpidem, discontinuation of zolpidem due to lack efficacy, or a prescription for a different sleep aid. Inclusion criteria includes all patients 18 years of age or older diagnosised with primary or unspecified insomnia who received zolpidem 5mg. Exclusion criteria consist of patients taking less than 5mg or more than 10mg zolpidem nightly, using the controlled release, using zolpidem for less than 30 days, insomnia from other causes, hypersensitivity to zolpidem, alcohol abuse, severe hepatic disease, and concurrent use of other sleep aids.

8-058

Title: Evaluation of liposomal bupivacaine for use in total hip and knee replacement

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Purpose: Liposomal bupivacaine is indicated for single-dose infiltration into the surgical site to produce post-surgical analgesia lasting up to 72 hours. Data comparing the standard therapy of local analgesic nerve blocks to liposomal bupivacaine is limited. The purpose of this drug-use evaluation (DUE) is to determine whether liposomal bupivacaine will impact length of stay, opioid use, pain scores, and falls in total joint replacement patients at Mercy Health.

Methods: The institutional review board approved this retrospective review. Patients from two orthopedic surgeons who underwent total hip or knee replacement were analyzed from March to August 2013. Patients receiving standard post-surgical care were compared to those who were administered liposomal bupivacaine. Endpoints evaluated included length of stay, post-surgical opioid use, post-surgical average pain scores, and reported fall data. Opioid use was compared using calculated intravenous morphine equivalents. Data was separated for comparison between hip and knee surgical patients.

Results: A total of 76 total hip or total knee replacement patients were reviewed. Of the 45 total knee replacement patients, 17 received liposomal bupivacaine. The average length of stay in the liposomal bupivacaine group was 5.4 hours less and average total use of opioid narcotics was 62 morphine equivalents less when compared to those who did not receive liposomal bupivacaine. Pain scores were similar on the first two post-operative days (Day 0 and Day 1) between groups; however, on post-operative day 2 and 3, pain scores were slightly higher in the liposomal bupivacaine group. Of the 31 total hip replacement patients, nine received liposomal bupivacaine. The average length of stay in the liposomal bupivacaine group was 1.7 hours less and average total use of opioid narcotics was 41 morphine equivalents less when compared to those who did not receive liposomal bupivacaine. Pain scores were similar between total hip replacement groups. There were no reported falls in either group.

Conclusion: Liposomal bupivacaine may have benefits to decrease length of stay post-total joint replacement and allow for decreased opioid use in patients. Differences in pain perception, frequency of reporting, and the subjective nature of pain scores make drawing conclusions on pain control difficult to correlate. At the same time liposomal bupivacaine was instituted, one surgeon initiated a multi-modal pain plan including pre-operative doses of pregabalin, oxycodone, and celecoxib, which may make it difficult to determine if these results were solely due to liposomal bupivacaine alone. Surveying

surgeons and patients experiences are warranted to determine pain control benefits to liposomal bupivacaine therapy.

8-059

Title: Are higher vancomycin troughs associated with a greater incidence of nephrotoxicity?

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Purpose: The 2009 consensus guidelines for vancomycin dosing and monitoring recommends targeting higher trough concentrations (15 to 20 mg/L) to overcome the increasing minimum inhibitory concentrations of gram-positive microorganisms. Recent literature suggests that an association exists between higher trough levels and the incidence of nephrotoxicity. The purpose of this study is to evaluate if these higher target troughs actually result in a greater incidence of nephrotoxicity and to describe associated risk factors.

Methods: Prior to presentation, this study will obtain approval from the Institutional Review Board. This is a retrospective chart review of patients on vancomycin therapy for a minimum of 72 hours with a target trough of 15-20 mg/L and at least one trough level drawn. Patients will be excluded if they are younger than 18 years of age, pregnant, on vancomycin prior to admission to the hospital, have end stage renal disease (ESRD) requiring dialysis, or lack the presence of routine monitoring of serum creatinine (defined as a minimum of baseline then every 48 hours). Data to be collected includes: demographics, past medical history, current medications, basic metabolic panel, complete blood count, electrolytes, microbiology cultures and sensitivities, diagnostic imaging, documented site of infection, length of vancomycin therapy, and length of hospital stay. Nephrotoxicity will be defined as an increase of at least 50% from baseline creatinine or an increase in serum creatinine of at least 0.5 milligrams per deciliter from baseline. Patients that develop nephrotoxicity will be evaluated to determine other concomitant risk factors for nephrotoxicity.

8-060

Title: Outcomes of a pharmacy practice model change in transitions of care

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Purpose: Drug related problems, which may contribute to poor patient outcomes, often occur during transitions of care. Suboptimal communication between healthcare professionals and patients is a significant factor. Pharmacists are poised to smooth care transitions with problem solving and patient education skills. The pharmacy department in a large teaching hospital instituted a practice change implementing pharmacists performing medication histories and post-discharge telephone follow-up. This study's primary objective is to describe healthcare outcomes from pharmacist involvement during transitions of care compared to historic data. The secondary objective is to describe student pharmacist, technician and pharmacist knowledge and satisfaction with the practice model change.

Methods: This study has been submitted to the hospital's Institutional Review Board for approval. Part 1 is a retrospective, descriptive study evaluating patient outcomes following a practice model change. Baseline demographics, previous hospital utilization, and interventions associated with medication histories will be collected using the electronic medical record. Total hospital use, including emergency room visits, observation stays, and hospitalizations within fourteen and thirty days of the index admission will be evaluated and compared to historical data. The difference in rate of hospitalizations will be analyzed using the chi-squared test. Part 2 is a qualitative study using surveys to evaluate attitudes of pharmacists, students, and pharmacy technicians towards pharmacy involvement at transitions of care and the change implemented. Standard descriptive statistics will be used to report all intended values, as well as compared frequencies between categories of interventions.

8-061

Title: Appropriateness of Vancomycin Loading Doses in Patients with Renal Insufficiency

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Purpose: Optimal dosing of antibiotics in patients with multidrug-resistant pathogens is essential. Vancomycin is an agent commonly used for treatment of methicillin-resistant Staphylococcus aureus infections and its efficacy is dependent on maintaining therapeutic trough levels determined by the site of infection. Patients with renal insufficiency exhibit altered pharmacokinetics with respect to volume of distribution and elimination. Our institution's guidelines recommend giving a dose of 15-20 mg/kg and checking a level within 24 hours in these patients. This study evaluated our ability to achieve and sustain target vancomycin trough concentrations in patients with renal insufficiency.

Methods: This study was approved by our institution's Human Investigation Committee. A medication report was run identifying patients with kidney insufficiency between the dates of May 1, 2013 and August 31, 2013 who received a one-time dose of vancomycin followed by a measured drug serum concentration. Data collection included patient demographics, method of renal replacement therapy (RRT), infection, target trough, serum creatinine, estimated creatinine clearance, vancomycin dose and level, and time until next vancomycin dose. Continuous variables were evaluated using a two-sided t-test and discrete data with a chi-squared test.

Results: One hundred fifty patients were identified for data analysis. Most subjects had acute kidney failure without RRT (72% [108/150]) or were receiving intermittent hemodialysis (22% [33/150]). Serum levels for 49 patients (32.7%) were below the target trough concentration. Patients on RRT were more likely to achieve target trough concentrations (88.1% [37/42] v. 59.3% [64/108], p = 0.0007). Time from dose administration until level drawn was significantly longer for those who did not achieve therapeutic troughs (11.7 4.8 v. 16.3 6.8 hours; p < 0.0005); however, loading doses were similar (16.7 3.5 v. 16.8 2.9 mg/kg; p = 0.932). Target troughs of 10-15 mcg/mL were more frequently achieved (75.5% [71/94]) than troughs of 15-20 mcg/mL (53.6% [30/56], p = 0.006). Mean dose did not influence success, irrespective of target trough concentration (10-15 mcg/mL: 16.6 3.1 v. 15.8 2.9 mg/kg, p = 0.284; 15-20 mcg/mL: 17.5 3.1 v. 17.7 2.9 mg/kg, p = 0.791). Time until next dose administered was significantly shorter for sub-therapeutic troughs (9.3 7.9 v. 6 2.6 hours, p = 0.006).

Conclusion: Following an initial vancomycin bolus dose in patients with kidney insufficiency, a substantial proportion of vancomycin levels were below the targeted trough concentration. Amount of vancomycin administered appeared to be independent of whether target troughs were achieved. Time of level following the dose and use of RRT were better predictors of observing adequate serum

concentrations. Ability to sustain effective concentrations was more likely when targeting a lower target trough range (i.e. 10-15 mcg/mL). Future studies are necessary to assess the clinical implications these initial sub-optimal concentrations have on patient outcomes.

8-062

Title: Impact of intravenous (IV) magnesium shortage on potassium doses in adult surgical patients receiving parenteral nutrition

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Purpose: Drug shortages have had impact on clinical practice across a variety of disciplines. Shortages of parenteral nutrition (PN) ingredients, including macronutrients, electrolytes, vitamins and trace elements have been common. Despite the impact of drug shortages on clinicians and patients, the effects on patient management and outcomes have not been quantitated. The objective of the current research is to determine the effect of a parenteral magnesium shortage requiring removal of magnesium from adult PN admixtures on total daily potassium doses required by adult patients receiving PN.

Methods: This is a retrospective case-control study designed to compare total daily potassium doses prior to the parenteral magnesium shortage (magnesium provided in PN) and during the magnesium shortage (magnesium not provided in PN). This study has been approved by the University of Michigan Institutional Review Board. The electronic medical record system will identify adult patients on surgical services who received parenteral nutrition during two study periods: January 1, 2011 through May 31, 2011 (prior to the magnesium shortage) and January 1, 2012 through May 31, 2012 (during the magnesium shortage). Patients with estimated creatinine clearance less than 40 mL/min or receiving any form of renal replacement therapy, receiving concomitant oral and/or enteral nutrition with PN, or receiving continuous infusion diuretic therapy will be excluded. The remaining patients will be matched on the basis of age, weight and diagnosis/indication for PN. The relationship between daily potassium doses and presence or absence of magnesium in PN will be evaluated using a repeated measures analysis of variance. Serum potassium concentrations, daily magnesium doses, and serum magnesium concentrations will also be analyzed.

8-063

Title: Utilization of an antiplatelet decision tree to increase compliance with American College of Cardiology/American Heart Association guidelines in acute coronary syndrome and peripheral arterial disease

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Purpose: The American College of Cardiology and The American Heart Association guidelines recommend clopidogrel, prasugrel, or ticagrelor in combination with aspirin based on certain patient characteristics. An antiplatelet decision tree for use in acute coronary syndrome and peripheral arterial disease patients during percutaneous intervention was implemented in October 2012. The objective of this study is to determine if clopidogrel, prasugrel, and ticagrelor are being chosen appropriately based on the treatment decision tree.

Methods: This study will be submitted to the Institutional Review Board for approval. A six month retrospective chart review will be performed. Cerner, the electronic medical record system, will be used to generate a list of acute coronary syndrome and peripheral arterial disease patients who received clopidogrel, prasugrel, or ticagrelor during percutaneous intervention. The patient data that will be collected includes age, weight, medication allergies, diagnosis, past medical history, CYP2C19 metabolizer information if available, the use of aspirin, and antiplatelet doses. Patient data will be kept confidential. The antiplatelet choice will be assessed based on the antiplatelet decision tree.

8-064

Title: Continuation of intensive care unit delirium treatment upon transitions of care

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Purpose: Delirium can occur in up to 80% of mechanically ventilated critically ill patients and is associated with increased length of stay, cost of care, mortality and prolonged cognitive impairment. With increasing utilization of atypical antipsychotics for the treatment of intensive care unit (ICU) delirium and their potential for adverse effects, it is important that these medications be appropriately discontinued at transitions of care. The objective of this study is to evaluate the incidence of inappropriate continuation of atypical antipsychotics for the treatment of ICU delirium upon transitions of care at our institution.

Methods: This study has been approved by the Institutional Review Board. This single center, retrospective study will evaluate critically ill adult patients who received either quetiapine, risperidone, or olanzapine for the treatment of ICU delirium from January 2011 to September 2013. The dose and duration of atypical antipsychotic, ICU location, ICU and hospital length of stay, and CAM-ICU scores will be collected to determine the incidence of atypical antipsychotic continuation for ICU delirium upon transitions of care. For patients continued on atypical antipsychotics after ICU discharge, appropriateness will be assessed according to CAM-ICU scores. Potential risk factors for the continuation of atypical antipsychotic medications will be determined. Patients at high risk of adverse drug events and continued on atypical antipsychotics upon transition of care will be evaluated. In order to evaluate these patients, data regarding medications with risk of QTc prolongation, extrapyramidal effects or documented on the Beers Criteria list will be collected upon any transition of care. Categorical and continuous variables will be described as frequency distributions and means with standard deviations respectively. Logistic regression analysis may be used to assess risk factors for continuation of atypical antipsychotics at transitions of care pending study results.

8-065

Title: Assessment of antibiotic utilization in the critical care setting at a community teaching hospital

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Purpose: Antimicrobial stewardship is an essential program in the hospital setting as bacterial resistance rates and antibiotic costs continue to rise. In addition to recent guidelines published by the Infectious Diseases Society of America (IDSA), a community teaching hospital implemented local guidelines, including intra-abdominal infections, pneumonias, and Clostridium difficile infections. Since the introduction of these local efforts, it is anticipated that empiric antibiotic coverage is appropriately selected. As part of the programs longitudinal quality efforts, antimicrobial use within each hospital care area will be assessed. The objective of this study is to evaluate appropriate antibiotic utilization within the critical care setting.

Methods: A retrospective chart review of patients admitted to the ICU and CCU, who have received antibiotics, over a one month period, will be identified using the electronic medical record system. Patients who are pregnant, under the age of 18, or who have received prophylactic antibiotic use will be excluded from the study. The primary outcome measure is appropriateness of initial antimicrobial regimens. Secondary outcomes measures are dosing appropriateness, infection type, antimicrobial de-escalation following cultures, length of stay, and patient outcomes. Data being collected includes: baseline patient characteristics, such as demographics, clinical signs and symptoms of infection, radiographic imaging, and renal function; infection type; indication per hospital and/or IDSA guidelines; appropriateness of dosing; mechanical ventilation days; microbiology assessments, such as culture results, causative pathogens, time of results in relation of treatment initiation, and de-escalation following susceptibility; and patient outcomes, such as critical care and hospital lengths of stay, 30-day readmission rate, 30-day mortality rate, and discharge disposition. This study will be submitted to the Institutional Review Board for approval.

8-066

Title: Retrospective Review of Initial Tacrolimus Dosing In Adult Heart Transplant Recipients

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Purpose: Calcineurin inhibitors, specifically tacrolimus, are a mainstay of therapy to prevent cellular rejection after heart transplantation but initiation induces renal vasoconstriction that can result in decreases in glomerular filtration rate. To date, there are still questions regarding dosing following heart transplantation; dose adjustments and monitoring requires the intricate balance of these risks. The purpose is to optimize tacrolimus dosing and minimize risk of rejection within the first 3 months immediately following heart transplantation.

Methods: This is a single center retrospective review including all patients 18 years of age or older who underwent heart transplantation at University of Michigan Health Systems from January 1st 2007 through December 31st 2012 and received tacrolimus as part of the immunosuppression regimen. Patients who received a repeat transplant or those followed by pediatric cardiology will be excluded. The primary outcome of this study is to determine if time to therapeutic tacrolimus trough correlates with the rate of biopsy proven rejection (grade 2 or above, as define by The International Society for Heart and Lung Transplantation) within the first 3 months after transplant. Therapeutic trough will be defined as the dose needed to achieve a trough greater than 10ng/mL. The secondary objective is to identify predictors of tacrolimus dose requirements to develop a predictive model for maintenance dose. Demographic data from recipients and donors will be collected, along with concomitant maintenance immunosuppression, laboratory and biopsy results and known risk factors for cellular rejection. Descriptive statistics will be used to report baseline characteristics. Standard statistical methods will be used to analyze the data for primary and secondary outcomes. This study was approved by the University of Michigan Institutional Review Board.

8-067

Title: Evaluation of Long Acting Medications in the Inpatient Setting: Darbepoetin, Zoledronic acid, Leuprolide, and Octreotide depot

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Purpose: Long acting injectable medications allow for easier treatment of chronic conditions by improving adherence through less frequent administration. In most situations, these medications are indicated in outpatient settings, as they tend to be costly and may not be acutely indicated for use during hospital admissions.

Methods: This is a retrospective cohort study evaluating the use of darbepoetin, zoledronic acid, leuprolide, and octreotide depot at Henry Ford Hospital in Detroit, Michigan. This study has been approved by the Institutional Review Board. Subjects will be identified using the inpatient pharmacy database. Inclusion criteria are age greater than 18 years and receipt of at least one dose of study medication. Pregnant patients are excluded. Fifty consecutive patients on each study medication will be evaluated. Data will be collected using a standardized case report form and will include: patient demographics, dose, number of doses received, documented indications, and appropriate laboratory parameters. The primary endpoint is to determine the incidence of inappropriate use, defined as administration without a documented indication, administration shortly before discharge, or administration without appropriate laboratory parameters. The secondary endpoint is to evaluate the cost of inappropriate use of these medications by obtaining the acquisition cost per dose. The data collected will be analyzed using descriptive statistics.

8-068

Title: Comparison of aPTT versus anti-IIa monitoring for argatroban dosing

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Purpose: Argatroban is monitored using activated partial thrombin time (aPTT). Cases have shown aPTT may be an unreliable way of measuring argatroban anticoagulation and can lead to excess drug administration. Assessing an argatroban level using an anti-IIa assay may increase the accuracy of monitoring. We hypothesize that patients followed by anti-IIa levels will require less argatroban for therapeutic anticoagulation compared to patients followed by aPTT.

Methods: Adult patients 18 years or older receiving argatroban infusions between April 2012 and August 2013 were included. Patients under the age of 18 years were excluded. In April 2013, the use of argatroban anti-IIa monitoring was implemented within our institution for all patients receiving argatroban. Demographic information, argatroban dose, dose titrations, aPTT or argatroban levels, duration of argatroban therapy, and bleeding incidents were collected. Patients monitored by aPTT (pre-April, 2013) will be compared with patients monitored with argatroban levels. Data will be analyzed using descriptive statistics. This study received Institutional Review Board approval.

8-069

Title: Impact of a Pharmacist-Lead Individualized Pain Management Process on Length of Stay in Chronic Pain Patients Admitted for a Surgical Procedure

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Purpose: The number of patients with chronic pain who are treated with opioids is increasing and inpatient pain management of these patients with opioid dependence can be difficult for providers. Poorly managed acute on chronic pain can lead to increased length of stay and hospital costs. The primary objective of this pilot project is to develop a process for pharmacist-lead individualized pain management of chronic pain patients admitted for a surgical procedure and to measure the impact that process has on length of stay.

Methods: Prior to initiation, this pilot project will be submitted for review to the Institutional Review Board. The electronic medical record system will be used to identify patients who self-identify as having chronic pain and have a recent history of treatment with opioids. Inclusion criteria includes patients with chronic pain as defined above and admission to Munson Medical Center (MMC) for a surgical procedure. Exclusion criteria includes age 18 years, patients enrolled in palliative care or hospice, pregnant women, prisoners and oncology patients. The following baseline data will be collected: sex, age, reason for admission, location of admission to MMC and hospital length of stay. Once baseline data on length of stay in chronic pain patients is identified, a pharmacist-lead pain team will create individualized pain treatment plans for those chronic pain patients admitted for a surgical procedure. Length of stay will then be re-measured and compared to the baseline data. The primary outcome is the development of an individualized pharmacist-lead pain management process for chronic pain patients admitted for a surgical procedure and the impact the process has on length of stay.

8-070

Title: Effect of comprehensive anticoagulation management on attainment and maintenance of therapeutic INRs after orthopedic surgery

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Purpose: Management of anticoagulation following orthopedic surgery is complicated by many transitions of care issues, including multiple provider changes and lapses in INR monitoring. This exposes patients to unwarranted risks of post-procedural thrombosis and bleeding. The objective of our project is to characterize the effect of a comprehensive anticoagulation monitoring program on attainment and maintenance of therapeutic INRs following orthopedic surgery.

Methods: This retrospective cohort study comparing the INRs and bleeding event documentation will be gathered from the medical charts of patients who underwent elective knee or hip replacement surgery and enrolled in our institutions outpatient anticoagulation clinic following discharge. Data from traditionally-managed patients, which included surgeon-management of anticoagulation during hospitalization and post-discharge INR follow up within four days, will be compared to data from patients who were managed using a comprehensive anticoagulation management program that included inpatient pharmacist-managed anticoagulation and next day INR follow up post-discharge. The time to first post-discharge INR greater than 2, time within therapeutic range, proportion of measured INRs less than 1.5 or greater than 4, and number and severity of bleeding events in each group will be compared. This study was exempted from IRB review because it solely involves the collection or study of existing data that is recorded in a manner that prevents subject identification.

8-071

Title: Appropriateness of antimicrobial treatment of pneumonia and uncomplicated urinary tract infections (UTIs) in a community teaching hospital

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Purpose: Pneumonia and UTIs are common causes for hospital admissions requiring antibiotics. Inappropriate treatment of these conditions can include medication selection, dose, or treatment duration. The purpose of this study is to identify antimicrobial stewardship opportunities to improve treatment of healthcare associated pneumonia (HCAP), community acquired pneumonia (CAP), and uncomplicated UTIs.

Methods: This study will be submitted to the Institutional Review Board for approval. A retrospective electronic chart review from July 1, 2013 through September 1, 2013 will be conducted. Patients will be identified by positive respiratory and urine cultures in a laboratory results database. Inclusion criteria are: admission to a medical surgical or progressive care unit for at least 24 hours, 18 years or older, positive bacterial culture to support a diagnosis of pneumonia or UTI, and documented diagnosis of active infection. The primary study endpoints are the appropriateness of treatment for HCAP, CAP, and uncomplicated UTIs. Appropriate treatment is defined by prescriber selection of the correct empiric medication, dose, and duration based on Infectious Diseases Society of America guidelines.

8-072

Title: Safety of dabigatran and rivaroxaban in the elderly veteran population

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Purpose: This study is designed to compare the incidence of bleeding and thrombosis with dabigatran and rivaroxaban in the elderly atrial fibrillation population (aged 75 years or older) to determine which medication is safer in this population. It is hypothesized that rivaroxaban would be safer due to less renal elimination compared to dabigatran (36 percent versus 80 percent, respectively). In addition, this study seeks to determine whether adverse drug reactions (ADRs) inherent to these medications can be prevented using a more conservative variation of the Cockroft Gault method for estimating renal function compared to the method used in clinical trials.

Methods: This study will be submitted to the Institutional Review Board for approval. A retrospective chart review will be conducted on patients greater than 74 years of age in the Veterans Integrated Service Network (VISN) 11 of the Veterans Affairs Healthcare System who received dabigatran and rivaroxaban from January 1, 2011 to June 30, 2013 for the purpose of preventing stroke caused by nonvalvular atrial fibrillation. The two patient groups will be compared to each other with respect to the composite incidence of thrombosis and all types of bleeding (primary outcome) as well as the number of significant drug interactions (secondary outcome). All patients will be assessed for appropriate renal dosing of dabigatran and rivaroxaban. For each patient who experienced an ADR, his or her creatinine clearance will be recalculated via a variation of the Cockroft Gault method using only age and serum creatinine to determine whether a medication overdose, and ultimately an ADR, could have been prevented.

8-073

Title: Antifungal therapy for the management of fungal infections due to contaminated methylprednisolone injections

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Purpose: In the fall of 2012, there was an outbreak of fungal infections due to contaminated methylprednisolone injections, with 750 reported cases to date. Due to the circumstances of this outbreak, there were no existing guidelines to direct therapy and patients were empirically initiated on voriconazole with or without liposomal amphotericin B. Itraconazole and posaconazole were also available as alternative agents. Information regarding this patient population is limited, therefore, the purpose of this study is to report the duration of antifungal therapy, reasons patients switched or discontinued initial therapy and antifungal adverse drug reactions or side effects.

Methods: This is a retrospective, observational, descriptive, single-center study pending approval from the Institutional Review Board. Patients initiated on voriconazole with or without liposomal amphotericin B as inpatients from October 1, 2012 to March 31, 2013 will be included in the study. Patients must also have completed a minimum of 30 days of antifungal therapy. The study will utilize electronic medical records and fungal outbreak clinic records to determine the following: baseline characteristics, the duration of antifungal therapy, reasons patients switched from initial therapy to alternative therapy, reasons patients discontinued initial therapy and adverse drug reactions or side effects patients experienced from antifungal therapy. The duration of therapy, reasons patients switched or discontinued therapy and adverse drug reactions or side effects will be reported through the use of text, charts and tables. This information will be further analyzed through the use of descriptive statistics.

8-074

Title: Evaluation of appropriate pain assessment and treatment in critically ill patients sedated with dexmedetomidine and/or propofol

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Purpose: The American College of Critical Care Medicine (ACCM) recently published guidelines on the appropriate use of pain assessment tools in the intensive care unit (ICU). A patient's self reported pain using the Numeric Rating Scale (NRS) is considered the gold standard. However, for patients who are sedated and unable to communicate, the ACCM recommends the use of the Critical Care Pain Observation Tool (CPOT). The purpose of this drug use evaluation (DUE) was to determine whether pain was being appropriately identified and treated for in sedated patients according to ACCM guidelines and protocols at our institution.

Methods: The institutional review board approved this retrospective DUE. Patients were randomly selected based on computer generated reports from one of our two institutional campuses. Patients were included if they were administered dexmedetomidine and/or propofol in the ICU from April 2013 to June 2013. Patients were excluded if they received opioid infusions or opioid patient controlled analgesia during the use of sedative agents. Based on ACCM recommendations, significant pain was defined as having a NRS pain score greater than 3 or a CPOT pain score greater than 2. Charts were reviewed to determine whether significant pain was treated using the NRS and CPOT pain scales. Charts were also evaluated to see if patients were prescribed as needed intravenous (IV) opioid medications while on sedative agents as suggested by the ACCM guidelines. Secondary endpoints identified the frequency of pain relief and adherence to our institution's computerized reassessment prompts. Prompts sent reminders to reassess pain after an intravenous medication and an oral medication was administered within 15 minutes and 1 hour, respectively. For the purposes of this study, pain relief was defined as sleeping, having a NRS pain score less than 4, or having a CPOT pain score less than 3.

Results: A total of 25 patients were reviewed. Of that, 16 patients were prescribed as needed IV opioids. From the number of patients studied, 358 pain assessments were evaluated. Documentation using the NRS and CPOT pain scores occurred in 83% of these assessments. Of the 50 significant pain scores, there were 33 instances when pain was treated with medication. Only 27 appropriate reassessments were identified. Pain relief was confirmed in 16 pain reassessments.

Conclusion: Inconsistencies were identified between ACCM recommendations, protocols, and pain management practice at our institution. Rates of prescribed as needed IV opioids and use of NRS and CPOT pain scales were lower than expected. Computerized prompts promote further adherence to protocol requiring reassessment of pain after a medication is given. However, noncompliance with protocols made it difficult to evaluate pain relief. Following pain guideline recommendations and institution protocols provide an opportunity to improve the patient care experience. The results of this DUE may also offer further direction with the inclusion of pain management into the sedation order set for ICU patients.

8-075

Title: Program of All-inclusive Care for the Elderly (PACE) as a model for integrated care: a pilot study to assess health outcomes and cost-effectiveness

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Purpose: Centers for Medicare and Medicaid Services (CMS) is trying to develop an effective healthcare delivery system and payment model in an effort to improve the quality of healthcare received by Medicare/Medicaid dual beneficiaries and minimize financial burden on the healthcare system. The holistic patient-centered care approach used in PACE programs is hypothesized to improve the health and general well-being of its participants, thereby minimizing healthcare costs. The purpose of the present study is to determine whether the practices implemented in PACE programs could be expanded in alignment with CMS vision to create an effective and economical model for integrated care.

Methods: The following retrospective chart review has been approved by the Henry Ford Hospitals IRB. A list of participants enrolled into the PACE program from June 2011-June 2012 will be obtained from medical records. The aims of the study are to compare general health outcomes for PACE participants at the time of program enrollment (i.e. baseline) and post-enrollment; and to compare healthcare-related expenditures for PACE participants post program enrollment to averages for dual eligible beneficiaries. To assess the studys first aim, number of inappropriate medications (defined as therapeutic duplication, major drug-drug interaction, or inappropriate dose for indication/renal function/liver function), number of chronic disease states (based on CMS fifteen most common chronic disease states in dual eligible beneficiaries), blood pressure, low density lipoprotein (LDL), glycoslyated hemoglobin A1c (A1c), geriatric depression scale (GDS) score and vitamin D level will be collected at baseline, six months post-enrollment and one year post-enrollment and compared using appropriate statistical tests. To assess the studys second aim, PACE program rates of emergency room (ER) visits, hospitalizations, 30 day re-hospitalizations, and nursing home/assisted living facility placement will be compared to current national averages for dual eligible beneficiaries. All data will be recorded without patient identifiers and maintained confidentially.

8-076

Title: Accuracy of the Caprini Scale in predicting incidence of venous thromboembolism in pulmonary tuberculosis patients

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Purpose: Upon admission to the hospital, the Caprini Scale is often used to assess risk factors for venous thromboembolism (VTE) in medical patients. Although serious lung disease is one such risk factor, the Caprini Scale does not clearly delineate what pulmonary diseases are included in this term. There have been case reports and retrospective reviews that suggest pulmonary tuberculosis (TB) as an independent risk factor of developing VTE especially in the initial phase of the disease. This study aims to evaluate the accuracy of the Caprini Scale in predicting VTE in TB patients.

Methods: This study will be an Institutional Review Board approved, retrospective cohort of adult patients admitted to an inner city academic medical center in Detroit, Michigan with pulmonary TB from January 2008 to September 2013. Patients eighteen years to eighty years of age diagnosed with pulmonary TB will be identified using International Classification of Diseases-9 (ICD-9) codes for pulmonary TB, deep vein thrombosis and pulmonary embolism. Information to be collected will include: patient demographics, co-morbid disease states, medication information, hospital length of stay, and pertinent laboratory values. The primary endpoint is to assess the accuracy of the Caprini Scale in predicting VTE in TB patients. Secondary endpoints are to characterize the incidence of VTE in pulmonary TB patients and to compare the differences in risk factors between the TB patients who developed VTE during the hospitalization and those who did not. Results will be analyzed with SPSS software and descriptive statistics.

8-077

Title: Evaluation of transdermal lidocaine 5% patch use in adult patients at a tertiary, academic health system

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Purpose: Package labeling lists pain associated with post-herpetic neuralgia as the sole indication for the use of transdermal lidocaine 5% patch (L5P). Questionable efficacy in non-labeled neuropathy and nociceptive pain conditions has been reported. Currently in our health system, there are no medication guidelines limiting the use of L5P. The purpose of this study is to evaluate the label and off-label use, safety, and efficacy of L5P in adult patients in our health system.

Methods: This study is a retrospective chart review approved by our Institutional Review Board. The electronic medical record system was used to generate a list of patients receiving L5P at multiple sites within our institution from June 1, 2013 through June 30, 2013. The electronic medical record was reviewed for patient-specific information (age, weight, gender, indication for L5P use, and length of stay). Prior to admission and inpatient medication records were assessed for use of opioids, non-opioids, and adjuvant pain medications. Patient-reported pain scores and healthcare provider chart documentation were collected to assess efficacy of L5P. Adverse effects, naloxone administration, and rapid response or cardiopulmonary resuscitation calls were collected to assess safety of L5P.

8-078

Title: Impact of an antimicrobial stewardship team comprehensive care bundle on the management of Staphylococcus aureus bacteremia

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Purpose: Staphylococcus aureus bacteremia (SAB) carries a high risk of complications for which suboptimal treatment may adversely affect patient outcomes and survival. Antimicrobial stewardship teams (AST) are well-situated to direct the evidence-based treatment of SAB. By implementing an AST-directed, comprehensive care bundle for the management of SAB, we hypothesize that adherence to the applicable bundle elements will increase.

Methods: This is a quasi-experimental study of patients with SAB at the University of Michigan Hospital and Health System (UMHS) before and after implementation of a comprehensive care bundle directed by an AST. Bundle elements include: timely initiation of effective empiric antibiotics following positive gram stain, targeting therapeutic vancomycin levels (10-20mg/L), changing to beta -lactam therapy for MSSA, obtaining blood cultures every 24-48 hours until documented clearance, utilizing an appropriate treatment duration, identifying and controlling the source of bacteremia, obtaining echocardiography, and making adjustments to antibiotic therapy for patients with clinical failure, vancomycin MIC=2, and/or persistent bacteremia >5 days. Obtaining a formal ID consultation will also be recommended. Demographic, microbiologic, management, and outcomes data will be collected by review of the electronic medical record. Adherence to applicable bundle elements will be calculated and compared using a two tailed Chi-squared test. Secondary endpoints include length of hospital stay, length of ICU stay, time to microbiologic cure, incidence of recurrent bacteremia, 30-day readmission rate, and 30-day all-cause mortality. This study has been approved by the Institutional Review Board.

8-079

Title: Effectiveness of a retrospective drug utilization review on potentially unsafe opioid and central nervous system (CNS) combination therapy

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Purpose: Drug overdose deaths are the second leading cause of unintentional deaths in the United States. Three fourths of these deaths involve opioid analgesics. Benzodiazepines and antidepressants are the next most common drugs involved in drug overdose deaths, and in a majority of these cases, the patient is concomitantly on an opioid. The objective of this study is to determine the effectiveness of a retrospective drug utilization review (DUR) program among patients whose claims history suggested potentially unsafe opioid and central nervous system (CNS) combination therapy.

Methods: This study was submitted to an Institutional Review Board for approval. Commercially insured adult members with pharmacy claims for high dose opioids (daily morphine equivalent dose at least 120 mg) and concomitant claims for another opioid, benzodiazepine, or antidepressant will be identified during a 4 month period. Members with pharmacy claims indicating presence of HIV, AIDS, or malignancy will be excluded. A one time letter will be mailed to the most recent prescriber of the high dose opioid regarding the potentially unsafe drug combination and reassessment of therapy. A satisfaction survey will also be sent to the provider. After 4 months post mailings, pharmacy claims for members targeted in the DUR program will be reexamined to measure changes in therapy, including total unique opioids, total morphine equivalents per day, discontinuation of therapies, and dose reductions. Survey results will also be analyzed to determine the provider perceived clinical utility of the retrospective DUR program.

8-080

Title: Duration of efficacy with addition of glipizide to metformin therapy in veterans with type 2 diabetes mellitus

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Purpose: Diabetes mellitus (DM) is an epidemic that affects 25.8 million people in the United States. The Veterans Health Administration (VHA) clinical practice guidelines for diabetes mellitus recommend metformin and sulfonylurea as the preferred initial oral combination. However, oral antihyperglycemics eventually lead to secondary failure over the course of therapy. The duration until onset of secondary failure has not been well defined in the literature. The objective of this study is to determine the duration of efficacy with the addition of glipizide to metformin therapy in veterans with type 2 diabetes mellitus.

Methods: This study will be submitted to the Institutional Review Board for approval. A retrospective chart review will be conducted to evaluate patients diagnosed with type 2 diabetes mellitus (T2DM) between the years of January 2004 to December 2006. Patients will be identified in the electronic medical record (EMR) using International Classification of Diseases, 9th edition (ICD 9) codes consistent with T2DM. Patients will be included if aged at least 18 years and taking metformin therapy with a new prescription for glipizide between 2004 to 2006. The following data will be collected from the EMR: hemoglobin A1c (HbA1c), weight, body mass index (BMI), patient age, gender, ethnicity, serum creatinine, estimated glomerular filtration rate, duration of diabetes, duration until onset of secondary failure, doses of metformin and glipizide. Secondary failure will be defined as the addition of a third oral antihyperglycemic agent, addition of insulin therapy, or HbA1c increase of 2 percent or more. Glycemic control will be monitored with annual assessment of HbA1c until patients meet the criteria for secondary failure or until the end of the six year follow up period for the study.

8-081

Title: Assessment of pharmacist intervention on health outcomes and costs in patients with chronic obstructive pulmonary disease and tobacco dependence

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Purpose: Poor adherence to pharmacological treatment of chronic obstructive pulmonary disease (COPD) is a common problem that has adverse effects on disease state management, patient quality of life, and treatment costs. Furthermore, smoking cessation is an important component of the treatment and prevention of COPD. The purpose of this study is to evaluate the efficacy of a pharmacist-managed COPD and smoking cessation program in improving patient outcomes and reducing treatment costs.

Methods: This study will be submitted to the Institutional Review Board for approval and will be performed in collaboration with the Montana Association of Health Care Purchasers (MAHCP). MAHCP will analyze its claims data warehouse, quantifying current costs and risk levels, to identify participating members who are candidates for referral to the COPD management program. This program will be pharmacist-managed, with a focus on COPD patient education, disease state management, longitudinal monitoring of patient progress, and Medication Therapy Management (MTM) services. The following data on patient progress and outcomes will be collected: patient demographics, education provided to patients, medication adherence, changes to pharmacotherapy, inhaler technique using in-check dial, immunization status, exacerbation history, hospital admissions, and COPD Assessment Test (CAT) score. Qualifying patients will also be referred to a pharmacist-managed smoking cessation clinic, where clinical pharmacists and pharmacy residents will provide education and manage smoking cessation pharmacotherapy under a collaborative practice agreement. The following data will be collected on this patient subset: patient demographics, tobacco use history, education provided to patients, prescribed pharmacotherapy, and quit attempt outcomes. Data will be collected and compiled with economic data from MAHCP to assess the effects of this program on patient outcomes and treatment costs.

8-082

Title: Development of a post-discharge medication reconciliation service to improve patient outcomes in transition of care

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Purpose: The Agency for Healthcare Research and Quality (AHRQ) recognizes transfer of information to the patient about which medications to take and how to take them after hospital discharge as a common process breakdown that can result in avoidable hospital readmission. One of the top five reasons for hospital re-admission is adverse drug events. Pharmacists play an integral role in educating patients about medications and should be involved in the discharge medication reconciliation process. This project will determine the value of developing a pharmacist-led service to follow up with patients after hospital discharge to review medication regimens and answer patient questions.

Methods: This study will not be submitted to an Institutional Review Board for approval but will be approved by the Pharmacy and Therapeutics and Transitions of Care Committees. Patient inclusion criteria will be age greater than 18 years with a recent hospital admission and a LACE score greater than or equal to ten. A sub-analysis of patients with a LACE score greater than or equal to ten with three or more maintenance medication changes from hospital admission to discharge will be included. Exclusion criteria will be hospital discharge to anywhere other than home. Patients will be contacted by phone within two days after discharge from the hospital and will be offered telephone or face-to-face medication reconciliation and counseling. The primary endpoint will be reduction in 30-day re-admission rates to the hospital. Secondary endpoints will include improvement in the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey score for medication communication as well as patient satisfaction with the service.

8-083

Title: Effect of pharmacist-led heart failure medication education and discharge reconciliation during inpatient stays on reducing readmissions and improving medication communication.

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Purpose: Lack of health literacy, nonadherence to medication therapy, and insufficient discharge planning have been shown to contribute to readmissions for heart failure patients. Pharmacists are specifically trained to address these issues through medication reconciliation and patient counseling. The focus of this project is to reduce 30-day hospital readmissions of heart failure patients by improving patients medication knowledge and adherence. Primary endpoints are 30-day readmissions and Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) scores. Secondary endpoints are number of patients receiving medication education, completed discharge medication reconciliations, and time required for counseling, medication reconciliation, and follow-up phone calls.

Methods: Non-randomized patients are screened prospectively for risk of readmission utilizing the LACE Risk Stratification Tool upon admission to St. Vincent Healthcare for heart failure. The LACE Risk Stratification Tool is a tool used to calculate a readmission risk score based on length of stay, acute admission through the emergency department, comorbidities and emergency department visits in the last six months. Patients admitted for heart failure with a LACE score greater than six receive face-to-face consultations from a pharmacist at the beginning of their hospital stay. The pharmacist consults with the clinical team on plan of care, performs medication reconciliation at discharge, and follows up with a post-discharge call to the patient. The data is reviewed and project outcomes are assessed throughout the research period.

8-084

Title: Evaluation of the management of pain, agitation, and delirium in the intensive care unit

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Purpose: The American College of Critical Care Medicine guidelines for the management of pain, agitation, and delirium in adult patients in the intensive care unit recognize that improved patient outcomes are associated with ensuring patient comfort while maintaining a light level of sedation. The purpose of this study is to evaluate patient outcomes when the hospitals current practice for managing pain, agitation, and delirium is being used, and then reevaluate patient outcomes after implementing a pain, agitation, and delirium protocol.

Methods: This study will not be submitted to an Institutional Review Board for approval. This study is approved by the Pharmacy and Therapeutics Committee at Bozeman Deaconess Hospital. This study will include patients 18 years of age and older who are mechanically ventilated in the intensive care unit. A retrospective review, using the electronic medical record, will be conducted from April 1, 2013 through September 30, 2013. Another six-month data collection period will be completed after a protocol for managing pain, agitation, and delirium has been implemented. Intensive care length of stay, hospital length of stay, duration of mechanical ventilation, and the number of self-extubations will be recorded during each data collection period. These outcomes will be used to compare the current management strategies used in the hospital to the American College of Critical Care Medicine guidelines for the management of pain, agitation, and delirium.

8-085

Title: Comparison of medication reconciliation completion times before and after electronic prescription data system implementation.

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Purpose: Medication errors and omissions can have serious consequences for patients. Medication reconciliation at admission is an effective way to determine differences between what a patient is taking at home and what a physician has ordered for a patient admitted to the hospital. Timely completion of medication reconciliation is key to ensure that patient home medication therapy is continued. The purpose of this study is to evaluate whether access to electronic pharmacy claims data improves the time to completion of medication reconciliation (MR) upon admission.

Methods: The study will be a retrospective chart review of patients admitted to a hospital. Patients eligible for inclusion will be admitted between August 1 - October 31, 2013, > 18 years old and take medication(s) before admission. Patients will be excluded if admitted to the inpatient rehab facility, no medications before admission or elective surgery. The following data will be collected: medical record number, age, gender, ethnicity, admission type, weekday admitted, time admitted, time MR completed, total time to MR completion, who completed MR, information source, patient communication level, caregiver present, how many sources contacted, how many times sources contacted, discharge in previous 30 days. Approval for this investigation was obtained from the hospital Institutional Review Board (IRB). The Surescripts database contains medication fill information for patients who are enrolled with participating insurance groups and pharmacies. The information in the database includes medication strength, name, dispensed quantity, days supply, date filled, pharmacy name and prescriber name. Patient information in the database is downloaded when a patient is admitted to the hospital. Data will be collected by the principal investigator both pre and post database implementation and it will be determined if access to claims data improves time to MR completion.

8-086

Title: Pharmacy resident presence at the American Diabetes Association sponsored Camp Montana

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Purpose: Camp Montana, sponsored by the American Diabetes Association, is a fun, safe environment for children diagnosed with diabetes. Camp Montana provides ample medical professional presence, glucose monitoring, insulin therapy management, structured diet, and age appropriate diabetic education. 2013 marked the first year the University of Montana Residency Program sent residents to join the medical staff at Camp Montana. As pharmacists, we play a key role in diabetes management.

Methods: Two PGY-1 pharmacy residents served as medical staff as well as camp counselors. The American Diabetes Association provided guidelines for diabetes management at camp for children with diabetes. The medical staff operated under a written medical management procedure based upon these guidelines and in collaboration with the medical director of Camp Montana. Baseline insulin therapy was adjusted based on increased physical activity during camp. Throughout camp, bolus insulin dosing was adjusted, administered, and documented, for each camper on an individual basis. Additional medications prescribed to the campers were administered by medical staff as well. Glucose monitoring was performed and documented up to 8 to 10 times a day, around the clock. Glucose tablets or other glucose containing products were administered to hypoglycemic campers. In addition, glucagon injections were available in the event of hypoglycemic emergencies. Finally, diabetic education delivered by the medical staff, was a key component to the campers stay. Age appropriate diabetic education covered a variety of topics involved with diabetes management.

Results: The pharmacy residents served as effective members of the medical staff by managing diabetic therapy through appropriately adjusting basal insulin levels and regulating bolus insulin administration. During the educational components of camp, the pharmacy residents counseled the campers on a variety of topics including: diet, exercise, insulin management, as well as possible effects of their disease on future health. Camp Montana was a valuable learning experience for the pharmacy residents. Working with the children strengthened diabetes management and practical education skills. Observation and involvement with managing diabetes on a day to day basis is typically outside the scope of pharmacy education. Being a part of this camp allowed pharmacy residents to understand the finer nuances of the disease. These learning experiences included identifying individual hypoglycemic symptoms, adjusting insulin dosages in certain situations, managing a balanced diet, and carbohydrate counting, among others.

Conclusion: Pharmacy residents played a vital role at Camp Montana, offering clinical knowledge and expertise. Conversely, the pharmacy residents greatly benefited from Camp Montana by gaining experience in multiple facets of diabetes management.

8-087

Title: Development and evaluation of sensible dose range alerts for pediatric patients at a community health system

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Purpose: Medication errors can be harmful for all patients, but pediatric patients are at increased risk of harm due to differences in physiologic characteristics and need for more individualized dosing. Medication dosing alerts can be useful to prevent overdosing of medications, but overly restrictive dosing parameters may lead to alert fatigue and reduced confidence in the alert systems relevance, possibly leading to critical alerts being ignored. The objective of this study is to evaluate the appropriateness of sensible dose range alerts for pediatric patients in both the inpatient and outpatient settings of a community health system.

Methods: This is a prospective study of dose range alerts for pediatric patients using a single health systems clinical information service. Dose range alert parameters will be developed for specific medications, including high alert products, antimicrobials, nonopioid analgesics, opioid analgesics, and chemotherapeutic agents. The alerts will be customized to medication dosage forms and routes of administration as well as patient characteristics, such as age, weight, and body surface area. Dose range parameters will be set after evaluation of literature, determination of acceptable variance, and approval by local pediatric specialists. Patients will be included if they are 1 to 17 years of age and have an order to receive 1 or more medications with an established dose range alert between November 2013 and March 2014. The primary outcome of this study is to determine the incidence of appropriately dosed medications during the study period as compared to a historical control. A secondary objective is evaluation of dose range alert utility based upon different users alert override rate. Subgroup analyses will be conducted on override rates based upon users medical disciplines as well as medication classifications. Prior to commencement, this study will be submitted to the local Institutional Review Board for approval.

8-088

Title: Implementation of a pharmacist led medication reconciliation consultation service in an inpatient psychiatric center during transitions of care

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Purpose: The Joint Commission recognizes that medication reconciliation is an important component of patient safety and that differences in medication records can adversely affect patient outcomes. Currently, data regarding pharmacist led medication reconciliation services on admission and discharge are limited, particularly for patients in an inpatient psychiatric center. The objective of this study is to assess the impact of pharmacist directed medication reconciliation in an inpatient psychiatric center during transitions of care.

Methods: In this is prospective, single center study, inpatient psychiatric providers will order consultations for a pharmacist to complete medication reconciliation at admission or discharge. Within 24 hours of an admission consult, the pharmacist will obtain the patients medication history. Subsequently, the pharmacist will order necessary laboratory tests, resume appropriate nonpsychiatric maintenance medications, identify medication intervention opportunities, and provide recommendations to minimize drug therapy problems. Discharge consults will be completed by the pharmacist within 24 hours, including medication counseling prior to patients leaving the hospital. Patients greater than 18 years of age, admitted to the inpatient psychiatric unit between November 2013 and March 2014, with at least four medications, and who have a consultation for pharmacist directed medication reconciliation will be included. Patients with an anticipated length of stay less than 72 hours will be excluded. The primary outcome will be the number of medication intervention opportunities (MIOs) identified by the pharmacist. Secondary outcomes will include types of medication interventions; severity of MIOs identified; rates of medication errors, 30 day readmissions, and 30 day emergency department visits, and pharmacist time to complete each consultation. Prior to patient enrollment, this study will be submitted for approval to the local Institutional Review Board.

8-089

Title: Establishing clinical pharmacist services in emergency medicine at a community hospital

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Purpose: In recent years, health care providers have increased their focus on medication safety. Patients presenting to Emergency Departments (ED) potentially receive multiple medications that traditionally have not been prospectively screened by a pharmacist. Pharmacists screening for patient allergies, drug interactions, and inappropriate dose/use provide opportunity for interventions that prevent patient harm. The objective of this study is to establish and implement a clinical pharmacy service in the ED to determine if pharmacy expertise provides patient safety and financial benefits.

Methods: The resident pharmacist will staff the ED for six weeks. The resident will become an integral part of the health care team providing: clinical consultation, medication reconciliation (upon referral), medication order screening, inventory/formulary management, patient and provider education, and attending CODE responses. The resident will track clinical interventions, medication errors, and medication utilization for potential cost avoidance to justify the clinical pharmacy service. In addition, the resident will serve as a liaison for questions as patients are admitted. This data will then be compared to historical data to assess any potential benefits of a pharmacist in the ED. A survey will be conducted before and after the pilot project as an indicator of staff satisfaction of pharmacy services in the ED. This project will potentially show increased patient safety, decreased medication costs, and increased patient satisfaction by placing a pharmacist in the ED.

8-090

Title: Impact of a pharmacist driven protocol for the management of electrolytes in adult critical care patients at a community health system

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Purpose: Electrolyte disturbances occur frequently in critical care patients, and management of electrolytes in critically ill individuals requires timely intervention and adequate monitoring by healthcare providers. Electrolyte replacement protocols offer standardization in drug selection and dosing as well as patient monitoring; however, most published protocols have utilized physicians or nurses to replenish electrolytes. Pharmacist electrolyte management could reduce the time to intervention and improve the time to correction of electrolyte abnormalities. The purpose of this study is to evaluate the effectiveness and safety of a pharmacist driven electrolyte replacement protocol in adult critical care patients at a community health system.

Methods: This is a single center, prospective, cohort study of adult critically ill patients receiving electrolyte replacement by pharmacists. Adult patients (18 years of age or older) admitted to the combined medical/surgical intensive care unit (ICU) between November 2013 and March 2014 with an active order for pharmacy driven electrolyte replacement and who have received at least one replacement dose of potassium, magnesium, or phosphorous during their ICU stay will be included. Patients will be excluded if they have a documented creatinine clearance less than 30 mL/min, a diagnosis of diabetic ketoacidosis, and concurrent or recent utilization of therapeutic hypothermia. Protocol patients receiving electrolyte replacement by a pharmacist will be compared to a historical cohort of patients with similar baseline characteristics whose electrolytes were managed by healthcare providers before implementation of the protocol. The primary outcome will include the proportion of measured serum electrolytes within the goal ranges in protocol patients compared to the control group. Secondary outcomes will include the time to intervention, time to correction, proportion of values above the desired ranges, development of adverse events, and protocol adherence by the pharmacists. Prior to beginning, approval from the local Institutional Review Board will be obtained.

8-091

Title: Effect of pharmacist intervention on venous thromboembolism prophylaxis adherence rates

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Purpose: Evaluate the effectiveness of pharmacist intervention on venous thromboembolism prophylaxis adherence rates.

Methods: Pharmacists will use a report from the pharmacy system of active inpatients who are not receiving pharmacologic VTE prophylaxis and conduct a chart review to determine if eligible or if contraindication exists. If eligible, the pharmacist will make a recommendation based on current guidelines to physician caring for the patient to consider pharmacologic VTE prophylaxis. The decision to start prophylaxis will be left to the medical team taking care of the patient. Patients will be reevaluated within 48 hours. The total number of patients screened, the number of recommendations, and the outcome of the recommendation will be collected. Adherence to the venous thromboembolism protocol will be assessed throughout the hospital over the 3 month study period.

8-092

Title: Impact of continuous subcutaneous insulin infusion (CSII) on glycemic control in patients with type II diabetes mellitus (T2DM) and associated costs

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Purpose: As the prevalence of diabetes has grown in the United States, the costs associated with the disease have dramatically increased. It is known that the highest costs related to diabetes are due to hospitalizations and complications, and that patients with poorly controlled diabetes are more likely to be hospitalized and suffer from multiple complications. Therefore, it is important to identify therapies that help patients reach recommended hemoglobin A1c (HgA1c) goals to reduce costs. This study will evaluate the effect of CSII on glycemic control and the associated costs of therapy to the VA in a veteran population with T2DM.

Methods: This study will be a retrospective chart review of veterans receiving CSII between May 1, 2008 and May 1, 2013. Patients will be selected from a pharmacy-database generated list and reviewed. Eligible patients will be at least 18 years of age and have a diagnosis of T2DM. Patients will be excluded if they have been on CSII therapy for less than a year or if they don't have both a HgA1c level at baseline and one between 6-12 months after CSII initiation. Patients will also be excluded if they get any diabetic medications outside the VA. The primary objective will be assessed by collecting HgA1c values at baseline prior to CSII initiation and HgA1c values closest to one year after initiation. Cost of therapy will be assessed by determining the cost of all diabetic medications, diabetic supplies, and diabetic associated office visits for one year prior to initiation of CSII and for one year after initiation of CSII. This study has been approved by the Institutional Review Board and data is currently being collected.

8-093

Title: Risk factors associated with readmission following initial hospitalization for community-acquired pneumonia

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Purpose: Clinical benchmarks including readmission rates for specific disease states have been set as national goals to improve the quality of patient care in hospitals. Among these disease states, community-acquired pneumonia ranks as one of the most common causes of hospital admissions in the United States. The objective of this study is to evaluate causes and risk factors associated with hospital readmission in patients with community-acquired pneumonia.

Methods: This study has been submitted to the Institutional Review Board for approval. Study setting is a single, large university hospital. The electronic medical record system will be used to identify patients with an ICD-9 coded admission or discharge diagnosis of community-acquired pneumonia between January 1, 2010 and December 31, 2012. The following data will be collected: patient age, gender, ethnicity, setting from which admission occurred, length of stay, admitting diagnosis, time elapsed between index hospitalization and readmission, available culture data, antibiotic regimen used, and if patient received discharge counseling for any comorbid conditions. Additionally, data regarding presence of the following comorbidities will be collected: congestive heart failure, hypertension, diabetes, acute coronary syndrome, chronic obstructive pulmonary disease, seizure disorder, cerebral vascular accident, atrial dysrhythmia, ventricular dysrhythmia, malignancy, asthma, pneumonia and other. A case-control analysis will be conducted matching patients who were readmitted within 30 days with a control group consisting of those cases not readmitted. Patients will be matched based on basic demographics and presence of identified comorbidities. Differences between case and control group will be assessed in attempt identify opportunities for intervention to prevent readmission in this population.

8-094

Title: Current practices and outcomes associated with intraoperative topical antibiotic use at a community teaching hospital and ambulatory surgery center

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Purpose: Topical antibiotic administration for prophylaxis of surgical site infection is commonly employed in orthopedic surgery despite a lack of consensus guidelines and level 1 evidence supporting this practice. Recent clinical practice guidelines recommend intravenous (IV) administration of antibiotics for the majority of procedures and do not make recommendations for topical antibiotics due to insufficient evidence. The objective of this study is to describe our institutions current use of topical antibiotics in total hip arthroplasty (THA) and total knee arthroplasty (TKA) procedures as well as the clinical and economic outcomes associated with topical antibiotic administration.

Methods: This study has been submitted to the Institutional Review Board for expedited approval. Patients will be included in the descriptive analysis if they underwent THA or TKA (including revision surgeries) from January 1, 2012 through December 31, 2012 and received topical antibiotics, defined as any antibiotic administered into or around the surgical site. Patients will be excluded if they were less than eighteen years of age at the time of their procedure. Demographic and descriptive data for the patient, surgery type, and use of antibiotics will be collected and summarized. Outcomes collected will include postoperative infection rates and readmission rates, subsequent surgeries within six months, 30-day postoperative mortality, evidence of acute kidney injury during admission, hospital length of stay, postoperative intensive care unit admission, incidence of Clostridium difficile infection, and costs associated with antibiotics. The outcome measures will be stratified by procedure type and reported with the general population incidence where available.

8-095

Title: Achievement of therapeutic heparin concentrations with implementation of a new heparin dosing nomogram and monitoring with the anti-activated factor ten assay

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Purpose: Heparin dosing protocols based on patient weight and monitoring of heparin concentrations with activated partial thromboplastin time (aPTT) at our institution were changed in June 2009 as a result of overdosing and higher bleeding rates. The new dosing protocol was changed to dosing based on patient age and plasma volume while monitoring was switched to the activated anti factor ten assay. The objective of this study is to compare the effectiveness of the new dosing method and monitoring assay to the weight based dosing method and aPTT assay in patients receiving an infusion of IV UFH.

Methods: This will be retrospective matched cohort study conducted at a single teaching hospital. Data will be collected through electronic and paper medical charts from 07/01/2009 to 07/01/2013 for patients admitted after initiation of the new dosing and monitoring protocol. Data for patients admitted prior to the initiation of the new protocol will be collected from 05/31/2004 to 05/31/2009. All patients that received IV unfractionated heparin (UFH) for at least 48 hours will be included. The following data will be collected: age, height, weight, gender, concomitant anticoagulant medications, and indication for UFH. Data on heparin dosing collected will include total duration of heparin, initial rate, bolus doses, the timing and results of the monitoring tests, and the timing and dose of any UFH rate adjustments. The primary outcome will be time to achieve a therapeutic level of heparin. Secondary outcomes assessed will be percentage of tests in therapeutic range, the number of monitoring tests ordered per 24 hours, and the number of dosage adjustments per 24 hours. Safety outcomes will include major and minor bleeding events while in the hospital. This study will be submitted to the Institutional Review Board for approval.

8-096

Title: Impact on morbidity and mortality in heart failure patients with reduced ejection fraction utilizing an interdisciplinary approach in a shared medical appointment clinic

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Purpose: Randomized, controlled trials have evaluated the impact on morbidity and mortality in heart failure (HF) patients through the utilization of a multidisciplinary team with controversial outcomes. At Louis Stokes Cleveland VA Medical Center (LSCDVAMC), an interdisciplinary shared medical appointment (SMA) is designed for patients to participate in peer discussion regarding HF self-management and also be evaluated for their individual medical visit. The purpose of this study is to determine the difference in the composite outcome of cardiovascular hospitalizations and all-cause mortality for HF patients with reduced ejection fraction (HFrEF) who are seen in HF SMA versus general cardiology care.

Methods: : A retrospective, matched case-control chart review will be conducted on patients with established care in HF SMA or general cardiology clinics. Patients must be at least 18 years of age, diagnosed with HFrEF, and followed in clinic for at least six months with at least two appointments. Patients will be excluded if HF care is provided by a non-VA provider. Data will be collected on acute care utilization, dosing of disease modifying medications, vital signs, renal function, and co-morbidities. The EFFECT HF Mortality Prediction Score will be use to determine each patients 30-day and 1-year mortality risk. The study will be powered to detect a 50% difference in composite morbidity and mortality, with a 25% event-free survival in the control group (two-sided, α=0.05, and β=0.8). Based on power analysis, approximately 100 patients will be needed to detect this difference in the primary end-point. Composite morbidity and mortality in HFrEF patients and time to target dose will be analyzed using the Kaplan Meier Curve. Differences in categorical variables will be assessed with the Pearson Chi Squared test and continuous variables with the Student t-test. P values of <0.05 will be considered statistically significant for all tests.

Results: Pending R&D and IRB approval; no results at this time. Information about patient characteristics and co-morbities collected will help to determine which populations receive the most benefit from an interdisciplinary HF SMA approach, as opposed to more traditional general cardiology care.

8-097

Title: Comparison of two piperacillin/tazobactam infusion strategies on the incidence of acute kidney injury

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Purpose: Piperacillin/tazobactam is an extended spectrum penicillin/beta-lactamase inhibitor antibiotic and the drug of choice for many infections. Studies have shown that extended infusion achieves higher pharmacokinetic and pharmacodynamic targets than traditional infusion, thus there has been widespread acceptance of extended infusion strategies. There is data to suggest piperacillin/tazobactam increases the risk of acute kidney injury, but the effect of an extended infusion on this risk is unknown. The objective of this study is to determine the effect of traditional infusion (TI) and extended infusion (EI) piperacillin/tazobactam on the incidence of acute kidney injury.

Methods: This is a retrospective, cohort study from January 2011 through December 2013 comparing the effect of TI and EI piperacillin/tazobactam on the risk of acute kidney injury. Upon approval from the Institutional Research Review Board, patients will be identified via billing records. Patients eligible for inclusion are those 18 years of age or older and treated with piperacillin/tazobactam for at least 48 hours. Exclusion criteria include patients receiving both piperacillin/tazobactam dosing strategies, chronic dialysis, receipt of dialysis within 48 hours of admission, baseline serum creatinine greater than 2mg/dL, or pregnancy. Data collection will include demographic data, concomitant nephrotoxic medications, surgery within 48 hours of admission, intensive care stay, length of time on piperacillin/tazobactam, serum creatinine, new dialysis requirement, and mortality. Increase in serum creatinine by 0.3mg/dL or greater than 50 percent from baseline will define acute kidney injury. The primary endpoint will compare rates of acute kidney injury in patients treated with TI to EI of piperacillin/tazobactam. Secondary endpoints will evaluate the impact of risk factors for acute kidney injury in each infusion strategy. Patient identifiers will be removed prior to data analysis to maintain confidentiality. A statistician will aid in the analysis of the data.

8-098

Title: Review of a pharmacy medication risk mitigation program for veterans identified as high risk for suicide

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Purpose: Suicide continues to be a significant problem in the United States and in particular amongst the veteran population. A consult-driven Pharmacist Suicide Prevention Program was piloted in 2013 which converts qualifying high-risk prescription refills into 7-day supplies. It is unknown what impact pharmacist intervention has on medication adherence of veterans enrolled in the program. The primary objective of this study is to assess the change in medication adherence of veterans included in the Pharmacy Suicide Prevention Program in terms of differences in medication possession ratio. The secondary objectives are to determine the cost, time, and perceived satisfaction of the program.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify veterans flagged as high risk for suicide with a consultation for a medication quantity review by a psychiatric clinical pharmacy specialist from May 1st 2013 through October 31st 2013. A retrospective case-crossover study will be conducted. For each patient, the case period will be defined as the 90 day period after placement of a high risk suicide flag and the control period will be defined as the 6 month period prior to placement of a high risk suicide flag. The following data will be collected: patients age, gender, race, diagnosis (primary medical and primary psychiatric), level of service connection, and prescription information. In addition, an anonymous survey will be administered to patients and pharmacists included in the program. It is anticipated that data will be collected on approximately 180 patients.

8-099

Title: Intravenous pentamidine for pneumocystis carinii/jiroveci pneumonia (PCP) prophylaxis in pediatric transplant patients

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Purpose: Sulfamethoxazole/trimethoprim (SMX/TMP) is the current gold standard for prophylaxis of PCP for immunocompromised pediatric patients. Currently there are several second line options for prophylaxis but many, including intravenous (IV) pentamidine, have not been proven to be as effective or as safe as SMX/TMP. The use of IV pentamidine in the transplant population as prophylaxis is increasing but there is limited published data to support its efficacy and safety in this population. The primary aim of this study is to determine the efficacy and safety of IV pentamidine in preventing PCP in pediatric transplant patients.

Methods: The study was approved by institutional review board. A retrospective chart review will evaluate all transplant patients less than 18 years of age that received at least one dose of IV pentamidine from January 10, 2010 to July 31, 2013. Patients who are HIV positive will be excluded from the study. Data to be collected include: PCP diagnosis, toxoplasmosis diagnosis, adverse effects leading to discontinuation of the drug, IV pentamidine dosing regimen (mg/kg/dose), number of doses of IV pentamidine, prior PCP diagnosis, dates of administration of IV pentamidine, age, sex, race/ethnicity, transplant type, diagnosis, prior medications for PCP prophylaxis and day of engraftment/transplant. The primary outcome, pentamidine efficacy will be evaluated through lack of PCP diagnosis and statistically analyzed with a Fishers Exact test. The secondary outcome, pentamidine safety will be evaluated by determining adverse effects leading to discontinuation of therapy and be analyzed with a Kruskal-Wallis test. All other baseline characteristics and patient demographics will be analyzed with descriptive statistics. A subgroup analysis of transplant populations (heart, liver, small bowel, bone marrow, and renal) will be conducted using a multivariate logistic regression to analyze the primary outcome.

8-100

Title: Body Mass Index and 30-day Readmissions and Costs Post Kidney Transplantation

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Purpose: Kidney transplant recipients have a high risk of readmissions particularly within 30 days after transplantation. Reports estimated nearly one-third of renal transplant patients are re-admitted within 30 days. Over two-thirds of patients with end stage renal disease are overweight or obese; both are costly medical conditions with negative sequelae. Insight of body mass index (BMI) and relation to this problem may help focus attention on whether greater efforts should be targeted after discharge to improve patient outcomes and decrease cost. This study was conducted to observe 30 day re-admissions and Medicare costs secondary to BMI at the time of transplant.

Methods: This study was a retrospective cohort from data obtained from Medicare, the United Network of Organ Sharing (UNOS) and the Unites States Renal Data System (USRDS) of primary Medicare beneficiaries who received a primary renal transplant from deceased donor between 2004-2008. The primary outcome 30-day readmissions and costs according to BMI category. BMI categories were classified as follows: underweight (< 18.5 kg/m2), normal (18.5-25 kg/m2), overweight (25-30 kg/m2), obese (30-35 kg/m2), and morbidly obese (≥35 kg/m2). Re-admissions were captured by DRG and ICD-9 codes and costs were obtained from Medicare claims data. Descriptive and clinical information was obtained from UNOS. Those not eligible were patients who received previous kidney transplant or multiple transplants or did not have primary Medicare coverage. A total of 23,831 primary Medicare beneficiaries received a kidney transplant from 2004-2008. Patients were excluded for BMI < 13 (n=75) and BMI > 60 (n=32) or missing BMI (n=4). Patients were censored at loss of primary Medicare coverage, graft failure and death. Patients censored before discharge (n=203) and those with missing claims data (n=63) were excluded. Costs were adjusted to 2012 US Dollars. Statistical analysis included one-way analysis of variance and Chi-square analysis.

Results: A total of 23,454 patients were included in the study and overall 32.8% (n=7696) were re-admitted within 30 days. The average age was 52.6 years, 62% were males, 50% were Caucasian and average length of stay for transplantation was 10.8 days. Delayed graft failure occurred in 27% of the cohort. Distribution of BMI categories for patients readmitted were 1.8% (n=142) for underweight, 28% normal weight, 34% overweight, 23% obese, and 13% morbidly obese. Overweight patients were most likely to be readmitted with 24% being re-admitted at least once and of these 10% were admitted more than once. Of the other BMI categories, 29% of normal weight, 23% obese, 13% of morbidly obese, and less than 2% of underweight patients had readmissions. Compared to their normal weight counterparts,

obese and morbidly obese patients were 8% (p=0.45) and 30% (p<0.001) less likely to be readmitted. The average costs for 30-day readmissions were $ 6858, $6594, $7038, $7211, and $8548 for underweight, normal, overweight, obese and morbidly obese patient respectively. Costs paid by Medicare were significantly greater (p<0.001) for the morbidly obese compared to all categories except the underweight group (p=0.12). Graft related complications accounted for 10% of reason for re-hospitalization.

Conclusion: Re-admission remains a significant issue in kidney transplants. Obese and morbidly obese kidney transplant recipients had greater 30-day Medicare costs but normal and overweight patients had the greatest observance of 30-days readmission rates. Further research into BMI as an impact on cost, reasons for hospitalizations by BMI and long term impact on patient and graft survival are important to better allocate resources in renal transplantation and improve outcomes.

8-101

Title: Implementation and evaluation of the efficacy and safety of high-dose, extended infusion aminoglycoside dosing in children five years of age and older

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Purpose: Aminoglycoside antibiotics are bactericidal and demonstrate concentration dependent killing. Once daily dosing of aminoglycosides has been evaluated in adults and children with similar efficacy when compared to multiple daily dosing. High-dose, once daily dosing should be the preferred administration technique in children to improve patient outcomes and reduce the risk of medication toxicity. The purpose of this study is to implement a standard protocol and evaluate the efficacy of high-dose, extended infusion aminoglycoside antibiotics in children five years of age and older. The secondary objective to be assessed will include the safety of high-dose aminoglycoside administration.

Methods: This study will be submitted to the Institutional Review Board for approval. This will be a prospective study including children five years of age and older who are prescribed an aminoglycoside antibiotic using the high-dose, extended infusion protocol after October 2013 in a tertiary pediatric hospital. Guidelines have been established and will be implemented in the facility to dose aminoglycosides for each patient. Data will be collected from the patients electronic medical records using Horizon MedManager and Horizon Clinical Manger-care organizer. Data to be collected will include patient age, medication allergies, weight, comorbidities, indication for aminoglycoside, medication dose prescribed, length of therapy, peak and trough levels, patients temperature, white blood cell count, serum creatinine, daily urine output, signs of ototoxicity, isolated organism with minimum inhibitory concentration (MIC), the clinical outcome of the patient, as well as concurrent antibiotics or other nephrotoxic medications. Aminoglycosides to be assessed will include gentamicin and tobramycin. Dose and length of therapy will be dependent upon patient age and indication. Reviewers will assess efficacy and safety of dosing by patient outcomes and signs of nephrotoxicity and ototoxicity. This review will be carried out by a pediatric specialty pharmacist and a PGY-1 pharmacy resident.

8-102

Title: Implementation of an Interactive Health Record to Improve Diabetes Outcomes

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Purpose: With the ongoing implementation of technology due to CMS meaningful use criteria the use of electronic health records has become the standard of care. The institution of the EHR has allowed the use of internet-based interactive health records which permit patients to access their own medical records and contact their health care professionals. The purpose of this study is to determine what impact an interactive health record will have on clinical outcomes in the management of diabetes (A1c, blood pressure, cholesterol, aspirin use, and smoking cessation).

Methods: Prior to commencement, the IRBs at St. Ritas Medical Center and the University of Findlay reviewed and approved this study. The study will be conducted over a four month period and include patients with up to date referrals for medication management to the SRMC Diabetes Clinic. Patients will be identified and educated by clinical staff and enrolled in the IHR during clinic appointments. Exclusion criteria will include patients under the age of 18, non-English speaking patients, pregnant patients, and patients who verbally decline participation. Data collected for analysis will include baseline demographics, tobacco use, blood pressure, lipid panel, A1c, serum creatinine, and medication use (ACE inhibitor/ARB, aspirin, statin, diabetic medications). Patients will also be asked to complete a patient satisfaction survey at baseline and at completion of the study. All data will be maintained without patient identifiers in a secure location accessible only by clinic staff. Outcomes data will be recorded as categorical data (at goal vs. not at goal) and analyzed using a two-tailed Fishers exact with an assigned alpha of < 0.05 to detect a significant change from historical data.

Results: Results and conclusions of this study will be presented at Great Lakes Pharmacy Resident Conference in April 2014.

8-103

Title: Antibiotic de-escalation patterns in the medical intensive care unit of a community teaching hospital

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Purpose: Emerging antimicrobial resistance mandates the judicious use of broad-spectrum antibiotics. While empiric use of broad spectrum antibiotics is necessary to ensure effective treatment, the practice of de-escalation targets therapy resulting in decreased antimicrobial exposure. This practice is strongly recommended by the Centers for Disease Control and Prevention to decrease development of multi-drug resistant infection and colonization. To date, de-escalation has been studied across multiple institutions and disease states to assess the efficacy and feasibility of this practice. However, factors influencing the probability and appropriate practice of de-escalation in a specific hospital unit have not been reviewed.

Methods: A retrospective review of patients admitted to the medical intensive care unit (MICU) over a one year period will be conducted to evaluate broad-spectrum antibiotic prescribing and de-escalation patterns. Patients will be included if they were admitted to the MICU for greater than 72 hours and started on empiric therapy including piperacillin/tazobactam, cefepime, or meropenem. Patients will be excluded if they were on definitive therapy for a diagnosed infection or if the antibiotics were for prophylaxis on admission to the MICU. Data collection will include: age, gender, history of multi-drug resistant organism, APACHE II score, MICU/hospital length of stay, all-cause mortality, primary infection site, antibiotic regimen, and culture results. The primary outcomes will be the rate of de-escalation and time to de-escalation from antibiotic initiation. Changes in antibiotic regimens will be reviewed by the investigators and categorized as de-escalated, escalated, re-escalated or no change from the initial antibiotic regimen. Secondary outcomes will include factors influencing de-escalation, missed opportunities for de-escalation based on positive cultures, and cost avoidance for the missed opportunities for de-escalation. This study was approved by the Institutional Review Board.

8-104

Title: Efficacy of baclofen in the treatment of acute alcohol withdrawal

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Purpose: Acute alcohol withdrawal is a common cause of morbidity among hospitalized patients. The standard of care for treating alcohol withdrawal is benzodiazepines with variable dosing based on symptoms. However, using benzodiazepines at high doses can lead to prolonged hospitalization and increased morbidity. Baclofen is a gamma-aminobutryic acid B receptor agonist that may assist in treating alcohol withdrawal. There have been a limited number studies that show favorable outcomes when combining baclofen with benzodiazepines. The objective of this study is to determine the effect of baclofen on the total dose of lorazepam required for the treatment of acute alcohol withdrawal.

Methods: This is a retrospective, cohort study from January 2010 to December 2013 comparing the effect of baclofen to no baclofen on the total dose of lorazepam required for acute alcohol withdrawal. Upon approval of the Institutional Research Review Board, patients will be identified via billing records. Patients eligible for inclusion are those 18 years of age or older who receive treatment with lorazepam via the Clinical Institute Withdrawal of Alcohol revised scale (CIWA-Ar) for a documented diagnosis of acute alcohol withdrawal. Data collection will include demographic information, lorazepam usage, baclofen usage, alternate sedative usage, CIWA-Ar scores, critical care and hospital length of stay. Patients will be divided into two groups for analysis: patients receiving baclofen and lorazepam via the CIWA-Ar scale and patients only receiving lorazepam via the CIWA-Ar scale. The primary endpoint will be the total amount of lorazepam received during hospitalization. Secondary outcomes will include an analysis of the length of hospital stay, time in the intensive care unit, and CIWA-Ar scores. Patient identifiers will be removed prior to data analysis to maintain confidentiality. A statistician will aid in the analysis of the data.

8-105

Title: Impact of Conversion to Long-Acting Opioids and Methadone on Overall Morphine Equivalents, Patient-Reported Pain Scores, and Overall Medication Cost in Treatment of Chronic Nonmalignant Pain

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Purpose: Within the past year, the Veterans Affairs (VA) Healthcare System of Ohio enacted a new policy that states it is preferred for chronic nonmalignant pain patients to only utilize long-acting opioids or methadone. The pharmacokinetic profile of long-acting opioids and methadone allows for less peak and trough effect when compared to short-acting opioids. The steadier plasma concentrations allow for constant pain relief without the periods of clock watching to administer the next dose of short-acting opioid. As the VA Healthcare System of Ohio recently enacted its new initiative concerning chronic pain management, our practice site will provide valuable information.

Methods: This retrospective analysis will be conducted at the Chalmers P. Wylie VA Ambulatory Care Center in Columbus, Ohio. Patients that were converted from a chronic, short-acting opioid used alone or in combination with a long-acting opioid or methadone to a long-acting opioid or methadone between 10/1/2012 and 8/31/2013 will be randomly selected. To assess the primary objective, total morphine equivalents at baseline prior to and 3 months following conversion to a long-acting opioid or methadone alone will be collected. Morphine equivalents will be calculated utilizing the conversion factors listed in the table below that was gathered from VA/DoD Clinical Practice Guidelines unless otherwise stated. For secondary objectives, patient-reported pain scores and cost of opioid therapy prior to and 3 months following conversion will be collected. Patient-reported pain scores will be assessed using the numeric rating scale as it is the preferred pain scale in the VA Clinical Practice Guidelines. Cost of opioid therapy will be assessed in 2013 dollars based on pricing data from the facility's primary vendor, McKesson. Ratios for Conversion Oxycodone 20mg : 30mg Morphine Fentanyl 1mg : 70mg Morphine Oxymorphone 10mg : 30mg Morphine Methadone will utilize the Fudin Factor via an online calculator.

8-106

Title: Assessing the economic implications of racial disparities in uncontrolled asthma patients due to the prevalent noncompliance of asthma-controller medications

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Purpose: Asthma is a chronic inflammatory disease of the airway that has many economic consequences on the Unites States health care system. Asthma is a leading cause of activity limitation and costs our nation $56 billion dollars in health care costs annually. The objective of this study is to determine the use of controller medications among asthma patients and to assess the economic implications of non-adherence to asthma controller medications.

Methods: This study has been submitted to the Institutional Review Board for approval. The Medical Expenditure Panel Survey (MEPS) will be utilized to identify patients who will be evaluated for the study. MEPS sampled participants among respondents of the National Health Interview Survey (NHIS) and is a federal survey sponsored by the Agency for Healthcare Research and Quality (AHRQ) with a goal of estimating health expenditures. The surveys collect detailed data on healthcare use, expenditures, sources of payment, and health insurance coverage. The following data will be collected from MEPS: patient age, gender, ethnicity, socioeconomic characteristics, asthma controller medications utilized, emergency room visits, and physician office visits. All data will be recorded without patient identifiers and maintained confidentially. The exclusive major categories of expenditures, which will be evaluated are office-based medical provider expenditures, hospital outpatient expenditures, emergency department expenditures, hospital inpatient expenditures, and prescribed medicine expenditures.

8-107

Title: Pharmacoeconomic evaluation of vancomycin, linezolid, or daptomycin selection for the treatment of methicillin-resistant Staphylococcus aureus

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Purpose: Methicillin-resistant Staphylococcus aureus (MRSA) is a significant cause of community acquired and health-care associated infections. Patients with serious MRSA infections are often treated with vancomycin, linezolid, or daptomycin. Although all are used for treatment of MRSA infections, they vary widely in cost. Septicemia, prosthetic joint infections, osteomyelitis, and pneumonia are associated with a high cost of care and extended treatment regimens. The objective of this study is to compare the impact of these antibiotic selections on outcomes and costs.

Methods: The study is a retrospective analysis that includes all patients, age 18 and older, admitted to this institution between January 1, 2012, and December 31, 2012, and treated with vancomycin, linezolid, or daptomycin with ICD-9 diagnoses for MRSA infection and one of the following: septicemia, prosthetic joint infection, osteomyelitis, or pneumonia. MRSA diagnosis will be confirmed with a positive MRSA culture. Patients will be excluded if they received one day or less of therapy or have cultures with vancomycin sensitivities with MIC of 2 or greater. Outcomes evaluated will be mortality, length of stay, and 30-day readmission. Costs will be measured by antibiotic charges and total hospital costs. Patients will then be stratified based on co-morbidities. This study has received Institutional Review Board approval.

8-108

Title: Prescriber utilization of Ohio Automated Rx Reporting System (OARRS), a prescription monitoring program.

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Purpose: Currently 42 states have implemented electronic prescription drug monitoring programs for controlled substances. Ohio utilizes a system known as the Ohio Automated Rx Reporting System (OARRS). Legislation exists in Ohio requiring prescribers to review an OARRS report before prescribing controlled medications to select patients. However, limited studies have been conducted to determine the reasons prescribers use or do not use OARRS. The objective of this study will be to identify barriers to the use of OARRS by prescribers in an effort to improve legal compliance and promote appropriate medication use.

Methods: Prior to commencement, this study will be submitted to the Institutional Review Board for approval. A web-based survey will be distributed to Ohio prescribers for self-administration. All active Ohio physicians, medical residents, and advanced practice nurses registered with their respective licensing board will be included in this study. Those who are not registered or who do not have current email addresses will be excluded. Contact will be attempted on 3 separate occasions using a web-based survey. The following information will be collected from the survey: current position/title, type of practice, self-identified Ohio region of practice, years in practice, registration status with OARRS, reasons for use or disuse, and impact of OARRS reports on their practice. All data will be recorded without specific identifiers and stored in a password protected file. Data will be analyzed descriptively as a whole and then analyzed comparatively by the independent variables. The primary outcome will be to describe the barriers prescribers identify in using OARRS when prescribing controlled medications. Secondary outcomes will include prescribers perception of how often an OARRS report affects a decision to write a controlled prescription and what factors predict increased or decreased use of OARRS.

8-109

Title: An evaluation of continuously infused remifentanil in mechanically ventilated critical care patients

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Purpose: Remifentanil is an ultra short acting -opioid agonist with a rapid onset and short duration of action. Organ independent metabolism, lack of accumulation, and rapid onset/offset of action are several properties that make it unique from other opioid agents. Remifentanil has been made available for selection by the ICU team at Riverside Methodist Hospital for sedation management for a trial period of four months. The purpose of this study will be to evaluate the use of remifentanil for management of analgesia and sedation in mechanically ventilated patients.

Methods: This retrospective study has been approved by the Institutional Review Board. Remifentanil will be made available for use for analgesia and sedation management in mechanically ventilated patients on October 8th. Data collection for this study will contain two cohorts of patients. For Cohort 1 we will collect data on mechanically ventilated patients admitted to the medical, surgical, cardiac, or neurological intensive care units at OhioHealths Riverside Methodist Hospital initiated on an opioid infusion beginning one month post-implementation of remifentanil protocol. For Cohort 2 we will collect data on a group of pre-remifentanil protocol patients with the same criteria as Cohort 1 who were admitted during the same two months of the previous year. Data will be recorded without patient identifiers and maintained confidentially. The primary objective is to evaluate the frequency of remifentanil use following implementation of the protocol. Secondary objectives include a comparison between the two cohorts of ICU delirium, ventilator days, ICU length of stay, average sedative dose, and number of days at goal RASS. This data will be used to assess the implementation and utilization of remifentanil in mechanically ventilated patients.

8-110

Title: Non-anticoagulation related interventions in a pharmacist-managed anticoagulation clinic

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Purpose: Pharmacists are an easily accessible health care resource for patients and play a significant role in the overall health of patients. Pharmacists provide services and make interventions in pharmacist-managed clinics outside of the clinics primary purpose that, if overlooked, could negatively impact the patients health and increase health care costs. Data describing these interventions would provide evidence that supports recognizing pharmacists as providers. This study aims to identify the types and significance of non-anticoagulation related interventions made in patients enrolled in a pharmacist-managed anticoagulation clinic.

Methods: This is a retrospective cohort conducted by chart review of patients referred to the Internal Medicine Center of Akron (IMCA) Anticoagulation Clinic. This study will be submitted to the Institutional Review Board for approval. Patients included are at least 18 years old and have attended at least one appointment in the IMCA Anticoagulation Clinic between July 21, 2009, and November 31, 2013. No patients are excluded. The primary outcome of this study is the incidence of each type of non-anticoagulation related intervention made by pharmacists. Interventions are classified based on predetermined categories and include promoting continuity of care, health assessment and triage, acquiring necessary diagnostics, reconciling medications, and modifying therapy. Secondary outcomes are the significance level of interventions, the amount of potential reimbursement associated with these interventions, and the association between patient characteristics and interventions. The significance of interventions is determined based on criteria adapted from the institutions medication intervention classification. Potential reimbursement is calculated for interventions that qualify as valid claims using OutcomesMTM reimbursement rates. Descriptive statistics will be used for the primary outcome, significance level, and reimbursement. Relative risk will be used to describe patient predictor data.

8-111

Title: Vancomycin dosing in hemodialysis patients: a retrospective review

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Purpose: The primary objective of this study is to assess the current practice of vancomycin dosing in hemodialysis patients at St. Elizabeth Healthcare by analyzing vancomycin target level attainment and vancomycin doses provided. The secondary objective is to evaluate the need for protocol revision by comparing the results of this study to currently available literature.

Methods: Initiation of this study will begin following approval from the Institutional Review Board. The hospitals electronic medical record system will be used to identify all hemodialysis patients treated with vancomycin between July 2012 and July 2013. A retrospective review will be conducted with patients admitted to Edgewood, Florence, and Ft. Thomas locations. All patients that received at least one hemodialysis session and one dose of intravenous vancomycin during admission and had at least two appropriately drawn vancomycin levels will be included. Patients will be excluded if they meet the following criteria: less than 18 years old, pregnant, received CRRT prior to hemodialysis, or had a measurable vancomycin level upon admission. The following information, if available, will be collected: date and time of vancomycin administration, vancomycin dose, date and time of each dialysis session, dialysis flow rate, time and value of vancomycin level(s), type of infection, MIC for vancomycin, patients dry weight, daily urine output, hospital length of stay, and mortality. In order to maintain confidentiality all data will remain in a secure location. The primary outcome will be vancomycin target attainment, defined as measured post-load and maintenance troughs between 10-20 mg/L, with an optimal target of 15-20 mg/L.

8-112

Title: Implementation of a multidisciplinary discharge process in a community-hospital setting: a focus on hospital discharge education and patient satisfaction

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Purpose: Transitions of care have been identified as high risk processes that often subject patients to medication-related errors, confusion regarding treatment plans, and questions related to follow-up care. One of the most significant transitions of care surrounds the hospital discharge experience, during which patients are often discharged with new medications or changes to their previous medication regimens. By establishing an effective, integrated discharge collaboration, we hope to identify a process that joins the most valuable components of multidisciplinary care and delivers a solution that will improve patient education and satisfaction while reducing hospital readmissions.

Methods: Providing patient medication reconciliation and counseling at discharge by a pharmacist has been proven to decrease medication errors, readmissions and provide a large cost-savings to the healthcare system. Modifications to the inpatient internal medicine service discharge process will be identified using researched components from national best discharge practices as well as opportunities identified through a gap analysis of current practices. The new discharge process will be prospectively evaluated against a control group. Data will be collected on patient demographics, education, and satisfaction, with an additional focus on readmissions and healthcare team perceptions.

8-113

Title: Pharmacists Evaluation of Rivaroxaban Dosing for Atrial Fibrillation

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Purpose: The policies and procedures at Hillcrest Hospital allow pharmacists to evaluate renal function and make dose adjustments as appropriate for rivaroxaban. The purpose of this study is to determine if pharmacists evaluated renal function and appropriately adjusted the regimen while verifying rivaroxaban.

Methods: A retrospective chart review was conducted of patients that received rivaroxaban in a 496-bed community hospital from January 2012 to June 2013. Inclusion criteria consisted of patients admitted to the hospital age 18 years old and received rivaroxaban for the treatment of atrial fibrillation. Patients that received rivaroxaban for any other indication were excluded. Eligible patients enrolled in the study were stratified based on their admission date into one of three, six month evaluation periods to detect trends in prescribing and pharmacist evaluation. Assessment of renal function was based on the patients serum creatinine, height, weight, and age. Multiple methods to determine creatinine clearance calculated from ideal body weight, adjusted body weight, and actual body weight were used by the investigator to assess renal function. The laboratory reported serum creatinine via isotope dilution mass spectrometry and was converted to an approximate standard creatinine prior to calculating creatinine clearance. Appropriate assessment and adjustment of renal dosing was determined by the investigator while reviewing pharmacist documentation. Institutional review board was obtained prior to conducting the study and descriptive statistics were used to analyze the data.

Results: One hundred seventy total patients received rivaroxaban during the study period with 74 patients included in the analysis. The total number of orders in the each term increased with time at 14, 48, and 108 respectively. The mean age of the patient was 73 years old, CHADS2 score was 2.24, and 52% of the sample was male. The mean serum creatinine was 1.0 mg/dL and the mean creatinine clearance calculated using ideal body weight was 54 mL/min. The primary outcome of pharmacists documenting renal function assessment occurred in 60 of 77 opportunities (78%). Term one (n=14) documentation of renal assessment occurred in 15 of 19 opportunities (79%) with six adjustments (32%) to rivaroxaban dose. Term two (n=29) had 20 of 29 documented assessments (70%) with only one adjustment (3.4%). Finally, term three (n=31) completed 25 of 31 assessments (81%) with only 2 adjustments (6.5%). Ten patients received rivaroxaban when the dose was not adjusted for renal function appropriately. Four of these ten patients did not have a documented assessment of renal

function by the pharmacist during verification. The incidence of patients receiving an inappropriate dose decreased with each term at 21%, 17%, and 6.5% respectively.

Conclusion: The results of this medication use evaluation demonstrated an improvement in pharmacist assessment of rivaroxaban renal dosing for atrial fibrillation while decreasing missed opportunities for adjustment with each study term.

8-114

Title: Evaluation of a 24/7 emergency department medication reconciliation pilot

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Purpose: Accurate medication reconciliation is a key aspect of delivering safer care to patients throughout their hospital admission. Pharmacy technicians and interns are becoming increasingly involved in admission medication reconciliation activities, especially in the emergency department. The objective of this study is to evaluate the impact of expanding an existing admission medication reconciliation program conducted by pharmacy technicians and interns to twenty-four hours a day, seven days a week in a hospital emergency department.

Methods: This study will be submitted to the Institutional Review Board for approval. Patients will be identified for inclusion through a retrospective review of emergency department admission records and clinical surveillance software used to document patients who receive medication reconciliation conducted by a pharmacy technician or intern. This study will involve a review the documentation for all patients admitted through the Emergency Department during a 2-month pre-implementation evaluation phase and 2-month post-implementation evaluation phase. The following data will be collected: number of documented interventions, time from decision to admit patient to time admission orders were received, reason medication reconciliation was not completed prior to admission (if applicable), type of documented intervention(s), time spent per patient on medication reconciliation, internal and external methods for completing medication reconciliation, and time of day when medication reconciliation was performed. Overall patient capture rate and mean time spent per patient on medication reconciliation will be calculated. A satisfaction survey will also be administered to assess the physician satisfaction with the program. All data will be presented in aggregate and without patient identifiers to maintain confidentiality of those patients included in the study.

8-115

Title: Evaluation of dexmedetomidine for acute alcohol withdrawal syndrome in the intensive care unit

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Purpose: Dexmedetomidine use for the management of acute alcohol withdrawal in patients admitted to the intensive care unit (ICU) is significantly more expensive than traditional benzodiazepine therapy and lacks supporting evidence. The objective of this study is to determine if the adjunctive use of dexmedetomidine in patients admitted to the ICU for acute alcohol withdrawal syndrome reduces ICU length of stay.

Methods: Prior to commencement, this study will be submitted to the Institutional Review Board for approval. The hospitals electronic medical record system will be utilized to identify patients admitted to the ICU for acute alcohol withdrawal syndrome, as indicated by alcohol withdrawal protocol order. Patients will be divided into two groups, based on presence or absence of an order for dexmedetomidine, and compared. Patients will be excluded from analysis if there is a concurrent order for clonidine or if, through review of clinician documentation, it is determined dexmedetomidine was not received solely for management of alcohol withdrawal symptoms. The following data will be collected: age, gender, weight, history of delirium tremens or drug abuse, total number of doses received of antipsychotic drugs, need for intubation, ICU and hospital length of stay, and deaths. Maximum daily Clinical Institute Withdrawal Assessment of Alcohol scores will be recorded. Dexmedetomidine use will be characterized by total duration of infusion and minimum and maximum infusion rates per day. Use of benzodiazepines will be expressed by cumulative daily doses. Data will be collected for seven days, until intubation, or until ICU discharge, whichever is first. All data will be recorded without patient identifiers and maintained confidentially.

8-116

Title: A Retrospective Outcomes-based and Cost-based Study Comparing Novel Oral Anticoagulants to Warfarin Across the Veterans Affairs Hospital System

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Purpose: Veterans Affairs Hospitals have a unique patient population; a significant subset of these patients has atrial fibrillation (AFib) and receives anticoagulation therapy with warfarin. However, warfarin has several pitfalls including multiple drug-drug and drug-food interactions, a narrow therapeutic index, and require frequent laboratory monitoring. Apixaban, dabigatran, and rivaroxaban are novel oral anticoagulants (NOACs) with indications for AFib. Unlike warfarin, NOACs do not require therapeutic monitoring. Unfortunately, safety monitoring is not established and reversal of anticoagulation is more complex. It is the aim of this study to investigate efficacy, safety, and pharmacoeconomic value of these agents relative to that of warfarin.

Methods: This is a retrospective cohort study to compare warfarin versus NOACs in the treatment of AFib within the VA hospital system. The primary end-point is efficacy being measured by incidence of stroke, systemic embolism, and survival. Secondary end-points for safety are measured by need for anticoagulation reversal with vitamin K, a bleed requiring more that one unit of blood, administration of concentrated clotting factors, administration of prothrombin complex concentrate, a decrease in hematocrit of more than ten percent, or by a drop in hemoglobin greater than five gm/dL. Cost-minimization analysis will account for cost of monitoring, actual drug cost, adverse event cost, and provider time estimates using local hospital data. Inclusion in the study requires presence of ICD-9 diagnosis code representing Afib and treatment with either warfarin or a NOAC as determined by the VA outpatient pharmacy records. Patients with ICD-9 codes indicating malignancy are excluded from analysis. Incidence of stroke and systemic embolism will be determined by ICD-9 codes. The VA vital statistics database will be used to determine mortality. End-points for each cohort will be compared using odds ratios and relative risk. Mortality will be evaluated using the Kaplan-Meier method.

8-117

Title: Evaluation of therapeutic enoxaparin dose regimens and anti-factor xa levels in adult patients with cystic fibrosis

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Purpose: Cystic fibrosis (CF) patients are at risk for venous thromboembolism (VTE) and have a high concomitant bleeding risk. All adult patients with cystic fibrosis treated for a VTE at Nationwide Childrens Hospital have anti-factor Xa levels monitored to follow the safety and efficacy of the anticoagulation. This study will investigate if the current standard adult enoxaparin dose regimen is effective at achieving therapeutic anti-factor Xa levels, without increasing the risk of adverse events, in the adult CF population.

Methods: This study has been submitted to the Institutional Review Board for expedited review, approval is pending. The hospitals electronic medical record system will be used to identify all patients > 18 years old with a diagnosis of CF who have received at least one therapeutic dose of enoxaparin for VTE treatment from October 1, 2008 through October 15, 2013. Patients in whom anti-factor Xa levels were not monitored or drawn 4-6 hours post-dose and patients who received prophylactic doses of enoxaparin will be excluded. Data used in this analysis will be collected from inpatient and outpatient electronic medical records. The following data will be collected at baseline: age, gender, renal function, CBC, coagulation studies, type and area of the thrombus, type and location of any central venous catheters, use of prophylactic anticoagulation at the time of the clot, and any history of thrombus or heparin induced thrombocytopenia. Outcomes data to be collected include: serum anti-Xa levels, enoxaparin initial dose and dose adjustments, and adverse events including the occurrence of bleeding and progression or recurrence of the thrombus. Outcomes will be analyzed using descriptive statistics.

8-118

Title: Patient awareness and expectations of pharmacists' services during hospital stay

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Purpose: Current literature in the United States regarding patient awareness and expectations of hospital pharmacist availability and services is lacking. Anecdotal evidence appears to suggest that, upon hospital admission, patients naturally expect to receive personalized care from both physicians and nurses, and rightfully so. However, little is known about whether or not patients also expect the direct care of a pharmacist. The purpose of this research is to first define patient awareness and expectations of hospital pharmacists' services and then to determine if the implementation of a hospital-wide marketing campaign for pharmacists has any effect on these baseline findings.

Methods: This IRB-approved research study will survey patients regarding their expectations for pharmacist services before and during a hospital-wide campaign. Over a two-month period, eligible patients providing consent will be enrolled and surveyed within 72 hours of admission. Eligible patients will be non-ICU inpatients age 18 or older, able to make independent decisions, and without any evidence of neurological instability, including altered mental status and history of stroke. During month two of enrollment, the intervention, a hospital-wide pharmacist marketing campaign available through the American Society of Health-System Pharmacists (ASHP), will be implemented to highlight pharmacist availability and services within the hospital. Baseline survey data is estimated to demonstrate 40% of patients expect pharmacist services. Using continuous data for mean survey scores and assuming α=5% for a two-tailed student's t test, confidence interval=95%, β=10%, and Cohens effect size of 0.40, it is estimated a sample of 133 patients per study month would be required. The survey consists of three domains, Awareness and Expectations, Understanding of Services, and Satisfaction. Main outcomes to be assessed include the effect of the intervention (campaign) on survey domain scores and Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPs) scores related to medications.

8-119

Title: Retrospective study of dual anti-pseudomonal coverage for pneumonia with an aminoglycoside versus monotherapy at two healthcare centers: is there a reduction in morbidity and mortality

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Purpose: Despite national guidelines and the findings of other clinical studies, there still remains controversy in whether or not dual anti-pseudomonal therapy with an aminoglycoside is needed as initial treatment modalities for Pseudomonas pneumonia. The objective of this study is to determine how the use of anti-pseudomonal combination therapy with the inclusion of an aminoglycoside, in addition to an anti-pseudomonal beta-lactam, for treatment for potential or actual Pseudomonas infections in patients with health care associated pneumonia (HCAP) or ventilator associated pneumonia (VAP) affects patient mortality and morbidity when compared to treatment with anti-pseudomonal monotherapy without the inclusion of an aminoglycoside.

Methods: This study will be submitted to the Institutional Review Board for approval. Eligible patients will be identified based on International Classification of Diseases Version 9 (ICD-9) codes from June 2011 to June 2013. Patients will be screened for microbiology data and antibiotic regimen for inclusion in our patient population of HCAP, VAP, or Pseudomonas pneumonia patients. Patients will be excluded if they are transferred from an outside facility, under 18 years of age, or not treated for HCAP, VAP, or Pseudomonas pneumonia. Demographic information will include age, gender, and comorbidities, which will be compared with descriptive statistics. Outcomes to be evaluated are all-cause mortality during inpatient stay, length of ICU stay, length of hospital stay, acute renal failure, and days on antibiotics. Chart reviews will be conducted to clarify outliers and acute renal failure occurrence secondary to non-medication related factors. Outcomes will be compared with appropriate inferential statistical analyses.

8-121

Title: Implementation and evaluation of a remote clinical pharmacy behavorial health service in a rural community hospital setting

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Purpose: Patients suffering from mental health issues are often at higher risk for events such as hospital readmission, drug-related adverse events, poor medication adherence, and several other misadventures. Unfortunately, the issues associated with this high-risk population are enhanced by the lack of care opportunities available and barriers to appropriate care coordination. These resources are even more limited in rural areas of the United States. The purpose of this research is to implement and evaluate the effects of a remote clinical pharmacy behavioral health service focused on identifying high-risk mental health patients and extending the coordinated care opportunities available for this population.

Methods: This study will be submitted to the Institutional Review Board for approval and all enrolled patients will have signed an informed consent. High-risk patients presenting to behavioral health branch campuses will be identified using pre-defined criteria determined by a multidisciplinary health care team. Members of this team will include a psychiatrist, mental health nurse, clinical pharmacist, and social worker. Patients identified as high-risk will then be randomized in a 1:1 ratio into intervention and non-intervention groups. Patients enrolled in the intervention group will have their medication profile reviewed by a clinical pharmacist who will identify medication-related issues and resolve them as appropriate. Additionally, patients enrolled in the intervention group will be given the opportunity to directly communicate with the clinical pharmacist through a phone and video-communication system. This educational session will include, but will not be limited to, medication indication, importance of adherence, side effects, and instructions for use. Intervention and non-intervention groups will be compared through pre- and post-surveys identifying information such as patient compliance, patient understanding of medications, patient willingness to adhere to therapy, and patient satisfaction. Finally, all patients will be followed for additional outcomes such as hospital readmission and drug-related adverse events.

8-122

Title: Retrospective evaluation of an institutional protocol to increase the initial maximum infusion rate for intravenous unfractionated heparin

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Purpose: The American College of Cardiology recommends intravenous unfractionated heparin (IV UFH) infusions to run at an initial infusion rate of 12 units/kg/hr with a maximum of 1,000 units/hr. This institution recently increased the protocol maximum infusion rate from 1,000 units/hr to 1,800 units/hr based on new evidence in treating obese patients. The objective of this study is to assess whether an improvement in the time to therapeutic activated partial thromboplastin time (aPTT) exists with the increase in initial maximum infusion rate. Secondary outcomes will measure bleeding incidence, effect of incorrect draw times, and impact of additional anticoagulant use.

Methods: This retrospective study will be approved by the Institutional Review Board at this institution prior to initiation. The study assesses patients eighteen years of age and older on IV UFH infusion for more than 24 consecutive hours between September 1, 2012 and September 30, 2013 at this institution. Exclusion criteria for this study includes patients with contraindications to heparin, pregnant patients, patients with von Willebrand disease (vWD), patients already at therapeutic aPTT, or patients on IV heparin infusion during the month of the protocol change (March 2013). The following data will be collected for all patients satisfying inclusion criteria: demographics, indication for heparin use, initial heparin dose and infusion rate, duration of heparin infusion, use of low (60 units/kg) or standard (80 units/kg) loading bolus dose, use of as needed bolus doses, use of other anticoagulants, and collection of aPTT. Collection of aPTT will be obtained at baseline, 6-8 hours after initiation, then defaulting to a specific time (0600, 1400, 2200) following the institution's aPTT schedule. Any bleeding occurrences and their respective times will be documented.

8-123

Title: Adherence to antiarrhythmic medication monitoring: a comparison of usual care and management by pharmacists in an outpatient practice

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Purpose: Antiarrhythmic medications play a critical role in the treatment of cardiac arrhythmias. Vaughan Williams Class III antiarrhythmics, such as amiodarone and sotalol, are effective yet are associated with significant adverse drug events. It is essential to perform periodic monitoring of laboratory and objective testing to prevent any unwanted adverse events and to ensure the safe and effective use of these medications. The objective of this study is to compare adherence to monitoring protocols for antiarrhythmic drug therapy in patients managed by physicians (usual care) versus patients referred to a pharmacist-run antiarrhythmic clinic in an outpatient practice.

Methods: Patients receiving amiodarone or sotalol can be referred to a pharmacy-run antiarrhythmic clinic within a multi-disciplinary physicians' office in Findlay, Ohio. The pharmacist is then responsible for coordinating monitoring and reviewing results with patients at follow-up appointments. A retrospective chart review will be conducted to compare adherence to monitoring protocols between patients referred to the pharmacist-run clinic and patients managed by physicians. Patients must have received antiarrhythmic treatment for at least six months to be included in the study. Patients will be excluded if they are not physically able to complete all necessary testing and cannot come into the office for follow-up appointments. The primary endpoint of this study assesses adherence to monitoring protocols. Monitoring parameters assessed for amiodarone include liver function test, thyroid function test, electrocardiogram, pulmonary function test, and chest x-ray, while sotalol parameters include electrocardiogram, electrolytes and renal function. Adherence to monitoring protocols was defined as completing recommended testing within 1 month of the specified timeframe. The type and frequency of adverse events, drug interactions, and characterization of pharmacist-initiated interventions will also be evaluated. Additionally, assessment of patient knowledge and satisfaction with their antiarrhythmic monitoring will be determined by administration of a survey. IRB approval is pending.

Results: Pending

Conclusion: Pending

8-124

Title: Development of an evidence-based comprehensive immunization menu in a Computerized Patient Record System (CPRS)

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Purpose: Vaccinations are key to the prevention of many common diseases. The current immunization ordering process at a Veteran Affairs (VA) medical center lacks a uniform approach in the computerized patient record system (CPRS), creating unnecessary barriers to the delivery of care. The objective of this project is to design a user-friendly and informative immunization order set in CPRS. The implementation of such an order set stands to potentially streamline the vaccination process, improve adult vaccination rates, and enhance the delivery of care to our diverse veteran population.

Methods: A CPRS order set shall be designed by conducting an internal review, surveying providers, and performing an immunization guideline literature search. An in-depth review of current immunization ordering practices and available compliance rates of current vaccination rates at the VA medical center shall be collected and select healthcare professionals and services involved in ordering immunizations will be surveyed regarding current challenges in ordering vaccines through CPRS and frequently asked immunization inquiries. A literature search shall be performed to target important vaccinations by consulting sources such as the Center of Disease Control and Prevention (CDC) via the Advisory Committee on Immunization Practices (ACIP) and the Morbidity and Mortality Weekly Report (MMWR). With the assistance of informatics and pharmacy, a CPRS order set will be designed to address the needs and focuses identified from the aforementioned analyses. A drafted order set shall then be reviewed and approved by the Pharmacy and Therapeutics committee (P&T) and Clinical Executive Board (CEB). Clinical Informatics will then implement the order set into CPRS following its approval.

8-125

Title: HIV drug regimen adherence following a pharmacy educational intervention: a pilot study

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Purpose: Patients infected with HIV often have a difficult time adhering to their medication regimens. By lacking 100% adherence rates, patients are at risk of treatment failure and developing resistance. Pharmacists are referred to as the drug experts and relied on to provide medication education. Patients infected with HIV often report less than perfect adherence rates. The aim is to determine the impact that a pharmacist based educational intervention can have on HIV medication adherence through incorporating a pharmacy resident into the patient education process. The second aim will be to compare patient perceptions regarding the importance of HIV medication adherence.

Methods: Currently a pharmacy resident is available every Wednesday, December 11 in the infectious disease clinic to provide assistance with medication questions and counseling. A large percentage of patients seen in the infectious disease clinic are infected with HIV. Through informed consent, HIV infected patients will be administered a survey by the principle investigator to evaluate missed doses in the past month and perceptions of the importance of medication adherence. With the survey, patients who lack perfect adherence will be selected for further one-on-one educational intervention led by the pharmacy resident. The intervention will focus on specific aspects of therapy regimens including proper administration, importance of adherence, consequences of lack of adherence, as well as potential drug-drug interactions. Lifestyle changes and barriers such as side effects will be discussed to direct the intervention to the specific patient. A 14 day follow-up phone call will be placed to answer questions and to clarify and reinforce previous teaching points from the baseline appointment. A 30 day post survey via telephone will be administered through a different interviewer to evaluate missed doses in the past month since the initial intervention, perceptions of the importance of medication adherence, and perceived value of the educational intervention.

8-126

Title: Initiation of dexmedetomidine versus CIWA-Ar protocol for alcohol withdrawal syndrome in various ICU settings

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Purpose: Dexmedetomidine has been reported in literature as an off-label, adjunct therapy in the treatment of alcohol withdrawal syndrome. The specific aims of this study are as follows: 1. Describe the type (CIWA-Ar protocol, dexmedetomidine, or other) of first-line treatment received by alcohol withdrawal patients based on the ICU setting (medical, surgical, or cardiac). 2. Examine the clinical outcomes (intubation/ventilation, length of stay, seizure/neurological event, and mortality) of patients treated with dexmedetomidine (first or second line) based on dose administered (< or = 0.7 mcg/kg/hour).

Methods: The patient population will be determined based on those admitted to the MICU, SICU, or CICU with predetermined ICD-9 codes relating to alcohol withdrawal syndrome between June 2012 and June 2013 (12 months) at Riverside Methodist Hospital. Patients will then be further categorized based on the initial treatment of alcohol withdrawal, consisting of either the use of dexmedetomidine, CIWA-Ar protocol, or other. Patients will be included in the dexmedetomidine group as long as this was their initial treatment, regardless of concomitant medication administration. Exclusion criteria include patients <18 years of age and patients who were admitted to the ICU >48 hours after hospital admission (excluding time in the emergency department). The study design will be a retrospective chart review. It will compare the clinical outcomes (stated above) of those initially treated with dexmedetomidine versus those who were initially started on the CIWA-Ar protocol or another protocol and switched to dexmedetomidine, based on the type of ICU setting. Potential benefits of this study include a step towards standardization of practice at our institution. I hope to develop more insight on an appropriate patient population and develop parameters to help guide physicians on the safest treatment regimen possible for our patients.

8-127

Title: The impact of pharmacist education in patients with heart failure on disease state and medication knowledge: The TEACH trial

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Purpose: Current literature suggests that potentially avoidable hospital readmissions result from a multitude of factors, including poor patient understanding of disease states, uncertainty in appropriate medication use after discharge, and lack of awareness of warning signs warranting a call to their physician. Heart failure is one of the top reasons for readmissions and a potential target for patient education. The objectives of this study are to determine the impact of pharmacist education about heart failure and associated medications on 1) patient knowledge of the disease state and 2) heart failure 30-day hospital readmission rates.

Methods: This prospective, randomized, single-center study will include patients greater than 18 years of age that are admitted with an active diagnosis of heart failure, and recent (within one year) documentation of an ejection fraction. The control group will receive standard of care, including heart failure education by nursing and dietary staff, while the intervention group will receive standard of care plus pharmacist provided education focusing on heart failure and associated medications. Both groups will receive a pre- and post-assessment tool, adapted with permission from the Atlanta Heart Failure Knowledge Test, during their hospitalization. Change in assessment scores will be compared between groups using a student t-test. Goal enrollment is a total of 64 patients (32 patients per group) to have 80 percent power to detect a 10 percent difference in post-assessment scores between groups. Institutional review board approval is pending.

8-128

Title: Evaluation of hypoglycemic events during treatment of diabetic ketoacidosis

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Purpose: Diabetic ketoacidosis (DKA) is a serious complication of diabetes mellitus (DM) and a significant cause of morbidity and mortality. In 2009, The American Diabetes Association (ADA) established treatment guidelines for DKA. Delayed and insufficient initiation of intravenous fluids, insulin infusion, and potassium replenishment are associated with extended hospital stays. A common complication in DKA management is hypoglycemia. Despite having a DKA treatment protocol at Euclid Hospital, hypoglycemia continues to be problematic during DKA treatment. The purpose of this study is to identify the number of hypoglycemic events (blood sugar <70mg/dL) and evaluate healthcare providers compliance with ADA guidelines.

Methods: A retrospective chart review will be conducted to determine the number of hypoglycemic events that occurred while patients received treatment for DKA at Euclid Hospital. Patients 18 years of age and older with an admitting diagnosis of DKA (defined by ADA guidelines) between June 2012 through September 2013 will be included in the study. Patients that are pregnant, started on subcutaneous insulin, or have a length of stay less than 24 hours will be excluded. Data collection will include: patient demographics, potassium, anion gap, blood glucose, arterial pH, serum bicarbonate, time to resolution of ketoacidosis, time to initiation of D5W, and ICU length of stay. Primary outcomes will assess the number of hypoglycemic events while receiving treatment for DKA. Secondary outcomes will assess rate of glucose reduction, time to initiation of D5W after blood glucose reaches 200 mg/dL, potassium level maintainance of 4-5 mmol/L during treatment, time to resolution of DKA (defined according to ADA guidelines), and ICU length of stay. It is hypothesized that 20% of patients will experience hypoglycemia while being treated for DKA. An appropriate descriptive statisitcal analysis will be preformed to evaluate the data. IRB approval will be obtained prior to study commencement.

8-129

Title: Implementation of a cardiac patient medication transition pilot program: a prospective study of inpatient and outpatient clinical pharmacy services for patients after acute heart failure exacerbation

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Purpose: Health-care payment model changes have encouraged the reduction of 30-day readmission rates for patients admitted for heart failure (HF) exacerbation. Pharmacists play an integral role by promoting adherence to evidence-based medication regimens. The primary objective is to determine the change in 30-day readmission rates for patients with HF after implementation of the high-touch transitional care program. Secondary objectives include: 1) change in 72-hour emergency department visit rates, 2) change in 30-day mortality rate, 3) change in scores on the Minnesota Living with Heart Failure Questionnaire (MLHFQ), 4) adherence to HF medications, and 5) compliance with follow-up MTM and cardiologist appointments.

Methods: This prospective pilot study was approved by the University of Toledo (UT) Institutional Review Board and funded through a grant from the Cardinal Health Foundation (2013 E3 Grant Program). This program focuses on frequent contact between the patient and nurses, dieticians, physicians, and trained pharmacy personnel during admission and for 30 days after discharge. Patients admitted to the UT Medical Center from August 1, 2013 through July 31, 2014 with HF exacerbation are eligible for this study. On the second day of admission, patients are educated on the signs and symptoms of HF, the importance of a healthy diet, and HF medications. On the day of discharge, all concepts are reinforced, and the MLHFQ is administered. Follow-up telephone calls are made 48 to 72 hours, five to seven days, and three weeks after discharge, by a nurse, pharmacist, and dietician, respectively. A cardiologist appointment is made within one week of discharge. A follow-up appointment with an MTM pharmacist is scheduled at two and four weeks after discharge which includes a comprehensive medication review, medication and HF education, and administration of the MLHFQ questionnaire.

Results: Descriptive statistics will be used. Enrollment and data collection are in progress.

8-130

Title: Retrospective evaluation of pharmacist workload in a preoperative surgical unit

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Purpose: A problematic situation arises when the pre-admission process is not designed to appropriately allow for pharmacist order review before administering medications for elective procedures. This practice increases the risk of a medication error, most notably by either administering drugs to which patients are allergic, at unsafe doses, or with unrecognized food or drug interactions. The objective of this study is to determine the safety of a single pharmacist reviewing all medication orders in the preoperative unit.

Methods: The study will be submitted to the Institutional Review Board for approval. As of August 2013, our institution implemented pharmacy review in the preoperative unit, consisting of a single dedicated staff pharmacist reviewing all orders for preoperative patients. Each patient will be followed from admission through discharge from the preoperative unit only. The volume of preoperative surgery patients per day (Monday-Friday only) is approximately 25-30, therefore the observational sample size within the specified enrollment period (30 days) will be approximately 500-600 patients. The primary outcome will be an evaluation of the number of orders for each patient in comparison to the number of those orders that were reviewed by the pharmacist. The secondary outcomes of the study include: drug allergies information, dosing interventions, drug information and education, drug interactions, missing information (e.g. allergies, height, weight, serum creatinine), and time dedicated to each intervention. Patients will be retrospectively reviewed upon discharge from the preoperative care unit in order to assess pharmacy impact in this patient care area.

8-131

Title: Comparison of two pharmacist-delivered transitions of care models for patients discharged home from a community teaching hospital

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Purpose: An increased risk of medical errors occurs during transitions of care, which can lead to adverse outcomes and increased healthcare utilization. A comparison of pharmacist-driven transitions of care services is necessary to determine particular elements of the process which have the greatest impact on outcomes. The objective of this study is to compare two pharmacist-driven transitions of care models to each other and to usual care at a community teaching hospital and evaluate their effect on hospital readmissions 30 days post-discharge, combined readmissions and emergency department (ED) visits 30 days post-discharge, patient satisfaction, and length of stay.

Methods: This comparison study of two pharmacist-driven transitions of care models (A and B) was approved by the Institutional Review Board. Model A activities include discharge medication reconciliation and education. Model B represents activities a pharmacist could perform daily if a transitions of care position was implemented. In addition to the activities performed in model A, this model includes admission medication reconciliation, education throughout the hospital stay, follow-up phone calls post-discharge, and communication of medication changes to the patients outpatient primary care physician and pharmacy. Data collected prospectively on models A and B will be compared to data collected retrospectively on a baseline group of patients who have received the usual care at the hospital (nurse and physician driven medication reconciliation and education). Patients who are admitted/transferred to the study nursing unit and who have a planned discharge to their home will be included in the study. The primary outcome is the 30-day post-discharge readmission rate for the baseline group and models A and B. Secondary outcomes include combined 30-day post-discharge readmission and ED visitation rates, length of stay, and patient satisfaction. The number of drug therapy problems and medication reconciliation discrepancies identified will be compared for models A and B.

8-132

Title: Toxicity comparison of pre-engraftment utilization of intravenous versus oral tacrolimus in adult blood and marrow transplant recipients

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Purpose: Historically, tacrolimus has been administered intravenously to blood and marrow transplant recipients at initiation of therapy and changed to oral administration upon neutrophil engraftment. Our institution switched to using oral tacrolimus at initiation of therapy starting in September 2012 due to lower cost and ease of administration. The objective of this study is to determine whether there is a difference in tacrolimus associated nephrotoxicity and hypertension in blood and marrow transplant recipients when tacrolimus is administered orally versus intravenously pre-engraftment. A secondary objective is to determine the medication cost difference between pre-engraftment oral versus intravenous tacrolimus administration.

Methods: This is a retrospective, observational, single center chart review. Prior to initiation, this study will be submitted to the Institutional Review Board for approval. Data will be maintained confidentially and patient specific identifiers will be removed. Adult patients who have undergone hematopoietic stem cell transplant and used tacrolimus for graft-versus-host-disease prophylaxis will be identified and divided into two study groups based on whether they received intravenous tacrolimus or oral tacrolimus prior to neutrophil engraftment. Patients who used corticosteroids after the day of transplant or experienced transplant associated thrombotic microangiopathy will be excluded. Patients will be followed from the day they receive their stem cell transplant through neutrophil engraftment. Data collection will include age, gender, weight, malignancy, source of stem cells, donor type, pre-existing hypertension, baseline renal function, tacrolimus doses and levels, antihypertensive use, elevated serum creatinine, concurrent nephrotoxic medication use, and episodes of sepsis. The total tacrolimus cost will be calculated for each patient. The primary end point will be composite tacrolimus toxicity, including nephrotoxicity and hypertension. The cost difference between oral versus intravenous tacrolimus will be a secondary endpoint.

8-133

Title: Pharmacist-driven monitoring and evaluation of taxane-induced neuropathy: a pilot program

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Purpose: Peripheral neuropathy is a cumbersome side effect of taxane chemotherapy regimens, typically affecting 10% of patients. The American Society of Clinical Oncology (ASCO) in collaboration with the Oncology Nursing Society (ONS) has developed chemotherapy administration safety standards to ensure wellbeing throughout chemotherapy courses for patients receiving toxic chemotherapy. The caveat to providing safe administration relies on the institutions ability to evaluate and document treatment-related toxicities. Aims of this study are, 1) assess the feasibility of a pharmacist-driven toxicity monitoring program, 2) determine patient satisfaction, and 3) quantify the percent of accepted dose-adjustments suggested by the pharmacist to the medical oncologist.

Methods: This study has been accepted by the Institutional Review Board. Patients will be screened through the electronic medical records system, and all eligible patients will be approached by the Principal Investigator for informed consent. The following data points will be collected from the patient or patients chart to assess each aim listed above: cancer type, prior chemotherapy, concurrent neurotoxic medications, alcohol consumption, prior neuropathy, diabetes, family history of neuropathy, taxane type, dose, and frequency, day of treatment, treatment duration, infusion duration, unplanned deviations from treatment, pre-medications, concurrent chemotherapy, pharmacist interaction time with patient at each visit, total pharmacist interaction time with patient throughout chemotherapy course, baseline neuropathy National Cancer Institute-Common Terminology Criteria for Adverse Events (NCI-CTCAE 4.3) grade, neuropathy NCI-CTCAE 4.3 grade prior to every taxane infusion, patient reported neuropathy, and dose reductions accepted by the medical oncologist. All follow-up neuropathy evaluations will be given prior to taxane treatment on the same day. At the last taxane therapy visit, each patient will be asked to complete a satisfaction questionnaire. An average time spent with each patient will be calculated, along with the average percent of time the dose-reduction was accepted by the medical oncologist. A statistician will review all data.

8-134

Title: Cost savings analysis following a hospital-wide change from 10 to 3 milliliter multi-dose insulin vials

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Purpose: The purpose of this study was to compare the total volumetric wastage and financial loss of multi-dose vial insulin (regular, NPH, 70/30 mix, lispro, and 75/25 mix) stored on inpatient nursing units before and following a hospital-wide switch from 10 milliliter multi-dose insulin vials to 3 milliliter multi-dose vials in 2010. The hospital switched manufacturers to take advantage of the 3 milliliter presentation after an initial assessment of wastage indicated the potential for significant cost savings.

Methods: On July 21, 2010 while still using the 10 milliliter vials, all nursing units (except the emergency department) of a 488 bed community hospital were surveyed and all 10 milliliter multi-dose insulin vials were returned to the pharmacy if they were either not dated or outdated. The remaining insulin was drawn up into a syringe, and the volume was documented. Based on the remaining quantity and price per milliliter in 2010, the value of the remaining volume was calculated to be $529.58. A second assessment was performed on August 30, 2013, following a hospital-wide switch to 3 milliliter multi-dose insulin vials whenever possible. Once again, the vials were returned to the pharmacy if they were not dated, outdated or improperly dated, and the total volume remaining in each vial was measured and documented. This information will be utilized to determine the total volume remaining and the value of the remaining volume. Descriptive statistics will be utilized to compare the results of the two assessments. The primary outcomes of this study are the difference in volumetric wastage and financial loss. Costs of purchased insulin during the two time periods will also be correlated with the findings.

8-135

Title: Evaluation of pharmacist involvement with the stroke response team

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Purpose: Delivery of thrombolytic therapy within three hours of time last known well to acute ischemic stroke patients is a core measure set by the Centers for Medicare and Medicaid Services. Administration of alteplase within this timeframe may help reduce patient morbidity and mortality. The purpose of this study is to determine if direct pharmacist involvement with the stroke response team will decrease the door to needle time for administration of alteplase for eligible ischemic stroke patients. Additionally, the study will also determine if pharmacist involvement aids in waste aversion and improves patient morbidity and mortality.

Methods: This study has been submitted to the ProMedica Institutional Review Board for approval. Patients 18 years and older who received alteplase for an acute ischemic stroke from January 2011 through study conclusion will be included for analysis by retrospective and prospective study design. Retrospective data will be identified via a search quality databases and billing, pharmacy, and medical records during the specified study period. When available, competent pharmacists will respond to the initial stroke alert with the materials necessary to appropriately compound, dispense, and document administration of alteplase at the patient's bedside, as opposed to the current practice of mixing the drug product in the inpatient pharmacy. Retrospective and concurrent patient data to be collected will include: gender, age, height, weight, date of admission, diagnosis, risk factors for stroke, time last known well, time of brain imaging, time alteplase ordered, time alteplase administered, NIHSS scores (initial, pre alteplase, post alteplase, on admission, 24 hours post admission, at discharge/transfer), dosing of alteplase, amount of alteplase wasted, length of stay and outcome. A random patient number will be assigned to the data collection forms and maintained confidentially.

8-136

Title: Impact of pharmacist-conducted bedside discharge counseling for pediatric patients with type 1 diabetes and their caregivers

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Purpose: Type 1 diabetes (T1D) affects 5% of the population worldwide and 1 out of 300 children in the United States. Patients with T1D have significant prescription burdens. Currently, discharge prescriptions for patients with T1D at Nationwide Childrens Hospital (NCH) are dispensed, after counseling, from the pick-up window in the outpatient pharmacy. However, pharmacist-led bedside dispensing and counseling is hypothesized to offer improved comprehension of medication use. The comfort and knowledge of the caregiver to manage all home prescriptions will be measured before and after a pharmacist dispenses and counsels at the bedside.

Methods: Pharmacist-led discharge counseling for patients with T1D will begin after approval from the Institutional Review Board. The pharmacist will communicate with the endocrinology team regarding planned discharges of patients with T1D. Discharge prescriptions will be filled in the NCH outpatient pharmacy. At a scheduled time, the pharmacist will bring the prescriptions to the patients bedside. The caregiver will complete a pre-counseling survey measuring comfort and knowledge of home prescriptions. The caregiver will then fill out the survey again post-counseling. One month after discharge, the pharmacist will call patients who received discharge counseling to measure retention of prescription knowledge. The pharmacist will also call patients who did not receive discharge counseling one month after discharge to serve as the control group. The control group will answer the same survey. All patient interaction will be documented in the patients electronic medical record. The primary outcome will compare the pre- and post- counseling survey responses to determine the significance of pharmacist-lead discharge counseling at the bedside. Secondary outcomes will compare retention of prescription knowledge of counseled and non-counseled patients.

8-137

Title: Implementation of a cardiac patient medication transition pilot program: a prospective study of inpatient and outpatient clinical pharmacy services for patients after acute myocardial infarction

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Purpose: Pharmacists play an integral role in decreasing 30-day hospital readmission rates after Acute Myocardial Infarction (AMI) by promoting adherence to evidence-based medication regimens. The primary objective is to determine the change in 30-day hospital readmission rates for patients with AMI after implementation of a high-touch standard of care. Secondary objectives include 1) change in 72-hour emergency department visit rates, 2) change in 30-day mortality rate, 3) change in quality of life scores on the Myocardial Infarction Dimensional Assessment Scale (MIDAS) Questionnaire, 4) adherence to AMI medications, and 5) compliance with follow-up appointments with Medication Therapy Management (MTM) pharmacist and cardiologist.

Methods: This prospective pilot study was approved by the University of Toledo (UT) Institutional Review Board and funded through a grant from the Cardinal Health Foundation (2013 E3 Grant Program). Trained pharmacy personnel, involved in collaborative patient care, include decentralized pharmacists, pharmacy residents, and supervised advanced pharmacy practice experience students. In this program, a systematic process is used to bridge inpatient medication education and outpatient MTM. Non-ST-elevation MI and ST-elevation MI patients admitted to the UT Medical Center from August 15, 2013 through August 14, 2014 are eligible for this study. On the second day of admission, patients are educated by pharmacy personnel on the signs and symptoms of MI, the importance of a healthy diet, and post-discharge AMI medications. On the third day of admission or day of discharge, all concepts are reinforced, and the MIDAS questionnaire is administered. Within 48 to 72 hours of discharge, patients are called to ensure understanding and adherence to medication regimens. A follow-up appointment with an MTM pharmacist is scheduled within two weeks of discharge which includes a comprehensive medication review, medication and AMI education, and administration of the MIDAS questionnaire. Descriptive statistics will be used. Enrollment and data collection are in progress.

8-138

Title: Management of hepatitis C antivirals: do we react when they interact?

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Purpose: Treatment of hepatitis C virus (HCV) continues to evolve owing to significantly improved cure rates with the use of direct-acting antivirals (DAAs). Despite these great advancements, the HCV DAAs currently approved have significant drug interaction profiles due to their metabolism and inhibition of CYP3A4. With the impending Food and Drug Administration approval of newer HCV DAAs with similar potential for clinically significant drug interactions, the Veterans Affairs (VA) healthcare system needs to be prepared to provide guidance to providers and pharmacists on the appropriate management of drug interactions with these agents.

Methods: This study is intended to develop a better understanding of provider practices throughout the VA system for assessing and managing drug interactions occurring between HCV DAAs and veterans concomitant medications. Secondary objectives include to determine the varying level of pharmacist involvement in managing drug interactions with HCV DAAs and to determine providers perceptions of current drug interaction resources when managing drug interactions with HCV DAAs. An electronic survey tool will be developed and distributed nationally to VA HCV providers in order to investigate this studys primary and secondary objectives. Data on drug interactions with the new HCV DAAs will be collected via literature searches and from abstracts presented at national meetings. The research team will apply the Grading of Recommendations Assessment, Development, and Evaluation approach to developing evidence-based management recommendations of drug interactions with HCV DAAs. A website will then be created for the dissemination of evidence-based management recommendations of drug interactions between HCV DAAs and other medications commonly prescribed to Veteran patients.

8-139

Title: Assessing written communication in fourth year pharmacy students during a Drug Information rotation

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Purpose: Fourth year pharmacy students completing an Advanced Pharmacy Practice Experience (APPE) rotation in Drug Information (DI) at this site are required to compose written responses to DI requests received from healthcare providers. All responses are reviewed and edited by a preceptor, and subsequently submitted to the requestor. In May 2012 the Drug Information Service (DIS) coordinated with the University Writing Center (UWC) and began mandatory weekly writing workshops for pharmacy students completing a DI APPE rotation. The objective of this study is to evaluate the effectiveness of weekly writing workshops as a tool to improve pharmacy students written communication.

Methods: This research is not considered human subjects research and does not require review by the Institutional Review Board. Data from surveys and writing submissions of fourth year pharmacy students completing an APPE elective in DI at this site will be included in the study. On day one of rotation, DI students will be given a standard DI question and asked to provide a written response within 24 hours. Students will also be asked to fill out a self-assessment survey assessing their confidence and skill in writing, knowledge and utilization of drug information resources, scientific writing strengths and weaknesses, and writing process. Written responses to the standard DI question provided on day one may not be submitted for review during writing workshops. After three weeks of rotation, students will be provided the same self-assessment survey and DI question they received on day one, and again asked for a written response within 24 hours. Responses to standard DI questions will be scored using a rubric evaluating responsiveness, thesis/support, organization, format, and grammar/spelling. Data collection began in August 2013. Analysis will include descriptive statistics and non-parametric comparisons for ordinal data.

8-140

Title: Effects of physician-education on the management of patients with chronic non-cancer related pain in the primary care setting: Implications for a pharmacist-based opioid management clinic

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Purpose: The 2009 American Pain Society/American Academy of Pain clinical guidelines highlight the importance of prescriber education for identification and monitoring of opioid misuse in high-risk patients treated with chronic opioid therapy (COT) for chronic non-cancer pain (CNCP). Increased COT prescribing parallels increased incidence of opioid diversion, overdoses, addiction, and death nationally. CNCP management is complex and often impeded by inconsistent, inadequate provider education, lacking adherence to guideline-based assessment and monitoring. The primary study objective will evaluate prescriber adherence to COT monitoring and prescribing guidelines. Secondary objectives will assess opioid utilization, pain diagnosis, prescriber and clinic variation, and concomitant benzodiazepine use.

Methods: Retrospective chart review of Cincinnati VA Medical Center (CVAMC) patients receiving high-risk COT defined as requiring greater than 120 daily morphine equivalents (DME) for greater than three months. Patients must have been managed by a primary care physician from the CVAMC or affiliated community-based outpatient clinic. The study period will evaluate patients one-year prior to and following implementation of prescriber education. Study exclusion includes active cancer diagnosis, surgery within six months, hepatic impairment, VA opioid substitution program enrollment or death. Physician compliance will be assessed using the Office of Inspector General (OIG) criteria checklist evaluating pain diagnosis documentation, non-opioid treatment trials, opioid treatment agreement, biannual urine drug screening, baseline and annual methadone EKG monitoring, and reassessment at least every six months. Outcomes will be assessed by treatment site, individual provider, duration of stable of dose, long vs. short acting opiate use, and concomitant benzodiazepine use. Statistical analyses utilized will include descriptive and inferential statistics, and logistic regression analyses for associations with individual characteristics. Patient data will remain confidential, recorded indirectly using medical record numbers. The study protocol has been submitted to the Institutional Review Board. Study results will aid with implementation of a primary care pharmacy run opioid management clinic.

8-142

Title: Use of omalizumab in pediatric patients with moderate to severe persistent asthma

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Purpose: Current asthma guidelines include the use of omalizumab, a recombinant humanized monoclonal antibody, as a treatment option for select patients with moderate to severe persistent asthma. The primary objective of this study is to evaluate the effectiveness of omalizumab in pediatric patients as a component of their asthma treatment regimen. The secondary objective, depending on the assessment of effectiveness of omalizumab, is to identify additional pediatric patients who may benefit from omalizumab therapy.

Methods: This observational study was approved by the Institutional Review Board. Patient agreement to participate in the study will be obtained. The electronic medical record system will identify outpatient pediatric pulmonary patients currently receiving omalizumab who receive their first dose prior to November 29, 2013. Patients will receive standard asthma care with no changes in therapy based on study involvement. The following data will be collected: patient age, gender, ethnicity, start date of omalizumab treatment, baseline laboratory values, pre- and post-therapy IgE level, pre- and post-therapy pulmonary function test (PFT) results, Pediatric Asthma Score (PAS), current medications, and number of hospitalizations. Provider documentation will be reviewed to determine patient-reported use of rescue medications, exacerbations, and adverse effects. All data will be recorded and reported in an anonymized manner. Data will be collected until March 31, 2014, to allow sufficient follow-up time to assess effectiveness. Differences in IgE levels, PFT results, PAS, usage of rescue medications, and number of exacerbations or hospitalizations will be determined and analyzed. Based on these results, the reviewers plan to develop an assessment tool to identify other potential patients who many benefit from omalizumab therapy.

8-143

Title: Efficacy and safety of U-500 insulin as compared to high dose conventional therapy: a retrospective chart review

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Purpose: Insulin resistant patients require large volumes of insulin to maintain glycemic control. However, total daily doses of greater than 200 units can negatively impact adherence and absorption. Conversion to U-500 insulin allows for fewer daily doses, more predictable absorption, and has been shown to improve glycemic control. The primary objective of this study is to determine if patients converted to U-500 insulin therapy have demonstrated improved glycemic control without an increase in negative outcomes as compared to patients maintained on high dose U-100 regimens. The secondary objective is to identify reasons for discontinuation of U-500 insulin.

Methods: This study will be submitted to the Institutional Review Board for approval. The computerized patient record system will be utilized to conduct a retrospective chart review of all patients who received at least one prescription for U-500 insulin or high dose conventional therapy between January 1, 2008 and December 31, 2012. High dose conventional therapy will be defined as 200 units or more of U-100 insulin per day. For the purpose of data extraction, these patients will be isolated based on usage of six or more vials or twenty or more pens of any combination of U-100 insulin per 30 days. Patients will be excluded if they do not have a diagnosis of type 2 diabetes mellitus or at least 6 months of baseline data prior to conversion to U-500. Data collected and analyzed will be de-identified and include: age, sex, weight, type and total daily dose of insulin, concomitant non-insulin diabetes medications, hemoglobin A1C, and severe hypoglycemic or hyperglycemic events as defined by documented blood sugar readings, emergency room visits, or hospital admissions.

8-144

Title: Evaluation of the use of loop diuretic infusions with and without continuous albumin infusions in acute kidney injury patients

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Purpose: Loop diuretics are used to convert patients with oliguric acute kidney injury (AKI) to non-oliguric AKI and reduce the requirement for renal replacement therapy. When co-administered with albumin, loop diuretics are believed to remain within the vasculature for an extended period of time. The study objective is to determine if patients with acute kidney injury that receive loop diuretic infusions, with or without albumin, have improved urine output compared with patients who receive intermittent bolus doses of loop diuretics.

Methods: This study has been approved by the Institutional Review Board. Electronic medical records and paper charts will be reviewed prospectively for three months. Patients will be included in the study that meet the criteria for AKI and receive a loop diuretic and/or albumin for treatment. The Acute Kidney Injury Network (AKIN) and Risk, Injury, Failure, Loss, and End-stage Kidney (RIFLE) criteria will be used to assess the presence of AKI. Patients younger than 18 years of age, pregnant women, and patients with end-stage renal disease receiving dialysis prior to admission will be excluded from the study. The following data will be collected: age, gender, race, height, weight, home and current hospital medications, baseline serum creatinine and serum blood urea nitrogen, suspected cause of AKI, and long term dialysis need after discharge. The following data will be collected for up to 96 continuous treatment hours: agents used for treatment, diuretic and/or albumin infusion rate, laboratory values, use of nephrotoxic agents, and daily urine output per kilogram.

8-145

Title: The effects of procalcitonin levels on physician practices of antibiotic treatment: a retrospective cohort

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Purpose: Procalcitonin (PCT) has been studied for its use as a biomarker for bacterial infections. Multiple studies have used PCT as a way to guide the continuation and discontinuation of antibiotic treatment in patients suspected of certain infections. Among the various PCT algorithms developed in various studies, a common cut-off value of 0.25 mcg/L was found. The objective of this study will be to determine the association between PCT levels of less than 0.25 mcg/L and the discontinuation of antibiotic therapy. This study will also determine whether PCT levels are being used appropriately to stop antibiotic treatment.

Methods: This is a retrospective cohort following patients whose PCT levels were drawn while admitted in Akron General Medical Center. Upon approval of the Institutional Research Review Board, medical records will be used to identify adult patients at least 18 years of age with at least one PCT level reported from September 1, 2012 to November 30, 2013. Any patients who expired or were discharged within 48 hours of PCT levels reported will be excluded. Data collection will include patient age, sex, patient location (ICU or general inpatient floor), PCT level, PCT report date, antibiotic start date, antibiotic stop date, patient discharge or expiration date, positive or negative cultures within 72 hours, culture source (excluding nares), and organism in positive cultures. Continuous data will be analyzed by the independent variable (PCT level), using either Student t test or Mann-Whitney U test. The primary endpoint will examine the association between PCT levels less than 0.25 mcg/L and the discontinuation of antibiotic treatment. Secondary endpoints will study the association between PCT levels less than 0.1 mcg/L and the discontinuation of antibiotic treatment, the number of days past PCT report day that antibiotics were stopped, and differences between ICU and regular floor patients.

Results: To be determined.

Conclusion: To be determined.

8-146

Title: Acid Suppression Therapy Use in Non-Critically Ill General Medicine Patients in a Community Hospital

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Purpose: Acid suppression therapy (AST) use among non-critically ill general medicine patients has become widespread while the evidence to support such use is lacking. As a result, some patients are receiving AST without any acceptable indication. This leads to an increased risk for the development of adverse effects associated with AST, including Clostridium difficile colitis. The objective of this study is to determine the percentage of patients receiving inappropriate AST and to determine the economic impact incurred by both the patient and institution. In addition, this study will explore the incidence of Clostridium difficile colitis in patients using AST.

Methods: This study will be submitted to the Institutional Review Board for approval. A retrospective chart review will be conducted on patients admitted to the institution between June 2012 and June 2013 who have active orders for AST. Patients will be included in a singular fashion and will not be counted for multiple admissions. Inclusion criteria include all patients admitted or transferred to our general medicine units with an active order for AST. Exclusion criteria include all patients discharged from the ICU. Patient records will be reviewed for AST use and indication in the following instances: prior to admission, inpatient, and upon discharge. Acceptable indications for AST will include those approved by the FDA as well as additional indications supported by medical literature. The economic impact for patients inappropriately discharged on AST will be estimated using the average wholesale price of the selected medication extrapolated to reflect one year of prescriptions. The economic impact on the institution will be estimated using the hospitals acquisition cost for the selected medication. Patients included will also have an additional retrospective review looking for any 90 day readmissions with a diagnosis of Clostridium difficile colitis.

8-147

Title: Pain management in opioid-tolerant versus opioid-nave sickle cell disease patients with acute pain crises

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Purpose: Patients with sickle cell disease (SCD) experience significant morbidity and high rates of healthcare utilization secondary to the severe, acute pain of vaso-occlusive crises (VOC). Patients with SCD may also have chronic pain requiring daily use of opioids. Long-term opioid use can lead to opioid tolerance, a potential barrier to the treatment of acute pain. Literature searches reveal studies evaluating the management of VOC. These studies, however, do not address opioid-tolerant sickle cell patients. The objective of this study is to evaluate pain management and clinical outcomes in opioid-tolerant and opioid-nave sickle cell patients with acute pain secondary to VOC.

Methods: The study will take place at a large academic medical center. Investigators will collect pertinent study information through retrospective review of patient charts identified by ICD 9 codes for SCD with crisis. Eligible patients will be divided into two groups, opioid-nave and opioid-tolerant. Patients will be considered opioid-tolerant if they meet the following definition used in FDA-approved medication guides and documents: oral morphine 60 mg/day, transdermal fentanyl 25 mcg/h, oral oxycodone 30 mg/day, oral hydromorphone 8 mg/day, oral oxymorphone 25 mg/day, or an equianalgesic dose of another opioid for at least one week immediately prior to presentation. Opioid-nave patients include those who do not meet this definition of opioid-tolerant. Investigators will collect the following demographic data: age, ethnicity, weight, height, sex, and past medical history of a pain-related condition. Opioid medication history, including medication name, daily dose, and duration of therapy, will be used to determine opioid tolerance. To evaluate pain management and clinical outcomes in opioid-tolerant versus opioid-nave sickle cell patients with acute pain secondary to a VOC, investigators will compare opioid doses, pain scores, and acute care utilization rates between the two groups. This study will be submitted to the Institutional Review Board for approval.

8-148

Title: Evaluation of bevacizumab-induced hypertension assessment and treatment in an outpatient cancer center

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Purpose: Bevacizumab is a recombinant humanized monoclonal antibody that inhibits angiogensis by targeting vascular endothelial growth factor (VEGF). Although efficacious in multiple types of cancer, this drug has a prominent adverse effect of increasing blood pressure (BP). The purpose of this medication usage evaluation (MUE) is to determine if patients at our cancer center are being appropriately assessed, and if necessary, treated for bevacizumab-induced hypertension (HTN).

Methods: The project will be evaluated by out institutions IRB prior to data collection. Patients being retrospectively reviewed will be acquired through pharmacy dispensing records for bevacizumab from January 01, 2012 through December 31, 2012. Patients enrolled in an investigational trial will be excluded from analysis. With the first dose of bevacizumab, we will be collecting: patient demographics, BP, HTN risk factors, JNC VII HTN stage, HTN medications, bevacizumab dose and frequency. Data collected with each subsequent dose of bevacizumab will include: BP, JNC VII HTN stage, HTN medications, bevaicizumab dose & frequency, and total cumulative bevacizumab dose. Descriptive statistics will be used to assess our cancer centers assessment and treatment of becacizumab-induced HTN. Collected data points will be input through an encrypted intranet resource utilized by our institution.

8-149

Title: Impact of pharmacist participation in a new outpatient transition-of-care shared discharge visit program on 30-day readmission rates

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Purpose: The Hospital Readmissions Reduction Program was added to the Affordable Care Act in 2010 and implemented reductions in reimbursement rates for institutions with excessive readmission rates. The program has served as incentive for many institutions to initiate programs and policies aimed at preventing readmissions. The objective of this study is to evaluate the impact of pharmacist participation in a new outpatient transition-of-care shared discharge visit program on 30-day readmission rates in patients recently discharged from a community hospital.

Methods: This study will be submitted to the institutional review board for approval. The study will be completed at a family medicine clinic, at which an existing pharmacist managed ambulatory care clinic is established. All adult family medicine patients discharged from the affiliated community hospital will be scheduled for a transition-of-care visit within seven days of discharge. Standardized face-to-face transition-of-care visits will be completed by a team consisting of an ambulatory care pharmacist, a care enhancement physician resident, and a nurse. The pharmacy portion of the visit will include a comprehensive medication review and brief disease specific medication education. The pharmacist will also participate in an integrated portion of the visit with the physician and patient. The ambulatory care pharmacist will be responsible for 30 days of follow up care, including additional phone encounters and office visits. The primary outcome of interest will be 30-day readmission rates of patients seen by the transition-of-care team during the study period. Several secondary outcomes will also be evaluated including the number and type of pharmacy interventions, frequency of acceptance by the physician, identified risks for readmission, and tracking of Medicare reimbursement using the new CPT transition-of-care codes.

8-150

Title: Mortality rates of infants treated with high-dose sildenafil

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Purpose: Sildenafil is commonly used off-label for the treatment of pulmonary hypertension (PH) in pediatric patients. Although previous data suggested sildenafil to be safe in the pediatric population, recent data from the STARTS-2 study indicates an increase in long-term mortality in patients ages 1-17 years using high-dose sildenafil. The purpose of this study is to describe the overall mortality rate of infants treated with high-dose sildenafil at our institution, and compare the overall mortality rate to that seen in the high-dose sildenafil group of the STARTS study population.

Methods: This retrospective study has been approved by the Investigational Review Board. Informed consent was waived for study participants as this study presents no more than minimal risk to subjects from use or disclosure of Protected Health Information. Patients will be identified by reports generated from the electronic medical record. Infants with PH who were less than one year of age, weighed less than 8 kilograms, and who received enteral sildenafil at a dose greater than 3 mg/kg/day for at least 7 days will be included in this study. Data will be collected from 2007 to 2013 and follow-up data will be collected for at least one year after initiating sildenafil. The following will be collected: demographics, etiology of PH, sildenafil data, concomitant PH medication data, and date of loss to follow-up or death. Data will be analyzed to define an overall mortality rate for infants with PH treated with high dose sildenafil, as well as to compare to the mortality rate described in the STARTS trial. Additionally, subgroup analysis will be performed to describe PH etiology and associated rates of mortality.

8-151

Title: Discharge medication counseling and its correlation with reducing readmissions for patients with chronic obstructive pulmonary disease exacerbations

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Purpose: Based on the high prevalence, significant cost, and largely preventable nature of hospital readmissions, as well as recent reimbursement changes, there is a need to focus on reducing readmission rates. Pharmacists are equipped with a unique set of medication knowledge that often is underutilized and may be beneficial in reducing readmissions in patients by providing medication counseling and increasing patient education. Therefore, the purpose of this project was to determine the relationship between pharmacist-provided medication discharge counseling and readmission rates in patients diagnosed with COPD exacerbation at 30 and 90 days post-discharge.

Methods: In January 2013, pharmacists began counseling COPD patients before discharge, which later became a hospital-wide improvement. Patients are now counseled by a pharmacist before discharge on their medications and inhaler technique. A follow-up phone interview is conducted 3-5 days post-discharge to review any medication-related problems experienced. In order to assess changes in 30- and 90-day hospital and ED readmission rates pre- and post-improvement, a nonequivalent posttest-only design will be utilized. Data from COPD patients admitted prior to the improvement (control) will be compared to patients who received discharge counseling (intervention) using retrospective chart reviews. In order to achieve statistical significance, at least 88 patients per group will be obtained. Data will be analyzed using SPSS v. 21.0 with alpha=0.05. Descriptive statistics will be used to examine demographic data as well as readmission rates. Differences in readmission rates will be assessed using a Chi-squared test or a Kruskal-Wallis test, as appropriate. This study was approved by the institutional review board, and a waiver of informed consent was obtained.

8-152

Title: Impact of Advancing Age on Vancomycin Pharmacokinetics

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Purpose: Advancing age causes changes in body composition and function, including volume of distribution, metabolism, and renal function, which may alter medication pharmacokinetics (PK). Vancomycin, a broad-spectrum antibiotic frequently used to treat severe infections in hospitalized elderly patients, should be dosed to achieve trough levels of 15-20 mcg/mL to optimize clinical outcomes while minimizing toxicities. Vancomycin PK data in hospitalized elderly patients are very limited, making achievement of pharmacodynamic goals challenging in this patient population. The objectives of this study are to 1) describe vancomycin PK in hospitalized elderly patients and 2) identify patient-specific factors contributing to PK alterations.

Methods: This prospective, single-center, clinical PK study will include elderly, non-obese patients (65 years of age) with normal renal function being treated with vancomycin according to local standards of care for suspected or confirmed infection. Three vancomycin serum concentrations (drawn just prior to infusion, 2 hours post-infusion, and 6 hours post-infusion) will be assessed after the first day of therapy and measured using a quantitative enzyme immunoassay. PK parameters (volume of distribution in central compartment, elimination rate constant, half-life, maximum concentration, minimum concentration, area under the curve, and total body clearance) will be determined by fitting data to either a one or two compartment open model with first-order elimination, as appropriate. Multivariate logistic regression will be used to determine if patient-specific factors, such as age, albumin, nutritional status, fluid administration, and inflammation, alter vancomycin PK. Goal enrollment is a total of 15 patients (5 patients aged 65-74, 75-84, and 85 years, respectively). Institutional review board approval is pending.

8-153

Title: Evaluating changes in efficacy, safety, and cost when switching from regular insulin to insulin aspart in a pharmacist-managed type 2 diabetes clinic.

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Purpose: Approximately 20% of veterans have type 2 diabetes, which is more than twice the national incidence. Studies show that compared to regular insulin, fast-acting analogues like insulin aspart improve patient satisfaction and treatment flexibility. However, aspart is costly, and improvements in glucose control compared to regular insulin have been inconsistent in the literature. The purpose of this study is to investigate if switching from regular insulin to insulin aspart improves overall glucose control for veterans in a pharmacist-managed diabetes clinic. Evaluating these differences will help determine if restricting aspart use at the VA is beneficial to patients and the facility.

Methods: This study will be a retrospective analysis of type 2 diabetics who have switched from regular insulin to insulin aspart at the Chalmers P. Wylie VA Ambulatory Care Center in Columbus, Ohio. Data will be collected through the VA computerized patient records system for patients seen in the Diabetes Control Clinic (DCC) from August 1st, 2010 to July 31st, 2013. Patients will be included in the study if they are at least 18 years of age, on basal insulin therapy with insulin glargine, and previously used regular insulin for at least three months before switching to insulin aspart for at least three months. To assess the primary objective, hemoglobin A1c values at the time of the insulin therapy change will be compared to values obtained approximately three months after aspart initiation. Hemoglobin A1c values six months after the therapy change will be recorded for comparison also, if available. Secondary objectives such as incidence of hypoglycemia, changes in weight, and cost of insulin therapy during the study period will be collected and reviewed as well. Cost of insulin therapy will be assessed in 2013 dollars based on pricing data from the facilities primary vendor, McKesson.

8-154

Title: The Effect of Opioid Tolerance on Patient Reported Satisfaction of Inpatient Pain Management

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Purpose: Approximately 100 million adults in the United States are affected by chronic pain. Optimization of pain management is an important component of care for patients admitted to hospitals. Limited research is available identifying factors that impact inpatient satisfaction with pain control. Physical dependence and opioid tolerance complicate pain management and therefore patient satisfaction. Recently, CMS instituted the Hospital Consumer Assessment of Healthcare Providers & Systems (HCAHPS) survey to assess patient satisfaction and incentivize hospitals based on outcomes. This study compares patient reported HCAHPS pain scores in medically ill opioid tolerant patients versus opioid nave patients admitted to a community hospital.

Methods: This is a retrospective cohort study comparing pain HCAHPS scores in opioid tolerant patients versus opioid nave patients. This research has been approved by the institutional review board. The study will include patients 18 years of age and older discharged from our institution between July 1, 2012 and June 30, 2013 who completed the pain portion of the HCAHPS surveys. Exclusion criteria will include: Patients admitted to the ICU, patients admitted for a surgical procedure, a psychiatric diagnosis, and patients admitted to the observation unit. A total of 150 patients will be included and separated into groups based on history of opioid tolerance. Patients will be identified based on completed responses to the HCAHPS survey from the applicable time period. Patient medication history prior to admission will be evaluated to determine opioid tolerance. The primary endpoint will compare always response rates between opioid tolerant and opioid nave patients. Secondary endpoints will include: patient demographics, medication reconciliation, nurse documented pain scores, toxicology results, time to initiation of pain medication, hourly nurse rounding, documentation of pain scores every 4 hours, HCAHPS scores for communication regarding medications and overall patient satisfaction. Chi-square analysis will be used to compare primary and secondary endpoints.

8-155

Title: The effect of chronic pain education on patient reported pain scores

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Purpose: Chronic pain, as defined by the International Association for the Study of Pain, is pain that persists beyond normal tissue healing time, which is assumed to be three months. In the absence of proper management, chronic noncancer pain can lead to disability, loss of productivity, and a decrease in quality of life. The primary objective of this study is to determine if a chronic pain education program facilitated by a pharmacy resident can improve pain scores by three points. Secondary outcomes will be to see how the education program affects quality of life scores and use of medication therapy

Methods: Patients admitted to the renal/telemetry unit at St. Ritas Medical Center will be screened for education by a pharmacy resident. Inclusion Criteria: Patients admitted to the Renal/ Telemetry unit (6K) who have been taking pain medication at home for greater than three months, regardless of whether or not control over their pain has been achieved. Regular use of pain medications is defined as daily use of one or more classes of medications used to treat chronic pain conditions. Exclusion Criteria: Any patient who is less than 18 years of age, pregnant, or who do not speak English will be excluded from this study. Patients who verbally decline the offer to education will also be excluded. Patients who meet criteria and agree to participate, will be given the Brief Pain Inventory. After the survey is administered, the patient will receive education on chronic pain conditions and treatment options for pain. Twenty-four to forty-eight hours after the education, the patients will be given the survey again to assess changes in their attitudes on pain. The Brief Pain Inventory will be administered over the telephone four weeks after discharge.

Results: Results will be presented at the Ohio Resident Conference in 2014.

8-156

Title: Evaluation of the impact of two pharmacist-directed osteoporosis educational interventions and screenings on the retention of osteoporosis knowledge and preventive behavior

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Purpose: The studys primary purpose is to assess the impact of a pharmacist-directed osteoporosis screening and educational intervention as part of an employee wellness program on the retention of osteoporosis knowledge and preventive behavior. Secondarily, the study evaluates the effects of a prior pharmacist-directed bone density screening and educational intervention on risk factors, physician follow-up, and bone density.

Methods: Subjects will participate in a pharmacist-directed osteoporosis educational program and peripheral bone density screening. To be eligible for the intervention, the subject must have participated one to two years prior in a pharmacist-directed osteoporosis educational program and screening. Data collected at the original and follow-up screening includes age, gender, and osteoporotic nonmodifiable and modifiable risk factors. The non-dominant heel bone density will be measured using a peripheral ultrasound bone densitometer, and the resulting t-score will be recorded. From the t-score, the z-score will be calculated and recorded. All participants will complete the Facts on Osteoporosis Quiz (FOOQ), a 20 question validated osteoporosis knowledge questionnaire, to ascertain his/her knowledge of osteoporosis before and after a 25 minute individual pharmacist-driven educational session. All study participants will complete an additional follow-up questionnaire concerning calcium and vitamin D supplementation, prescription osteoporosis medications, physician follow-up, exercise, diet, and lactose-intolerance. The questionnaire will assess the patients opinion on the original screenings impact on his/her knowledge of osteoporosis, effect on motivation to improve bone health, and overall usefulness. A brief post-assessment lifestyle changes survey and FOOQ questionnaire will be emailed to all participants three months following his/her follow-up appointment to evaluate long-term retention of osteoporosis knowledge.

8-157

Title: Evaluation of adherence to institutional guidelines of prothrombin complex concentrate (3-factor) at a large academic medical center

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Purpose: Prothrombin complex concentrates (PCC) have gained traction for treatment of warfarin associated bleeding, though there are few prospective, randomized, controlled trials evaluating their efficacy and safety. University Hospitals Case Medical Center (UHCMC) developed institutional PCC guidelines. The primary purpose of this study is to evaluate the institutions adherence to these Guidelines. The second objective is to assess outcomes in patients administered PCC.

Methods: This study is a retrospective chart review. All patients administered PCC from July 1, 2012 through June 30, 2013 were identified through electronic medical records. At UHCMC, PCC is approved for use per its approved FDA indication and off-label in patients with life threatening warfarin associated intracerebral/spinal hemorrhage. PCC therapy was evaluated for guideline adherence including use of IV phytonadione, fresh frozen plasma (FFP), weight-based INR specific PCC dosing, and supplemental FFP or recombinant factor VIIa (rFVIIa) dosing for elevated INR following the initial regimen. The indication for usage was identified by patients progress notes. The patients chart was examined to see if a hematology consult was obtained. Patient charts were also evaluated to assess how safely PCC is being used at UHCMC. The frequency of in-hospital patient death and adverse events attributable to PCC (new venous thromboembolism) were also assessed and compared to occurrence in the literature. Descriptive statistics were used to characterize the data.

8-158

Title: Dose effect of second generation antipsychotic therapy on incidence of diabetes in a Veteran population

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Purpose: Pharmacoepidemiologic studies have determined an association between second generation antipsychotics (SGAs), primarily clozapine and olanzapine, and diabetes. The risk of new onset diabetes between ziprasidone and aripiprazole are not well defined. Further studies are needed to confirm the association between the newer SGAs ziprasidone and aripiprazole, and their effect on incidence of diabetes. The objective of this study is to evaluate the dose response of the newer SGAs, aripiprazole and ziprasidone, and the incidence of type 2 diabetes mellitus in a U.S. Veteran population.

Methods: This study will be submitted to the Institutional Review Board for approval. A retrospective chart review of Veterans who were newly prescribed a SGA, without a history of type 2 diabetes will be conducted. Veterans will be identified who had been dispensed one of four SGAs (aripiprazole, quetiapine, risperidone, and ziprasidone) for at least 45 days and continuously enrolled for at least three months before and six months after the index date between January 1, 2010 and March 1, 2013. A subset will then be identified with no evidence of diabetes anytime before the index date and no previous antipsychotic prescription filled within 3 months before the index date. A third subset will be identified that filled at least one prescription for an oral anti-diabetic agent or insulin.Patients with any evidence of diabetes anytime before index date and prescribed more than one SGA will be excluded from the study.The rates of newly treated diabetes will be calculated for exposure to each SGA. The following data will be collected: patient age, gender, weight, glycosylated hemoglobin (HbA1c), low-density lipoprotein cholesterol (LDL-C), SGA agent and dose, and anti-diabetic agent. Records will be reviewed by research staff and de-identified to maintain confidentiality.

8-159

Title: Management of staphylococcus aureus bacteremia (SAB) with outpatient parenteral antimicrobial therapy (OPAT)

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Purpose: Staphylococcus aureus bacteremia (SAB) is an infection associated with significant morbidity and mortality. According to standard practices and guidelines from the Infectious Diseases Society of America (IDSA), patients may receive up to six weeks of intravenous (IV) antimicrobial therapy. Treatment is frequently administered in outpatient settings to decrease cost and risk of nosocomial infections. While OPAT is generally safe and effective, a previous study at Louis Stokes Cleveland Department of Veterans Affairs Medical Center (LSCDVAMC) found a high failure rate in veterans with bone and joint infections. This study will identify risk factors for OPAT failure in veterans with SAB.

Methods: Approval from the LSCDVAMC Institutional Review Board will be obtained prior to study commencement. All patients enrolled in the OPAT program with an initial diagnosis of SAB from January 2011 through September 2013 will be reviewed. Patients who are bacteremic with more than one organism, enrolled in the spinal cord rehabilitation program, or refuse treatment will be excluded from the study. A retrospective chart review will be performed to collect the following data: documentation of treatment success or failure, patient demographics and comorbidities, type(s) of infection(s) concomitant with SAB, initial antimicrobial agent, microbiology, time to negative blood culture, and treatment setting (home, skilled nursing facility, or community living center at the LSCDVAMC). All data will be recorded without patient identifiers and maintained confidentially. Chi-squared tests and odds ratios will be used to determine differences between success and failure groups in uni-variate analyses. Multivariate logistic regression will then be used to determine which characteristics or risk factors are the strongest predictors of treatment failure.

8-160

Title: Clinical outcomes with dual antiplatelet therapy in chronic kidney disease patients after percutaneous coronary intervention

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Purpose: Patients with chronic kidney disease (CKD) are at a greater risk of cardiovascular events and major bleeding events while on dual antiplatelet therapy than the general population. Most randomized controlled trials with dual antiplatelet therapy have excluded patients with CKD, so the balance of cardiovascular benefit and bleeding risk remains largely unknown. The purpose of this study is to evaluate effectiveness and safety of clopidogrel and aspirin in patients with CKD after percutaneous coronary intervention (PCI).

Methods: The institutional review board approved this retrospective chart review study. Patients admitted to the University of Toledo Medical Center (UTMC) from January 1, 2001 through December 31, 2011 who received PCI will be screened for inclusion in this study. Control patients will include patients with CKD stages 1-2, while case patients will be those with CKD stages 3-5. Patients will be included in this study if they are > 18 years of age, prescribed clopidogrel in combination with aspirin after PCI, and had less than a 10% change from baseline serum creatinine within 24 hours before PCI. Patients will be excluded if they had documented coagulopathy, liver failure, sickle cell anemia, leukemia, myelodysplastic syndrome, HIV, cancer, or were receiving chemotherapy. Patient charts and medical records will be evaluated for clinical outcomes at 3, 6, 9, 12, and 15 months after PCI.

8-161

Title: Telepharmacy in the outpatient clinic: feasibility and effectiveness of video consultations

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Purpose: The use of remote patient healthcare is increasing which expands care to patients in resource restricted settings. Video based telepharmacy has been used in community pharmacies for technician oversight and remote patient counseling. Whereas telephone based telepharmacy has been used to perform disease state management with patients in remote areas. Our primary objective is to assess the feasibility of video based patient-pharmacist consultations in a hospital based outpatient clinic setting. Secondarily we will evaluate consultation effectiveness. Our goal is to determine if video based pharmacy services will be a viable option to expand pharmacy services within OhioHealth.

Methods: This study will be approved by the Institutional Review Board. Patients seen in the clinic will be screened for study inclusion based on pre-clinic schedule review by a pharmacy resident. Patients will be asked to participate if they have a diagnosis of hypertension in their problem list and are older than 18 years of age. Consented patients will be given a pre-consultation hypertension knowledge test, then meet with a pharmacy resident via video conference. Visits that cannot be completed by video due to technical difficulties will take place in person. All visits will address baseline disease state, lifestyle modification and medication knowledge in a semi-structured format followed by pharmacist provided education in necessary areas. After the visit the pharmacist will make recommendations to the provider and the patient will complete a validated satisfaction survey and repeat the knowledge test. To determine feasibility we will measure the 1) patient satisfaction, 2) percent visits completed by video and 3) percent time on task during the consultation. To determine consultation effectiveness we will evaluate the difference between pre and post consultation knowledge test scores.

8-162

Title: Aminoglycoside pharmacokinetic parameters in infants with cystic fibrosis

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Purpose: Patients with cystic fibrosis have known alterations in aminoglycoside pharmacokinetics. However, many of the studies that described these changes excluded neonates and infants. The purposes of this study are to describe aminoglycoside pharmacokinetic parameters and determine the optimal empiric dose of intravenous aminoglycoside antibiotics in children less than 12 months of age with cystic fibrosis.

Methods: This is a retrospective chart review of infants with cystic fibrosis treated with intravenous aminoglycosides between October 2008 and September 2013. Expedited Institutional Review Board approval is pending. Patients will be included if they are less than 12 months of age, have a diagnosis of cystic fibrosis, and had two aminoglycoside levels drawn around the same dose. The population will be further subdivided into premature neonates, term neonates, and infants one month to 12 months of age. Data to be evaluated for the outcomes of the study include: age, post-menstrual age for premature neonates, gender, dosing weight, baseline serum creatinine, maximum serum creatinine during course of therapy, prescribing service, cystic fibrosis genetic profile, initial dose of the aminoglycoside antibiotic in mg/kg, time of dose associated with therapeutic drug monitoring, and aminoglycoside levels (value and time lab collected). The following pharmacokinetic parameters will be calculated based on data obtained: elimination half-life, elimination constant, calculated peak/trough, volume of distribution, clearance, AUC (24 hour), and drug-free interval. Descriptive statistics will be used to report population and subgroup pharmacokinetic parameters. These pharmacokinetic parameters will be used to determine optimal empiric dosing guidelines in this age group.

8-163

Title: Evaluation of antimicrobial stewardship interventions to decrease fluoroquinolone overuse

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Purpose: Fluoroquinolone overuse results in increased Pseudomonas aeruginosa resistance and contributes to increased prevalence of methicillin-resistant Staphylococcus aureus. Guidelines from the Infectious Disease Society of America (IDSA) recommend developing antimicrobial stewardship programs to reduce inappropriate usage and duration of antibiotics. This study will focus on the targeted review of fluoroquinolones utilizing one aspect of antimicrobial stewardship: prospective auditing. The primary objective of this study is to assess the impact of pharmacist recommendations on the amount of fluoroquinolone usage within one institution. The secondary objective is to assess the types of interventions and their acceptance rates.

Methods: This retrospective review has been submitted to the Institutional Review Board and will compare fluoroquinolone use, at a 450 bed tertiary care hospital, over two 30 day periods before and after targeted stewardship interventions. During the intervention phase, the pharmacy resident will review patients with active fluoroquinolone orders five days per week and make recommendations to prescribers to optimize therapy either verbally or via a progress note. Patients will be included if they are 18 to 89 years old and received at least one dose of fluoroquinolone therapy. Patients will be excluded if the Infectious Disease service was consulted or the fluoroquinolone was ordered for infection prophylaxis. Data collection from the electronic medical record will include patient demographics, renal function, infection source, culture results, antimicrobial therapy, types of interventions, and intervention acceptance rates. The primary endpoints will be days of inpatient fluoroquinolone therapy and change in total daily dose of fluoroquinolone. Secondary endpoints include types of interventions and acceptance rates. Statistical analysis will consist of descriptive measures, t-tests for continuous data, and chi-square or Fishers exact tests for categorical data as appropriate.

8-164

Title: Evaluation of vancomycin induced nephrotoxicity following implementation of a pharmacist initiated dosing service

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Purpose: A previous study conducted at this facility indicated there was no difference in nephrotoxicity after implementation of a protocol for pharmacists to dose vancomycin. Recent literature publications indicate vancomycin nephrotoxicity incidences are increasing for numerous reasons around the country, with such incidences ranging from 2.8 percent to 43 percent in some studies. At our facility increasing concerns regarding vancomycin nephrotoxicity among physicians, pharmacists, and patient safety advisors have led to this study. The objective of this study is to compare patient characteristics in the nephrotoxic and non-nephrotoxic group to identify differences that contribute to the incidence of nephrotoxicity.

Methods: Prior to study initiation, study protocol will be submitted to the Institutional Review Board and the Research and Development Department for approval. The health systems electronic medical record will be used to identify patients who receive vancomycin from July to December 2013. Patients will be excluded from the study if they received vancomycin prior to admission, were on dialysis, received vancomycin as an outpatient, or received vancomycin for less than 48 hours. Eligible patients will be stratified into one of two groups, nephrotoxic or non-nephrotoxic, with the same data collected for both groups. Nephrotoxicity will be defined as a 0.5mg/dL or 50 percent increase in serum creatinine for two consecutive days while on vancomycin therapy. The following data will be collected for all patients included in the study: age, gender, height, weight, vancomycin dose, indication for use, goal trough, and vancomycin levels drawn. Additional risk factors known to increase the incidence of vancomycin nephrotoxicity will also be evaluated, such as obesity, greater than 4 grams per day dosing, greater than 20mcg/mL trough levels, and other concomitant nephrotoxic agents. Data collected will then be evaluated for differences to identify if certain characteristics are contributing to vancomycin nephrotoxicity at our facility.

8-165

Title: Comparison of an insulin infusion and bolus protocol with an insulin multiplier infusion protocol in critically ill patients

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Purpose: Hyperglycemia in critically ill patients correlates with poor outcomes. Numerous insulin infusion protocols exist, but guidelines do not recommend one single method. One strategy employs an insulin multiplier, using a factor M to adjust the infusion rate. Multipliers are thought to be more effective for insulin titrations by accounting for insulin sensitivity. Currently there is a paucity of studies directly comparing insulin infusion protocols. This study aims to compare outcomes data from a bolus infusion protocol to a multiplier method in critically ill patients. We hypothesize shorter time to goal blood glucose (BG) and less hypoglycemia with the multiplier method.

Methods: This single center, retrospective review will be conducted at a 450 bed tertiary care hospital and approved by the institutional review board. The institution is currently piloting an insulin multiplier pathway. This study will compare the prior bolus infusion insulin protocol to the pilot multiplier protocol. Data will be obtained from the electronic medical record, with patients identified via insulin infusion orders. Inclusion criteria will consist of adults admitted to the medical and surgical intensive care units (ICU) between 05/1/13 and 10/31/13 (pre) and 11/15/13 and 02/28/14 (post) and a minimum 6 hours of insulin infusion. Patients will be excluded if pregnant, on the DKA protocol, or no documented BG level during the infusion. Data will include baseline characteristics, SOFA score, Charlson weighted index of comorbidity, admitting team, diet order, steroid use, and oral antihyperglycemic use. Efficacy information will include time to target BG (hours), percent time in, above and below target BG, and mean insulin infusion rates and BG. Safety data will include hypoglycemic events (BG below 70 and severe, BG below 50). Outcomes data will include discharge disposition, in ICU days and in hospital days. Statistical analysis will include descriptive measures, chi square analysis, and t tests.

8-166

Title: Development and implementation of a protocol for INR self-monitoring in a pharmacist-managed anticoagulation clinic

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Purpose: INR self-monitoring is increasing in popularity for patients receiving anticoagulation with long-term warfarin due to convenience and lowered cost. Self-monitoring has been shown to be a feasible, safe, and reliable option for warfarin management. Current literature has found a comparable time in therapeutic range (TTR) for INR self-monitoring compared to conventional INR monitoring. The purpose of this project is to describe the implementation of an INR self-monitoring protocol in a pharmacist managed anticoagulation clinic.

Methods: This project will be submitted to the Institutional Review Board for approval. Patients enrolled in the IMCA Anticoagulation Clinic at Akron General Medical Center will be considered for enrollment. Patients included must have been monitored by the clinic for at least three months. Exclusion criteria include patient refusal for self-monitoring and the presence of patient characteristics making self-monitoring unsuitable as determined by clinic policies and procedures. The primary study outcome is TTR during the last two months of clinic monitoring and the first two months of self-monitoring. Secondary outcomes related to adherence with the self-monitoring protocol include adherence with INR monitoring and reporting, scheduled clinic appointments, warfarin instructions, and need for reversion to clinic testing. Secondary outcomes related to communication include number of attempts to communicate with the patient for routine assessments and for INR results outside the therapeutic range, the number of calendar days between the first attempt to reach a patient and achieved communication, and instances of non-communication of information relevant to warfarin management. Other secondary outcomes include frequency of INR testing before and after initiation of self-monitoring and patient satisfaction with self-monitoring. All results will be descriptive in nature.

8-167

Title: Evaluation of a newly implemented intranasal midazolam protocol in a pediatric emergency department

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Purpose: The emergency department can be a stressful environment for pediatric patients. For minor procedures that do not require inpatient admission to a hospital, medications with fast onset of anxiolysis are preferred. At Palmetto Health Childrens Hospital, a protocol was implemented that allowed health care professionals to administer intranasal midazolam to patients requiring an anxiolytic for minor procedures. The purpose of this study is to evaluate the recently implemented protocol and assess the efficacy and safety of intranasal midazolam.

Methods: This study will be submitted to the Institutional Review Board for approval. This study will be a non-interventional, observational, prospective chart review of patients that received intranasal midazolam in the pediatric emergency department. Patient data will be collected from June 2013 to December 2013. The primary outcome will be efficacy as measured by necessity of repeat dosing, additional medications used for anxiolysis, and documentation in the medical chart of failure to achieve adequate anxiolysis. Secondary outcomes will be the evaluation of efficacy in the following subgroups of patients: age and type of procedure. Additional secondary outcomes will be safety, as measured by adverse effects, and time to procedure. Data collected will be age, gender, weight, type of procedure, medications used in the emergency department, vitals, and indications of patient appearance before and after administration of intranasal midazolam. Descriptive statistics will be used to analyze the primary and secondary outcomes. Logistic regression will be used for the analysis of efficacy in the different subgroups.

8-168

Title: Evaluation of time in therapeutic range on warfarin therapy between telephone and face-to-face follow up in a VA medical center

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Purpose: There have been few studies comparing the difference in percent time in therapeutic range in patients managed by telephone versus face to face visits, and these studies found no difference between the two groups. The objective of this study is to compare and evaluate the percent time in therapeutic range on warfarin therapy in ambulatory patients who receive follow up visits via telephone versus face to face in a VA medical center.

Methods: This study has been approved by the Institutional Review Board. A request for waiver or alteration of informed consent has been submitted, as well as a request for HIPAA waiver of authorization. The electronic medical record system will be used to identify patients that were followed for anticoagulation management by primary care pharmacists throughout the study period. Patients will be randomly assigned ID numbers and PHI will not be disclosed. Data collected will include demographics, indication for warfarin therapy, duration of warfarin treatment, goal INR range, percent of time within therapeutic range calculated by the Rosendaal method, and visit type (telephone visits vs. face to face). Event data while on warfarin therapy will include any signs of bleeding, DVT, PE, or CVA, hospitalizations, and death. Assuming an alpha of 0.05, it was calculated that to achieve 80% power a sample size of 200 patients is needed. Demographic and nominal data will be analyzed using a Chi-Square or Fishers exact test. Interval or ratio data will be described using the mean, minimum, and maximum values and will be compared using a Student T-test.

8-169

Title: Evaluation of intravenous immunoglobulin (IV IgG) infusion adverse drug reactions in a veterans affairs community

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Purpose: Intravenous immunoglobulin (IV IgG) is currently used in the treatment of primary and secondary immune deficiency states, as well as autoimmune and inflammatory disorders. Clinical use of IV IgG is often limited due to a high prevalence of adverse reactions. It has been hypothesized that adverse reactions may be minimized by reducing infusion rate. The purpose of this study is to compare our documented adverse effects based on infusion rate to the expected adverse effects based on the package insert for IV IgG. This will help determine if our individual facility infusion protocol should be updated.

Methods: The study has been submitted to and approved by the Institutional Review Board. The electronic medical record system will identify patients who have received IV IgG for an FDA approved indication of primary humoral immunodeficiency, idiopathic thrombocytopenia purpura or chronic inflammatory demyelinating polyneuropathy. The following data will be collected: patient demographics, vital signs, indication for IV IgG therapy, dose, infusion rate, product and lot used, adverse effects, pretreatment medications, past medical history or medication therapy that could contribute to documented adverse event(s), pertinent lab values and results of imaging studies if warranted. All outcomes will be stratified based on FDA indication and then grouped into acute and subacute reactions. In addition to timing associated with adverse reactions, they will also be classified depending on the intensity of the documented event in conjunction to practitioners response to event. In regards to severity of events, reactions will be classified into three categories: mild, moderate or severe based on reviewers discretion. Only the first infusion per patient per admission or outpatient clinic visit will be considered for final analysis. A Chi-square or Fishers exact test will be used to analyze differences in adverse reactions. All research will be conducted retrospectively as chart review.

8-170

Title: Safety and tolerability of elvitegravir, cobicistat, tenofovir, emtricitabine therapy; one year post marketing

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Purpose: Stribild (elvitegravir, cobicistat, tenofovir, emtricitabine) was approved in August 2012 and is currently the only integrase inhibitor once daily combination product available. Cobicistat, a novel pharmacokinetic boosting agent, not only inhibits the cytochrome P450 3A4 system resulting in increased elvitegravir serum concentrations but also inhibits active secretion of creatinine by the kidney. This increases serum creatinine without a reduction in glomerular function. The purpose of this study is to assess safety and tolerability of Stribild therapy. This study will also determine how clinicians react to changes in serum creatinine and provide insight into reasons for switching or discontinuing Stribild therapy.

Methods: This retrospective, multi-center, non-interventional, cohort study will evaluate an estimated 160 HIV positive patients receiving Stribild therapy. Patients will be included if they are greater than 18 years old, receiving Stribild therapy for a minimum of 2 months, and have serum creatinine measured within two months of starting therapy. Patients will be excluded if they receive renal replacement therapy or renal transplant, or have CrCl less than 70 milliliters per minute. The primary endpoint is to determine the incidence of increases in serum creatinine while on Stribild therapy and correlate this with switch and discontinuation rates. Secondary endpoints include identifying reasons for initiating Stribild therapy as well as identifying if age, race, and/or concurrent nephrotoxins (sulfamethoxazole-trimethoprim, aminoglycosides, non-steroidal anti-inflammatory agents, and furosemide) correlate with renal dysfunction. Lastly, analyzing if prior tenofovir therapy is correlated with increased serum creatinine and decreased glomerular filtration rate. This study will be submitted to the Institutional Review Board for approval. Descriptive statistics as well as paired t-tests and pearson correlation analysis will be performed.

8-171

Title: Incidence of acute kidney injury in adult patients receiving concomitant vancomycin and beta-lactam therapy

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Purpose: The purpose of this study is to determine the incidence of acute kidney injury (AKI) following vancomycin monotherapy versus vancomycin in combination with a beta lactam antibiotic in adult patients hospitalized in a tertiary medical center. Previous studies have shown that AKI from any mechanism can lead to poorer outcomes, including an increased length of hospital stay by 3 to 5 days and upwards of 7,500 dollars in increased healthcare costs. Recent literature has reported an incidence of AKI by 4.9 to 8.9 percent with vancomycin monotherapy and 18.6 to 49.3 percent in combination with a beta lactam agent.

Methods: This study is a single center, retrospective, observational, cohort study. Adult patients admitted to the institution receiving at least one dose of vancomycin during a three year time frame will be screened for inclusion. Inclusion and exclusion criteria have been strictly established for study enrollment. Patients included will be subdivided into groups based on vancomycin monotherapy versus beta lactam combination. Further categorization will occur based on the beta lactam antibiotic chosen. Patient demographics, pertinent laboratory values, presence of concomitant nephrotoxic agents, episodes of hypotension, history of diabetes, and APACHE II scores will be collected from the patient electronic medical record. Total daily dose and trough concentrations of vancomycin will be recorded up to the development of AKI. Patients will be followed for 72 hours post discontinuation of antibiotics, onset of AKI, discharge from the facility or death. The primary objective is to compare AKI incidence associated with vancomycin alone versus in combination with a beta lactam antibiotic. Secondary objectives including evaluating time to AKI, risk factors associated with AKI, and in hospital mortality. Categorical and continuous variables will be analyzed using Chi Square and Students t test, respectively. This study will be submitted to the Institutional Review Board for approval.

8-172

Title: Comparison of pharmacologic pain regimens and their impact on the ability of elderly patients to participate in inpatient physical rehabilitation

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Purpose: Per a consensus statement from the American Geriatric Society and World Health Organization, opiates should be considered in elderly patients with moderate to severe pain, pain-related functional impairment, or decreased quality of life due to pain. Clinicians should anticipate, assess for, and identify potential opioid-associated adverse effects. Many physicians are hesitant to prescribe opiates to elderly patients due to constipation and central nervous system effects. The purpose of this study is to assess the effect of the prescribed pharmacologic pain management, with or without opiates, on the participation of elderly patients in inpatient physical rehabilitation without experiencing opiate-related adverse effects.

Methods: Prior to commencement, this retrospective, chart review study was submitted to the Institutional Review Board for approval. The electronic medical record will be used to identify patients enrolled in inpatient physical rehabilitation between January 1, 2011 to June 30, 2013 and scheduled to participate for at least 7 sessions. Patients at least 65 years old will be included. The primary outcome is to determine the effect of pharmacologic pain management with or without opiates on rehabilitation participation. The secondary outcomes include comparing pain scores (with or without opiates) and the prevalence of opiate-related adverse effects. The following data will be collected: demographics, enrollment date into rehabilitation, number of sessions, diagnosis for rehabilitation enrollment, prior pain regimen, pain regimen during rehabilitation, and pain scores. Data collection regarding participation will include: scheduled and completed sessions (full/partial sessions completed). This data will be collected objectively (whether the patient participated) and subjectively (the reported reason for not participating). Data will be collected regarding reported adverse effects: falls, constipation, and respiratory depression (evidenced by naloxone administration). The presence or absence of an active bowel regimen, as well as specific agents, will be recorded. All data will be collected without patient identifiers and maintained confidentially.

8-173

Title: Assessment of the safety and efficacy of clopidogrel as an alternative to aspirin/extended-release dipyridamole for the prevention of recurrent CVA in the veteran population

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Purpose: Antiplatelet therapy is the standard of care for prevention of recurrent stroke, but available evidence is inconclusive as to which agent is superior. The PRoFESS trial presented data which suggests that clopidogrel is an acceptable, and possibly better tolerated, alternative to aspirin/extended-release dipyridamole. This study aims to assess the safety and efficacy of clopidogrel as a therapeutic alternative to aspirin/extended-release dipyridamole for secondary prevention of cerebrovascular accident (CVA) and/or transient ischemic attack (TIA) in the veteran population with large-vessel disease.

Methods: A single center, retrospective, chart review will be conducted to investigate the safety and efficacy of clopidogrel for primary or secondary prevention of cerebrovascular accident (CVA) and/or transient ischemic attack (TIA) in the veteran population. Eligible patients are those patients with documented large-vessel disease who were selected for therapeutic interchange from aspirin/extended-release dipyridamole to clopidogrel following PBM approval. The following data will be collected: patient age, gender, ethnicity, tobacco use status, pertinent medical history, current medications, medication adherence, reported adverse drug reactions, laboratory data, incidence of adverse events including CVA, and rate of discontinuation and medication revision. Patient charts and lab data will be evaluated to determine the incidence of major and minor bleeding and thromboembolic events (CVA, TIA, VTE, MI, etc). All patient information will be de-identified by investigators and stored securely to maintain confidentiality. This study has been approved by the local institutional review board and R&D committee.

8-174

Title: Comparative review of vancomycin dosing strategies at a community, teaching hospital

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Purpose: The vancomycin dosing protocol for this institution was revised to implement smaller, more frequent doses, and a simplified dosing schedule. This study will evaluate safety and efficacy of the revised vancomycin dosing protocol in regards to consistent attainment of therapeutic trough levels and avoidance of vancomycin associated renal insufficiency.

Methods: A retrospective, observational evaluation will be conducted to compare the safety and efficacy of a revised vancomycin dosing protocol with previously instituted dosing. Due to the retrospective, observational design of the study, it is exempt from institutional review board approval. Data will be evaluated three months prior to and following the initiation of the revised protocol. Pharmacy records will be used to identify patients who were dosed per protocol and had at least one appropriately drawn trough level during the study period. Patients who had baseline renal insufficiency (CrCl < 30 ml/min) will not be included in this study. The following data will be collected: patient weight, height, age, gender, serum creatinine, blood urea nitrogen, urine output, vancomycin dose and dosing interval, vancomycin trough levels, comorbid disease states, and concomitant use of nephrotoxic agents. Data will be analyzed to determine if a significant reduction in the following occurred: sub-therapeutic trough levels, defined as < 10 mcg/ml, supra-therapeutic trough levels, defined as > 20 mcg/ml, or acute renal insufficiency, defined as a serum creatinine increase of 0.3 mcg/dL within 48 hours or a 50% increase from baseline developing over 7 days.

8-175

Title: Adherence and persistence to 5-aminosalicylic acid (5-ASA) treatment in ulcerative colitis (UC)

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Purpose: UC is a chronic inflammatory condition of the colonic mucosa. Oral 5-ASA medication is the initial drug of choice for induction and maintenance of remission. Although UC is a chronic condition, patients may experience long periods of remission during which therapy should be continued. The objective of this study is to assess the relationship between adherence and persistence to 5-ASA therapy and clinical outcomes in adult veterans receiving oral 5-ASA therapy.

Methods: This IRB approved retrospective chart review will evaluate a sample of adult veterans (n=308) with a diagnosis of UC receiving oral 5-ASA therapy between July 1, 2007 and December 31, 2010. Patients receiving TNF-alpha inhibitors at baseline, or patients with a diagnosis of Crohns disease or other types of colitis will be excluded. Adherence will be defined using the medication possession ratio at 6 months, 1 year, and 2 years. Persistence will be defined as days until discontinuation of the index 5-ASA medication or by a gap in utilization of 60 days or more for the index 5-ASA medication. The following data will be collected: oral 5-ASA prescription data, patient demographics, and clinical outcomes (hospitalization, ER visit, documented disease flare, GI surgery, prednisone use, treatment escalation, 5-ASA therapy change). Treatment groups will be categorized by 5-ASA therapy received and dosing frequency. A Chi-Square test or student t-test will be used to measure differences in adherence and patient outcomes between treatment groups at each time interval. Treatment persistence will be estimated using Kaplan-Meier analysis methodology. The log-rank statistic will be used to assess differences between treatment groups. Statistical significance will be determined at a level of 0.05.

8-176

Title: Evaluation of a comprehensive pharmacist-managed medication reconciliation process after hospital discharge at an academic medical center's internal medicine clinic

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Purpose: The Joint Commission updated the national patient safety goal regarding medication reconciliation. The implementation of pharmacy services at hospital admission or discharge and their associated impact has been documented in several settings. However, there is limited to no evidence surrounding the impact of the ambulatory care pharmacists providing medication reconciliation after hospital discharge in the primary care setting. The objective of this study is to assess the impact of a hospital discharge follow-up (HDF) appointment on reduction of 30-day readmission rates in patients who were seen by ambulatory care pharmacists in conjunction with primary care providers.

Methods: This study has been approved by the Institutional Review Board. The outpatient electronic medical record system will identify all adult patients scheduled for HDF appointments from May 1, 2013 through December 31, 2013. The data recorded will include patient age, gender, ethnicity, number of days between hospital discharge and HDF pharmacist appointment, attendance at scheduled pharmacist and physician HDF appointments, number of medications, re-admission within 30 days of a previous hospitalization, attendance of regular scheduled MD appointments within the last 6 months, assessment of the 4-item Morisky Adherence Scale and assessment of prescription fill history for compliance with medications and medication regimens, types of medication discrepancies between the hospital discharge medication list and the post-hospitalization medication records, and discrepancy associated with re-admission to the hospital during the 8-month study period. All data will be recorded and analyzed without patient identifiers and maintained confidentially. Data analysis will be performed using descriptive statistics.

8-177

Title: Dose-adjusted enoxaparin for venous thromboembolism prophylaxis in trauma patients

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Purpose: Recent studies have questioned whether currently recommended enoxaparin doses provide adequate venous thromboembolism (VTE) prophylaxis in trauma patients. In a study by Costantine et al., 70.5% of trauma patients receiving enoxaparin 30mg twice daily had subtherapeutic peak anti Xa levels. In response to the published literature, our institution's trauma team implemented an enoxaparin dosing guideline for VTE prophylaxis to achieve therapeutic anti Xa levels. The purpose of this study is to determine the proportion of patients with initial therapeutic peak anti Xa levels and to evaluate the efficacy and safety of the enoxaparin dosing guideline in trauma patients.

Methods: This study will be submitted to the Institutional Review Board for approval. A single center, prospective observational study will be conducted among adult trauma patients who receive at least 3 consecutive doses of enoxaparin for VTE prophylaxis and have at least 1 peak anti Xa level. Exclusion criteria include contraindications to enoxaparin, pregnancy, malignancy, renal insufficiency on admission, thrombocytopenia, VTE diagnosed prior to initiation of enoxaparin, or requirement for therapeutic anticoagulation. The primary outcome is the proportion of patients with initial therapeutic anti Xa levels. Secondary outcomes include the number of enoxaparin dose adjustments required to achieve therapeutic anti Xa levels, the proportion of patients diagnosed with VTE, the proportion of patients who experience major or minor bleeding, and thrombelastography results (if available). Patients will be followed up to death or hospital discharge for the development of VTE or adverse effects. An enrollment of 100 patients is anticipated. Univariate and multivariate regression analyses will be used to identify factors associated with subtherapeutic anti Xa levels or VTE.

8-178

Title: Development of an age-dependent antibiogram in a Veterans Affairs community

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Purpose: Hospital antibiograms are commonly used to guide empiric antimicrobial treatment and are an important component in detecting and monitoring trends in antibiotic resistance. However, aggregated antibiogram data does not allow results to be evaluated by potential variables of interest, such as age. The purpose of this study is to determine if an alternative antibiogram should be developed for geriatric patients.

Methods: This study was submitted to the Institutional Review Board and approved. The electronic medical record system will identify patients based on final culture and sensitivities obtained during inpatient admissions and outpatient clinic visits from January 1, 2011 through December 31, 2011. Only the first isolate of a given species per patient will be considered and only final culture and sensitivity data will be utilized. From this data, patients will be identified and stratified based on age at the time of specimen collection. The following data will be collected: date of birth, height, weight, fluid intake and output, significant past medical history, active prescriptions upon and during inpatient admission or outpatient visit, previous antibiotic use within 90 days of culture, specimen sites, ward notations, length of hospitalization, and documented adverse effects. Laboratory values will include: serum creatinine, liver functioning tests, and culture and sensitivity data. The primary objective is to determine if there is a difference in bacterial susceptibility to antimicrobial agents based on patients' age. Secondary objectives include assessing the appropriateness of empiric antibiotic regimens, duration of inpatient hospitalization, occurrence of adverse events, and practitioners' responses to adverse effects.

8-179

Title: Evaluation of dexmedetomidine use in a pediatric intensive care unit

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Purpose: Recent evidence indicates the addition of dexmedetomidine to pediatric sedation regimens can decrease total benzodiazepine and opioid dose, thus decreasing adverse effects associated with these agents including decreased respiratory drive and withdrawal symptoms. Dexmedetomidine also may lead to fewer days on continuous sedation. The purpose of this study is to evaluate the use of dexmedetomidine in a pediatric intensive care unit by comparing the overall sedation profile of patients receiving dexmedetomidine versus standard of care with opioid and benzodiazepine infusions.

Methods: This single center, retrospective study conducted in a pediatric intensive care unit (PICU) will evaluate patients admitted between September 1, 2011 and September 30, 2013. Patients receiving dexmedetomidine infusions, alone or in combination with other sedatives, will be matched 2:1 by age, primary diagnosis and severity to patients receiving current standard of care (e.g. fentanyl and midazolam). Age ranges for matching will be: less than 1 month, 1 month to 1 year, 1 year to 5 years, 5 years to 12 years, and 12 years and older. Standard patient demographics and vital signs will be recorded. The primary outcome, comparison of sedation profile between groups, will be measured by total opioid and sedative doses. The sedation drug, dose, method of administration, and duration will be recorded. Length of sedation taper and method (number of days, medications used, doses) will also be evaluated. Secondary outcomes will include length of PICU stay (days), days on continuous sedation, days on mechanical ventilation, and adverse effects (constipation, bradycardia, hypotension) between groups. Statistical analysis will include independent samples t tests for outcomes with continuous data. Chi square test for independence will be utilized for comparison of adverse effects. This study is pending IRB approval.

8-180

Title: A Potential Novel Antimicrobial Dosing Strategy in Critically Ill Patients with Dynamic Renal Function

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Purpose: Precision of renal dosing adjustment of critically ill patients with dynamic renal function is limited with the Cockcroft-Gault (C-G) formula given it was derived in patients with stable renal function. Estimations of creatinine clearance (CrCl) by the Jellife, Chiou, and Brater equations were proposed to monitor rapidly changing renal function. We hypothesize that the differences in CrCl estimations between the C-G equation, and the three candidate equations will have an impact on dosing regimens of commonly used antimicrobials in post-cardiac surgical, trauma, critical care, and surgical patients (ICU) with acute kidney injury (AKI).

Methods: The electronic medical record will be used to identify adult patients diagnosed with AKI on admission or developing AKI in ICU. Patients on renal replacement therapy will be excluded. The following data will be collected: patient demographics, comorbidities (pre-existing chronic kidney disease, sepsis, cardiac failure, liver disease, and diabetes mellitus), serum creatinine levels, and blood urea nitrogen. Five commonly used antimicrobials will be used to assess the outcomes. The major outcomes are the differences in CrCl between the reference and candidate equations, and the discordance in dosing regimens. The CrCl from each of the four equations will be utilized to select an appropriate dosing regimen for each of the five antimicrobials in accordance with the FDA-approved dosing cited in the respective package insert. If the candidate dosing regimen is different from the reference one, the dosing regimen would be defined as discordance. Paired t-tests or Wilcoxon rank sign tests will be performed to compare differences in CrCl between the reference and candidate equations. Logistic regressions will be applied to identify predictors associated with discordance in dosing regimens. A subgroup analysis will be conducted to assess the discordance in dosing regimens in patients at least 65 years old.

8-181

Title: Incidence of hypoglycemia due to sliding scale insulin use in a Veterans Affairs community living center

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Purpose: Sliding scale insulin was added to the 2012 Beers Criteria as an inappropriate medication to use in the elderly population due to increased risk of hypoglycemia without improvement of hyperglycemia. The objective of this study is to evaluate the incidence of hypoglycemia and secondary adverse events due to the use of sliding scale insulin compared to scheduled insulin regimens in a community living center.

Methods: This study has been approved by the Institutional Review Board. All patients and associated patient information will be de-identified by the investigators and confidentiality will be maintained. This is a retrospective chart review and all data will be evaluated through electronic chart review of data queries. Based on the insulin regimen patients received from January of 2008 through December of 2012, patients will be assigned to either group 1 (sliding scale insulin regimen) or group 2 (scheduled insulin regimen). The incidence of point of care blood glucose levels less than 60mg/dL will be documented for all patients and then compared to the overall point of care blood glucose levels. Other data to be collected includes: resolution of hypoglycemia, use of other diabetic medications, A1c, age, creatinine, weight, height, ethnicity and gender. All adverse outcomes, found per chart review, resulting from hypoglycemia incident will be documented. These include transfer to higher level of care, fall or secondary severe hyperglycemia (greater than 400mg/dL). Nominal data will then be assessed using the Chi-Square or Fisher's Exact Test, ordinal data using the Mann-Whitney U test and continuous data using the Student's T-test.

8-182

Title: Assessment of health literacy in high-risk medical inpatients

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Purpose: The current level of health literacy amongst high-risk medical inpatients at this institution is unknown. At this time, there is not a formal health literacy instrument utilized to determine patient-specific educational needs. The written and verbal information provided to inpatients by healthcare providers may be above the level of understanding that is necessary for optimal care. With the assessment of health literacy limitations, a more patient-centered approach to medication and disease-state education can be provided.

Methods: This study will be submitted to the Institutional Review Board for approval. High-risk medical patients will be selected based on a LACE score greater than 11. This score is calculated based on four factors which include length of stay, acuity of admission, co-morbidities, and emergency room visits. Patients will be consented to participate in the health literacy assessment by the investigator. The assessment will be conducted utilizing the Brief Health Literacy Screen (BHLS) instrument, which consists of six questions, scored 1 to 5 points each, asked verbally by the investigator. Each patient will have a total score ranging from 5 to 25, with higher scores correlating to higher levels of health literacy. Patients with a total score less than 19 will be considered to have health literacy limitations, and a score of 3 in any area would indicate a concern.

8-183

Title: Implementation of clinical pharmacy services in urgent care and the emergency department at a rural Veterans Affairs healthcare system: A quality improvement project

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Purpose: The emergency department is a fast-paced environment with a primary focus of delivering safe, effective, and immediate care. However, the inherent pace required to see multiple patients and multiple emergencies creates the ideal setting for medical and medication errors. Evidence shows that implementation of pharmacy services in the emergency department improves patient safety, enhances patient care, and likely promotes cost-reductions. The goal of this project is to pilot the implementation of clinical pharmacy services into urgent care and the emergency department (UC/ED).

Methods: This quality improvement project will be approved by the facilitys Pharmacy and Therapeutics Committee prior to commencement. UC/ED staff will be asked to anonymously complete a 24 item questionnaire assessing the respondents personal beliefs regarding the implementation of pharmacy services. The questionnaire will utilize a five-point scale with responses ranging from one (strongly agree) through five (strongly disagree). Pharmacy staff will be blinded from respondent data to prevent bias due to questionnaire results. After six months of pharmacy availability, a follow-up questionnaire will be sent to UC/ED staff. Results of the questionnaire will be used for project planning, program implementation, and assessment of pharmacy impact in UC/ED. Planned projects include implementing Inpatient Medications for Outpatients (IMO) and Barcode Medication Administration (BCMA), providing educational in-service presentations, offering clinical consultation, implementing discharge medication education, and implementing telehealth capabilities within UC/ED. Additionally, all pharmacist interventions will be documented based on specific criteria for each intervention type. Interventions will be categorized and evaluated at the six-month follow-up. Based on previously published literature, dollar values will be assigned to pharmacy interventions and an assessment of the benefit of pharmacy services will be completed. Results will be assessed based on questionnaire responses and intervention data.

8-184

Title: Nursing evaluation of the feasibility and clinical utility of the Critical-Care Pain Observation Tool (CPOT) or Behavioral Pain Scale (BPS)

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Purpose: Pain is a significant stressor to patients especially patients in the intensive care unit (ICU). The pain, sedation, and delirium guidelines recommended using either the Behavioral pain scale (BPS) or the Critical-Care Pain Observation Tool (CPOT) as they both have been previously validated in mechanically ventilated patients. The purpose of this study is to compare the clinical effectiveness, based on nurses evaluations, in comparison of two validated pain scales, the CPOT and BPS in assessing pain in mechanically ventilated patients.

Methods: This study will be submitted to the institutional review board for expedited status. Nursing staff will complete a consent waver before participating in the study. This study will begin on November 1st -30th and begin trialing the CPOT with the nursing staff. After the first trial month, the nursing staff will complete an anonymous survey regarding their experiences with the CPOT pain scale. The following month, December 1st-31st the BPS pain scale will be trialed in the ICU. The nursing staff will complete an anonymous survey regarding their experience with BPS. Finally nursing will fill out one final survey regarding their preference of which pain scale they thought was most helpful to their patients. The surveys will be collected and assessed after each trial month to evaluate if more education needs to be performed for the nursing staff. After the 3rd and final survey, a decision will be made to recommend a particular pain scale to the ICU Evidence Based Practice Committee based on the results of the nursing staff surveys. All data will be recorded without patient identifiers and maintained confidentially.

Results: Data collection not yet completed.

Conclusion: Data collection is ongoing and will be completed following data collection.

8-185

Title: Impact of a pharmacist run medication management clinic on appropriate proton pump inhibitor use in patients at a rural Veterans Affairs outpatient clinic

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Purpose: The 2013 Guidelines for the Diagnosis and Management of GERD state an eight week trial of proton pump inhibitors (PPIs) in patients with typical GERD symptoms is the first line treatment for resolving symptoms and confirming a GERD diagnosis. Unnecessary longer durations of therapy may expose patients to undue adverse risks and prescription costs. The main objective of this quality improvement project is to enhance patient care through identifying patients receiving inappropriate long term PPI therapy and enrolling them in a pharmacist run medication management clinic to taper off PPIs or to the lowest effective dose for the individual.

Methods: Prior to commencement, this quality improvement project will be submitted to the Pharmacy and Therapeutics Committee for approval. A retrospective chart review of a sample of primary care providers patients will be utilized to identify patients receiving omeprazole therapy for greater than eight weeks but less than twelve months for a diagnosis of GERD or without documented indication. Baseline demographic, medication, and laboratory data will be obtained. Identified patients will be enrolled into a medication management clinic and followed for a four month time period for evaluation of PPI therapy and tapering off the medication or to the lowest effective dose. Education will be provided to the pharmacists on the 2013 Guidelines for the Diagnosis and Management of Gastroesophageal Reflux Disease with emphasis placed on appropriate PPI therapy and individualization of nonpharmacologic treatments for each patient. Additional education will be provided on the tapering procedures and documentation of the medication management encounter in the electronic medical record utilizing a provided template. A cost savings analysis will also be performed.

8-186

Title: Impact of high fidelity simulation experience on pharmacists and pharmacy students comfort level in responding to an acute arrhythmia scenario in the hospital

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Purpose: Pharmacists are continuing to become integral team members in a variety of acute patient care scenarios. However without adequate experience, many pharmacists may not feel comfortable intervening in these situations. Therefore, the need for continuing education in responding to acute situations exists. By utilizing simulation labs, pharmacists and pharmacy students can gain adequate experience and knowledge without compromising patient care. This project is designed to utilize the simulation lab to provide education on responding to an acute atrial fibrillation scenario.

Methods: This study will be submitted to the Institutional Review Board for approval. Prior to attending the simulation lab, pharmacists and pharmacy students will fill out a survey indicating his or her comfort level in participating in pharmacologic intervention for arrhythmia treatment. When the pharmacist attends the simulation lab, a short educational session will take place on arrhythmia recognition and pharmacologic intervention. After this, the patient simulation will occur where the patient will develop an acute arrhythmia. The pharmacist or pharmacy student will then be consulted to help identify the rhythm the patient is currently experiencing and provide appropriate pharmacologic intervention. During this simulation, the pharmacist or pharmacy student will be evaluated by another pharmacist running the simulation to ensure that the correct interventions occurred. After the simulation, a debriefing will be held to discuss the scenario followed by a survey to assess whether or not the simulation was effective in increasing his or her comfort in attending an acute arrhythmia situation. The results of this study may indicate whether or not pharmacists and pharmacy students may benefit from further simulation labs to develop and maintain competency in other areas of practice.

8-187

Title: Initiation of pharmacist-managed osteoporosis clinic for high risk male patients

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Purpose: In recent years much emphasis has been placed on prevention of osteoporosis in women, but there has been considerably less focus placed on males which make up more than 90% of US veterans. The aim of this quality improvement project is to identify male patients at highest risk for fracture, evaluate them for treatment, and treat utilizing an osteoporosis algorithm. Secondarily, appropriate education and tools will be provided to staff regarding evaluation and treatment of osteoporosis.

Methods: Prior to commencement, this quality improvement project will be submitted for approval to the Pharmacy and Therapeutics Committee. First, a search will be conducted to identify veterans with the highest risk for osteoporosis. This was determined by an evidence based review of male osteoporosis to be patients with a previous osteoporotic fracture, patients taking oral glucocorticoid therapy for more than 3 months, and patients who have received androgen deprivation therapy. Second, clinical pharmacists will be educated regarding the osteoporosis algorithm, associated therapies, and laboratory tests. A pre and post survey will be taken to evaluate effectiveness of provided education. Third, after a provider consult is placed, patients will be evaluated by clinical pharmacists and treatment will be based on the osteoporosis algorithm. Patient characteristics will be documented to assess the effectiveness of this quality improvement project including; history of high osteoporosis risk factor, agreement to participate, previous osteoporosis treatment, contraindication to oral biphosphonate therapy, previous diagnosis of osteoporosis, serum calcium, vitamin D, creatinine, CBC, serum phosphate, alkaline phosphatase, dual energy x ray absorptiometry (DXA) scan prior to implementation of project, results of DXA scans, new treatments initiated, ADRs to new drug therapy, and results from education pre and post surveys.

8-188

Title: Determining the values of a standardized venous thromboembolism prophylaxis protocol for post orthopedic surgical patients at a teaching hospital through nursing perspectives and patient experience

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Purpose: Currently, there is no standardized thromboprophylaxis protocol for post orthopedic surgical patients at Avera McKennan Hospital. The selection and duration of antithrombotic therapy is based on physician preference. The nursing staff plays a crucial role in administering the antithrombotic and educating the patients on the antithrombotic prior to discharge. The purpose of this study is to determine the values of establishing a standardized thromboprophylaxis protocol for post orthopedic surgical patients through nursing perspectives and patient experience.

Methods: For the first part of the study, we hypothesize that using a standardized protocol could decrease nursing workload, improve nursing education skills on antithrombotic, and increase patient understanding of these medications. All nurses who work on the orthopedic surgical floor at Avera McKennan Hospital will be invited to participate in the survey. The questionnaire will be designed to focus on three aspects of the nurses perceptions of antithrombotic therapy in the post-orthopedic surgical patients: 1) Experience with antithrombotic; 2) Patient education on antithrombotic; and 3) Opinions on establishing a standardized thromboprophylaxis protocol. For the second part of the study, we hypothesize that without a standardized protocol, patients may not be receiving optimal antithrombotic treatment. Retrospective chart review will be conducted to determine how often patient had experienced antithrombotic misadventures such an inappropriate medication administration time and adverse side effects.

8-189

Title: Evaluating the effects of dexmedetomidine on lorazepam and haloperidol use in patients undergoing alcohol withdrawal

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Purpose: Alcohol withdrawal can have numerous manifestations, including seizures, agitation, and hallucinations. Current pharmacologic therapy includes the use of benzodiazepines to ease withdrawal symptoms, antiepileptic medications to prevent and treat seizures, and antipsychotics to help with agitation and sedation. Sedative agents, depending on the severity of withdrawal symptoms, are also used to alleviate symptoms. The objective of this study is to evaluate the effects of dexmedetomidine and propofol on alcohol withdrawal severity, benzodiazepine and haloperidol dosing, subsequent complications, and overall patient outcomes during their stay in the intensive care unit.

Methods: This retrospective chart review will be submitted to the Institutional Review Board for approval. Patients will be identified by electronic medical record system via a search for those admitted to the Intensive Care Unit with a diagnosis of alcohol withdrawal, orders to receive the alcohol withdrawal protocol, and use of either propofol or dexmedetomidine for sedation. The primary outcome will be looking at the overall dosing of benzodiazepines and haloperidol 24 hours before and 24 hours after initiation of sedation. Secondary outcomes will include intensive care unit length of stay, intubation time, analgesic usage, clinical institute withdrawal assessment score, Richmond agitation and sedation scale score, confusion assessment method score, and adverse drug reactions. Patients will be excluded if they are 18 years of age or less, already on a daily maintenance dose of a benzodiazepine or antipsychotic, or any contraindication to lorazepam or haloperidol therapy. Results will be analyzed for statistical significance and trends in patient care from the sedative agent chosen.

8-190

Title: Utilizing a pharmacist calculated 4T score to assess the appropriateness of heparin-induced thrombocytopenia antibody testing

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Purpose: The 4T scoring system is a validated method to predict the probability that a patient will be diagnosed with heparin-induced thrombocytopenia. The proper use of this scoring system may help prevent unnecessary laboratory tests and expensive alternative drug therapies. The purpose of this study is to evaluate the appropriateness of heparin-induced thrombocytopenia antibody testing in relation to a pharmacist calculated 4T score.

Methods: This study has been submitted and is awaiting approval from the Institutional Review Board. A random sample of 150 patients with a heparin-induced thrombocytopenia (HIT) antibody test in the last year will be evaluated by a retrospective chart review. All information will be collected through an electronic medical record and will include age, sex, comorbidities, 4T data, HIT panel results, treatment received and adverse drug reactions of treatment. For each patient, a 4T score will be calculated by the principle investigator based on the degree of thrombocytopenia, timing of platelet count fall, presence of thrombosis or other sequelae, and presence of other causes for thrombocytopenia. Based on the score, the patient will be categorized as low, intermediate, or high risk for the development of HIT. From the HIT antibody test results and the calculated 4T score, an assessment will be made regarding the appropriateness of ordering HIT antibody tests. An evaluation will also be done to determine the need of a pharmacist calculated 4T score intervention prior to ordering a HIT antibody test. A cost savings analysis will also be performed using the cost of HIT panels, treatment, and adverse drug reactions from treatment.

8-191

Title: Evaluation of a multimodal pain order set implemented for gynecologic surgical patients

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Purpose: Multimodal analgesia uses combinations of pain medications with different mechanisms and pain pathway targets. Using a multimodal approach to pain management both before and after surgery has been shown to reduce postoperative pain, decrease opioid use and adverse effects related to pain medications, and produce additive analgesia. Most multimodal analgesia research published involves orthopedic or colorectal surgical patients. The objective of this study is to evaluate the implementation of a multimodal pain order set for gynecologic surgical patients.

Methods: This study will be submitted to the Institutional Review Board for approval. Retrospective chart review will be conducted to identify gynecologic surgical patients undergoing vaginal reconstructive surgery and total vaginal hysterectomies. Patients younger than 18 years of age and patients undergoing nonvaginal surgeries will be excluded. The historical control group will include patients prior to initiation of the gynecologic multimodal pain order set implemented in May 2012. Data collected will include age, race, length of hospital stay, surgical procedure, pain medication allergies, comorbid conditions, chronic pain history, past major surgeries, home pain medications, inpatient pain medications and doses administered, naloxone use, and all pain scores recorded using the 0 to 10 numeric pain intensity scale. Total oral morphine equivalents will be calculated from the total pain medication usage during the hospital stay without a reduction for cross tolerance. Data collected will be analyzed to compare pain scores overall, total pain medication use in morphine equivalents, time to first breakthrough pain medication, and whether or not the pain regimen was altered for patients. The retrospective patient data and results of this study will be used in conjunction with other published literature in hopes to further develop additional multimodal pain order sets.

8-192

Title: The Impact of a Pharmacist-Run Interdisciplinary Hypertension Shared Medical Appointment at a Rural Veterans Affairs Health Care System

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Purpose: Patients with uncontrolled hypertension are at a higher risk of mortality. The Veterans Health Administration (VHA) currently has 2,880,281 patients diagnosed with hypertension. According to data from August 2013, approximately 1400 patients at a rural veterans affairs health care system have been diagnosed with hypertension and approximately 20 percent are currently uncontrolled. Based on previous studies, improved blood pressure control can be achieved by using an interdisciplinary approach. The primary objective of this quality improvement project is to evaluate improvement in blood pressure control and patients disease state knowledge through a multidisciplinary hypertension shared medical appointment.

Methods: Prior to commencement, this collaborative quality improvement project will be submitted to the Pharmacy and Therapeutics committee for approval. Patients who have not met their blood pressure goal and have been seen by their primary care provider at least once since January 2013 will be contacted to participate in a SMA. The computerized medical record will be utilized to obtain current and past antihypertensive medications, disease states to determine blood pressure goal, height, weight, past and current vital sign measurements, and laboratories to evaluate appropriate therapy. The interdisciplinary team consists of a pharmacist, dietitian, psychologist and nurse educator. Patient education at the SMA will consist of medication information, psychological barriers to blood pressure lowering, proper use of blood pressure machines, and appropriate dietary choices. Follow-up will occur at either the patients last SMA attended or the primary care appointment following the last SMA attended, comparing baseline blood pressure to post-SMA blood pressure. A patient questionnaire will be utilized before and after each SMA session to assess the utility of the SMA as well as the patients perceived level of knowledge prior to and after attending the group hypertension clinic.

8-193

Title: Impact on outcomes of a pediatric asthma service involving pharmacist measured spirometry in the Native American population

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Purpose: The National Asthma Education and Prevention Program (NAEPP) has asked pharmacists to alleviate the public health burden attributable to asthma by helping patients gain control of their asthma symptoms. Positive outcomes have been achieved through pharmacist-run asthma clinics. However, little is known regarding the impact of adding pharmacist-measured spirometry to patient care. Spirometry measurements are part of the standard of care in monitoring and managing asthma. Studies have shown that pharmacists are able to perform accurate and reproducible spirometry. Future studies are needed to assess the role of pharmacists in performing spirometry and measuring the performance outcomes of asthma patients.

Methods: This is a prospective, observational study measuring asthma outcomes of a pharmacist-run asthma clinic using spirometry in an ambulatory care environment with a Native American patient population. To be eligible for referral by a pediatrician to the clinic, the participant must be between the ages of 5 and 21 years old, have a diagnosis of asthma and consent to be enrolled in the clinic. Pharmacists in the clinic have the ability to perform spirometry, provide asthma education and make therapeutic recommendations to the patients provider as well as create an asthma action plan according to the guidelines set forth by the NAEPP. Pharmacists will obtain the Certified Asthma Educator (AE-C) designation within 12 months of clinic implementation. The primary outcomes are frequency of emergency department visits, hospitalizations and missed days of school or work at 5 months pre- and post- enrollment in clinic. The secondary outcomes are nocturnal episodes per month, frequency of oral steroid use, symptom frequency, and evaluation of asthma management skills at enrollment and 5 months post enrollment. Participants will act as their own controls. It is anticipated that approximately 30 participants will be referred by their pediatrician during the study period.

8-194

Title: Resistance among bacteria causing community onset urinary tract infection in patients presenting to the emergency department: an evaluation of trends to guide treatment protocol development

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Purpose: Trends in antimicrobial resistance to bacterial urinary isolates in outpatient subjects have increased throughout the past decade in the United States. This study will evaluate antimicrobial resistance patterns in community onset urinary tract infections that are seen in the emergency department. The results of this study will allow the investigators to develop an empiric treatment protocol for urinary tract infections of those outpatients that received antimicrobial therapy and/or a prescription for antimicrobial therapy from the emergency department prior to final culture results.

Methods: Appropriate IRB waivers will be obtained for this study. The laboratory reporting system will be utilized to identify patients who have had a positive urine culture result after evaluation in the emergency department from September 1, 2012 through August 31, 2013. Retrospective chart review will be completed on subjects meeting the following inclusion criteria: age greater than or equal to 16 years presenting for evaluation to the emergency department, urinalysis with reflex order for urine culture, and prescribed antimicrobial therapy in the emergency department. Data to be collected will include: subject demographics, urinalysis results, urine culture results and susceptibility to antimicrobials, and subsequent organism-antimicrobial match. All data will be recorded without subject identifiers and maintained on a locked computer for confidentiality purposes. After data collection is complete, a urinary tract infection empiric treatment protocol will be developed based on analysis of resistance trends found among the most commonly isolated bacteria.

8-195

Title: Evaluation of a creatinine-based vancomycin dosing regimen in the neonatal intensive care unit

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Purpose: Infection in the neonatal population is difficult to identify, yet early effective treatment is crucial to improve morbidity and mortality. Vancomycin remains the mainstay of an initial treatment regimen of suspected gram-positive infections. In most neonates, traditional dosing models (utilizing weight and gestational age) do not result in therapeutic trough levels without further dosage adjustments. This study will evaluate the rate of initial therapeutic trough attainment of a literature supported creatinine-based vancomycin dosing regimen as compared to the traditional dosing model from Neofax.

Methods: The study will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify patients that have received vancomycin during a six month period prior to and after implementation of the practice change. The study will be conducted in a retrospective manner through post-discharge chart review. The following data will be collected: patient gestational age (GA), serum creatinine, weight, vancomycin dosing regimen, initial vancomycin level, timing of level, goal therapeutic range, and concurrent medications. All recorded data will remain confidential without patient identifiers. There will be four subject groups, two from each dosing model, one 28 weeks GA or younger, and the other over 28 weeks GA. Data analysis will occur by comparing both dosing models within the two age groups on whether the initial, appropriately drawn level is within the accepted therapeutic range.

8-196

Title: Assessment of benzodiazepine utilization in post-traumatic stress disorder patients before and after pharmacist education in a rural veterans affairs mental health residential treatment program

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Purpose: The Veterans Affairs Department of Defense (VA DoD) Post-Traumatic Stress Disorder (PTSD) guidelines recommend against the use of benzodiazepines in patients with PTSD as evidence suggests the risks outweigh the benefits. The primary objective of this quality improvement project is to improve adherence to the VA DoD PTSD guidelines in regards to benzodiazepine use in patients admitted to a Mental Health Residential Rehabilitation Treatment Program (MHRRTP). Secondary objectives include monitoring for withdrawal symptoms, and evaluating changes in both the veteran PTSD checklist and the clinician administered PTSD scale scores.

Methods: The project will be approved by the local Pharmacy and Therapeutics Committee. A retrospective chart review will be completed to assess current utilization of benzodiazepines in MHRRTP patients diagnosed with PTSD. Benzodiazepine use will be evaluated on admission and discharge. The chart review will assess the utilization of antidepressants, hypnotics, antipsychotics, anticonvulsants, anxiolytics, prazosin, cyproheptadine, and lithium. The patient's medical history will be examined for the diagnosis of depression, bipolar disorder, schizophrenia, anxiety, seizure disorder, muscle spasms, and sleep disorders. MHRRTP staff will complete a questionnaire to assess current benzodiazepine prescribing practices and knowledge of appropriate benzodiazepine use in PTSD. A pharmacist will provide education through presentations and handouts to MHRRTP staff on the current VA DoD PTSD guideline recommendations on benzodiazepine use, benzodiazepine reduction techniques, and possible withdrawal side effects. Patients admitted to the MHRRTP will receive education on benzodiazepines in a group class format. A list of MHRRTP patients with a PTSD diagnosis taking benzodiazepines will be given twice monthly to providers. A pharmacist will be available to provide benzodiazepine tapering recommendations if requested. A second retrospective chart review and questionnaire will be completed after project implementation to assess impact of education on benzodiazepine prescribing.

8-197

Title: Impact of pharmacist presence on adherence to advanced cardiac life support guidelines during in-hospital adult cardiac arrest

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Purpose: Pharmacy clinical services are rapidly expanding and the role of a pharmacist on multidisciplinary teams is continuously evolving. As a member of the resuscitation team, pharmacists can serve a variety of beneficial roles, such as preparing medications, documenting administration times, and dose verification. The objective of this study is to assess adherence to advanced cardiac life support (ACLS) guidelines during in-hospital cardiac arrest with and without the presence of a pharmacist.

Methods: This study has been submitted to our Institutional Review Board for approval. In-hospital cardiac arrests will be evaluated for advanced cardiac life support (ACLS) adherence. The pre-intervention (pre-pharmacist involvement) group will consist of code blues occurring from January 2010 through December 2010 and code blues occurring between 0230 and 0700 from January 2012 through December 2012 (as no pharmacist is available to attend codes during these hours). The post-intervention group (post-pharmacist involvement) will include all code blues occurring from January 2012 through December 2012 between the hours of 0700 and 0230. Subject data will be collected from the code blue reporting database maintained by the American Heart Association, Get with the Guidelines-Resuscitation. Subjects less than 18 years old will be excluded from this study. Data will include demographic information (age and gender), time and location of the cardiac event, and the following related to each event: arrest rhythm, drug use and administration times, defibrillation use, outcome of arrest, and survival to discharge. Data collected will be reviewed for ACLS guidelines compliance. Secondary endpoints will assess time to first and second dose of epinephrine and administration and dosing of amiodarone and atropine. All patient specific information will remain confidential.

8-198

Title: Evaluation of outpatient vitamin d replacement strategies in adults: a retrospective review

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Purpose: Insufficient vitamin D levels are associated with an increased risk of osteoporosis, falls, and cancer. Multiple replacement regimens have been used in patients, particularly in the outpatient setting. The objective of this study is to determine the efficacy of vitamin D replacement regimens to correct vitamin D insufficiency and analyze patient specific factors that may impact attaining vitamin D sufficiency.

Methods: This study will be submitted to the Institutional Review Board for approval. A chart review of the electronic medical record for outpatients with an initial 25 hydroxyvitamin D (25 OHD) level under 30 ng/mL and a subsequent 25 OHD level after a vitamin D replacement strategy will be considered. The following data will be collected: patient age, gender, race, body mass index, 25 OHD level, vitamin D regimen used, creatinine, osteoporosis diagnosis, and date levels collected. All data will remain confidential and without patient identifiers. Patients will be excluded if there is no documentation for vitamin D use; they have only one 25 OHD level; or they are under the age of 18. Average increase in serum 25 OHD will be calculated and whether or not the replacement regimen achieved vitamin D sufficiency (defined as 25 OHD level greater than 30 ng/mL). Patient characteristics will also be analyzed for their influence in vitamin D replacement.

8-199

Title: Retrospective analysis of patient characteristics associated with inadequate response to dexmedetomidine

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Purpose: Dexmedetomidine is a centrally acting alpha 2 adrenergic agonist displaying dose dependent sedation and analgesic properties. It is primarily used for short term sedation in patients that are mechanically ventilated in the intensive care unit. Multiple studies have demonstrated its safety and efficacy in sedation management but studies are lacking that have assessed factors resulting in inadequate sedative or anxiolytic response. The objective of this study is to evaluate patients that have inadequate response to dexmedetomidine to assess if there is a significant patient characteristic trend compared to patients with adequate response.

Methods: This study has been submitted to our Institutional Review Board for approval. Retrospective review of medical records will be conducted to assess patient characteristics that may be associated with an inadequate response to dexmedetomidine. Patients will be identified as having an inadequate response based on the need for additional or escalation of other sedatives or antipsychotic therapy between 1 and 8 hours after starting dexmedetomidine without an apparent adverse drug reaction. The following data will be collected: patient age, gender, ethnicity, height, weight, BMI, primary diagnosis, indication for therapy, initial dosing and titration of dexmedetomidine, time to discontinuation, time to initiation of other sedatives, benzodiazepines, or antipsychotics, APACHE II score, RASS scores, serum creatinine, calculated creatinine clearance, history of hepatic disease or acute hepatic dysfunction, history or active drug abuse or alcohol abuse, tobacco use, significant drug interactions, history of dementia, bipolar disorder, or schizophrenia, home use of benzodiazepines or antipsychotic medications, and current head injury, trauma, or post-surgical. All patient identifiers will be removed and patient confidentially maintained. Collected data will be reviewed and statistical analysis evaluated to assess for trending characteristics that can be associated to inadequate response.

8-200

Title: Impact of Rapid Diagnostic Testing with Antimicrobial Stewardship on Hospital Length of Stay in a Non-Teaching Community Hospital

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Purpose: The primary objective of this study is to determine if rapid diagnostic testing in conjunction with antimicrobial stewardship decreases hospital length of stay in patients with blood cultures growing gram-positive organisms. Secondary objectives include ICU length of stay, time to optimal regimen, and hospital expenditures.

Methods: This study is being submitted to the institutional review board for approval. All inpatients and emergency department patients with blood cultures growing gram-positive organisms identified by rapid diagnostic testing during the three months following implementation of rapid diagnostic testing will be included. The historical control group will include all inpatients and emergency department patients with blood cultures growing gram-positive organisms identified by traditional methods during the same three months of 2012. Data will be collected through retrospective chart review and will include patient's age and gender, pertinent past medical history, admitting diagnosis, infection source, other positive cultures, date, time, and results of the gram stain, rapid diagnostic testing, and final results of identification and susceptibilities, initial antibiotic therapy, recommendations made by pharmacists, result of recommendation, total and ICU length of stay, and time to optimal regimen. All data will contain limited patient identifiers and be stored securely and confidentially.

8-201

Title: Development of an ASHP-accredited pharmacy technician training program at a community hospital

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Purpose: Pharmacy services identified a deficit in qualified technician applicants and an overall dearth of highly qualified technicians in the region served by our hospital. It was also recognized that current training modalities and emphasis were outdated. As a result, pharmacy services decided to redesign the existing training program to meet Pharmacy Practice Model Initiative (PPMI) requirements of the future and ASHP accreditation standards, both to enhance its current workforce and the overall aptitude in the region. The goal of this project is to design and implement an ASHP-accredited pharmacy technician training program at a community hospital.

Methods: A technician training program was developed using standards and regulations set forth by ASHP. The program will be led by the pharmacy director, experiential site coordinator and an advisory committee comprised of clinical pharmacists, staff pharmacists, faculty, and pharmacy technicians. The director, site coordinator and committee will meet quarterly to discuss curriculum, experiential training, admission criteria, and strategic planning. A customized training plan for each student will be developed and documented at the beginning of the program. This plan will include curriculum plan, program expectations, educational goals, and future employment goals. These customized plans will be reviewed on a monthly basis with students. The training program extends over a 20-week period consisting of approximately 640 hours of didactic, laboratory, and experiential training. The didactic training will include courses in calculations, medical terminology, anatomy and physiology, pharmacy law, and pharmacology. The laboratory training will be integrated with the didactic courses and will provide simulation experiences for students that further enforce learning. The experiential training component will allow for clinical training in acute care, community pharmacy, and other areas of interest to the student. Upon completion of the program, students will be awarded a certificate of completion.

8-202

Title: Acute kidney injury associated with beta-lactams, standard-infusion piperacillin-tazobactam, and extended-infusion piperacillin-tazobactam in combination with vancomycin

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Purpose: Vancomycin with piperacillin-tazobactam (PT) is a common antibiotic regimen at our institution. The incidence of vancomycin-associated nephrotoxicity may be increased with larger daily doses, higher trough concentrations, and concomitant nephrotoxic agents. Additionally, recent literature suggests PT may cause acute interstitial nephritis and delayed renal recovery following an insult. In 2011, our institution transitioned to extended-infusion PT (EI-PT) dosing to optimize the drug's pharmacodynamic profile and improve efficacy. However, a possible increase in nephrotoxicity was noticed in patients receiving EI-PT with vancomycin. The purpose of this study is to assess the association between EI-PT with vancomycin and acute kidney injury (AKI).

Methods: This study will be submitted to the Institutional Review Board for approval. A retrospective, cohort analysis will be performed of adult patients receiving vancomycin in combination with EI-PT, nonextended-infusion PT (NEI-PT), or other beta-lactam antibiotics for at least 48 hours between February 2009 and February 2013. Patients with end-stage renal disease or requiring hemodialysis at the time of antimicrobial initiation, history of cystic fibrosis or renal transplant, or allergy to penicillins or vancomycin requiring desensitization will be excluded. The primary endpoint will assess the incidence of AKI in each group, defined as an increase in serum creatinine of 0.5 mg/dl or at least a 50 percent increase from baseline for two consecutive laboratory measurements. Secondary endpoints will examine the potential relationship between nephrotoxicity and APACHE-II scores, vancomycin troughs and total daily doses, patient comorbidities, and concomitant nephrotoxic agents.

8-203

Title: Retrospective analysis of arfomoterol in a community hospital setting

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Purpose: Arfomoterol is a nebulized long-acting beta-2 agonist approved for the maintenance of chronic obstructive pulmonary disease (COPD). Arfomoterol is approved for formulary use at our institution. The objective of this study is to assess the appropriate utilization of arfomoterol in a community hospital setting.

Methods: Patients were identified utilizing the health-systems medical record system. The analysis did not require institutional review board approval, because it is a qualitative improvement initiative. All patients that were prescribed arfomoterol from July 2012 to July 2013 were included in the evaluation process. A medical record review was conducted to collect the following information: patient age, sex, ethnicity, diagnosis, past medical history, home medications, active COPD medications, location, failure of short-acting beta-2 agonist therapy, length of arfomoterol therapy, length of hospital stay, and instances of hypokalemia and tachycardia. Collected data was recorded without patient identifiers and maintained confidentially. Failure of short-acting beta-2 agonist therapy was defined as no clinical improvement in twenty-four hours. Clinical improvement was assessed by documented breath sounds, e.g. rales, wheezing, and rhonchi. Therapy was deemed appropriate or inappropriate based on clinical improvement.

8-204

Title: Protocol compliance rates and utilization of sipuleucel-T at a large, academic medical center

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Purpose: Sipuleucel-T was added to formulary by the Pharmacy & Therapeutics Committee at Vanderbilt University Medical Center in 2010. At the time of approval, restrictions were placed on the agent limiting use to men with androgen-independent metastatic prostate cancer defined as three rising PSA values on combined androgen-blockade therapy and radiologically-documented metastatic disease). Treatment with sipuleucel-T has proven only modestly effective from phase III trials and each treatment course with sipuleucel-T costs ~$100,000. It is prudent to assess our usage to determine compliance rates with protocol restrictions in order to determine whether the appropriate patient population is receiving this therapy.

Methods: A retrospective analysis of approximately 50 adult patients who received sipuleucel-T at Vanderbilt-Ingram Cancer Center (VICC) from September 2010 to July 2013 will be conducted. Patients who received at least one cycle of sipuleucel-T during the pre-specified time frame will be included. Data collection will include patient age, gender, oncologic diagnosis and stage, prior chemotherapeutic agents received, testosterone level, renal/hepatic function at time of sipuleucel-T initiation, systemic corticosteroids at time of initiation, pain symptoms at time of initiation, ECOG performance status at time of initiation, number of rising PSA values on combined androgen blockade therapy prior to initiation, provider, total number of sipuleucel-T infusions received by the patient, toxicities experienced, and total cost of therapy and reimbursement received. The percentage of patients who met criteria to receive sipuleucel-T based on the VICC protocol will be assessed.

8-205

Title: Medication reconciliation effectiveness in a private psychiatric inpatient hospital revisited

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Purpose: The purpose of this study is to measure improvement in the admission medication reconciliation process at an 80-bed inpatient psychiatric hospital. A previous evaluation conducted at the site indicated that only 45% of admission medication reconciliations were correct. Subsequently, a new process was developed to improve this area of patient care. This process includes an update to existing medication reconciliation forms and the standardization of all protocols involved. The investigators will examine the updated process to identify gaps in patient care involved in the improved medication reconciliation process.

Methods: Data will be collected from randomly selected patients (13 years of age) admitted to the psychiatric hospital during a 2-month period. The principal investigator will collect data at twenty-four hours and beyond post admission. The patients will then be interviewed and their home pharmacy/pharmacies will be contacted to identify if the information collected during the initial medication reconciliation process was correct. Data collected will include number and class of medications, number and type of medication discrepancies, patient demographics and disease states. The data will be entered into Microsoft Excel and analyzed for relevance and compared to the previous study to determine if improvements in the process were achieved.

8-206

Title: Improving the coordination of antibiotic administration and therapeutic monitoring of antibiotics through pharmacist-driven education

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Purpose: Aminoglycosides and vancomycin are routinely monitored to ensure therapeutic levels are achieved while minimizing potential adverse effects such as nephrotoxicity. Effective monitoring requires a coordination of timed drug levels around specific drug administration times. Our hospital protocol allows for an administration window of one hour before and one hour after the scheduled administration time. This quality improvement project will evaluate the effect of pharmacist education on the coordination of dose administration and timed drug levels.

Methods: The project design is a comparison of aminoglycosides and vancomycin to administration techniques after undergoing an educational in-service. This will be done on high risk units which are units with high usage of intravenous antibiotics and large patient volumes. Aminoglycoside and vancomycin administrations will be monitored for administration times and drug level draws for four weeks. Pharmacist-driven educational in-services will be provided to all the nurses on the selected units. The same units will be observed for four more weeks. The primary endpoints will be administration and levels done greater than one hour before or one hour after the ordered time to determine the effect of the educational effort.

8-207

Title: Impact of a clinical decision support tool on antimicrobial stewardship: A survey of pharmacists in a multi-state hospital system

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Purpose: Our multi-state hospital system is transitioning from the clinical decision support system, Safety Surveillor, to an updated program, Safety Advisor (Premier). Both systems contain features that may be used to increase the efficiency of antimicrobial stewardship programs. The objective of this study is to evaluate the impact of Safety Advisor compared to Safety Surveillor on pharmacists' antimicrobial stewardship interventions.

Methods: Upon Institutional Review Board approval, two web-based surveys will be administered to all Mountain States Health Alliance (MSHA) pharmacists. The first survey will be given during the Safety Surveillor phase. The second survey will be given after Safety Advisor has been implemented at all MSHA hospitals. Pharmacists will be surveyed on the following: utilization of the current clinical decision support system, time spent performing and documenting antimicrobial stewardship interventions, methods used to document interventions, and barriers to documentation. Additionally, data from an internal pharmacy interventions database will be collected. Documentation in this database is mandatory and includes intervention type, medication, and time spent performing the intervention. Only interventions involving an anti-infective medication will be included in this study. This data will serve as an outcome measurement unaffected by reporting bias. Data from the Safety Surveillor period will be compared to data from the Safety Advisor period using chi-square (or Fisher exact test) and Student t-test.

Results: Results will be presented at the Southeastern Residency Conference (SERC) in Athens, GA in May.

8-208

Title: Length of stay compared in selected surgical procedures with and without bupivacaine liposome administration

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Purpose: Bupivacaine liposome (Exparel) is FDA approved to produce postsurgical analgesia through infiltration into the surgical-site. There is little literature to support that bupivacaine liposome use in multimodal analgesia decreases length of hospital stay in comparison to opioids and elastomeric pain pumps for post-operative analgesia. The primary objective of this study is to compare the length of stay in patients who received bupivacaine liposome versus patients who did not receive bupivacaine liposome within similar surgical procedure groupings and surgeons. Opioid use and adverse effects of opioids and bupivacaine liposome will be compared across cohorts as secondary objectives.

Methods: This is a retrospective cohort study approved from the institutional investigational review board. Data will be pulled from the electronic medical record to identify all surgical procedures where bupivacaine liposome was used; subsequently isolating the surgical procedures and surgeons who used the drug. These same surgical procedures and surgeons where bupivacaine liposome is not used will be the comparison group. The following data will be collected: diagnoses, medical history/conditions, laboratory values, procedures, medications used, surgeons, length of stay, complications, physician and nursing assessments, and surgical records. Thirty day inpatient and outpatient visits will be evaluated for adverse drug events post procedure. Using the data collected, investigators will quantify length of stay, opioid usage, and adverse effects in both cohorts. Results by presence or absence of bupivacaine liposome use will be compared by surgeon and their respective surgical procedure groupings. Results will also be compared between surgeons. Outpatient procedures will be analyzed separately from inpatient procedures. Data will be analyzed using risk ratios.

8-209

Title: Retrospective evaluation of the appropriateness of initial antibiotic selection in an emergency department for pneumonia

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Purpose: Most patients admitted for pneumonia are first treated in the emergency department (ED). With the current ED crowding crisis, the feasibility of rapid antibiotic administration can be difficult. To comply with Joint Commission requirements and CMS quality measures, some EDs have moved toward treating patients with suspected pneumonia with antibiotics before the diagnosis is confirmed. The objective of this study is to determine the extent to which initial antibiotic therapy in the ED for patients with pneumonia complies with the IDSA/ATS guidelines.

Methods: In this IRB -approved study, a retrospective chart review will be conducted to investigate appropriate prescribing and timing of antibiotics for patients presenting to the ED of a community teaching hospital with community-acquired pneumonia (CAP) or health-care associated pneumonia (HCAP). ICD-9 codes for pneumonia will be used to screen and identify the first 100 patients with an admitting diagnosis of CAP or HCAP from the ED between 9/1/12 and 2/28/13. The first seventeen patients who meet inclusion criteria during each month within the time frame will be included in the study. An equal proportion of patients from each month within the study time frame will be chosen in order to be representative of patients presenting to the ED with pneumonia throughout the influenza season. A data collection form will be utilized to gather patient demographics (age, gender, and antibiotic allergy), to document risk factors for multi-drug resistant pathogens, and to record the time in hours to first antibiotic administration in the ED. The initial antibiotic regimen in the ED will be evaluated for appropriateness based on IDSA/ATS guideline recommendations. Data will also be collected on whether the initial antibiotic regimen is continued once the patient is admitted to the hospital.

8-210

Title: Deep Vein Thrombosis Prophylaxis in Pediatric Trauma Patients

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Purpose: Pediatric trauma patients typically have a low incidence of deep vein thrombosis, and routine pharmacological prophylaxis is not recommended at this time. Interventions such as early ambulation and use of compression devices are the preferred methods for prevention in this population. The purpose of this medication use evaluation is to assess rates of DVT occurrence in pediatric trauma patients at our institution,and to assess safety and efficacy in patients who received pharmacological prophylaxis.

Methods: This study will be a retrospective chart review of pediatric trauma patients treated at this institution from July 2011 to June 2013. Data collected will include patient demographics, injuries sustained, prophylactic measures taken (pharmacologic vs non-pharmacologic), incidence of DVT during hospital stay, and incidence of bleeding in those patients treated pharmacologically. The research protocol has been submitted to the University of Tennessee Institutional Review Board for approval.

Results: In progress.

Conclusion: In progress.

8-211

Title: Comparison of glasgow outcome scale extended scores in patients treated with phenytoin or levetiracetam for post-traumatic seizure prophylaxis after traumatic brain injury

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Purpose: Brain Trauma Foundation (BTF) guidelines recommend the use of anticonvulsants for 7 days to prevent early seizures in patients with traumatic brain injury (TBI). Historically, phenytoin (PHT) has been the primary drug used for seizure prophylaxis, but levetiracetam (LEV) has become an attractive alternative because of its simpler dosing schedule and fewer adverse effects. A 2012 meta-analysis concluded that LEV and PHT were equally effective at preventing early seizures; however few studies have looked at long term outcomes. The purpose of this study was to evaluate the long-term functional outcomes in patients receiving LEV or PHT after diagnosis with TBI.

Methods: This was an IRB approved, single center, prospective cohort analysis conducted at an academic medical center. The primary objective was to compare the Glasgow Outcome Scale Extended (GOS-E) 6 months or more after severe TBI. Secondary endpoints were absence or presence of early and late seizures. Patients were included if they received LEV or PHT for greater than 48 hours and had an ICD-9 code for TBI. Patients were excluded if they were less than 18 years of age, pregnant, had a history of seizure disorder, unexplained seizure activity in past 6 months, any antiepileptic medication (AED) listed as home medication, study medication started greater than 24 hours after diagnosis of TBI or died before GOS-E assessment. The primary outcome was collected by phone interview of the patient or caregiver after verbal consent given. Secondary outcomes and baseline characteristics were collected by paper and electronic chart review. An a priore power analysis indicated that to detect a two point difference in the GOS-E with 80% power, 15 patients would have to survive and consent to the phone interview. The primary outcome was analyzed using the independent t-test. All secondary outcomes were analyzed with the Fischer's exact test for dichotomous data.

Results: Nineteen patients were included in the study (PHT = 14, LEV = 5). Baseline characteristics were similar, except the LEV group had a statistically higher GCS at presentation and ICU discharge (p=0.016, p=0.044 respectively) and the PHT group had a longer time between TBI and GOS-E assessment (p=0.001). There was no difference in the primary outcome, mean GOS-E score assessed 6 months after injury (PHT = 5.07, SD 1.69; LEV = 5.60, SD 2.07; p=0.58). There was no difference in the secondary endpoints of early seizures (p=0.53) or late seizures (p=0.53). Patients who received LEV were significant less likely to experience a complication during hospitalization (OR = 0.07, 95% CI 0.01-0.86). In addition, those patients who received LEV had less patient days with recorded fever (0.20 vs. 0, p=0.014). Four patients had a documented possible side effect from the medication. The PHT group reported slurring speech, neutropenia and fever and the LEV group reported one incidence of delirium. Six patients had a

total of 14 PHT levels reported during therapy with an average level after adjusting with last known albumin was 19.2 mg/dL. Most of the LEV patients received 500 mg BID IV or PO during their medication course.

Conclusion: At this time, we cannot concluded that there is any difference in GOS-E scores 6 months after TBI in patients who receive PHT or LEV for post-traumatic seizure prophylaxis after TBI. The disproportionate groups affected the statistical power of the data. We found no difference in either early or late seizure occurrence between PHT and LEV which is consistent with much of the current literature. Patients who received LEV were significantly less likely to experience a complication during hospitalization and had fewer fevers. These differences could be related to longer hospital stays in the PHT group.

8-212

Title: The efficacy and safety of tacrolimus vs. cyclosporine as the calcineurin inhibitor of choice in cardiac transplant patients: a prospective and retrospective chart review.

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Purpose: Immunosuppressive therapy after cardiac transplant typically includes a calcineurin inhibitor, either cyclosporine or tacrolimus. While a clear mortality benefit has not been shown with the use of tacrolimus preferentially, studies have shown decreased incidence of acute rejection (AR) and cardiac allograft vasculopathy (CAV). The immunosuppression protocol at the study institution reflects a preference for tacrolimus since 2012. The purpose of this study is to compare tacrolimus versus cyclosporine in the prevention of AR, CAV, and mortality up to one year post transplant. Adverse effects and the incidence of infection and malignancy will also be assessed.

Methods: All adult cardiac transplant patients who received care at Baptist Memorial Hospital-Memphis for both transplantation and outpatient management for one year will be included. A retrospective and prospective chart review will be performed between January 1, 2009 and January 1, 2014. Data will be collected through the transplant specific patient documentation system. Data points analyzed will include patient and donor gender and past medical history, physician documentation of any end point, follow up biopsy results, ejection fractions, allomaps, and monitoring for the incidence or progression of comorbidities (SCr, A1C, LDL, etc.). The incidence of infection (bacteremia, urinary tract infection, pneumonia, or fungemia) and malignancy will also be evaluated. Categorical variables will be analyzed using chi square and Fischer's exact tests. Continuous variables will be analyzed using student's t test.

8-213

Title: Development and implementation of a vancomycin dosing protocol for patients receiving hemodialysis to assure therapeutic serum concentrations are maintained throughout therapy

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Purpose: Patients requiring hemodialysis (HD) are at an increased risk of acquiring serious methicillin resistant Staphylococcus aureus (MRSA) infections due to chronic indwelling catheters and immunosuppression. Vancomycin remains a mainstay antibiotic for the treatment of presumptive or documented MRSA infections. There is evidence suggesting a change in HD filters resulting in a greater removal of vancomycin, may lead to suboptimal therapy with conventional dosing methodologies in this population. This study will evaluate the actual clearance of vancomycin in patients undergoing HD and the data used to develop a dosing protocol.

Methods: This study will be submitted to the Institutional Review Board (IRB) for approval. It is a single-center, cohort study of patients with end stage renal disease undergoing HD while concurrently receiving intravenous vancomycin. Dialysis specific inclusion criteria are HD via fistula, a blood flow of greater than or equal to 350 milliliters per minute during HD, and a dialysis time of four hours. Following informed consent, pre- and post-dialysis vancomycin levels will be drawn to determine the actual clearance of the drug during HD. This data will be used to develop a vancomycin dosing protocol for HD patients.

8-214

Title: Scheduled 23.4% sodium chloride for intracranial pressure control in traumatic brain injury

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Purpose: Traumatic brain injury (TBI) remains a highly detrimental illness resulting in neurological disability or mortality in up to 50% of patients. Current TBI guidelines recommend the use of mannitol for controlling elevations of intracranial pressure (ICP) greater than 20 mmHg. Additionally, guidelines indicate there is insufficient evidence to support the use of hypertonic saline; however, recent studies suggest there may be a benefit of using hypertonic saline to treat elevations in ICP. The objective of this study is to determine whether a fixed schedule of 23.4% sodium chloride is more beneficial for preventing elevations in ICP as compared to mannitol.

Methods: A retrospective cohort of patients treated with mannitol prior to July 2013 will be examined in order to assess the control of ICP. A prospective cohort beginning in November 2013 will examine patients treated with a fixed schedule of 23.4% sodium chloride in order to prevent ICP elevations. Patients will be included if they present to the University of Tennessee Medical Center (UTMC), are greater than 18 years of age, placed on the UTMC TBI protocol, and have an ICP monitor. Patients will be excluded if they did not receive the study medication or if there is insufficient data. A primary outcome of instances of ICP elevations greater than 20 mmHg during the initial 96 hour hospitalization period will be examined. Secondary outcomes include: brain-tissue oxygenation pressure (PbtO2), in-hospital mortality, number of instances of serum osmolarity greater than 320 mOsm/kg, number of instances of serum sodium greater than 160 mEq/L, number of breakthrough doses of 23.4% sodium chloride, mannitol, or 8.4% sodium bicarbonate required to lower ICP below 20 mmHg, and the use of adjunctive therapies required to control ICP. This study is currently pending Institutional Review Board approval.

8-215

Title: Evaluating the use of phytonadione for the reversal of supratherapeutic international normalized ratios secondary to warfarin administration

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Purpose: The Joint Commission National Patient Safety Goal 03.05.01 states to reduce the likelihood of patient harm associated with the use of anticoagulant therapy. Specifically, Element 8 of this safety goal states to evaluate anticoagulation safety practice. To address safe practice at our institution, this medication use evaluation will assess if the use of phytonadione (vitamin K) for reversal of supratherapeutic international normalized ratios (INRs) is in accordance with the 9th Edition of the American College of Chest Physicians (ACCP) Evidence-Based Clinical Practice Guidelines.

Methods: This medication use evaluation is exempt from institutional review board approval since the results will be used as a quality improvement measure. Patients with an order for vitamin K at our institution between May 2013 and July 2013 were selected for a retrospective chart review. Inclusion criteria consist of patients over the age of 18 who received at least one dose of vitamin K for a supratherapeutic INR related to warfarin use. Exclusion criteria consist of patients with known coagulopathy secondary to liver disease, patients given vitamin K to reverse the anticoagulant effects of warfarin for surgery, or patients given vitamin K for another indication. The primary analysis is to assess that the use of vitamin K, including dosage and route of administration, is in accordance with ACCP guidelines. The secondary analysis is to assess bleeding rates and predisposing factors to bleeding.

8-216

Title: Quetiapine for delirium prophylaxis in high-risk critically ill patients

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Purpose: Delirium occurs frequently in the intensive care unit (ICU) and is associated with worse outcomes. A decreased incidence of delirium in elderly surgical patients who received short-term prophylactic administration of low-dose intravenous haloperidol has been reported. An evidence-based prediction model for delirium in the ICU has recently been validated and can help identify patients that are at high-risk for developing delirium. The purpose of this study is to determine the efficacy and safety of low-dose quetiapine for the prevention of delirium in critically ill trauma and surgical patients identified as high-risk utilizing a validated prediction model.

Methods: This is an open-label, prospective trial that has been submitted to the Institutional Review Board for approval. All trauma and surgical patients who are ≥ 18 years of age admitted to the Trauma/Surgical ICUs will be eligible for inclusion. Within 24 hours of admission, the PRE-DELIRIC delirium prediction model score will be calculated on each patient to determine if he or she is at high-risk for developing delirium. Patients will be considered high-risk for delirium if their calculated PRE-DELIRIC score is ≥ 50% or if they have a history of alcohol misuse, substance abuse, or dementia. High-risk patients will be included and assigned to either receive quetiapine 12.5 mg twice daily for prophylaxis of delirium or not based on unit bed location. All other decisions regarding the management of delirium will be made per standard care.

The primary endpoint is the incidence of delirium during the ICU admission. Secondary endpoints will include time to onset of delirium, number of delirium-free days, and ICU and hospital length of stay.

8-217

Title: Evaluation of total reported events for a twelve-month period across a multi-hospital system

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Purpose: Hospital Corporation of America (HCA) is large healthcare system devoted to patient safety. Close call and actual event reporting patterns are considered valid markers of culture, signaling the willingness of direct care clinicians to communicate threats to safety to their organizational leaders. The purpose of this study is to identify and target system level defects that may have contributed to the actual or potential events, and assess trends in order to improve patient safety.

Methods: The Patient Safety Improvement Program (PSIP) is the voluntary event reporting system that uses standardized taxonomy for events. This retrospective study analyzed reports submitted to the PSIP database through the electronic health record from January to December 2012. Every report made in a facilitys module is included regardless of severity or outcome. All reports in the PSIP database are de-identified, and therefore this study is exempt from the Institutional Review Board (IRB). The data will be analyzed according to the ratio of close calls to events, notification type, severity of event, event code classification and primary reported cause.

Results: Preliminary results of the reports voluntarily submitted into PSIP from January to December 2012 close calls accounted for 68% of reports, 24% were harm events, and 8% were miscellaneous/other events. The top reported notification type was medication related event (21%), followed by treatment or medical complication (18%) and behavioral issue (16%). For medication events, the top three related event codes were dose omission, improper dose, and wrong medication. The primary cause for these related event codes were staff competency/education. The top medications associated with reported events were IV fluids, heparin, and vancomycin. The top therapeutic classes associated with reported events were sodium/saline preparations, analgesics/narcotics, and heparin and related preparations.

Conclusion: Will be determined based on further data analysis.

8-218

Title: Incidence of phlebitis with peripheral administration of amiodarone

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Purpose: The cardiology pharmacist at our institution noticed that nurses reported amiodarone induced phlebitis a rate that might be higher than that found in the literature and practice guidelines. The primary objective of this study is to determine the rate and severity of phlebitis in patients administered peripherally infused amiodarone. Secondarily, we want to investigate what actions are currently undertaken when a patient develops phlebitis.

Methods: This study will be submitted to the Institutional Review Board for approval as an exempt research project. The study will include adult patients identified retrospectively through an electronic medical records search who have received intravenous (IV) amiodarone through a peripheral catheter. The following data will be collected: patient age, sex, race, blood pressure, heart rate, service line, diagnosis, location and type of IV access, gauge of needle, amiodarone specific IV line, drugs administered before or during amiodarone infusion, time IV line first started, time amiodarone first administered, total time of amiodarone infusion, how long after start of amiodarone infusion is phlebitis reported, severity of phlebitis, and current medications. Provider and nurse documentation will be used to determine the timing, location, and severity of phlebitis. All data will be recorded without patient identifiers and maintained confidentially. The information will be used to compare the rate of phlebitis at our institution to the rates currently reported in the literature and guidelines. The timing, location, severity, and confounding variables will be analyzed to determine the gravity of the problem at our institution and to identify opportunities for improvement in the hospitals policies and procedures and overall clinical practice.

8-219

Title: Evaluation of appropriate inpatient use and discontinuation of proton pump inhibitors for stress ulcer prophylaxis in a veteran population

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Purpose: The purpose of this study is to assess the incidence of inappropriate proton pump inhibitor (PPI) use for stress ulcer prophylaxis upon admission and at discharge at the James H. Quillen VA Medical Center. Secondary outcomes will assess the cost associated with inappropriately continuing PPI therapy upon hospital discharge, and will assess the occurrence rate of community-acquired pneumonia (CAP), fractures, and clostridium difficile.

Methods: A retrospective chart review study involving patients of a non-deceased veteran population will be performed. A computerized database query from January 1, 2010 to January 1, 2012 will identify inpatients who had a proton pump inhibitor (PPI) order started during admission and whom did not have ICD 9 codes of active duodenal ulcer disease or active benign gastric ulcer, gastroesophageal reflux disease (GERD), erosive esophagitis, Zollinger-Ellison syndrome, or as a part of a regimen for H. pylori eradication. Data will be collected into an electronic database for analysis. Each patient chart review will be numbered sequentially as it is reviewed and the following information will be collected: age, race, height, weight, INR level, ventilator status, medication profile, PPI prescription provider, and PPI dose and duration. PPIs for GI prophylaxis will be evaluated for appropriateness during inpatient admission and at discharge according to ASHP therapeutic guidelines for stress ulcer prophylaxis. Data will be analyzed to determine the number of inappropriately initiated PPIs as well as inappropriately continued PPI prescriptions at discharge. The cost associated with one year of inappropriate continuation of a PPI prescription post discharge and the occurrence rate of community-acquired pneumonia, fractures, and clostridium difficile will be assessed.

8-220

Title: Evaluation of antithrombin III (ATIII) supplementation in patients with low ATIII levels post cardiac surgery on major adverse cardiac events

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Purpose: Antithrombin IIII levels in patients post cardiac surgery can be decreased due to the administration of heparin perioperatively. Low levels of antithrombin III post cardiac surgery have been associated with worsened short term outcomes and a higher incidence of complications. The purpose of this study is to determine if there is a difference in the number of major adverse cardiac events in patients with low antithrombin III levels post cardiac surgery who received exogenous antithrombin III compared to those who did not receive exogenous antithrombin III.

Methods: This study will be a retrospective cohort study. It will include men and women 18 and older who underwent cardiac surgery at UTMC and had an antithrombin III level less than or equal to 75 after surgery. Patients will be excluded if they had an allergy to ATIII, had cardiac surgery off-pump, were administered ATIII perioperatively, received non-steroidal anti-inflammatory drugs 48 hours prior to surgery, or if they had a coagulation disorder, severe liver dysfunction, a platelet count less than 30,000, or a hereditary AT deficiency. Patients with an ATIII level less than or equal to 75 who received supplemental ATIII post cardiac surgery will be compared to those with low ATIII level and did not receive supplemental ATIII. The primary outcome is the number of major adverse cardiac events (MACE), which includes postoperative mortality within 30 days or during the primary hospitalization, reoperation for coronary graft occlusion, myocardial infarction, cardiac arrest, or thromboembolic event (DVT, PE, or stroke). Secondary outcomes will include mortality, bleeding events, and hospital length of stay.

8-221

Title: Medication use evaluation of intramuscular olanzapine in an inpatient behavioral health facility

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Purpose: Intramuscular olanzapine (Zyprexa) is an atypical antipsychotic approved for the treatment of acute agitation associated with schizophrenia and bipolar I mania. It is rapidly absorbed and achieves maximum plasma concentrations that are five times higher than an oral dose. In May 2013, six years after removal from the facility, intramuscular olanzapine was added back to formulary with use restricted to orders initiated by psychiatrists. The purpose of this study is to assess the usage of intramuscular olanzapine for FDA-approved indications, dosing and monitoring parameters, appropriate ordering physician, and the concomitant use with intramuscular benzodiazepines.

Methods: Prior to initiating research, this study will be submitted to the Institutional Review Board for approval. This study is a retrospective chart review utilizing the facilities electronic medical records. All patients who had an order for intramuscular olanzapine between May 1, 2013 and September 31, 2013 in the behavioral health facility will be included in the study. Prior to the collection of data, the records will be de-identified and confidentiality will be maintained. Data to be collected includes patients demographics, the ordering physician, indication for therapy, contraindications, dosing regimen, concomitant use of intramuscular benzodiazepines, drug interactions and adverse reactions.

8-222

Title: Retrospective Evaluation of Stress Ulcer Prophylaxis in Critical Care Population

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Purpose: Stress ulcer prophylaxis (SUP) is often indicated for critical care patients who are high risk for stress ulceration. It is unknown if SUP at Holston Valley Medical Center (HVMC) follows the therapeutic guidelines. The purpose of this study is to determine if patients are appropriately started on SUP while in critical care; if patients are inappropriately continued on SUP upon discharge; transfer from critical care; or when they no longer have documented risk factors for a GI bleed; hospital cost associated with inappropriate SUP. Data from this study will be used to determine whether a SUP protocol is warranted.

Methods: This is a retrospective chart review of patients who were admitted to HVMC medical or surgical critical care units between April 1-June 30, 2013 and were prescribed either a H2 receptor antagonist or a proton-pump inhibitor for stress ulcer prophylaxis therapy. Collected patient information for those who meet inclusion criteria will be documented on a standardized data collection form and will include demographics (age, gender, length of hospital stay, unit, and allergies), history of present illness, diagnosis, and home medications at time of admission. Additional information about SUP regimen (agent prescribed, dose, frequency, route, and duration) will also be recorded. The primary endpoint is to assess HVMCs adherence to published stress ulcer prophylaxis guidelines.

8-223

Title: Evaluation of intravenous acetaminophen on length of stay in abdominal surgery patients

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Purpose: Multi-modal approaches to analgesia have shown to be effective. Recently updated pain, agitation, and delirium guidelines suggest that nonopioid analgesics be considered to decrease the amount of opioids administered and opioid-related side effects. Intravenous acetaminophen has shown to be safe and effective when used in conjunction with opioids for postoperative pain in surgical ICU patients following major surgery. To the authors knowledge, no randomized trial has shown a decrease in length of stay using intravenous acetaminophen following surgery. The objective of this study is to evaluate the effect of intravenous acetaminophen on length of stay in abdominal surgery patients.

Methods: All clinical research represented in the abstract will be approved by the University of Tennessee Graduate School of Medicine Institutional Review Board. This study is a retrospective, cohort chart review. Patients who underwent abdominal surgery between January 1, 2010 and August 31, 2013 will be identified. Surgeries included will be colon resections and pancreaticoduodenectomies. The primary outcome will be hospital length of stay. Secondary outcomes include total opioid dose, total acetaminophen dose, time to bowel movement, number of bowel movements, time to resumption of diet, pain scores, bowel regimens, and opioid-related side effects. Side effects include itching, constipation, somnolence, and rash. Patients who received intravenous acetaminophen in the perioperative and postoperative period will be compared to patients who did not receive intravenous acetaminophen. Subgroups of individual surgeries will be compared for the primary outcome. It was determined that 131 patients per treatment group would yield 80 percent power to detect a 12 percent reduction in length of stay between groups.

8-224

Title: Risk factors for recurrent Clostridium difficile infections and strategies to decrease hospital readmissions in a community hospital

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Purpose: The purpose of this study is to evaluate and identify risk factors for recurrence of Clostridium difficile infections in patients readmitted with a diagnosis of C. difficile and implement strategies to decrease the number of recurrent C. difficile infections at our institution.

Methods: This is a single-center cohort analysis of patients admitted to the hospital for a recurrent C. difficile infection (CDI) confirmed by a polymerase chain reaction (PCR) test. Patient data on recurrent CDIs were collected over a time period of two years preceding the study and analyzed to determine the most prevalent risk factors in our patient population that best predicts a patients risk for recurrent CDIs. Results of the data analysis will then be used to develop recurrent CDI reduction strategies to be implemented in the hospital. Patients admitted to the hospital with a confirmed CDI will be identified with the use of medical identification software. Patients will be monitored for re-admittance to Memorial Hospital Health Care System for a defined period following discharge. This study will be submitted to the Institutional Review Board for approval.

8-225

Title: Improving the use and reimbursement of pegfilgrastim

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Purpose: A recent evaluation of pegfilgrastim at this institution found 68 percent adherence to American Society of Clinical Oncology (ASCO) guidelines for prevention of chemotherapy induced febrile neutropenia (CIFN). Potential expense reduction was estimated at approximately 300,000 dollars per year if pegfilgrastim is only used in patients with estimated risk of CIFN greater than 20 percent. Additionally insurance reimbursement for the drug is poor. The purpose of this study is to develop and implement consistent processes to improve the use of pegfilgrastim and reach 90 percent compliance with ASCO and maximize medication reimbursement.

Methods: All research represented in the study will be submitted to the Institutional Review Board for approval. Inpatients and outpatients who received orders for pegfilgrastim between November 1, 2013 and March 31, 2014 will be identified after a physician completes an order form for pegfilgrastim. Education will be provided to prescribers and pharmacists regarding restriction of pegfilgrastim for outpatient only and the use of CIFN reference guide developed by the previous resident. Outpatient and computerized physician order entry (CPOE) order forms will be revised to guide appropriate ordering of pegfilgrastim. Patient assistance programs will be utilized for patients in need of payment assistance. The final step of the project will consist of measuring the difference in ASCO compliance rates and total cost savings at the end of the project period.

8-226

Title: Evaluation of an electronic documentation system to improve immediate medication event reporting to prescribers

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Purpose: In November 2011, the Centers for Medicare & Medicaid Services (CMS) released a revision to the Conditions and Interpretive Guidelines for Hospitals, which included an update on the immediate reporting of medication events to the attending physician. This update recommends hospitals have policies and procedures in place to define medication events that require immediate reporting. Medication events include administration errors, adverse drug reactions, and incompatibilities. In July 2012 our institution implemented modifications to the current physician electronic notification form to ensure immediate physician notification of medication events in order to help improve compliance with these guidelines.

Methods: This will be a retrospective review evaluating the use of the updated electronic documentation for physician notification of medication events. Patients with completed physician notification forms, indicating a medication event between August 2012 and August 2013 will be reviewed and compared to reports filed through the voluntary electronic adverse event reporting system used at our institution. Patient charts will also be reviewed for the duration of 24 hours before and after the occurrence of the reported event to ensure notification of the physician took place. Descriptive statistics will be used to report inconsistencies in documentation. The research protocol has been submitted to the University of Tennessee institutional review board for approval.

8-227

Title: Assessment of knowledge and perceptions regarding electronic cigarettes

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Purpose: In the United States 43.2 million people smoke. Over half of US smokers attempt to quit smoking each year. Electronic cigarettes are becoming more popular as a tool for smoking cessation. Sales are projected to reach 1.7 billion dollars in 2013. There is little data on the safety and efficacy of electronic cigarettes as they are not regulated by any agency. The objective of this study is to assess primary care physician and community pharmacist knowledge, perceptions, practice patterns, and counseling practices for electronic cigarettes.

Methods: This study will be submitted to the Institutional Review Board for approval. A survey will contain questions to determine the responders knowledge, perceptions, counseling practices and practice patterns for electronic cigarettes. Survey questions will be drafted based on examples published in the current literature and validated through previously published methods. Contact will be made with community pharmacies associated with the college of pharmacy and with primary care physicians associated with the academic medical center health system. Participants will be asked to complete the survey return via postage-paid envelope. The survey will be collected anonymously with coding to classify if answered by a pharmacist or primary care physician. Descriptive statistics will be used to compile, evaluate, and summarize the data gathered through the survey process.

8-228

Title: High dose methotrexate: assessing delayed clearance and interpatient variability

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Purpose: The antimetabolite methotrexate (MTX) is a folate analog used in a variety of chemotherapy regimens. MTX, especially high doses, may result in renal toxicity due to delayed elimination despite preventive measures. Glucarpidase is the only treatment available to reduce elevated plasma MTX concentrations due to impaired renal function. The objective of this study is to develop a predictive risk model to identify patients at increased risk for delayed methotrexate clearance with the intent to reduce side effects, costs, and length of stay associated with MTX toxicity.

Methods: This retrospective, case-control study was submitted to the hospitals Institutional Review Board for approval in September. The hospitals medical record system will be used to identify patients > 18 years of age who received MTX therapy at doses > 500 mg/m2; between July 1, 2012 and September 26, 2013. Cases will be defined as patients who experienced delayed MTX clearance indicated by serum MTX level 5 mol/L at 24 hours or 0.9 mol/L at 48 hours. The following data points will be collected: age, gender, race, height, weight, MTX dose received, interacting medications, and documented MTX-induced toxicities. Evaluated lab values will include: CBC, serum creatinine, urine pH, MTX serum levels, and liver function tests. Data will be used to develop a predictive risk model to identify patients at increased risk of delayed MTX clearance. Multivariate analysis with logistic regression will be used to determine the relationship between patient specific factors and MTX elimination.

8-229

Title: Effectiveness of an outpatient pharmacist-implemented smoking cessation program in a low-income primary care clinic

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Purpose: This study is intended to develop and implement a smoking cessation program at a primary care clinic that offers assistance and resources to a large underserved, low-income population. Unfortunately, the clinic's current patient population has a reported tobacco dependence rate of approximately 50 percent, which is well above the national average of 19 percent. The ultimate goal of the program is to achieve a 10 percent reduction in the rate of tobacco dependence for adult enrollees after one year.

Methods: This is a prospective non-randomized study of the impact of a pharmacist-implemented smoking cessation program at a primary care clinic providing services to a low income, recently homeless, and largely uninsured population. Approval of the research proposal by the institutional review board is currently pending. The program will utilize the disciplines of nursing, medicine, pharmacy, and social services to provide smoking cessation therapy, including patient education, counseling, and assistance with prescription and over-the-counter medications. Selection of appropriate smoking cessation treatment will be based on recommendations from the smoking cessation clinical guidelines published by the United States Public Health Service. All patients aged 18 years and older who report current tobacco use will be eligible for enrollment into the program. All patients will receive counseling during their initial visit, and follow-up visits will be scheduled weekly for the first month, then as needed thereafter. Primary clinical outcomes will include rates of tobacco abstinence and relapse.

8-230

Title: Effect of multiple antimicrobial stewardship strategies on the utilization of linezolid

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Purpose: The prevalence of multidrug-resistant organisms continues to rise, making it extremely important to monitor the use of antibiotics. Overuse, misuse, and the limited number of alternative antibiotics contribute to the continued development of resistance. Severe infections due to drug-resistant organisms have been shown to increase length of stay and worsen patient outcomes. Linezolid is an oxazolidinone antibiotic used in the treatment of susceptible gram positive infections. The purpose of this study is to examine the impact of physician education and prescribing limitations on the appropriate use of linezolid and its associated impact on hospital cost.

Methods: A utilization analysis of injectable and oral linezolid was conducted to evaluate the frequency of inappropriate prescribing and analyze cost. Appropriate indications for use were developed in collaboration with members of the Antimicrobial Stewardship team. Stewardship strategies have included: direct face-to-face communication with prescribing physicians, communication through committee activities, and the development/implementation of a linezolid order set. Data will be separated into three intervals for analysis: time prior to physician education, time between physician education and the initiation of the linezolid order set, and time after the implementation of the order set. Antimicrobial stewardship efforts are expected to improve the appropriateness of linezolid prescribing and decrease hospital cost.

8-231

Title: Evaluation of the Relationship between Prior Exposures to Antibiotics and the Incidence of Vancomycin-resistant Enterococcus (VRE) in a Veteran Population

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Purpose: The purpose of this study is to determine the incidence of VRE infection or colonization with exposure to specific antibiotics. One of the risk factors for developing colonization or infection with VRE is prior exposure to antibiotics. Use of vancomycin, broad spectrum cephalosporins, and anti-anaerobic agents have been associated with the emergence of VRE. Insight as to which antibiotics place greater pressure on VRE rates may provide further information that can be utilized to target specific antibiotics for closer monitoring and/or restriction in antimicrobial stewardship programs.

Methods: This will be a retrospective chart review study involving patients who had a positive screen for or were infected with VRE at the VAMC in Mountain Home, Tennessee. A computerized database query will be used to identify these patients from January 2006 to December 2012. Patients with no medical records with this VA for 12 months prior to VRE identification and those transferred from another facility prior to culture will be excluded. Once patients have been identified, the computerized patient record system (CPRS) will be utilized to collect data from patients' charts and will be assimilated into an electronic database for analysis. Each patient chart reviewed will be numbered sequentially as it is reviewed. The following information will be collected for the day of positive VRE identification and/or colonization and within the 12 months prior: age, sex, type of residence, progress notes, microbiology, medication orders for antibiotics and related information (including name, doses, routes, dates of therapy), and previous hospitalizations dates. The data will then be evaluated to determine if there is a relationship between colonization or infection with VRE and exposure to any specific antibiotic(s). Using appropriate statistical testing, collected data will be analyzed to determine relationships under investigation.

8-232

Title: Seasonal variance in international normalized ratio

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Purpose: Fluctuations in INR level have always remained a concern for effective management of patients on warfarin. The purpose of this study is to determine seasonal variances in target international normalized ratio (INR) in the veteran population at the anticoagulation clinic from James H. Quillen Veterans Affairs Medical Center in Mountain Home, Tennessee. We will determine the percentage of INR that is either therapeutic, subtherapeutic or supratherapeutic from 2003-2013, stratifying according to seasons. In addition, within each season, we will also quantify the differences in fluctuations of INR values, sub-stratifying into two groups with INR goals of 2.0-3.0 and 2.5-3.5.

Methods: In this retrospective chart review, a computerized database query from 1/1/2003-1/1/2013 will screen for patients who were monitored while on warfarin/Coumadin. Following initial screening, the computerized patient record system (CPRS) and Microsoft Access Monitoring Program will collect data from the patient's chart and assimilate data into an electronic database for analysis. Each patient chart review will be numbered sequentially as it is reviewed. Age, race, medication profile, comorbidity, INR values and complete blood count will be collected. For primary endpoint, we will determine the percentage of INR value that is therapeutic, subtherapeutic or supratherapeutic according to their targeted INRs as defined by the anticoagulation clinic protocol. Data will be stratified according to seasons: winter (December-February), spring (March-May), summer (June-August), and autumn (September-November). For secondary endpoint, data will further be analyzed using a subgroup of veterans on warfarin consistently for 2 years, given INR values collected at least once a month. Among this selected group of veterans with their targeted INR (2.0-3.0 or 2.5-3.5), we are comparing the raw and averaged INR fluctuations among different seasons within each year from 1/1/2010-12/31/2012, where fluctuation is defined as 0.3 point changes in INR value. All data will be analyzed using appropriate statistical testing.

8-233

Title: Effect of intravenous iron in anemic chronic heart failure patients

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Purpose: Anemia is a frequent comorbidity in chronic heart failure with prevalence ranges from 4 to 73 percent. Anemia with low iron reserve has been reported to be one of the most common causes of anemia in heart failure patients. Iron supplementation without erythropoiesis stimulating agent has shown benefits in improving functional status, exercise capacity and quality of life in chronic heart failure patients. The purpose of this study is to evaluate readmission rates and effectiveness of intravenous (IV) iron in chronic heart failure patients with anemia.

Methods: Following approval by the Institutional Review Board, the hospitals electronic medical record system will be used to identify patients with left ventricle ejection fraction (LVEF) of 40 percent or less, hemoglobin (Hgb) less than 13 g/dL in men and less than 12 g/dL in women, and mean corpuscular volume (MCV) less than 80 fL. If iron studies are available, ferritin less than 100 mcg/L or ferritin greater than 100 mcg/L and less than 299 mcg/L with transferrin saturation less than 20 percent will be collected. Patients will be excluded with malignancy, end state renal disease (ESRD) requiring dialysis, or patients with blood transfusions during hospitalization. Patients will be divided into two groups: anemic heart failure who received IV iron versus anemic heart failure who did not received IV iron. Readmission rates, length of stay, readmission data including LVEF, BNP, Hgb, hematocrit (Hct), MCV, iron studies (iron, ferritin, transferrin saturation) will be evaluated and compared between the two groups.

8-234

Title: Resident directed site-specific live continuing education (CE) seminar: its impact on improving employee satisfaction and patient safety

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Purpose: Pharmacy residencies are utilizing teaching certificate programs more frequently within their residency program activities to achieve and augment the American Society of Health System Pharmacists (ASHP) outcome to provide medication and practice-related education/training (ASHP, R5). This resident will develop, implement, and direct site-specific, live CE seminars provided by pharmacy residents participating in a teaching certificate program and clinical pharmacists for the pharmacy staff at a local community hospital.

Methods: Certification for CE credit will be authorized by the Tennessee Board of Pharmacy following appropriate application. Five seminars will be presented during the residency year which will provide a total of five CE hours. Each seminar will consist of forty-five minutes of didactic presentation, followed by five minutes of assessment questions for proof of participation, and five to ten minutes of question and answer. Seminars will be recorded for those unable to attend the live session for continuity of information among staff. Following each seminar, participants and presenters will be asked to anonymously complete an evaluation created as a measure for improvement or success. Outcome measures will be based on evaluation of the seminar through employee satisfaction surveys, resident experiential surveys, and selected patient safety markers that align with seminar material.

8-235

Title: Community pharmacists role in a county-wide health initiative aimed at decreasing the incidence of type 2 diabetes

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Purpose: The prevalence of type 2 diabetes is currently on the rise worldwide, putting patients at further risks for cardiovascular disease, along with the complications present with the diagnosis of diabetes. Pharmacists are a readily-accessible healthcare entity, and are often the first resource utilized by patients in rural communities. The purpose of this study is to see how a community pharmacist can be utilized in a weight-loss initiative through the identification of prediabetic and diabetic patients and furthermore, attempting to decrease the incidence of type 2 diabetes through disease state management and lifestyle modification education.

Methods: This study is being conducted and reviewed by the Institutional Review Board at Lipscomb University, a private university. Starting September 2013, patients are included if they are participating in the weight loss initiative funded by a grant from the Tennessee State Department of Health aimed at decreasing the incidence of obesity and type 2 diabetes. The information obtained from participants will include the following: height, weight, BMI, cholesterol (fasting), blood glucose (fasting), hemoglobin A1c, blood pressure. The components of the grant include health analysis and patient-specific educational components such as disease state management and lifestyle modifications utilizing the American Association of Diabetes Educators Self-Care Behaviors (AADE7) framework. To assess the impact of the program, patient health data (BMI, cholesterol, etc.) will be analyzed using a chi-square analysis. Discussion will also include the realistic expectations and challenges of a pharmacist establishing a role in a lifestyle modification initiative focused on weight loss and diabetes prevention.

8-236

Title: Effects of education on United States Pharmacopeia (USP) chapter 797 garbing and aseptic technique compliance in a level one trauma center intravenous admixture cleanroom

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Purpose: The appropriate compounding of sterile preparations is essential in preventing harm to patients. Improper sterile technique can potentially lead to negative outcomes involving health care related infections, increased length of stay, and rising costs. United States Pharmacopeia chapter 797 is recognized as the standard guideline for compounding sterile preparations by many accrediting organizations and boards of pharmacy across the country. USP 797 compliance promotes quality patient care and helps ensure excellence within health care organizations. The objective of this study is to identify deficits within USP 797 adherence and assess the effectiveness of education designed to improve compliance.

Methods: This study will obtain Institutional Review Board approval prior to commencing. An initial assessment of current cleanroom garbing and compounding practices will be taken though a retrospective analysis of visually recorded anteroom and compounding area activities. Each area will be recorded continuously for a week in order to capture events across all shifts and with varying personnel. Each garbing event prior to compounding will be analyzed for compliance with USP 797 standards through a check list of required steps in the garbing process. Compounding itself will be analyzed for certain critical errors in aseptic technique also outlined in USP 797. After deficits in cleanroom practices are identified, focused education sessions will be arranged for all cleanroom personnel. These education sessions will emphasize the discrepancies identified in an effort to improve overall adherence to proper garbing and aseptic technique. A post-education assessment will be performed in the same manner as prior to the education sessions and the results will be compared to measure the effectiveness of the education.

8-237

Title: Medication use evaluation of initial vancomycin dose, frequency, and monitoring in adult patients at a tertiary medical center

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Purpose: Vancomycin is a bactericidal glycopeptide that is primarily utilized for methicillin-resistant Staphylococcus aureus (MRSA). The use of vancomycin in healthcare institutions has increased due to an increase in resistant microorganisms and health-care acquired infections. Underdosing of vancomycin, determined by steady-state trough monitoring, has been shown to lead to bacterial resistance while overdosing can lead to adverse effects such as nephrotoxicity. The goal of this chart review is to assess the initial dose, frequency, and monitoring of vancomycin for patients in a tertiary medical center.

Methods: This study will be submitted to the Institutional Review Board for approval. The chart review will collect information from May 1, 2013 to August 30, 2013. The electronic medical record system will identify patients > 18 years old who have received more than one day of vancomycin treatment. Appropriateness of first dose will be determined based on patients renal function, indication, and if the prescriber followed nomogram dosing, pulse dosing based on random levels or conventional dosing. Analysis will include if there was a pharmacy consultation for dosing, if there was an Infectious Diseases consult, and the specific hospital physician group ordering the initial vancomycin regimen. The following data will be collected: serum creatinine (SCr), creatinine clearance (CrCl), weight, height, sex, and age. Troughs will be analyzed to see if one was obtained and ensure they were drawn at steady state levels. The reviewers will evaluate each regimen as appropriate or non-appropriate based on the aforementioned criteria.

8-238

Title: Impact of alvimopan on length of stay and return of bowel function

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Purpose: Alvimopan (Entereg), the oral peripherally acting mu opiod receptor antagonist, has been shown to decrease time to return of gastrointestinal (GI) function and length of stay (LOS). Alvimopan selectively blocks the effects of opioids in the GI tract without altering analgesic effects on opioid receptors in the brain. Previous literature reports alvimopan can reduce length of stay by 15.2 to 24 hours, and time to GI recovery between 9 and 28 hours. This purpose of this study is to evaluate potential benefit of alvimopan in bowel resection patients at a 700-bed medical facility.

Methods: This study was submitted to the Institutional Review Board for approval. This study will evaluate patients who received alvimopan compared to matched controls. A retrospective, matched-cohort chart review will be conducted on patients with diagnosis-related group (DRG) codes including small and large bowel resection surgeries. Inclusion criteria are age greater than 18 years and a qualifying DRG. Patients will be excluded if they have a contraindication to alvimopan or received doses in excess of alvimopan product labeling. Baseline demographics include age, sex, ethnicity, admission type (emergent vs. elective), surgery type (laparoscopic vs. open), comorbid conditions and concurrent medications, including medications that affect GI motility and others. Post-surgical data includes doses of alvimopan, early vs. late mobilization, post-surgical medications including analgesia, and surgical complications. All data will be recorded without patient identifiers and maintained confidentially. The primary outcome will be time to hospital discharge orders (in hours). The secondary outcomes will be GI recovery defined as time to first bowel movement or time to first toleration of full liquid diet (in hours). Cost will be analyzed as average total direct hospitalization costs between groups.

8-239

Title: Use of Cockcroft Gault (CG) versus modification of diet in renal disease (MDRD) equations in estimating renal function when dosing carboplatin

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Purpose: The Cockcroft Gault (CG) equation is designed to estimate creatinine clearance (Clcr) and the Modification of Diet in Renal Disease (MDRD) equation estimates glomerular filtration rate (GFR). The National Kidney Disease Education Program (NKDEP) recommends estimated GFR and estimated Clcr be used interchangeably when dosing medications. Studies have evaluated the use of these equations in many renally dosed medications; however, few have assessed their use when dosing carboplatin. The objective of this study is to evaluate the potential difference in carboplatin dosages received by patients when using these two formulae to estimate renal function within the modified Calvert formula.

Methods: This study will be submitted to the Institutional Review Board for approval. Cancer chemotherapy dispensing records will be screened to identify patients who have received carboplatin as part of their chemotherapy regimen from January 1, 2010 to December 31, 2012. The following data will be collected: patient age, gender, race, height, weight, serum creatinine level used for carboplatin dosing, cancer type, and specific chemotherapy regimen administered. All recorded data will be maintained confidentially and properly disposed at completion of the study. Carboplatin doses will then be calculated using both the CG equation and MDRD equation within the modified Calvert formula. A statistical evaluation of the difference in dosages will be performed and reported.

8-240

Title: Factors that determine early therapeutic concentrations of phenytoin in traumatic brain injury patients

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Purpose: The hypermetabolic state experienced by critically ill patients poses difficulties in developing optimized pharmacotherapeutic regimens. Anticonvulsants are used for seizure prophylaxis in the management of traumatic brain injury patients. Guidelines recommend treatment with therapeutic levels of phenytoin during the first week post-injury for reducing the incidence of seizures. A variety of factors that influence a patients ability to reach therapeutic levels have previously been identified. The objective of this study is to develop a dosing model that takes into account the patient factors necessary to achieve early therapeutic concentrations of phenytoin in this population.

Methods: Prior to initiation, this study will be submitted to the Institutional Review Board for approval. Data from trauma intensive care patients who received phenytoin for posttraumatic seizure prophylaxis from October 2009 to October 2013 will be collected using the institutions electronic medical record system. Patients who had phenytoin levels present on the fourth day of therapy will be included. Exclusion criteria will include hepatic dysfunction, renal failure, prior seizures, previous antiseizure medication use, pregnancy, or the presence of potent interacting medications. Data collected will include age, weight, renal function, albumin, severity of head injury, presence of ethanol on admission, and nutritional supplementation. A multivariate regression analysis will be performed to identify factors critical for dosing model development.

8-241

Title: Pharmacist-driven transition of care model for patients discharged from a community hospital

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Purpose: The purpose of this study is to maximize improvement in post-discharge patient outcomes through a pharmacist-driven transition of care model.

Methods: This multidisciplinary service will include discharge medication reconciliation and a pharmacy liaison service provided to patients and community health care providers. The primary goals will be to improve medication knowledge among our patients and decrease the number of preventable adverse events related to medication use. We hypothesize that readmission rates and emergency department visits within 30 days of discharge will improve for patients participating in the pilot program.

8-242

Title: Relationship between electronically-submitted versus paper prescriptions and control of chronic diseases

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Purpose: Control of chronic disease states such as diabetes, hypertension, and dyslipidemia is important for cardiovascular risk reduction, and can lead to improved outcomes such as decreased morbidity and mortality and decreased healthcare costs. The objective of this study is to determine the correlation between chronic disease control and the type of prescription used; specifically, electronically-submitted versus paper prescriptions.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify patients over the age of 18 on medications for chronic conditions including hypertension, diabetes, and dyslipidemia. The following data will be collected: patient age, gender, ethnicity, all prescriptions for chronic medications, type of prescription (written versus electronic), blood pressure, fasting lipid panels, and A1c. All data will be de-identified and maintained confidentially. Laboratory markers before and after medication initiation will be compared between each group (paper versus electronic prescriptions) to determine the correlation between improvement of laboratory markers and the type of prescription utilized.

8-243

Title: Evaluation of ketorolac use in post-coronary artery bypass grafting (CABG) patients

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Purpose: Ketorolac and other non-steroidal anti-inflammatory drugs (NSAIDs) contain a boxed warning regarding the increased risk of cardiovascular (CV) events with NSAID use. Trial data, involving primarily the cyclooxygenase-2 inhibitors, showed an increased risk of CV events which led the Food and Drug Administration to require a boxed warning for all NSAIDs. Additionally, the prescribing information for NSAIDs contain a contraindication for patients who have recently undergone CABG surgery. The purpose of this study is to determine the adverse effects of using ketorolac for pain control in patients with recent CABG surgery and to evaluate its effectiveness in treating post-operative pain.

Methods: Institutional review board approval was not required for this evaluation as it was designated as a quality improvement initiative. Patients were identified by utilizing the institution's electronic medical record system. Patients were included in this evaluation if they underwent CABG surgery from July 1, 2012 to June 30, 2013. Two groups were evaluated; one group included patients who received ketorolac within 5 days after their surgery, and the other group included patients who did not receive ketorolac within 5 days after their surgery. Total number of doses and quantity (in milligrams) of ketorolac were assessed during the 5 day time period post-surgery. The primary analysis is a composite of the safety outcomes assessed including: acute renal failure, elevation in troponin levels, cerebrovascular accident or transient ischemic attack, sternal wound infection, deep vein thrombosis or pulmonary embolism, and bleeding. The secondary analysis is the individual safety components listed above; additionally, inpatient mortality, 30-day readmissions, and length of stay post-surgery were also assessed. Efficacy outcomes examined include amount of opioids used (measured in morphine equivalents) and peak and average pain scores.

8-244

Title: Clevidipine vs. nicardipine for early intensive blood pressure control following intracranial hemorrhage

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Purpose: Hemorrhagic stroke accounts for nearly ten to twenty percent of stroke annually. During hemorrhagic stroke, hypertension has been associated with increased risks of morbidity and mortality and should be rapidly controlled. Current guidelines published by AHA/ASA on blood pressure management in this population suggest goal systolic blood pressure (SBP) of less than 160mmHg and less than 180mmHg for intracerebral and subarachnoid hemorrhage respectively. The objective of this study is to identify which intravenous anti-hypertensive agent, clevidipine or nicardipine, provides optimal blood pressure control among patients presenting with computer tomography (CT)-confirmed intracranial hemorrhage.

Methods: This is a single-center, retrospective cohort conducted at a tertiary care academic medical center. Institutional Review Board approval is in progress. The electronic medical record system will be used to identify patients between January 1, 2010, and September 30, 2013. Inclusion criteria are adults with CT-confirmed intracranial hemorrhage with initial SBP greater than 180mmHg or mean arterial pressure greater than 130mmHg and having received one of the following regimens within 24 hours of presentation: greater than three hours of continuous infusion nicardipine or clevidipine. Patients less than 18 years old, pregnant, concurrent trauma/ head injury, acute ischemic stroke, brain arteriovenous malformation, or pheochromocytoma will be excluded. Data collection will include patient demographics, systolic and diastolic blood pressures, heart rates, physical exam findings, length of stay, adverse effects, medications, and mortality. The primary outcome of this study is to determine the time to goal blood pressure achievement (SBP less than 160mmHg). Secondary outcomes will analyze time in goal range (SBP 140 to 160mmHg), incidence of SBP less than 140mmHg, blood pressure variability, treatment failure, bradycardia (heart rate less than 60bpm), hospital length of stay, neurologic function, and incidence of re-bleeding or vasospasms.

8-245

Title: Implementation of a pharmacy-driven discharge counseling service in a community hospital

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Purpose: The objective is to implement a pharmacist-conducted medication counseling service addressing medication use for every patient upon discharge. Improving current processes by increasing patient education and patient satisfaction are imperative to the success of the service. In addition, identifying patients at high risk for hospital readmission and providing additional disease state education, both during admission and after discharge, will potentially decrease readmission rates; therefore, producing positive effects on Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) scoring and Value-Based Incentive Payment factors. Ideally, the discharge counseling service will increase patient knowledge and clarity regarding medication use upon discharge.

Methods: Recent implementation of pharmacy-conducted admission medication reconciliation aids in the realization of an effective discharge counseling service. With this process fully developed, pharmacy will have assumed the leadership role in the medication use process from admission to discharge. Upcoming availability of outpatient pharmacy services will provide additional reinforcement to patient education through provision of discharge medications and counseling at bedside. A systematic process was introduced beginning with evaluation of previous discharge procedures, identifying both strengths and weaknesses. Then, a resident-facilitated, collaborative, innovative discussion forum was scheduled to develop the most effective discharge counseling service using only currently available resources. Readmission rates before and after implementation of the discharge counseling service will be evaluated. A tool will be developed to assist in identification of patients at high-risk for readmission. The identified patients will require subsequent follow-up. Patient satisfaction will be measured through a hospital-approved survey after discharge. Survey data from before and after implementation will be compiled to compare patient reported satisfaction with the discharge counseling service. Also, Centers for Medicare and Medicaid Services (CMS) core measure data will be evaluated for improvement.

8-246

Title: Implementation of clinical decision support to enhance antimicrobial stewardship-guided novel laboratory test ordering

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Purpose: Computerized physician order entry (CPOE) systems have used various forms of Clinical Decision Support (CDS) to facilitate safe and judicious ordering of medications; however, a paucity of data exists about the use of CDS to facilitate laboratory testing. The objective of this study is to compare alternate forms of CDS to support the judicious and appropriate use of a novel laboratory test, the Gastrointestinal Pathogen Panel (GPP). This test targets a variety of pathogens including bacteria (including Clostridium difficile, Salmonella, Shigella), viruses (Adenovirus, Norovirus and Rotavirus A), and protozoan parasites (Cryptosporidium, Giardia and Entamoeba histolytica).

Methods: This study will be submitted to the Institutional Review Board for approval. Criteria for use of the GPP have been developed and approved by the Antimicrobial Stewardship Program (ASP), which include consideration of patient immune function and chronicity of diarrhea (acute onset vs. chronic). With the cooperation of the ASP, alternate forms of CDS, incorporating GPP criteria for use, will be developed to facilitate the appropriate ordering of this test using the inpatient CPOE system. For the patients in whom the test is ordered, the proportions of orders that meet the criteria for appropriate use of the test will be measured for each form of CDS used, in order to compare their effects on facilitating appropriate ordering of the test.

8-247

Title: Data mining opportunities and the creation of customized reports from a commercially available outpatient pharmacy information system

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Purpose: A commercially available outpatient pharmacy information system was recently implemented for use in four outpatient pharmacies of a large academic medical center. The pharmacies were previously utilizing different software solutions for each site. The implementation and use of a single system will enhance opportunities for evaluation, trending and predictive analysis of the data. This also provides an opportunity for greater reporting capabilities and development of customized reporting across a single site or including multiple sites.

Methods: The data is available in the application specific database. Discussions with key personnel coupled with subsequent analysis of the data and subsets of data will be conducted to reveal knowledge discovery opportunities and patterns available within. Innovative reporting options will be developed to maximize use of the knowledge discovered and patterns revealed from this analysis.

8-248

Title: Implementation of a non-diabetic ketoacidosis continuous infusion insulin protocol in computerized prescriber order entry

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Purpose: The current non-diabetic ketoacidosis (non-DKA) continuous infusion insulin written protocol at our institution utilizes a multiplier for initiation and titration. The multiplier portion of the protocol includes a table that is difficult to convert into computerized prescriber order entry (CPOE) due to the large amount of information, so only part of the protocol can currently be incorporated into CPOE which generates safety concerns. The purpose of this study is to implement and assess the safety and efficacy of a non-DKA continuous infusion insulin protocol that can be fully utilized in CPOE and is independent of the use of a multiplier.

Methods: A retrospective review of electronic medical records will be conducted for patients placed on the current continuous insulin infusion protocol between July 2013 and December 2013. After the implementation of the new protocol into CPOE, data will be collected prospectively for patients utilizing the new protocol from December 2013 until May 2013. The collected patient data will include baseline characteristics, mortality, time to reach target range of blood glucose, time staying within the target blood glucose range, number of hypoglycemic and hyperglycemic events, number of dosage adjustments, length of intensive care unit stay, length of hospitalization, use of corticosteroids, amount of dextrose containing intravenous fluids, documentation of infection, and duration of antibiotics. This study will be submitted to the Institutional Review Board for review and approval.

8-249

Title: Pharmacist-initiated continuum of care services: how to implement and maintain at a non-profit hospital

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Purpose: Continuum of care services for hospitalized patients is becoming an essential part of improving a patients medical course. This model follows a patient through admission medication reconciliation, chart review, discharge counseling, and post-discharge follow up. The purpose of this study is to successfully incorporate continuum of care services into the hospital system through the work of a pharmacist resident. The goal is to improve outcomes and reduce readmission rates in patients diagnosed with myocardial infarction with stent placement.

Methods: Eligible participants are those who receive scheduled or emergency angioplasty and have stent placement as part of their care at the hospital. The control population without medication counseling by a pharmacist at discharge will be obtained retrospectively in a 60 day time frame. The intervention population will receive medication counseling upon discharge and follow-up phone calls conducted by a pharmacist. Pharmacist counseling will be standardized with a pre-printed discharge progress note outline to follow and additional educational handouts for specific needs. A patient discharge summary sheet containing diagnosis, medication changes/additions, and recommendations from the physician for future therapy will be given to patients with a copy retained for follow-up. A pharmacist will follow-up at ten to fourteen days post stent placement to discuss any side effects, medication changes, and questions the patient may have. The impact of continuum of care services will be measured by readmission rates within 30 days of post-stent placement.

8-250

Title: Evaluation of intravenous medication events involving infusion pump technology in a multi-center healthcare system

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Purpose: An estimated 90% of patients in acute care facilities receive medication via intravenous (IV) route, placing them at risk for potential medication errors. The purpose of this study is to assess the current role of smart pump technology in IV product administration, explore the role of the human machine interface in IV error, and investigate use of this technology for averting errors. Information from this study will describe the current safety of IV product administration based on use of smart pump technology, and will be utilized to identify both current patient safety improvements as well as future areas for optimization.

Methods: In this retrospective evaluation, data was analyzed from Hospital Corporation of Americas (HCA) Patient Safety Improvement Project (PSIP) database associated with IV product administration and use of IV pump technology. HCA is a large hospital company that places emphasis on innovations in patient safety improvements. The PSIP data analysis process is a method for reviewing and investigating close call and harm events voluntarily reported by individuals involved in the patient care process. This PSIP data is de-identified; therefore, IRB approval was not required. The PSIP data set utilized for this evaluation encompasses events involving IV fluid administration occurring during the first quarter of 2013. IV product administration error data was sorted by relationship of event to IV pump using keywords associated with IV pump use. The primary measure for this descriptive report was the reported primary cause of the harm event or near miss associated with IV administration using pump technology. The reported type of IV administration error notification was also reported for events or near misses involving an IV pump for administration.

Results: Preliminary results describe how the voluntarily reported events and near misses recorded in the PSIP dataset regarding the use IV product administration was reviewed and analyzed. Utilization of an IV pump for product administration to the patient was mentioned in 11.2% of reports. Of the reports, staff competency and education was the most frequently reported primary cause for events and near misses (60%), followed by IV pump device issues (16%). Of the subset of data listing IV pump device issue as the primary cause for the event, rate of infusion was the most commonly reported notification type (62%), with duration of therapy (31%) and strength or concentration issues (6%) comprising the remaining reports. While preliminary data has been attained, additional analysis will be performed to

investigate frequency of drug classes associated with reported events. Data will also be analyzed to gain more insight about association of IV pump errors with technology failure, human error, and lack of safety technology utilization and optimization within reported events.

Conclusion: Conclusions will be determined based on further analysis.

8-251

Title: Analysis of medication management alerts and triggers from a clinical surveillance software

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Purpose: Clinical pharmacy surveillance software is becoming increasingly utilized by hospitals. These surveillance systems often report completed clinical interventions by pharmacists. This study reviewed clinical alerts and triggers not completed by pharmacists. A six-month proof of concept was performed at a 680-bed general medical and surgical hospital with approximately 10,000 patient admissions annually. Time period for proof of concept was March to August, 2013.

Methods: This retrospective study included all triggers and alerts reported by the clinical surveillance software from March through August, 2013. The rules engine utilizes multiple sources of clinical information to evaluate laboratory and microbiology results compared to pharmacotherapy and evidence-based medicine care pathways. Rule categories include renal and weight-based dosing, intravenous to oral medication administration, and antimicrobial stewardship. Information used for rule evaluation includes patient demographics; admission, discharge, and transfer data; laboratory and microbiology results; and pharmacy orders. Results were analyzed using Microsoft Excel and other software products.

8-252

Title: Utilization of a Candida Score in Patients in a Medical/Surgical Intensive Care Unit

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Purpose: The purpose of this project is to retrospectively evaluate the utility of an objective candida risk assessment in patients in a mixed medical/surgical intensive care unit (ICU). Current practice in this ICU does not utilize objective assessment of candida risk. Presently empiric antifungal therapy is initiated based on clinician suspicion. Using a candida risk assessment tool in these patients may help determine if this assessment would be valuable to more accurately identify patients at risk for invasive candidiasis and limit unnecessary antifungal use.

Methods: ICU patients receiving empiric antifungal therapy will be identified through an electronic search. Medical records of the identified patients will be retrospectively reviewed. Inclusion criteria are ICU patients receiving empiric fluconazole, micafungin or caspofungin. Neutropenic patients are excluded. Using the Candida Score (CS) developed by Leon and colleagues, the CS of patients will be calculated. The calculated CS includes the following risk factors: diagnosis of severe sepsis, administration of parenteral nutrition, multifocal candida colonization and recent surgery. The primary endpoint is the correlation between the CS and invasive candidiasis.

8-253

Title: Assessment of a pulmonary diseases, team-based learning (TBL) course for third year pharmacy students

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Purpose: Pharmacists are well positioned to play a significant role in caring for patients with pulmonary diseases both in the acute and ambulatory settings. Although student pharmacists gain knowledge and some practical skills managing pulmonary illnesses and using pulmonary devices, this is generally very basic and early in the curriculum. This course aims to increase knowledge, understanding, and application of various pulmonary disease states specifically focusing on the pharmacists role in managing these diseases and the many care transitions pulmonary patients make throughout the course of their pulmonary disease

Methods: This study will involve third-year doctor of pharmacy students who select to enroll in a new Pulmonary elective offered in the spring of 2014. The course will be structured as 2-hour sessions three times per week during the month of February. The team-based learning (TBL) format will be utilized for this course. TBL topics to be covered include: asthma, COPD, tobacco abuse, cystic fibrosis (CF), infectious lung diseases, drug-induced lung disease, and pulmonary hypertension. In addition to TBL sessions, hands-on skills and simulation sessions will be used to reinforce all skills taught throughout the course. Assessments will include a knowledge assessment conducted on the first day of class. This assessment will evaluate the students baseline knowledge of pulmonary related topics covered in the course (disease state knowledge, medications used to treat pulmonary diseases and appropriate patient counseling). Additionally, skills checklists will be used to assess the students ability to appropriately utilize pulmonary devices. All assessments will be repeated at the end of the course. Students opinions regarding TBL in this course using a previously published questionnaire as well as their opinion regarding the benefit of additional pulmonary disease training will be conducted at the end of the course.

8-254

Title: Impact of combination bumetanide and albumin versus bumetanide alone on urine output: A pilot study

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Purpose: Loop diuretics have long been known as the drug of choice to increase urine output. In order for loop diuretics to reach their site of action in the kidney, they must be bound to albumin. Theoretically, giving loop diuretics with albumin will increase the drug response. There are conflicting data regarding the efficacy of this method. All of the trials evaluating this combination studied just one loop diuretic, furosemide. The objective of this study is to evaluate the change in urine output in patients who received bumetanide alone followed by combination bumetanide and albumin.

Methods: After submission of this study to the Institutional Review Board for approval, a retrospective chart review will be conducted. Patients will be included if they are 18 years of age and they received intravenous bumetanide alone for at least six hours, followed by bumetanide and albumin given intravenously. Patients will be excluded if they did not have strict urine output documentation or if they were on dialysis prior to the first dose of bumetanide. The primary endpoint will be urinary output. Secondary endpoints will include a dose-response calculation to determine the amount of urine per milligram of drug, total dose of bumetanide and albumin, fluid balance, and length of therapy. Laboratory parameters will include serum SCr, albumin, sodium and potassium. Data will also be collected to determine demographics, home diuretic use (if available), concurrent diuretic use, co-morbid conditions, blood pressure, admitting diagnosis, presence of a ventilator, dialysis, pre-albumin (if available), and glomerular filtration rate as estimated by the Cockcroft-Gault and MDRD equation. In order to determine the patient populations that had significant increases in urine output, subgroup analyses will be performed on patients with chronic kidney disease, acute on chronic kidney disease, acute kidney injury, and congestive heart failure.

8-255

Title: Evaluation of the effectiveness of a vancomycin nomogram at predicting trough levels within a therapeutic range

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Purpose: Vancomycin is a narrow therapeutic index drug. According to the most recent Infectious Diseases Society of America/American Society of Health System Pharmacists' guidelines on the therapeutic monitoring of vancomycin in adult patients, vancomycin serum trough concentrations should be maintained above 10mg/L to avoid development of resistance, and ideally between 15-20mg/L to improve penetration, increase probability of obtaining optimal target serum concentrations, decrease the incidence of nephrotoxicity, and improve clinical outcomes. The objective of this study is to assess the ability of a vancomcyin dosing nomogram to effectively predict vancomycin serum trough concentrations within the desired 15-20mg/L therapeutic range.

Methods: This study will be submitted to the Institutional Review Board for approval. Evaluable patients will be identified by alerts set up through Theradoc, a therapeutic drug monitoring service, to determine target attainment of steady-state vancomycin serum trough concentrations for patients receiving intravenous vancomycin dosing regimens determined by the vancomycin dosing nomogram. The following data will be collected: patient age, gender, weight, height, diagnoses, vancomycin dose, vancomycin serum trough concentration, and serum creatinine. A modified creatinine clearance will be calculated. All data will be recorded without patient identifiers and maintained confidentially. Vancomycin serum trough concentrations will be evaluated to determine if they were drawn appropriately. Data from patients with appropriately drawn serum trough concentrations will be assessed as being within the therapeutic range of 15-20mg/L, or as not being within the therapeutic range.

8-256

Title: Impact of ketamine infusions on the ability to wean off continuously infused fentanyl in critically ill, trauma patients

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Purpose: In trauma patients, opioid therapy is frequently administered as a continuous intravenous infusion for adequate pain management. In some cases, higher doses or prolonged periods of administration are required, leading to prolonged ICU stay. Few recommendations exist to guide clinicians on the best strategy with which to wean patients from continuously infused opioids. The purpose of this study is to assess the impact of ketamine infusions on the ability to wean off continuously infused fentanyl.

Methods: This study will be submitted to the Institutional Review Board for approval. The study will be a retrospective cohort study design. The electronic medical record system will identify trauma patients 18 years of age and older who received a fentanyl continuous infusion of greater than 100 mcg/hour for a minimum of 24 hours. Patients will be excluded from the study if they had an intracerebral hemorrhage, traumatic brain injury, and/or diagnosed anoxic brain injury. The following data will be collected: age, gender, race, weight, Injury Severity Score (ISS), APACHE-II Score, Glasgow Coma Scale (GCS), home opioid use, ICU admitting diagnosis, analgesia use and dose, sedative use and dose, duration of mechanical ventilation, ICU and hospital length of stay (LOS), and duration of ketamine and fentanyl infusions. The primary outcome is the time from the maximum rate that continuously infused fentanyl was administered to the time of discontinuation. Secondary outcomes will include duration of mechanical ventilation, ICU and hospital LOS, and incidence of delirium.

8-257

Title: Medication use evaluation of central nervous system depressant, alcohol, and opiate detoxification protocols within a behavioral health facility.

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Purpose: Psychiatric disorders are associated with an increased risk of drug addiction and substance abuse. Symptoms of withdrawal from alcohol, sedatives, opiates, and stimulants include dysphoria, insomnia, anxiety, hypertension, tachycardia, nausea, agitation, and irritability. Although symptoms are similar, complications vary and thus treatment and importance of treatment vary as well. The purpose of this study is to determine the appropriateness of detoxification protocol use within a 132 bed behavioral health facility before and after the addition of a clinical pharmacist quality improvement initiative.

Methods: This retrospective chart review study will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify patients within the behavioral health department who received a detoxification protocol from January 1st 2013 through March 31st 2013. Upon generation of the list of prospective subjects, all those discharged against medical advice, < 18 years old, or receiving their home buprenorphine medication will be excluded. The following data will be collected: patient age, gender, allergies, location within facility, start date of detoxification protocol, which protocol the patient received, total doses of protocol medication, urine drug screen results, and concomitant controlled substances received while admitted. All data collected will be reviewed to assess inappropriateness defined as: the use of multiple protocols, the wrong hierarchy of protocols used (central nervous system, alcohol, opiates), wrong medication, wrong dose, wrong directions, and/or co-administration of other controlled substances. Provider documentation will be reviewed to determine clinical justification of inappropriateness. The investigators will compare the results of this review with results from the 2nd quarter of 2013 (April 1 through June 30) in which a quality improvement initiative was implemented to utilize a clinical pharmacist.

8-258

Title: Association between clinical outcomes and opioid dose among veterans with non-malignancy related pain

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Purpose: The primary objective of this study is to evaluate the rates of mortality, morbidity, and medication use among patients who are prescribed prescription opioids for non-malignancy related pain at the James H. Quillen VA Medical Center.

Methods: We plan to conduct a retrospective chart review involving patients from the Veterans Affairs Medical Center in Mountain Home, Tennessee. A computerized database query from June 30, 2012 to June 30, 2013 will be conducted to identify veterans greater than 18 years of age with non-malignancy related pain and with an active outpatient prescription(s) containing an opioid. Any patient with malignancy related pain will be excluded from the study. Each patient must have at least two fills for the same medication of at least a 28 day supply. All opioid medications will be converted to an equianalgesic dose per the Global RPh equianalgesic dose chart. The patient will be categorized in one of four categories of morphine equivalents of 0, 1-99, 100-199, and greater than 200. The primary endpoints, morbidity, mortality, and overall medication use will be analyzed for each of the four categories. Furthermore, analysis of secondary endpoints which include types of opioids prescribed, use of methylnaltrexone, admissions due to altered mental status, admissions due to falls, concomitant pain medications, and average pain score will also be assessed among the four categories.

8-259

Title: Safety and efficacy of a continuous intravenous insulin infusion protocol in postoperative cardiac surgery patients

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Purpose: Postoperative blood glucose control in cardiac surgery patients has been demonstrated to improve wound healing, decrease hospital length of stay, decrease mortality, and improve overall outcomes. By initiating an insulin infusion protocol, adequate blood glucose control can be achieved. The Society of Critical Care Medicines guidelines on the management of hyperglycemia in critically ill patients support moderate glycemic control (100 to 150 mg/dL) in the postoperative period following cardiac surgery. The purpose of this study is to evaluate the safety and effectiveness of a continuous intravenous insulin infusion protocol implemented in postoperative cardiac surgery patients.

Methods: After obtaining approval from the Institutional Review Board, patients undergoing cardiac surgery were identified using the daily surgery schedule. The cardiac surgeries predominantly included coronary artery bypass graft surgery (CABG), transcatheter aortic valve replacement (TAVR), aortic valve replacement (AVR), and mitral valve replacement (MVR). Inclusion criteria consisted of patients who received a CABG, TAVR, AVR, or MVR and received the insulin infusion protocol. Patients were excluded if endocrinology was consulted. Baseline data collection included A1C, diabetic status (diabetic, nondiabetic, unknown), and home diabetes medications, if applicable. Intraoperative data collection included the average blood glucose, range in blood glucose measurements, insulin administration, and corticosteroid administration. The remaining data collected were time to reach target glycemic control; blood glucose at initiation of the insulin infusion; blood glucose average and range during insulin infusion administration; duration of time on insulin infusion; percentage of blood glucose measurements outside of target range; episodes of hypoglycemia (less than 60 mg/dL) and severe hypoglycemia (less than 40 mg/dL); and use of medications that may raise blood glucose or the initiation of enteral or parenteral nutrition.

8-260

Title: Evaluation of single dose antifibrinolytics in total joint replacement surgery

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Purpose: Antifibrinolytics may reduce the need for blood transfusions with orthopedic surgery, and subsequently reduce the risks associated with blood transfusions. The objective of this study is to evaluate single dose antifibrinolytics for reducing peri-operative blood loss and subsequent blood transfusions in patients undergoing total hip or knee replacement surgery.

Methods: This study will be submitted to the Institutional Review Board for approval. Patients undergoing total hip or knee replacement by one orthopedic surgeon will receive a single-dose of an antifibrinolytic agent peri-operatively. Patients serving as control underwent prior total hip or knee replacement by the same surgeon, with no antifibrinolytic dose. The following data will be collected: patient age, gender, pre-operative and post-operative hemoglobin levels, total external blood loss, and number of packed red blood cell transfusions.

8-261

Title: Assessment of patient outcomes associated with a pharmacist managed warfarin consult service at a large, university-affiliated tertiary teaching institution

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Purpose: Warfarin anticoagulation therapy is used by over 4 million patients in the United States, in 2011. Lack of warfarin monitoring can lead to dangerous adverse effects and death. The study institution has implemented a pharmacist managed in-patient anticoagulation service to help improve patient outcomes. The purpose of this study is to assess patient outcomes in a new pharmacist managed inpatient warfarin consult service compared to non-pharmacist managed warfarin therapy at a 850-bed university-affiliated tertiary teaching institution.

Methods: This study is a single-center comparative retrospective cohort study of adult hospitalized patients receiving warfarin therapy managed by pharmacists compared to non-pharmacist managed services from September 2013 to February 2014. Patients greater than 18 years of age receiving warfarin will be included in this trial. Exclusion criteria will include patients who are receiving concurrent treatment with argatroban or bivalirudin. Data collected will include demographics, pertinent labs, INRs, major bleeding or thrombosis events, and hospital length of stay. Patients will be divided into the pharmacy consulted to manage warfarin service and the non-pharmacy managed warfarin service groups. Primary objective will be to compare the two groups that have one or more incidences of supratherapeutic INRs (>3.5 or as defined by physician). Secondary endpoints will include the time to reach therapeutic INRs (2-3.5 or as determined by physician), percent of patients that have one or more incidences of an INR > 10 after admission, percent of patients that received vitamin K after admission, and percent of incidence of major side effects, major bleeding and thrombosis, after initiation of warfarin.

8-262

Title: Analysis of asthma action plans developed and monitored by pharmacists in a community pharmacy setting

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Purpose: To evaluate the effectiveness of asthma action plans that are developed and monitored by community pharmacists in collaboration with healthcare providers.

Methods: Participants will be selected using profiles from community pharmacy locations within the Austin, Texas region. Ideal candidates will be individuals with asthma treated with multiple medications. Participants with no existing action plan will be provided an action plan along with a brief overview of the action plan and review of medications. The participants primary healthcare provider will be contacted and informed of the patients desire to create an asthma action plan. With collaborative efforts between the pharmacist and healthcare provider, a personalized action plan will be created. The medication history will be reviewed for three months prior to commencement of the action plan to establish the baseline frequency of medication fills. The participants will be monitored for three months following initial review of the asthma action plan. Effectiveness of the asthma action plan will be measured by completion of surveys at the beginning and conclusion of the study. Questions on the surveys will be designed to determine understanding and ease of use of the action plan in addition to disease state management related items such as number of exacerbations per month. Self-reported medication adherence forms completed by the candidates will measure medication adherence.

8-263

Title: Does ascorbic acid prevent acute kidney injury in patients receiving vancomycin therapy?

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Purpose: Vitamin C (ascorbic acid) possesses antioxidant properties and has been suggested to reduce renally-associated oxidative stress. Previous studies have suggested ascorbic acid may confer a renal protective benefit in patients receiving nephrotoxic agents such as gentamicin, cisplatin, and cyclosporine. Physicians at our institution frequently consult pharmacists to dose vancomycin. Upon initiation of vancomycin, pharmacists subsequently obtain permission from physicians to start oral ascorbic acid 500mg twice daily. Patients will receive oral ascorbic acid one hour prior to vancomycin administration. The objective of this study is to determine if supplementation with ascorbic acid during administration of vancomycin will prevent kidney injury.

Methods: This retrospective study will be conducted as a Quality Improvement measure, thus does not require approval from the Institutional Review Board. The study will evaluate data collected from October 1, 2010 through September 30, 2012. Vancomycin patients who received oral ascorbic acid 500 mg twice daily will be classified as the Vitamin C group. Patients who did not receive oral ascorbic acid with vancomycin will be classified as Non-vitamin C group. Patients will be excluded if they are not at least 18 years of age, have a previous history of calculi, previous vancomycin administered during the current admission, and require hemodialysis. Patients receiving other concurrent nephrotoxic agents, including but not limited to aminoglycosides, amphotericin B, contrast die, cisplatin, carboplatin, cyclosporine, and tacrolimus will be included for the purpose of a separate subgroup analysis. The primary outcome of this study is the occurrence of acute kidney injury in patients who received intravenous vancomycin therapy. Acute Kidney injury will be defined as an increase in serum creatinine of $\geq$ 0.3 mg/dl or 50% increase in serum creatinine from baseline within 48 hours.

8-264

Title: Risk of delirium in critically ill patients exposed to corticosteroids

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Purpose: Delirium commonly manifests in critically ill patients, ranging from 20 percent to 80 percent incidence in the intensive care unit (ICU). It is known to increase mortality, hospital length of stay, cost of care, and long-term cognitive impairment. Few studies have shown correlation between the incidence of delirium in patients receiving corticosteroids in the ICU. Our primary endpoint is to determine the risk of delirium in critically ill patients exposed to corticosteroids versus not exposed to corticosteroids. Secondary endpoints will be hospital length of stay, ICU length of stay, hospital mortality, and 30-day mortality.

Methods: The study will be submitted to the Institutional Review Board for approval. We will perform a retrospective, single-center cohort study in a medical ICU population. Patients will be included in the study if greater than or equal to 18 years of age, admitted to the selected medical ICU, and have a RASS score greater than negative 4. Patients will be excluded if they have a RASS Score of negative 5 and negative 4, alcohol withdrawal, neurosurgery, adrenal gland disease, hepatic encephalopathy, meningitis, history of dementia or cognitive impairment, seizures, and traumatic brain injury. Data collected will include: patient demographics; corticosteroid drug, dosage and duration of therapy; and use of typical and atypical medications. Hospital length of stay, ICU length of stay, hospital mortality, 30-day mortality will also be collected. A univariate and multivariate analysis will be conducted to test the association between the outcome and variables of interest.

8-265

Title: Assessing observance of clinical practice guidelines for the treatment and management of candidiasis infections at a Veterans Affairs Medical Center

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Purpose: The extent to which the 2009 Infectious Diseases Society of America (IDSA) guidelines have been followed for the treatment of Candida infections is not well known due to the lack of clinical studies investigating this topic. The objective of this research study will be to assess the extent to which pharmacological and non-pharmacological recommendations from the 2009 update for the treatment of candidiasis are followed by health care providers.

Methods: This study will be submitted to the Institutional Review Board for approval. The Veterans Affairs computerized patient record system will be used to identify patients with cultures positive for Candida species from June 30, 2009 to June 30, 2013. The following data will also be collected: age, gender, ethnicity, infection site, and existing co-morbidities at time of infection. Pharmacological recommendations from the IDSA guidelines to be assessed include: initial drug choice, treatment duration and drug therapy management based on Candida species type, hemodynamic stability, and renal function. Non-pharmacological recommendations to be assessed include: removal of central venous catheters or surgical debridement, when appropriate. Consultation of the Michael E. DeBakey Veterans Affairs Medical Center (MEDVAMC) Infectious Diseases Consult Service by the inpatient primary team during management of candidiasis will be assessed. All data will be recorded without patient identifiers to maintain confidentiality.

8-266

Title: Appropriate use of granulocyte-colony stimulating factor as supportive care in a veteran population receiving chemotherapy

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Purpose: The objective of this quality improvement project is to evaluate the use of G-CSF and GM-CSF within a veteran population to determine the level of consistency with National Cancer Care Network (NCCN) Guidelines on recommendation for use as supportive care for prevention of neutropenia in patients receiving chemotherapy. This project will identify the characteristics of veterans within a select region that receive growth factor support and analyze the appropriateness of dose, duration, and monitoring for G-CSF. The results of this project may be used to develop new measures to ensure evidence-based prescribing of G-CSF in cancer patients undergoing chemotherapy.

Methods: This quality improvement project is exempt from Institutional Review Board approval as it does not meet the definition of human subjects research. A preliminary query using the ProClarity database system will identify patients prescribed any dose or quantity of filgrastim, pegfilgrastim, or sargramostim during the preceding 12 months (September 2012 through August 2013). Retrospective chart reviews will be performed for all patients. Variables to be assessed include cancer type, chemotherapy regimen, treatment intent and line of therapy, NCCN risk category, dose and duration of G-CSF, neutropenia following prior chemotherapy cycle, neutropenic fever following previous chemotherapy, whether chemotherapy regimen was dose adjusted following neutropenia, and whether appropriate monitoring after G-CSF use occurred. Additional patient risk factors such as age 65 years or older, performance status, comorbidities, pre-existing neutropenia or bone marrow involvement, and impaired renal or hepatic function will be documented. Descriptive statistics will be used to present the data collected for this project.

8-267

Title: Evaluating the safety and efficacy of intraoperative antiarrhythmics in pediatric cardiac surgery patients

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Purpose: Cardiac arrhythmias occurring during the intraoperative period for cardiac surgery have been associated with excess morbidity and mortality. Several antiarrhythmics have been utilized for the management of intraoperative arrhythmias. These antiarrhythmic medications can cause undesirable adverse effects in the intensive care setting and may be associated with additional undesirable outcomes. The prevalence and optimal treatment of adult intraoperative arrhythmias and pediatric postoperative arrhythmias have been studied. Literature has not been published on intraoperative antiarrhythmia treatment during pediatric cardiac surgery. The purpose of this study is to determine the safety and efficacy of intraoperative antiarrhythmics utilized in pediatric cardiac surgery patients.

Methods: This is a retrospective cohort study of all patients who received an intraoperative antiarrhythmic in the cardiovascular operating room from November 1, 2008 through July 31, 2013. Patients will be identified from anesthesia op-time records. It is expected that this study will have approximately 200 patients after exclusion criteria are applied. Patient specific medical record numbers will then be used in the institutions various databases to complete further data collection. Institutional Review Board approval will be attained prior to study completion. Patients will be excluded if all antiarrhythmics were given intraoperatively for other indications. The primary outcome studied will be the occurrence of adverse events; the secondary outcome will be the cessation of the intraoperative arrhythmia. Variables to be collected include patient demographics, surgical procedure type, cardiopulmonary bypass time, history of arrhythmia, maintenance antiarrhythmics, intraoperative arrhythmia type, intraoperative antiarrhythmic utilized, use of direct current cardioversion, resolution of arrhythmia, additional antiarrhythmics utilized, electrolyte levels, presence of adverse events, administration of medications to treat adverse effects, antiarrhythmics continued post-operatively, and antiarrhythmics continued upon discharge. Results will be presented in a descriptive manner. Descriptive and inferential statistics will be applied as appropriate.

8-268

Title: Impact of diabetes on graft survival and cardiovascular outcomes after heart transplantation

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Purpose: Heart transplantation, the gold standard in treatment for end-stage heart failure, raises concern in diabetic patients due to risk for multiple pre- and post-transplant complications. Previous studies have demonstrated that pre-transplant diabetes is a major predictor of all-cause and cardiovascular mortality in kidney transplant recipients. However, the impact of diabetes on survival outcomes after heart transplant has not been fully described in current literature. The objective of this study is to assess the effects of diabetes mellitus on outcomes of graft survival, patient mortality, and cardiovascular events in heart transplant recipients.

Methods: A retrospective cohort observational study of treatment outcomes in heart transplant recipients with and without diabetes (pre-transplant history or new onset diabetes) will be performed for patients 18 years and older who were transplanted between January 2008 and November 2012. This study has been submitted to the Institutional Review Board for approval. Data collected will include: patient age, sex, race, past medical history, baseline BMI, hemoglobin A1c and fasting glucose measurements, post-transplant immunosuppressive medications, and all significant events after transplantation including change in ejection fraction, cardiovascular events, graft rejection, loss of cardiac graft, and death. All data will be maintained confidentially. In the analysis, the incidence of adverse outcomes after cardiac transplant will be determined and compared between cohorts with pre-transplant diabetes, with new onset diabetes after transplant, and without diabetes. The primary endpoint will be the incidence of graft failure after heart transplantation. Secondary endpoints will include the incidence of cardiovascular events and rates of all-cause mortality in patients with diabetes compared to patients without diabetes. Descriptive statistics will be reported for comparison of post-transplant events in each cohort and Kaplan-Meier method will be used to estimate survival rates for each cohort.

8-269

Title: Initiation of pharmaceutical services for the management of asthma/chronic obstructive pulmonary disease (COPD) in a community pharmacy

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Purpose: In 2005, among adults 18 years and older, there were 15,424 hospitalizations for asthma and 26,718 hospitalizations for COPD in Texas. Liberty County, which includes the city of Cleveland, was one of the top ten counties for COPD admission rates in 2005. The purpose of the study is to implement and assess the effect on the control of asthma and COPD in the Cleveland community by interventions made by retail pharmacists.

Methods: This study will be submitted to the Institutional Review Board for approval. This is a unique attempt to provide pharmaceutical care for asthma and COPD patients at a retail pharmacy in collaboration with a federally qualified health center (FQHC) in the rural city of Cleveland, Texas. All pharmacists at the store are trained in COPD and asthma management. Patients 18 years and older who are picking up any inhalers or inhalation solutions are counseled on respiratory device use technique and are asked to fill out a validated Asthma Control Test (ACT) or COPD assessment test (CAT) for the condition self-reported by the patient. Patients with uncontrolled asthma or COPD, as assessed by the tests, are offered an initial 30 minute appointment with a pharmacist followed by a maximum of 4 monthly 15 minutes follow-up sessions as needed based on their control. Additionally, patients are also referred to the individual sessions from the FQHC. At the end of 6 months, anticipated outcomes include decrease in number of ER visits/hospitalization compared to the start of the study based on local hospital data, improvement in symptom control based on validated questionnaire, reduced rescue inhaler use and improvement in adherence to controller medication.

8-270

Title: Evaluation of weight based dosing of fosphenytoin in obese patients

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Purpose: In the United States, approximately 12.5 million (17 percent) children and adolescents ages 2 to 19 years are obese. The primary objective of this study is to determine if obesity has any effect on fosphenytoin levels in pediatric patients. The secondary objective is to determine if obese pediatric patients receiving weight based loading or maintenance doses of fosphenytoin for seizure prophylaxis require more dosage adjustments or experience more adverse events compared to normal body weight patients.

Methods: This is a retrospective case cohort study, including patients 2 to 18 years of age, as identified by the electronic medical record system, admitted between March 2007 and March 2013, having received a weight based loading dose and subsequent maintenance therapy of fosphenytoin in the Emergency Center (EC) or Pediatric Intensive Care Unit (PICU). Patients must have had at least one fosphenytoin level drawn within 2 hours of the loading dose and at least one level with maintenance therapy. Patients will be classified as obese (body mass index (BMI) greater than or equal to 95th percentile for children of the same age and gender), or non obese (BMI between 25th to 75th percentile for children of the same age and gender). Patients will be excluded from this study if they currently receive phenytoin in an outpatient setting or have a BMI less than 25th percentile. Data collection will include: patient demographics, patient weight, loading and maintenance fosphenytoin dose, albumin levels, total phenytoin levels, free phenytoin levels, concomitant medications, and any reported adverse medication events. Statistical analysis of differences between the two groups will be conducted using the students t test.

8-271

Title: Intense to moderate pravastatin dose conversion: an analysis of lipid lowering benefit in a Veteran population

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Purpose: HMG-CoA reductase inhibitors are the drugs of choice for hyperlipidemia treatment, as they are the most potent LDL-C lowering agents. A few clinical trials compared high-dose statin therapy with standard therapy in patients with stable coronary heart disease and found no significant differences in all-cause mortality. Moreover, pravastatin 40 mg and 80 mg as compared to other moderate-dose statins provides similar LDL-C reduction of approximately 30 to 40 percent. This project is the result of a cost-savings initiative of pravastatin intense to moderate dose conversion to compare pre-and-post LDL-C, HDL-C and triglyceride levels to validate changes observed in clinical trials.

Methods: This quality improvement project is part of a Veterans Integrated Service Network cost-savings initiative to convert patients with an active prescription for pravastatin greater than 40 mg (GT40) to a decreased dose of 40 mg daily (one-half of an 80 mg tablet). This is exempt from IRB approval as it is not classified as human subject research. Structured Query Language computer software will be used to identify patients with an active pravastatin GT40 prescription. Patients will then be converted to pravastatin 40 mg daily. Data gathered will include the patients LDL-C, HDL-C, and triglyceride level pre-conversion, and LDL-C, HDL-C, and triglyceride level at least six weeks from the pravastatin conversion date. As the project progresses, lipid data will be collected to determine the number of Veterans for analysis. Descriptive statistics will be used to assess the percent change in the pre-and-post LDL-C, HDL-C and triglycerides. This project will also determine a projected annual cost-savings as a result of the pravastatin dose conversion.

8-272

Title: Risk factors for accelerated recurrent hepatitis C after liver transplantation

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Purpose: Chronic hepatitis C is the leading indication for liver transplantation in the United States. Recurrent hepatitis C after liver transplantation with poor outcomes has been reported. It remains unclear whether or not certain risk factors can accelerate the progression of hepatitis C virus (HCV) post-transplantation, leading to cirrhosis and ultimately graft failure. The objective of this study is to assess the relationship between known risk factors and accelerated recurrent HCV (within 1 year) in post-transplant patients.

Methods: A retrospective case-controlled study will be performed in HCV liver transplant recipients with accelerated recurrent HCV. Liver biopsy results will be used to identify patients with confirmed recurrent hepatitis C within 1-year post-transplantation. Risk factors assessed will be: donor- and recipient-specific factors (age, MELD score, length of stay and other pertinent medical history), viral factors (HCV viral loads and other co-infection) prior to transplantation, rejection episodes and treatment (specifically the use of bolus steroids) as well as the use of immunosuppressive medications. The primary endpoint is to assess risk factors for accelerated recurrent hepatitis C in post-transplant patients. Secondary endpoints including the incidence of accelerated recurrent hepatitis C, all-cause mortality, graft failure, liver-related mortality and liver re-transplantation, will be determined. Patient demographics will also be collected. Statistical analysis will be performed by using Chi-square or Fisher exact test for nominal data and Students T-test for normally distributed continuous data. Regression analysis will be used to determine significant risk factors. This study is currently pending Institutional Review Board approval.

8-273

Title: Evaluation of time to appropriate antibiotic administration in critically ill patients at an academic veterans affairs medical center

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Purpose: On average, for each hour delay in antibiotic therapy, survival decreases by 8% per hour regardless of site of infection or microorganism. For this reason, the Surviving Sepsis Campaign gives a grade 1B recommendation for the administration of antibiotics within one hour of sepsis recognition. The objective of this study is to evaluate time to appropriate antimicrobial administration in patients who are admitted to the medical, surgical, and coronary care intensive care units. The study will also evaluate in-hospital, all-cause mortality, intensive care unit length of stay, hospital length of stay, and initial empiric drug therapy for appropriateness.

Methods: This is a retrospective observational study of hospitalized patients admitted to the intensive care units from July 1, 2012 to December 31, 2012. All patients greater than or equal to 18 years of age with sepsis and receiving intravenous antibiotics will be included in the study. Due to the retrospective nature of the study and no risk of patient harm, informed consent will not be required. Exclusion criteria include age less than 18 years, pregnancy, and oral antimicrobial therapy. Patient demographics, ICU location, past medical history, Acute Physiology and Chronic Health Evaluation II score, first dose antibiotic including order entry time, verification time, administration time, and microbiology cultures will be collected from the medical record. Descriptive statistics will be used to determine the frequency distributions in baseline characteristics and outcomes. Prior to initiation, this study will be submitted to the Institutional Review Board and ethics committee for approval.

Results: Pending.

Conclusion: Pending.

8-274

Title: Evaluation of pain control in patients on propofol and dexmedetomidine

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Purpose: The Clinical Practice Guidelines for the Management of Sedation and Analgesia, recommend that pain should be appropriately addressed prior to initiation of sedation. Despite these recommendations many patients in the intensive care unit (ICU) receive sedation without analgesia. The primary outcome of this study is to determine whether patients receiving propofol or dexmedetomidine for sedation are also receiving medications for analgesia. Secondary outcomes include: determining if higher doses of sedation are being utilized in these patients due to ineffective management of analgesia, and determining if more adverse events are seen due to higher sedative doses.

Methods: This study is a retrospective chart review over a three year period from August 2010 to 2013. Patients will be included if they were in the ICU and received sedation with propofol or dexmedetomidine while on mechanical ventilation. The initial 72 hour period after sedation initiation will be analyzed to determine analgesia management. Exclusion criteria will be less than 18 years of age, pregnancy, severe acute respiratory distress syndrome, neuromuscular blockade, documented opiate dependence, active thyroid storm, conditions for which permissive hypertension is allowed, and hypertension requiring continuous IV medications. Patients that have adequate analgesia will serve as the control group. Institutional Review Board approval is pending.

8-275

Title: Determining optimal combination antibiotic therapy for carbapenamase-resistant Enterobacteriaceae based on in vitro synergy testing

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Purpose: Combination antibiotic therapy for carbapenamase-producing gram-negative bacteria has demonstrated a benefit compared to monotherapy in vitro. Patients are more likely to receive effective empiric coverage when treated with combination therapy. Prescribing guidelines for selecting dual antibiotic regimens are currently not available at our institution. The purpose of this study is to utilize the synergy Etest and CLSI antibiogram methods to construct a combination antibiogram in order to determine the most appropriate dual antimicrobial therapy for carbapenem-resistant Enterobacteriaceae (CRE) infections, specifically at our institution.

Methods: After Institutional Review Board approval, this retrospective analysis will evaluate 30 clinical CRE isolates from both inpatient and outpatient settings that have been confirmed by MicroScan and disk diffusion testing. Additional in vitro single and combination antibiotic susceptibility testing and MIC determination will be conducted using a synergy Etest method with antibiotics such as tigecycline, colistin, amikacin, and meropenem. After data collection, a dual antibiogram will be constructed according to CLSI standards (MS100-S23 with 95% CI and M39-A3 guidelines). This revised dual antibiogram will be internally distributed to assist empiric antibiotic treatment decisions, and potentially decrease failures with montherapy.

8-277

Title: Retrospective evaluation of intermittent intravenous sildenafil in infants with pulmonary hypertension

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Purpose: Sildenafil is used to treat pulmonary arterial hypertension associated with various cardiogenic and noncardiogenic causes. When enteral administration is not an option, discontinuation of sildenafil therapy is not always feasible. Adult pharmacokinetic data demonstrate sildenafil has an oral bioavailability between forty to fifty percent. In pediatric patients, there are minimal pharmacokinetic data and no randomized controlled trials assessing outcomes with intermittent intravenous sildenafil. In recent years, several patients have received intermittent intravenous sildenafil at our institution. The purpose of this study is to compare patients who received intravenous sildenafil to those who received enteral sildenafil and assess outcomes.

Methods: This study has been submitted to the Institutional Review Board for approval. A retrospective, matched-cohort will be performed on all patients less than on eyear of age who received intermittent intravenous sildenafil. Intravenous patients will be matched to enteral patients based on postmenstrual age and primary diagnosis. The following baseline demographics will be collected: gender, gestational age, postmenstrual age, postnatal age, birth weight, study entry weight, Apgar scores at 1 and 5 minutes, and primary diagnosis. Concomitant medications and the following biochemical and biophysical markers with be recorded at specific time intervals surrounding sildenafil initiation and dosage adjustments: liver function tests, brain natriuretic peptide, mean arterial pressure, systolic and diastolic blood pressure, and respiratory parameters. Lastly, the intensive care unit length of stay, ventilator days, mortality, hearing deficits, retinopathy of prematurity, and the initiation of extracorporeal membrane oxygenation during sildenafil therapy will be recorded. Descriptive statistics, students t test, and Chi square or Fishers exact test will be used appropriately to analyze results.

8-278

Title: Comparison of live versus previously recorded educational delivery methods

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Purpose: Providing live education to pharmacists may not always be feasible. Not all pharmacists may be able to attend the live education event at their workplace, as they may work different days, work different shifts, be on vacation, or have to staff during the event itself. With advancing technology, the ability to provide education electronically that is available at the viewer's convenience is an appealing option. The purpose of this study is to compare the knowledge improvement between live and previously video recorded educational delivery methods.

Methods: IRB approval is pending for this study. After IRB approval, a baseline competency assessment will be administered to all pharmacists who consent to study participation. Education will then be provided either as a live session or electronically as a previously recorded session. The education provided will be comprised of the same material to ensure consistent knowledge dissemination. After completing the education session, the competency assessment will be administered again. The assessments will be linked to allow the ability to compare individual improvement. Only the designated investigator will have access to the email accounts that will link the surveys.

8-279

Title: Use of vitamin B12 with peginterferon and ribavirin in the treatment of hepatitis C virus (HCV) infection in treatment-naive patients in correctional facilities in Texas

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Purpose: The standard dual therapy (SDT) for patients with chronic hepatitis C virus (HCV) infection includes peginterferon and ribavirin. Recent research suggests adding vitamin B12 to SDT may substantially improve outcomes in patients with chronic HCV infection. The purpose of this study is to assess the effectiveness of SDT plus vitamin B12 in a cohort of patients with chronic HCV infection in the Texas prison system. The primary aims are to assess end of treatment response rates and sustained virologic response rates among patients treated with SDT+B12 and to compare these rates to a historical comparison group treated with SDT alone.

Methods: Using a two-group posttest design, treatment responses of the cohort receiving SDT+B12 are compared to those of a historical comparison group treated with SDT alone across multiple demographic and clinical strata. Demographic and clinical strata will include age, sex, race/ethnicity, HCV genotype (1a/1b vs. 2/3), HCV disease progression (significant fibrosis vs. cirrhosis), viral burden prior to treatment (>500,000 vs. <500,000), vitamin B12 levels prior to treatment (< 350 vs. >350) and initial response to treatment (evaluated at the end of the first four weeks). The treatment group includes all patients who initiated treatment with SDT+B12 from January 1, 2013 through December 31, 2013. The historical comparison group includes patients who initiated SDT before December 31, 2013. We hypothesize that SDT+B12 will produce early treatment response rates and sustained virologic response rates that are significantly better than the historical comparison group, regardless of patient demographics or pre-treatment clinical factors under study. In addition, we predict no significant additional adverse outcomes will be identified in the SDT+B12 group. All data analyses will be conducted using Stata 12.0. All study procedures will be approved by the university IRB.

8-280

Title: Optimization of medication delivery robot use using lean methodology in a Veterans Affairs academic medical center

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Purpose: Delays in medication administration account for nearly thirty percent of all medication errors. Pharmacy plays a critical role in ensuring medication delivery to nursing units occurs in an efficient and timely manner. The Michael E. DeBakey VA Medical Center inpatient pharmacy has been approved a replacement of its current two medication delivery robots (MDRs) with four new upgraded robots. The purpose of this study is to optimize the functionality of the medication delivery robots. The primary endpoint is to reduce medication delivery time by the robot. Secondary endpoints include decreasing time between medication verification and administration and decreasing missing doses.

Methods: First, reports on MDR use will be collected to determine the current utilization of the robots by pharmacy shift, delivery times and nursing unit destinations. The computerized pharmacy record system will be utilized to obtain volume of missing doses. A voice of customer survey will be conducted on nurses staffing various units and pharmacy staff on various shifts to determine strengths, weaknesses, opportunities and threats of the current process. Upon collection of preliminary data, a taskforce of inpatient pharmacy supervisors, an inpatient staff pharmacist, an inpatient pharmacy technician, a nurse, and a systems redesign facilitator will convene to determine optimal use of the medication delivery robots. We will work directly with the robot technicians to update routes for the robot, utilize fingerprint scanning to track medications, add an additional elevator for robot use, and optimize use of the two additional robots. Upon complete installation, post-data will be collected on robot delivery times, turn-around time between medication verification and administration, and volume of missing doses. Finally, a standard operating procedure will be developed to facilitate use and troubleshooting for the upgraded MDR process. This research is exempt from institutional review board submission due to its intent of quality improvement.

8-281

Title: Dabigatran compared with warfarin for stroke prevention in atrial fibrillation: a look at bleeding rates and outcomes

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Purpose: The use of oral anticoagulation is the mainstay of therapy in the prevention of stroke in high risk atrial fibrillation patients. Dabigatran is a newer agent approved for stroke prevention in patients with nonvalvular atrial fibrillation. Unfortunately, dabigatran has been linked with multiple recent reports of bleeding beyond what was seen in clinical studies. Therefore, the purpose of this study is to assess the safety outcomes in patients receiving dabigatran.

Methods: This study will be submitted to the Institutional Review Board for approval before project initiation. A retrospective review of patients receiving dabigatran in a single large healthcare system will be conducted using electronic medical records from October 2010 to December 2012. All patient information will be de-identified by a randomly assigned number and information kept in a secure computer database. Inclusion criteria will be as follows: patients with a documented nonvalvular atrial fibrillation diagnosis prescribed dabigatran. Data collection will include patient age, sex, weight, serum creatinine, and concurrent medication use. The presence of congestive heart failure, hypertension, diabetes mellitus, or prior stroke will also be used to calculate a CHADS2 score. The primary outcome will evaluate major bleeding events as identified by ICD-9 codes and the secondary outcome will include an assessment of the treatment strategies for any bleeding events.

8-282

Title: Vancomycin and piperacillin/tazobactam combination nephrotoxicity risk

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Purpose: Nephrotoxic medications contribute to approximately 25 percent of acute kidney injury (AKI) cases. Although historically vancomycin has been associated with nephrotoxicity and piperacillin/tazobactam can mediate an allergic interstitial nephritis, recent anecdotal reports have highlighted a potential increased risk of nephrotoxicity when the two drugs are combined. Therefore the purpose of our study is to investigate whether combination vancomycin and piperacillin/tazobactam is associated with higher incidence of nephrotoxicity compared to other vancomycin based regimens. If AKI is present, we also want to investigate the time to AKI, time to AKI resolution, risk factors for AKI, length of stay, and mortality.

Methods: The study will be submitted to the Institutional Review Board for approval. This is a prospective observational study that compares the risk of nephrotoxicity in three treatment regimens: vancomycin with PTZ extended infusion, vancomycin alone, and vancomycin with other beta-lactams. Patients that are initiated on a treatment regimen will be followed throughout the admission until discharge. Demographics, comorbid conditions, treatment data, presence of nephrotoxic risk factors, severity of illness, and AKI data will be collected for the assessment of outcomes. Multivariate and time to event analyses will be conducted for the outcomes of interest. All assessments will be considered significant at an alpha of less than 5 percent.

8-283

Title: Effectiveness and adverse effects associated with the use of nitrofurantoin for the treatment of cystitis in patients with renal impairment

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Purpose: Urinary tract infections (UTI) account for over 8 million physician visits a year. Nitrofurantoin, a guideline-recommended antibiotic for the treatment of UTIs, is contraindicated in patients with renal impairment defined as creatinine clearance (CrCl) less than 60 mL/min. Despite this warning, nitrofurantoin is frequently and controversially prescribed in this population. The purpose of this retrospective study will be to assess and evaluate the effectiveness of nitrofurantoin in terms of clinical and microbiological outcomes in patients with renal impairment as compared to patients with CrCl greater than or equal to 60mL/min at a large, tertiary teaching institution.

Methods: A retrospective, cohort study will be performed in adult patients that received nitrofurantoin with a susceptible urine organism between June 2009 and June 2013. Patients will be stratified into two groups based on creatinine clearance: group A (CrCl greater than or equal to 60mL/min) or group B (CrCl less than 60 mL/min). Creatinine clearance will be calculated using the Cockcroft and Gault equation, adjusted for age and gender. Patients will be excluded if they have any underlying autoimmune disorders, pyelonephritis, recurrent UTIs, polymicrobial growth in the urine, nitrofurantoin usage less than 72 hours or have initiated any concurrent antibiotics active against the urinary pathogen. The primary endpoint will be to assess the difference in clinical and microbiological cure rates between groups. The secondary endpoint will assess for the rate of serious adverse drug events. This study has been submitted to the Institutional Review Board for approval.

8-284

Title: Impact of a universal decolonization protocol on the incidence of hospital-acquired methicillin-resistant staphylococcus aureus (MRSA) infections

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Purpose: MRSA infections represent the largest burden of preventable infection in critically ill patients and infection rates are increasing. One method of controlling the incidence of MRSA infection in this population is universal decolonization with intranasal mupirocin and chlorhexidine baths of all critically ill patients. The objective of this study is to evaluate the impact of universal decolonization on infection rates at a 252 bed community hospital.

Methods: The electronic medical records of the hospital will be used to identify patients who were cared for in the intensive care unit (ICU) and cardiovascular recovery unit (CVRU). The time frame of this retrospective study is six months before and after the implementation of a universal decolonization protocol. Adults who were hospitalized for at least two days and received at least one decolonization treatment will be included. Patients will be assessed for the incidence of MRSA bloodstream infections, catheter- and ventilator-associated infections, and surgical site infections after coronary artery bypass graft (CABG) utilizing manual chart review and Center for Disease Control (CDC) definitions for nosocomial infections. Compliance with the universal decolonization will be assessed using the electronic medical record. This study will be approved by an Institutional Review Board (IRB) and all patient identifiers will be removed prior to data analysis to maintain confidentiality.

8-285

Title: Pharmacist-Centered Medication Reconciliation in the Emergency Department: A 6-Week Prospective Pilot Study

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Purpose: Studies show that unintended medication errors occur in nearly one-third of patients on admission.1 One of the Joint Commissions National Patient Safety Goals is to accurately and completely reconcile medications across the continuum of care.2 Pharmacists, having the most training on appropriate medication use, are uniquely trained to take ownership of the medication reconciliation process on admission. The purpose of this study is to measure the reduction of medication errors, avoidance of adverse events, and cost savings associated with implementation of pharmacist-centered medication reconciliation services in the emergency department.

Methods: In this 6-week prospective pilot study, a pharmacist worked 40hrs/week in a 36-bed ED, with the priority of ensuring complete and accurate medication histories were obtained, recorded, and properly ordered for patients admitted through the ED. Once a patient had been flagged for admission, the pharmacist interviewed the patient about their allergies (including severity and type of reaction) and current medications (including OTC/herbal products). Nurses (whom normally gather medication histories unassisted) continued to document medication histories as usual. The pharmacist verified the medication reconciliation forms filled out by the nursing staff for completion and accuracy. The medication errors (including omitted medications, discontinued medications still ordered, missing allergy information, wrong medication/dose/route/frequency, and missing PRN indication) that were discovered by the pharmacist were corrected and documented by type. All questionable histories were verified with the patients outpatient pharmacy, family, or prescribing physician. Once complete, the medication reconciliation form was placed in the patients chart for the admitting physician to sign off on. At the end of the 6-week pilot program all medication errors were tallied up. The number of potential adverse events avoided and the amount of cost savings were estimated using figures from previous economic studies.

8-286

Title: Comparison of high-dose subcutaneous vitamin K to oral vitamin K for the treatment of warfarin-induced coagulopathy in the absence of bleeding

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Purpose: Current guidelines recommend against the use of subcutaneous vitamin K for the treatment of warfarin-induced coagulopathy because of erratic absorption and questionable effectiveness. These recommendations are based on several small studies comparing 3 mg or less of subcutaneous vitamin K to similar doses of oral or intravenous vitamin K. Data evaluating the efficacy of larger doses of subcutaneous vitamin K are lacking. This study will compare the effectiveness of high-dose (greater than 3 mg) subcutaneous vitamin K to oral vitamin K for reversing warfarin-induced coagulopathy in the absence of bleeding.

Methods: Approval from the Investigational Review Board will be obtained. A retrospective cohort analysis will be conducted using a hospital database to identify patients receiving oral vitamin K or high-dose subcutaneous vitamin K. Patients at least 18 years of age with a goal INR range of 2.0 3.0 will be included if their INR is greater than 4.5 at enrollment. Exclusion criteria include documented history of liver disease, bleeding at study enrollment, and administration of other reversal agents. The primary objective is the number of patients achieving an INR of less than 4.0 within 24 hours. Secondary endpoints include the number of patients achieving an INR of less than 4.0 at 48 and 72 hours, mean decrease in INR from baseline at 24, 48, and 72 hours, rate of INR overcorrection to less than 1.5, and rate of warfarin resistance. Warfarin resistance will be defined as the inability to raise the INR by at least 0.3 with the patients usual dose of warfarin for at least 2 days. The primary outcome will be analyzed using a chi-square test. Sub-group analyses include rates of goal INR attainment stratified by severity of coagulopathy and by dose of vitamin K administered.

8-287

Title: Implementation of whole blood rapid thyroid stimulating hormone (TSH) screening by pharmacists in a grocery store-based community pharmacy setting as a primary indicator of hypothyroidism

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Purpose: The purpose of this study is to assess the effectiveness of a community pharmacist delivered thyroid stimulating hormone (TSH) screening on detection and treatment of primary hypothyroidism. Primary hypothyroidism has an estimated prevalence of up to 4.6 percent in the general population, as stated by the American Association of Clinical Endocrinologists (AACE). Undiagnosed patients are at risk for certain health conditions including cardiovascular disease, osteoporosis, and infertility. According to the American Thyroid Association and the AACE, measurement of TSH is the principle screening test for primary hypothyroidism and is usually the first test health care providers perform.

Methods: The study will be submitted to the Institutional Review Board for approval and informed consent will be obtained from all participants. TSH screening will be initiated in grocery store-based community pharmacies in the Austin, TX area using a third-generation supersensitive TSH whole blood test. Participants will be pharmacy clients age 18 years and older without a history of hypothyroidism. Educational information will be offered to all participants. Participants who test positive as indicated by a TSH level greater than 5 microIU/mL will be referred to their general practitioner for a confirmatory test. Participants will receive a follow-up phone call to complete a verbal survey regarding the service. The primary endpoint will be the effectiveness of the service as measured by the number of patients with positive results who followed up with their physician. The secondary endpoint is patient self-reported assessment of the service.

8-288

Title: Reducing readmission rates in heart failure and acute myocardial infarction by pharmacy intervention

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Purpose: With financial penalties increasing for excess 30-day readmissions, many hospitals have attempted to identify causes for readmissions and implemented interventions to reduce these rates. Proper medication management and patient understanding of their medication regimen and disease states play a large role in preventing readmissions in patients with heart failure and acute myocardial infarction. As much of the medication discharge counseling is performed by health care professionals other than those in pharmacy, there are few studies that have assessed the impact of pharmacy-led discharge medication counseling and pharmacy-led post discharge follow-up on readmission rates.

Methods: This is a single-center, nonrandomized, retrospective, observational study evaluating the impact of a pharmacy resident and pharmacy student-led medication discharge and post discharge counseling program on heart failure and acute myocardial infarction readmissions. The primary endpoint is the 30-day readmission rates for heart failure and acute myocardial infarction. Secondary end points include medication errors found during post discharge medication reconciliation, patient satisfaction scores, pharmacy personnel time requirements for counseling and follow-up, and identifying barriers to non-compliance. All patients with a discharge diagnosis of heart failure and acute myocardial infarction will be included in the study. Patients will be excluded if discharging to another acute care facility or leaving against medical advice. These findings will be compared with previous readmission rates to assess the impact of pharmacy discharge counseling and telephone follow-up.

8-289

Title: Evaluating the use of intravenous palivizumab for the treatment of respiratory syncytial virus (RSV) infection in the pediatric population

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Purpose: Respiratory syncytial virus (RSV) is a major cause of morbidity and mortality in the pediatric population. Typical management includes supportive care measures, but pharmacologic treatment options should be considered in patients who develop severe RSV infection. Current treatment options are limited. Palivizumab is only approved by the Food and Drug Administration for RSV prophylaxis, but current evidence suggests it may be beneficial for RSV treatment. The objective of this study is to further describe the use of intravenous palivizumab in the treatment of RSV infection.

Methods: This study will be submitted to the Institutional Review Board for approval. A retrospective cohort analysis will be conducted to compare the primary endpoint of duration of mechanical ventilation in patients with RSV infection who received intravenous palivizumab to those that received the standard of care (e.g., ribavirin, intravenous fluids, respiratory support) alone. A hospital database will be used to identify patients by cross-matching ICD-9 codes for RSV and mechanical ventilation with laboratory reports of all positive RSV diagnostic tests and patients receiving palivizumab. Patients will be excluded if they received intramuscular palivizumab for treatment of RSV. Secondary endpoints will include hospital length of stay, intensive care unit length of stay, days requiring supplemental oxygen or respiratory support over baseline, time to microbiologic cure, and mortality. Information to be collected includes the following: baseline demographics; in-hospital receipt of standard of care, corticosteroids, or bronchodilators; history of palivizumab use for prevention of RSV; doses of intravenous palivizumab received. Continuous variables will be analyzed using a students T-test, Wilcoxon signed-rank test or Mann-Whitney U test, while nominal data will be analyzed using a chi-squared test or Fishers exact test as appropriate.

8-290

Title: Monitoring oral chemotherapy agents (MOChA): a retrospective assessment of the patient-monitoring practices of physicians prescribing oral chemotherapy agents

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Purpose: The past decade has seen an accelerating expansion of oral chemotherapy agents. Each chemotherapy agent has recommended monitoring parameters outlined in the product prescribing information. The aforementioned monitoring guidelines and subsequent dose adjustments are needed to minimize the risk of adverse events and maximize therapeutic benefit. The purpose of this study is to determine the compliance to the recommended monitoring parameters and dose adjustments in the package insert of select oral chemotherapy agents.

Methods: After approval from the Institutional Review Board, this retrospective evaluation will review patients treated with select oral chemotherapeutic agents from October 1, 2012 to October 1, 2013. All patient information will be de-identified by a randomly assigned number, and information will be kept in a secure computer database. Inclusion criteria will be as follows: patients 18 years and older diagnosed with cancer and prescribed an oral chemotherapy agent. The following data will be collected: demographics, cancer diagnosis, laboratory and diagnostic tests recommended in the package insert, adverse events, concomitant medications, and vital status at last contact. Study analysis includes evaluation of compliance to the recommended monitoring parameters and dose adjustments as outlined in the prescribing information.

8-291

Title: Incidence of acute kidney injury associated with vancomycin with or without concurrent nephrotoxins

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Purpose: There have been many studies detailing the incidence of nephrotoxicity associated with vancomycin use; there are no head-to-head trials that compare the incidence of nephrotoxicity when the drug is used alone in comparison to when it is used concomitantly with other nephrotoxins. The purpose of this study is to compare the rate of nephrotoxicity in patients receiving vancomycin with and without a current nephrotoxin, with an average vancomycin trough attainment of 15 to 20mcg/mL.

Methods: This retrospective cohort study will be submitted to the Institutional Review Board for approval. No interventions will be made and no patient information will be modified. The data for the project will be obtained through a review of electronic and/or paper medical records in Care4. Patients will be identified based on whether they received vancomycin targeting troughs of 15-20mcg/mL and if it was accompanied by other nephrotoxins. The following data will be collected: patient age, gender, height, weight, and comorbidities such as diabetes, hepatic dysfunction, heart failure, chronic obstructive pulmonary disease, chronic kidney disease, and human immunodeficiency virus. In addition, serum creatinine, blood urea nitrogen, and serum vancomycin drug concentrations will be recorded. Outcome measures such as time from initiation of vancomycin to onset of nephrotoxicity, hospital length of stay, and rate of resolution of nephrotoxicity will be collected. All data will be recorded without patient identifiers and maintained confidentially.

8-292

Title: Pharmacist competency in anticoagulation management after peer-driven education

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Purpose: Safe and effective anticoagulant therapy is imperative for clinical success across institutions nationwide. Such success is dependent on therapeutic drug monitoring, an activity clinical pharmacists often facilitate. Current literature advocates pharmacist-driven anticoagulation management, as it often improves patient outcomes. Multiple studies have demonstrated optimal anticoagulant therapy with fewer side effects when such therapy was managed by a pharmacist. However, it is important to note that effective anticoagulation management depends on clinician competence. The aim of this project is to assess pharmacist competence in anticoagulation management and to evaluate the effect of peer-to-peer education on such competence.

Methods: Clinical pharmacists at Methodist Hospital will be educated during the fourth quarter of 2013. This education will consist of in-services, topic discussions and clinical pathway documents relating to anticoagulation pharmacotherapy. These educational components will pertain to the following anticoagulants: warfarin, enoxaparin, dabigatran, and rivaroxaban. Pharmacist competence will be analyzed using the combined assessment of a case-based questionnaire followed by a survey. The questionnaire and survey, which will be administered prior to and after the educational period, will encompass several aspects of anticoagulation pharmacotherapy. These will include dose adjustments, indications, monitoring, and reversal of over-anticoagulation. The questionnaire and survey will measure both the pharmacists ability to appropriately manage and confidently approach clinical scenarios pertaining to the aforementioned anticoagulants. In addition to didactic materials and discussions, pharmacists will manage anticoagulation consultations requested by inpatient physicians at Methodist Hospital. Results of pre-educational and post-educational assessment comparisons will be used to assess effectiveness of the peer-driven education. This study is pending IRB approval.

Results: Pending data collection.

Conclusion: The conclusion will be reported after assessment and comparison of the results

8-293

Title: Evaluation of a standardized heparin protocol on patient management outcomes

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Purpose: Heparin is considered a high risk medication due to its unpredictable pharmacokinetics and narrow therapeutic index. The National Quality Forum emphasizes the importance of using standardized, weight-based heparin protocols for dosing and management to decrease the time to achieve therapeutic levels while minimizing the risk of adverse events. The purpose of this study is to evaluate the impact of a newly implemented standardized heparin protocol on safety and efficacy outcomes at a tertiary, teaching, academic medical center.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify patients age 18 and older who received a heparin infusion. Patient identifiers will be removed from all data to maintain confidentiality. Patients who received an anticoagulant or thrombolytic therapy in the preceding 24 hours and patients with any changes to the protocol will be excluded. The following data will be collected: time to therapeutic partial thromboplastin time (PTT); number of therapeutic PTTs at the first PTT draw, 24 hours and 48 hours; number of dose adjustments required to achieve therapeutic PTT; occurrence of thromboembolism while on heparin; incidence of major bleeding; proportion of correctly timed PTT draws and appropriate dose adjustments. Data from before and after the protocol implementation will be analyzed to compare patient efficacy and safety outcomes. A subgroup analysis will be performed to assess differences based on the patient's indication for heparin infusion (deep vein thrombosis and pulmonary embolism; acute coronary syndrome and heart failure.

8-294

Title: Retrospective evaluation comparing a care transition program to a control group in reducing hospital readmission rates in a managed care organization's Medicare population

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Purpose: The Centers for Medicare and Medicaid Services have identified transitions in care from the hospital to home as one of the primary areas for improvement by Accountable Care Organizations (ACOs). The objective of this study is to compare post-discharge hospital readmission rates in a managed care organization's group of high-risk Medicare patients receiving Care Transitions Intervention (CTI) with a control group receiving usual care.

Methods: Electronic medical data will be utilized to perform a retrospective analysis comparing high-risk Medicare patients who received CTI to a usual care matched cohort. The intervention group consists of patients who agreed to participate in CTI from a non-clinical professional, using the Coleman model. The intervention entailed patients to be provided with a hospital visit, a home visit within three days of hospital discharge, and two follow-up phone calls. The readmission rate between the two groups is the primary outcome being evaluated. This study will be submitted to the Institutional Review Board for approval.

8-295

Title: Hospital readmissions in patients managed with adjunctive rifaximin therapy for the treatment of hepatic encephalopathy

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Purpose: Multiple treatments have been used to manage hepatic encephalopathy (HE). In 2004, rifaximin was approved by the Food and Drug Administration for the treatment and prophylaxis of HE with positive data supporting its use as adjunctive therapy. The purpose of this study is to determine if there is a difference in the readmission rates between patients receiving adjunctive rifaximin therapy versus other therapies for the management of hepatic encephalopathy. This information can contribute to developing a standardized method of treating HE in our patient population at Methodist Dallas Medical Center (MDMC).

Methods: Premier Quality Advisor and electronic medical record information will be utilized to identify approximately 100 patients discharged between October 2008 to October 2012 who received rifaximin, lactulose, zinc, and/or neomycin for the management of hepatic encephalopathy and their subsequent hospitalizations. Patients that received rifaximin for Clostridium difficile associated diarrhea or travelers diarrhea will be excluded. The following data will be collected: patient demographics at index hospitalization, laboratory data, medications administered during hospitalization, medications prescribed at hospital discharge, and information regarding subsequent hospitalizations. All patient data will be stored appropriately to maintain confidentiality. The primary endpoint will compare the 30 and 90-day readmission rates between patients who received adjunctive rifaximin therapy and those who did not. The secondary endpoints will compare readmissions within 1-year of index hospitalization, number of readmissions for management of hepatic encephalopathy, and index hospitalization length of stay, medication utilization, and cost between the study groups. Differences between continuous and categorical endpoints will be evaluated using appropriate statistical tests. This study will be submitted to the MDMC Institutional Review Board for approval.

8-296

Title: Descriptive analysis of anticoagulation related to adverse events

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Purpose: Anticoagulants are used to both treat and prevent thrombus formation in at-risk patients. Despite the Institute for Safe Medication Practices (ISMP) classification of anticoagulants as a high-alert medication indicating the increased risk for significant and preventable patient harm related to its use, anticoagulants remain a top medication class associated with adverse drug events (ADEs) in hospitalized patients nationwide. The purpose of this study is the evaluation of voluntarily reported medication events involving all types of anticoagulants; recognize trends and areas of high risk; and utilize the information to drive changes related to anticoagulant use.

Methods: This study is exempt from Institutional Review Board (IRB) approval considering de-identification of data prior to investigators review and evaluation. This study was performed using data from a Patient Safety Improvement Program (PSIP) database, which was created in 2008 by Hospital Corporation of America (HCA). HCA is a large hospital company that owns over 160 hospitals and 110 ambulatory surgery centers across the United States. HCAs PSIP database collects voluntarily reported data surrounding events and close calls. This database was used to gather all reported medication events occurring from January 2011 to March 2013 using a keyword associated with anticoagulant use. The database report included associated medication, description of event, severity, and care area in which the event occurred.

Results: Preliminary results from the database describe how the reports were categorized by front line clinicians and risk managers. The anticoagulants most associated with medication errors were enoxaparin (50.9%), warfarin (26.5%), and heparin (13.3%). Most reporters classified their events primary cause as relating to staff competency/education (69.6%), followed by communication (19.1%), incorrect medication information (6.0%) and incorrect patient information (2.8%). Of events that occurred in known locations, the most events occurred in the medical/surgical units (54.7%), ICU/CCU/burn units (23.2%), pharmacy (11.0%), followed by the emergency department (2.8%). Although preliminary results have been obtained, analysis of the event description will be completed to determine node of origination, impact to patient, and if undercoding of severity of event was present.

Conclusion: Conclusion will be determined based on further data analysis.

8-297

Title: Evaluation of alemtuzumab induction in high-immunologic risk kidney transplantation and the incidence of biopsy-proven antibody-mediated rejection

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Purpose: Rejection of transplanted organs remains a major limitation to transplantation success. Antibody-mediated rejection (AMR) accounts for five to ten percent of all rejection episodes in kidney transplantation and generally carries a poor prognosis. Limited data exist on preferred immunosuppressive induction therapies used in kidney transplantation and their correlation to the incidence of biopsy-proven AMR. The objective of this study is to evaluate alemtuzumab induction in high-immunologic risk kidney transplantation and the incidence of biopsy-proven antibody-mediated rejection.

Methods: This study will be submitted to the Institutional Review Board for approval. All data will be recorded without patient identifiers and maintained confidentially. A retrospective chart review will be conducted including all patients who received basiliximab or alemtuzumab induction for kidney transplantation from April 2010 through April 2013. Patients who received antithymocyte globulin induction, a living donor transplantation, or a previous kidney transplant will be excluded. An institutional protocol will be utilized to determine criteria for low- and high-immunologic risk and respective immunosuppressive induction and maintenance therapies. Diagnosis of AMR will be confirmed based on Banff 07 criteria. The incidence of AMR within three-, six-, and twelve-month intervals, post transplantation, will be reported. Data elements pertinent to the study will be collected electronically from the medical record. Additionally, data collected will include the following patient demographics: age, gender, race, date of transplantation, panel reactive antibody at baseline, donor cold ischemia time, donor age, and baseline immunosuppressive induction and maintenance therapies at three-, six-, and twelve-month intervals.

8-298

Title: Volume resuscitation with albumin therapy in critically ill patients with low baseline albumin levels

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Purpose: Current sepsis guidelines recommend crystalloid therapy for fluid resuscitation. Furthermore, albumin may be considered as additional therapy after substantial fluid resuscitation has been given. Justification for albumin use comes from the SAFE trial results. Subjects enrolled in the SAFE trial had baseline serum albumin levels of approximately 2.7 g/dL. In this study, we aim to determine if severe sepsis or septic shock patients with severe hypoalbuminemia of less than 2.5 g/dL will benefit from the addition of albumin resuscitation in terms of length of intensive care unit (ICU) and hospital stay, duration of vasopressor therapy, and mortality.

Methods: Prior to initiation, this study will be submitted to the Institutional Review Board for approval. Electronic medical records (EMR) will be reviewed retrospectively for surgical/trauma and medical ICU patients admitted to the health system's two acute care institutions from January 1st, 2010 through June 1st 2013. Inclusion criteria consist of ICU admission greater than 24 hours, a diagnosis of severe sepsis or septic shock, and fluid resuscitation for volume depletion. Patients will be excluded if they were less than 18 years old, enrolled in a clinical trial, admitted to the neurological ICU, admitted to the ICU following cardiac surgery, or if they required plasmapheresis. Additionally, patients will be excluded based on diagnoses of liver cirrhosis, sepsis, body burns, or traumatic brain injury. Severe sepsis and septic shock patients will be placed into one of four treatment arms based on baseline albumin levels of either less than or greater than 2.5 g/dL, and receipt of either albumin in addition to crystalloid therapy, or crystalloid therapy alone. The EMR will then be utilized to evaluate the duration of vasopressor use, costs associated with length of ICU and hospital stay, and mortality rate after 28 days during hospitalization.

8-299

Title: Effectiveness of protocol guided heparin anticoagulation in patients with TandemHeart percutaneous ventricular assist device

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Purpose: The TandemHeart is a percutaneous ventricular assist device which provides cardiac support in patients with severe refractory cardiogenic shock. The TandemHeart requires both heparinized device infusate and systemic anticoagulation to prevent thrombotic complications. In current literature, there is no standard anticoagulation protocol for the TandemHeart. The purpose of this study is to assess how well heparin anticoagulation is managed in patients for which the TandemHeart heparin protocol was implemented compared to those managed without protocol.

Methods: This single center, retrospective cohort study included adult patients who used TandemHeart as their circulatory support from March 1st, 2012 to August 30th, 2013. Exclusion criteria include patients under 18 years of age, TandemHeart support for less than 24 hours and patients who are managed with heparin protocols other than the TandemHeart heparin protocol. The case patients were managed under the TandemHeart heparin protocol and the control patients were managed without any heparin protocol. Electronic medical records were reviewed for demographic data, presence of heparin protocol, aPTT values and clinical outcomes including thrombosis and bleeding.

8-300

Title: Emergency department pharmacist impact on septic shock resuscitation bundle compliance

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Purpose: A team-based approach is integral to the success of Surviving Sepsis Campaign (SSC) resuscitation bundle-based care and subsequent realization of positive clinical outcomes in septic shock patients. However, the role in and impact of pharmacists on these efforts, particularly in the emergency department (ED) is not well delineated. The objective of this study is to determine the effect of emergency department pharmacist presence and interventions on compliance with SSC bundle-based care and associated clinical outcomes in septic shock.

Methods: This study will be submitted to the Institutional Review Board for approval before initiation. The health-systems electronic medical record system will be utilized to identify patients for which a CODE sepsis alert was called in the ED as part of the institutions approved management pathway for severe sepsis and septic shock. The list of patients will be filtered by diagnosis, and the medical records of those patients, who are ≥18 years of age with septic shock will be reviewed. General data obtained from the records will include patient age, gender, co-morbidities, vitals, labs and assessment values necessary for SOFA score determination, SSC bundle-based care parameters, timing of ED to ICU patient transfers as well type and extent of the ED pharmacist interventions. The outcomes data to be collected will include in-hospital mortality, lengths of hospital and ICU stay and duration of mechanical ventilation. The gathered data will be analyzed separately for the patients with ED pharmacist involvement in care versus those who did not have use of this service to determine the extent of the impact of the ED pharmacist on septic shock resuscitation bundle compliance and related clinical outcomes.

8-301

Title: Implementation of a barcode verification process for intravenous (IV) medication preparation and checking in a level one trauma center

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Purpose: The 2008 ASHP IV Safety Summit identified "implementing procedures to trace and verify compounding accuracy" as a Priority IV Medication Safety Practice. Despite this recommendation, the 2011 ASHP national survey of pharmacy practice in hospital settings reported that less than 12 percent of institutions used barcode verification during IV preparation. The objective of this implementation is to assess the impact of barcode verification before and after IV preparation on the efficiency, safety, and accountability of the level one trauma center's sterile compounding services.

Methods: This implementation will include patient specific sterile products prepared at the level one trauma center. Premixed products, total parenteral nutrition, and chemotherapy orders will be excluded. Prior to compounding, barcode scanning of the order label followed by each ingredient by the technician will be required to document who prepared the product and ensure the accuracy of ingredient selection by verifying and recording national drug codes (NDC). After compounding, barcode scanning of the order label by the pharmacist will be required to electronically acknowledge that a manual product check and review of technician ingredient scans have been performed. The following data will be collected at baseline and post-implementation: average compounding time per order from label print to check, average missing dose requests per day, preparation barcode scan compliance rates, check barcode scan compliance rates, preparation barcode scan override rates, and percentage of compounded products that contain legible documentation of both the preparer and checking pharmacist. This data, which will not include any patient identifiable information, will allow for a comparison of the efficiency, safety, and accountability of the sterile product preparation process before and after barcode verification implementation.

8-302

Title: Expansion of the Pharmacist's Role in an Ambulatory Clinic Setting at a Large Pediatric Academic Medical Center

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Purpose: With the evolution of health care as it relates to quality, health systems are being impacted by coverage, reimbursement and quality care initiatives while also being tasked with contributing to lower costs. The objective of this study is to determine what opportunities exist to expand the pharmacist role in a pediatric ambulatory clinical setting at a large pediatric academic medical center.

Methods: Evaluation of the following will occur: Clinic service areas at Texas Childrens Hospital, space constraints within the existing ambulatory pharmacy area, and staffing models to support expansion. Data to be collected: clinics with high-cost patients, visits per clinic per month, prescriptions per clinic per month, 3rd-party hospital payer mix, 30-day readmission rates, outpatient prescriptions per month, and financial return on investment with proposed expansion. The endpoint to be measured as a result of evaluation and data collection will be the development of a strategic plan for expansion of the pharmacist role in the ambulatory setting as well as appropriate metrics to measure post-implementation impact. No patient data will be recorded during this study.

8-303

Title: Comparison of insulin neutral protamine Hagedorn and long-acting insulin analog use in a Veteran population

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Purpose: To evaluate whether there is a difference in glycohemoglobin A1c change or frequency of hypoglycemic episodes between Veterans who are started de novo on insulin neutral protamine Hagedorn (NPH) and those started de novo on insulin detemir or insulin glargine, and to compare the cost difference between these three insulin products

Methods: This quality improvement project is exempt from IRB approval as it is not classified as human subject research. SQL computer software will identify patients with type 2 diabetes newly started on insulin NPH, detemir, or glargine between 01/01/2000 and 01/01/2013, not prescribed bolus insulin during the first 9 months of therapy. Variables to be assessed include demographic data, weight, glycohemoglobin A1c, blood glucose, date of diabetes diagnosis, insulin prescription details, mean possession ration (MPR) by quartile, and concurrent use of other antidiabetic medications. The ProClarity database system will be used to obtain cost per 30 day supply for each insulin type. A sub-population will be created by randomly selecting 20 patients each from the insulin NPH, detemir, and glargine groups. Chart review of the sub-population will be performed to identify episodes of hypoglycemia during the first 9 months of insulin therapy. Data analysis will include a calculation of average A1c during the first 9 months after insulin initiation. A1c prior to initiation will be used to calculate change in A1c. Average A1c, change in A1c, and average number of hypoglycemic episodes will be compared using a two-sided t-test with statistical significance defined as p less than or equal to 0.05.

8-304

Title: Evaluation of impact of targeted interventions on the use of high risk medications in the elderly

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Purpose: High risk medications (HRMs) on the Beers Criteria have demonstrated a strong association between their use and poor patient outcomes in the elderly. In order to prevent complications the Centers for Medicare and Medicaid Services (CMS) recommends use of the Beers Criteria in conjunction with clinical judgment to determine HRMs place in therapy. Scott & White Health Plan (SWHP) has identified HRMs as a focus for continuing quality improvement initiative which is the emphasis of the study. The purpose of this study is to evaluate the impact of targeted interventions on the use of HRMs in a Medicare patient population.

Methods: This is a retrospective evaluation of the use of HRMs prior to and after implementation of SWHP quality improvement interventions. This study has been approved by the institutional review board. It will include SeniorCare members who are Medicare Part D enrollees and have received one or more prescription fills for a HRM during the measurement period. Prescription claim reports from CMS for the years 2012 and 2013 will be observed to assess the use of HRMs in the elderly. The use of a HRM will be assessed by determining the number of patients who received a HRM two or more times, and the percentage of members in the Medicare population who received a HRM two or more times will be reported.

Results: Pending.

Conclusion: Pending.

8-305

Title: Evaluation of diuretic therapy in the management of heart failure exacerbations

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Purpose: Diuretics are recommended in the management of heart failure exacerbations to improve symptoms of fluid retention. Currently, variations exist in the prescribing practices of diuretics including initial and discharge dosing, titration, and transition to oral therapy. The objective of this study is to retrospectively evaluate the length of stay and 30 day readmission rate in patients who achieved a minimum net fluid loss of 2.4 liters per day compared to those that did not. Secondary outcomes include length of stay and 30 day readmission rate in patients on stable oral diuretic therapy for at least 24 hours prior to discharge.

Methods: This study will be submitted to the Institutional Review Board for approval prior to commencement. The institution's electronic medical record system will identify adult patients admitted with a primary diagnosis of heart failure exacerbation. Patients must have received at least one dose of intravenous loop diuretics. Diuretic data points collected will include drug name, dose, route, and frequency. Additionally, the following information will be collected: date and time of admission and discharge, length of stay, demographics, left ventricular ejection fraction, serum creatinine, potassium, blood pressure, fluid intake, urine output, net fluid balance, and weight change. The time elapsed before transitioning to oral diuretic therapy, total inpatient duration of intravenous and oral diuretic therapy, and physician adherence to guideline directed medical therapy for heart failure at discharge will also be collected.

8-306

Title: Comparison of efficacy and safety outcomes with linezolid for the treatment of methicillin-resistant Staphylococcus aureus pneumonia between obese and nonobese patients

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Purpose: Linezolid is an oxazolidinone antibiotic indicated for the treatment of methicillin-resistant Staphylococcus aureus (MRSA) pneumonia. There is uncertainty as to whether the recommended fixed dose of linezolid is appropriate for treating obese patients with MRSA pneumonia. Previous studies have provided conflicting results regarding serum linezolid concentrations as well as clinical success rates; some report decreased concentrations in obese patients compared to the average population, while others report similar concentrations and clinical outcomes regardless of body weight. This study aims to compare clinical efficacy and safety outcomes between obese and nonobese patients treated with linezolid for MRSA pneumonia.

Methods: The study protocol will be submitted to two required Institutional Review Boards for approval. This study will be a retrospective chart review of patients 18 years of age and older who received at least 3 days of linezolid for MRSA pneumonia from October 2009 to August 2013. Patients without a documented indication for linezolid therapy or culture results and those who are pregnant or incarcerated will be excluded. Two primary outcome measures will be assessed: time to defervescence (days) and time to normal white blood cell count (days). Secondary outcomes include length of stay (hospital and ICU), in-hospital mortality, and incidence of anemia and thrombocytopenia. A sample size of 72 patients was calculated with 80 percent power to detect a difference of 1 day in the primary outcomes between obese (BMI greater than or equal to 30 kg/m2) and nonobese (BMI less than 30 kg/m2) groups. Categorical data will be evaluated using the chi-square test or Fishers exact test; outcomes with continuous data will be evaluated with the students t test. For all statistical tests, a p-value of less than 0.05 will be considered statistically significant.

8-307

Title: Analysis of benzodiazepine use in older adults diagnosed with post-traumatic stress disorder at a veterans affairs medical center

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Purpose: Historically used as primary treatment for post-traumatic stress disorder (PTSD), benzodiazepines (BNZs) are now recognized as potentially ineffective and harmful pharmacotherapy. The purpose of this study is to evaluate the prevalence and characteristics of BNZ prescribing in Vietnam-, Korea-, and World War II-era veterans diagnosed with PTSD. The primary objective is to determine the proportion of veterans ages 55 years and older seen in clinic that received therapy with a BNZ between August 1, 2012 and July 31, 2013. The secondary objectives are to determine sociodemographic and comorbidity effects on BNZ prescribing patterns in older adult veterans with PTSD.

Methods: This study has been submitted to the Institutional Review Board for approval. The computerized patient record system will be utilized to determine the percent of patients meeting inclusion criteria that was prescribed a benzodiazepine (alprazolam, chlordiazepoxide, clonazepam, clorazepate, diazepam, flurazepam, lorazepam, midazolam, oxazepam, temazepam, or triazolam) between August 1, 2012 and July 31, 2013. In determining benzodiazepine prescribing patterns, a 5-year (August 1, 2008 to July 31, 2013) retrospective chart review will be conducted. Records will be reviewed for: sociodemographics (patient age, gender, race, etc.), duration of therapy (based on cumulative refill history), indication for use, total daily dose, prescriber identification or credentials, use as monotherapy or in combination with a first-line antidepressant for PTSD (paroxetine, sertraline, fluoxetine or venlafaxine), hospital and clinic usage (number of encounters, ER visits, inpatient admissions, etc.), patient medication history, psychiatric comorbidities (depressive disorders, anxiety disorders, substance-related and addictive disorders, etc.), and medical comorbidities (dementia, traumatic brain injury, etc.). Descriptive statistics will be used to determine the frequency of distributions in baseline characteristics. Primary and secondary outcome measures will be reported as percentages and averages. Nominal variables will be measured using the Chi-square test or Fishers exact test where appropriate.

8-308

Title: Utilization of a pharmacist-driven, antimicrobial focused, clinical-decision support model in an intensive care setting

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Purpose: Due to the societal consequences of non-judicious use of antimicrobials and reports indicating no new novel antimicrobials being unveiled within the next decade, the optimization of global antimicrobial use has never been more important. The role of pharmacists in antimicrobial stewardship has been demonstrated to optimize antimicrobial therapy and achieve positive patient outcomes, which lends credence to the benefit of a pharmacist-driven decision support model. The primary objective of this study is to evaluate the clinical and fiscal impacts of a pharmacist-driven antimicrobial optimization program in an intensive care setting.

Methods: This study is currently pending approval from the Institutional Review Board. Patients to be included in the study are those greater than 18 years of age, admitted to either a medical intensive care unit (MICU) or medical-surgical intensive care unit (MSICU), and receiving antimicrobial therapy. Concurrent data collection will occur from October 2013 through March 2014. A retrospective analysis of data from January 2009 through August 2013 will serve as a baseline for comparison. The optimization program will consist of a pharmacist utilizing antimicrobial surveillance software to conduct a clinical review of each patient with intent to provide support on antimicrobial decision support. The following patient parameters will be collected using electronic medical records and secured using encryption software: account number, location(unit), room number, date of admission, length of stay, start of antibiotic therapy, documented signs and symptoms, culture source and date if available, organism(s) isolated, susceptibilities, ordering physician, dose/duration/frequency/route of all antimicrobial therapy and pharmacological treatment administered, and date of discharge or unit transfer.

8-309

Title: A comparison of the efficacy and safety of short versus long-term oral bisphosphonate therapy in a veteran population

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Purpose: In 2011, the FDA advised that bisphosphonate therapy be discontinued after 3-5 years and reevaluated in patients at moderate risk of developing a fracture due to limited long-term data and increased reports of serious adverse events. This interruption in therapy is the center of on-going debate amongst clinicians, as there may be a benefit in continuing bisphosphonate therapy for greater than 5 years. Long-term data analyzing the occurrence of fractures is limited with most of the available studies having been conducted in post-menopausal women. Alendronate and risendronate are both on the Veterans Affairs National Formulary. However, at the Michael E. DeBakey Veterans Affairs Medical Center (MEDVAMC), alendronate is the preferred bisphosphonate for the treatment of osteoporosis. The purpose of this study is to compare the efficacy and safety of short (5 years or less) versus long-term (greater than 5 years) treatment with oral bisphosphonates in a veteran population.

Methods: A retrospective, observational chart review will be conducted in all patients receiving oral bisphosphonate therapy between January 1, 2000 and December 31, 2007 at the MEDVAMC. Patients with a prescription for an oral bisphosphonate will be included in the study. Exclusion criteria include patients with a history of cancer, autoimmune disorders, or organ transplantation. The MEDVAMC computerized patient record system (CPRS) will be utilized to identify patients who meet inclusion criteria. The following will be extracted from the electronic medical record system: age, gender, ethnicity, height, weight, serum creatinine, body mass index, creatinine clearance, past medical history, bisphosphonate therapy (including specific agent received, dose, indication, start date, and duration), reason for discontinuation (if available), calcium and vitamin D supplementation (including dose, start date, and duration), Dual energy X-ray absorptiometry scans (including dates, bone mineral density measurements and t-score measurements) and documentation and dates of any reported fractures and/or adverse events while on treatment and after discontinuation if applicable. Appropriateness of therapy will be based on the 2013 National Osetoporosis Foundation guidelines and the 2010 American Association of Clinical Endocrinologists Medical Guidelines for Clinical Practice for the Diagnosis and Treatment of Osteporosis.

8-310

Title: Antibiotic Prescribing Practices in the ED

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Purpose: Hospital pharmacists and emergency physicians are charged with developing systems that promote safe and effective medication use in the emergency department (ED). The purpose of this project is to assess current empiric antibiotic prescribing practices in the ED and identify possible opportunities for improvement. If opportunities for improvement are identified, physician and pharmacist education materials and other interventions will be developed to optimize prescribing practices.

Methods: We will conduct a retrospective chart review in a convenience sample of 100 patients examined in our hospitals ED and prescribed parenteral or oral antibiotics. Patients who are treated and released as well as treated and admitted will be reviewed. Patients treated, released, and who present a second time for infection-related treatment issues will also be reviewed. We will evaluate the appropriateness of antibiotic selection and dosing based on patient demographics including age, weight, drug allergies, renal function, possible drug interactions, suspected site and etiology of infection, and recent laboratory data. If post-visit culture and susceptibility reports are available, they will be reviewed and compared with empiric therapy selections made. This information will be used to identify opportunities for improvement. These areas of improvement will be reviewed with ED department leadership and prioritized. Physician and pharmacist education and other methods to improve antimicrobial selection practices in the targeted areas will be proposed to leadership and implemented.

8-311

Title: Prospective evaluation of a weight based vancomycin dosing protocol in patients receiving high flux hemodialysis

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Purpose: In intermittent hemodialysis (HD), high flux membranes allow for greater elimination of larger molecular weight drugs, like vancomycin, when compared to low flux membranes. The extent of elimination of vancomycin in HD warrants evaluation to optimize dosing. Twenty four hour AUC:MIC ratios greater than 400 have been associated with positive clinical outcomes. The primary objective of this study is to assess if a weight based vancomycin dosing scheme reaches targeted AUC:MIC ratios in patients receiving HD thrice weekly with an F180 filter. The secondary objective is to examine the pharmacokinetics of vancomycin in the same population.

Methods: This prospective study will be submitted to the Institutional Review Board for approval prior to commencement. Informed consent will be obtained from all participants. Patients expected to receive at least 3 days of vancomycin treatment will be enrolled. Participants will receive vancomycin 20mg per kg as an initial dose followed by an 8 to 12mg per kg dose after each HD session. All doses will be rounded to the nearest 250mg. Five vancomycin levels will be obtained: 2 to 4 hours after initial dose, prior to the first HD session, 4 to 6 hours after completion of first HD session, 2 to 4 hours after second dose, and prior to second HD session. A sixth level will be obtained on patients receiving at least 7 days of therapy. The following data will be collected: patient demographics, indication for vancomycin, date and time of each HD session, vancomycin administration, and level. Patient data will be collected and maintained confidentially. Standard pharmacokinetic equations will be used to calculate the following: AUC:MIC ratio, half life, volume of distribution, and both HD and non renal clearance of vancomycin.

8-312

Title: Impact of an Electronic Health Record (EHR) implementation on hospital-acquired venous thromboembolism (VTE) rates and appropriateness of prophylaxis therapy

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Purpose: Hospital-acquired VTE is a very serious health complication for hospitalized patients leading to increased medical costs and death. VTE is preventable and therefore is not reimbursed by payers. The impact of an integrated EHR on VTE prophylaxis strategies and the incidence of hospital-acquired VTE is unknown. The purpose of this project is to determine the incidence of hospital-acquired VTE and assess the appropriateness of pharmacologic prophylaxis provided pre and post implementation of an integrated EHR.

Methods: An initial search of the University HealthSystem Consortium (UHC) clinical database for patients with hospital-acquired VTE will be conducted for patients discharge from December 1st, 2012 through May 31st, 2013. VTE reports will be generated for disease related groups (DRGs) specifically associated with acute DVT or PE. DRGs utilized will include: 4151, 41511-41513, 41519; 4341, 43410, 43411; 444, 4440, 44401, 44409, 4441, 449; 452, 453, 4531-4534; 45340-45342, 4538, 45382-45389, 4539; 4340, 43400, 43401, and 4376. Reports will only include VTEs that were not present on admission (POA flag). The incidence of VTE at the study institution shall be determined from the identified cases. A similar search will be conducted for the time period July1st, 2013 through December 31st, 2013 in order to determine the pre- and post-EHR incidence of VTE among patients discharged from the study institution. To further assess the appropriateness of prophylaxis, this study will include a retrospective chart review of 200 patients (100 charts from each time period) diagnosed with hospital-acquired VTE and previously identified from the UHC database.

8-313

Title: The impact of implementing osteoporosis screening and conducting follow-up assessments within the community pharmacy setting on patient education and risk awareness

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Purpose: Osteoporosis affects over 10 million individuals in the United States; the incidence of compromised bone strength will continue to grow as risk factors become more prevalent within the general populace. The National Osteoporosis Foundation asserts that the identification and education of patients at risk for osteoporosis can lead to early treatment and prevention of disease. Screening within the community provides an ideal setting to provide individuals with accessible education and recommendations for bone health. This project is designed to assess the impact of community pharmacy-based osteoporosis screening on raising awareness of risk factors, providing effective education, and enabling lifestyle modifications.

Methods: The study will be submitted to the Institutional Review Board for approval. Osteoporosis screening will be offered within the community pharmacy setting upon attaining informed consent from each participant. Participants will complete a questionnaire to assess modifiable and non-modifiable risk factors for osteoporosis. Based on responses to the risk assessment tool, patients will be educated on any identified risks and given suggestions for lifestyle modifications. All participants will receive education on the appropriate supplements for their respective age group and they will be encouraged to speak with their health care provider about osteoporosis at their next visit. Patients who are deemed to be at high risk for osteoporosis will be referred to their health care provider for confirmatory diagnostic testing. All participants will be contacted to complete a telephone survey assessing the services provided through the screening, any resulting modifications to lifestyle, and incidence of follow-up with a health care provider.

8-314

Title: Evaluation of palliative care in cancer patients in a Veteran population

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Purpose: The American Cancer Society has estimated 1,660,290 new cancer cases will occur in the United States in 2013. In recent years, a focus has been placed on quality of life issues in oncology with an expanding emphasis on palliative care. The National Comprehensive Cancer Network (NCCN) recommends palliative therapy be provided simultaneously with disease-modifying therapy upon diagnosis. Data analyzing palliative care currently provided to cancer patients and its impact on disease modifying chemotherapy usage in the last sixty days of life will help with the development of palliative care screening tools and standard intervention techniques for future use.

Methods: This quality improvement project will be a retrospective chart analysis and is exempt from IRB approval as it is not classified as human subject research. SQL computer software will be used to obtain a list of patients diagnosed with any type of cancer treated with at least one chemotherapy agent and having registered dates of death between January 1, 2013 and August 9, 2013. Chart reviews will be conducted for these patients with all data stored in secured files. Simple quantitative analysis will then be applied to the collected data to determine the number of patients offered or enrolled in palliative care or hospice care and the number of patients receiving chemotherapy within sixty days of death. This project will be conducted as part of a larger initiative to develop new protocols and standard interventions for chemotherapy patients who do not respond well to second and third line chemotherapy agents.

8-315

Title: An analysis of drug prices after drug shortage resolution

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Purpose: Current drug shortages have given rise to a call to action, and there are studies showing clinical effects, but little data is available on how this financially impacts a hospital system. Furthermore, cost analysis comparing drug prices prior to and after a drug has come back to market is lacking. The objective of this study is to determine if shortages have an effect on medication prices and, if so, to assess the magnitude of the change in price.

Methods: This study is pending IRB approval. This is a randomized, retrospective, multicenter study. The study analyzes 25-50 medications identified from the American Society of Health-System Pharmacists resolved shortage list found at http://www.ashp.org/DrugShortages/ResolvedShortages/. Each drug is defined by the unique National Drug Code (NDC). Only shortages that have been resolved between July 2010 and August 2013 are included. Randomization of the 25-50 medications is accomplished through a random number generator. The primary outcome is the change in price after resolution of a drug shortage. Price changes are analyzed by comparing post-shortage prices to the projected price increases. Subgroup analysis compares drug manufacturers, drug class, duration of shortage, month of initial shortage, and month of shortage resolution.

8-316

Title: Relationship between linezolid minimum inhibitory concentrations (MIC) and outcomes in methicillin resistant Staphylococcus aureus (MRSA) infections

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Purpose: Linezolid is an oxazolidinone antibiotic effective against gram positive pathogens. There have been increasing reports of linezolid resistance amongst staphylococcus species. When linezolid was approved by the FDA in 2000 the MIC50 was 1 mcg per mL and the MIC90 was 2 mcg per mL. With increasing use, MICs of 4 are isolated more frequently. Clinical outcomes of patients treated with linezolid MICs of 4 have not been fully investigated. The aim of this study is to evaluate clinical outcomes of patients with MRSA bacteremia or respiratory infections treated with linezolid at MICs of 2 or less and 4.

Methods: This study will be submitted to the Institutional Review Board for approval prior to commencement. Patient medical records will be reviewed retrospectively for patients who were admitted to the hospital from January 1, 2008 to June 30, 2013. Patients will be identified by positive MRSA blood or respiratory cultures. Patients meeting inclusion criteria will be categorized into two groups: patients with MRSA linezolid MICs of 2 or less, and patients with MRSA linezolid MICs of 4. Baseline patient demographics will be collected alongside Charlson Comorbidity Index, risk factors for MRSA infection, ICU length of stay (LOS), total LOS, and charge for hospitalization. Additionally, clinical outcomes will be assessed at hospital discharge as cure, improved, or failure. The primary objective is to determine the proportion of patients with clinical success who were treated with linezolid for MRSA bacteremia or respiratory infection with MICs of 2 or less and 4. Secondarily, the two groups will be compared for LOS and hospital charges.

8-317

Title: Impact of rapid molecular identification of yeast by PNA-FISH coupled with antimicrobial stewardship intervention on patient outcomes

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Purpose: Candidemia ranks fourth among all bloodstream infection in hospitalized patients in the United States, accounting for 8 to 10 percent of cases. Delaying treatment initiation for candidemia has been shown to significantly increase mortality. New methods have been developed to reduce time for proper organism identification, such as Peptide Nucleic Acid Fluorescence In Situ Hybridization (PNA-FISH). Studies have shown PNA-FISH to be an accurate and affordable test to implement; however, robust data lacks on the impact on mortality. Therefore, we aim to investigate the impact of improved turnaround time using PNA-FISH on mortality associated with candidemia.

Methods: This study has been submitted to the Institutional Review Board for approval. Patients admitted during the PNA-FISH pre-implementation phase (January 1, 2012 to December 31, 2012) and post-implementation phase (July 1, 2013 to June 30, 2014) with monomicrobial BSI due to Candida [C. albicans, C.tropicalis, C. parapsilosis, C. kruesi, and C. glabrata] will be studied. In the post-implementation group, the antimicrobial stewardship program (ASP) will also evaluate patients for intervention, coupled with recommendations that are posted with positive PNA-FISH culture results. Demographics, co-morbid conditions, treatment data, severity of illness, ASP intervention, hospital mortality, 30-day mortality, hospital cost, and antifungal cost data will be collected for the assessment of outcomes. Multivariate and time to event analyses will be conducted for the outcomes of interest. All assessments will be considered significant at alpha of less than 5 percent.

8-318

Title: Safety and efficacy evaluation of concentrated regular U-500 insulin in a Veteran population over a 10-year period

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Purpose: Concentrated regular U-500 insulin is recommended in insulin-resistant diabetic patients requiring greater than or equal to 200 units daily. The purpose of this study is to assess the safety and effectiveness of regular U-500 insulin in a Veteran population. The primary objective is to determine the percent change in hemoglobin A1c (A1c) after conversion to regular U-500 insulin. Secondary endpoints will be to determine the percent of patients achieving an A1c less than seven percent and less than eight percent, percent of documented hypoglycemia, percent of insulin discontinued, percent lost to follow-up, and the average number of yearly clinic visits.

Methods: This study will be submitted to the Institutional Review Board for approval before initiation. A retrospective chart review will be conducted in all patients converted from regular U-100 insulin to regular U-500 insulin between January 1, 2001 and December 31, 2011 at the Michael E. DeBakey VA Medical Center (MEDVAMC). Patients will be followed for a minimum of one year after conversion or until discontinuation of regular U-500 insulin. Patients over 18 years old with a diagnosis of type 2 diabetes mellitus (T2DM) or type 1 diabetes mellitus (T1DM) and an active prescription for regular U-500 insulin within the enrollment period will be included. Patients with gestational diabetes or managed by a non-MEDVAMC provider will be excluded. The computerized patient record system (CPRS) at the MEDVAMC will be utilized to obtain baseline data including age, race, gender, year of T2DM or T1DM diagnosis, type of insulin, total daily dose, and number of insulin injections before conversion. Continuous data collected will include: weight, use of oral antidiabetic agents, insulin pumps, or alternative insulin agents, fill dates for outpatient prescriptions of regular U-500 insulin, total daily insulin dose and number of daily injections, hypoglycemia, severe hypoglycemia requiring medical attention, and medication non-compliance.

8-319

Title: Comparing diabetes control in veterans with in-clinic visits vs. combined in-clinic and telephone visits

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Purpose: Many studies have demonstrated the positive impact of clinical pharmacist interventions on the glycemic control of diabetic patients followed via face to face clinic visits. However, many patients at the Michael E. DeBakey Veterans Affairs Medical Center (MEDVAMC) experience hardships, i.e. financial hardships, which prevent them from coming in for follow-up visits. Thus, a pilot telephone clinic for qualified patients was started in November 2011 to improve patients access to care. The purpose is to evaluate if the added option of telephone visits is as effective as in-clinic visits. The primary objective is the mean change in hemoglobin A1c.

Methods: Prior to initiation, this study will be submitted to the Institutional Review Board for approval. This non-randomized retrospective chart review study will be conducted in all ambulatory care diabetic patients, under the care of Dr. Jennifer D. Nguyen, from January 1, 2010 to December 31, 2012 at the Michael E. DeBakey VA Medical Center (MEDVAMC). Central VAs data warehouse and MEDVAMC's computerized patient record system (CPRS) will be utilized to determine encounter, visit type, patient demographics, and A1c. Other parameters include the percent of patients reaching hemoglobin A1c goals (e.g. A1c 7.5%), the average percent change in hemoglobin A1c, the time frame it takes to reach to goals, percentages of patients lost to follow-up, average time to follow-up (in days) between two groups, and the total number of visits. The time frame will be January 1, 2010 to December 31, 2010 for in-clinic visits vs. January 1, 2012 to December 31, 2012 for the combined telephone and in-clinic visits. Descriptive statistics will be used to determine the frequency of distributions in baseline characteristics. Outcome measures will be reported as percentages. Regression models, ANOVA tests, chi-square analysis and a logistic regression analysis will be used to compare the two groups.

Results: Pending

Conclusion: Pending

8-320

Title: Evaluation of thrombi and bleeding incidence in patients with congenital heart disease receiving anticoagulation therapy after heart surgery at a pediatric institution

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Purpose: There is limited data regarding anticoagulation therapy in children born with congenital heart disease (CHD) who undergo heart surgery. Current evidence and guidelines have been extrapolated from adult studies or are limited to small pediatric studies and case reports. The objective of this study is to determine the incidence of thrombi and bleeding in pediatric patients treated with anticoagulant agents after heart surgery. Data obtained will contribute to the ongoing efforts to improve the current standard of care of patients with CHD.

Methods: This descriptive study will be submitted to the Institutional Review Board for approval. Data will be prospectively collected from November 2013 to March 2014. Inclusion criteria: patients admitted to the cardiac intensive care unit (CICU) after heart surgery receiving heparin, enoxaparin or warfarin. Exclusion criteria: patients admitted to CICU from outside facilities, direct admissions receiving anticoagulation therapy, or diagnosed coagulopathies. Data will be collected from electronic medical records and charts. The following data will be collected: age, gender, weight, diagnosis, surgery date and type, open or close chest status, dates of closure, presence of lines including insertion date and removal time, indication for anticoagulation, agents, doses, treatment duration, changes in therapy, and reasons for holding doses or discontinuing therapy. Monitoring laboratory values to be collected will include coagulation panel, serum creatinine and AST/ALT. Any received blood products, protamine, phytonadione, factor VII and anti-thrombin III will be recorded. Data will be analyzed for trends regarding incidence of bleeding or thrombi complications using descriptive statistics.

8-321

Title: Comparative efficacy of meropenem versus doripenem for the treatment of ventilator associated pneumonia

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Purpose: Ventilator associated pneumonia (VAP) is one of the most common infections acquired in intensive care units (ICUs) and accounts for majority of antibiotics used in ICUs. Doripenem is a broad-spectrum antibiotic with in-vitro activity similar to imipenem and meropenem. Currently in the literature, there is conflicting evidence on the efficacy of doripenem in the treatment of VAP. The purpose of this study is to assess the rates of clinical cure in patients with VAP who were treated with doripenem as compared to those treated with meropenem.

Methods: A retrospective, case-control chart review in adult patients with VAP who were treated with doripenem or meropenem between January 2007 and December 2012 will be performed. Patient charts will be reviewed for the following exclusion criteria: adjunctive antimicrobial use excluding vancomycin or linezolid, immunocompromised patients and infection caused by pathogens resistant to doripenem or meropenem. Baseline demographics and the following endpoints will be collected; pertinent laboratory data, clinical cure, ICU/hospital length of stay, duration of antibiotic therapy, Sequential Organ Failure Assessment, and Clinical Pulmonary Infection Scores to assess for outcomes. The primary outcome measure will be to determine if clinical cure rates differ in patients treated with doripenem as compared with meropenem. Secondary outcomes measured will include comparative duration of treatment, outcomes based on disease severity, and all-cause in-hospital and attributable mortality. Incidence of carbapenem related side effects will also be assessed. This study is pending Institutional Review Board approval.

8-322

Title: Influence of inpatient diabetes education on patient understanding of diabetes and satisfaction with education

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Purpose: The purpose of this study is to assess the influence of diabetes education in the hospital setting on patient understanding of diabetes and on patient satisfaction of diabetes education.

Methods: This study is a single-center retrospective study designed to evaluate a patients understanding of diabetes and patient satisfaction with the education provided at Hendrick Medical Center. A 30-minute education session was provided at the bedside to patients identified as having a history of diabetes. A series of questions, based on the content of the education, were asked to evaluate baseline understanding. The same questions were repeated at the conclusion of the education to identify gaps in patient understanding and recommend any further educational needs. Following the education, patients were asked about their level of satisfaction with regard to specific characteristics of the education. To assess the influence of the education on patient understanding of diabetes, the overall change in score from baseline compared to after the education will be analyzed using a paired t-test. To evaluate patient satisfaction with the education, the responses on the satisfaction survey will be compiled to determine a mode.

8-323

Title: Assessing age-related treatment response rates in hospitalized patients with Clostridium difficile infection: a retrospective cohort study

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Purpose: Clostridium difficile is an anaerobic, spore-forming, Gram-positive bacillus that produces exotoxins and typically causes infectious diarrhea in hospitalized patients. Clostridium difficile infection (CDI) incidence and severity increase with advanced age. Anecdotally, treatment response decreases with age; however, this has never been formally studied. The purpose of the study is to assess age-related treatment response rates in hospitalized patients with CDI.

Methods: Prior to the initiation of the study, Institutional Review Board (IRB) approval will be obtained. A waiver of informed consent will be requested from the IRB. This retrospective cohort study will be conducted on hospitalized patients who are 18 years and older with a positive result of a Clostridium difficile toxin assay from January 1, 2009 to August 31, 2013. Baseline patient characteristics, laboratory, treatment, and clinical data will be collected and compared between age groups. The primary outcome will be refractory response rates in relation to patients age. Refractory CDI will be defined as persistent diarrhea and/or positive result of toxin assay with diarrhea after 7 days of antibiotic therapy. Secondary outcomes include time to resolution of CDI and risk factors that may influence refractory response rates of CDI. Time to resolution of symptoms will be defined as documentation of clinical cure by a treated physician in the medical chart.

8-324

Title: Expansion of the Anticoagulation Center through increased utilization of Outpatient Pharmacists

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Purpose: Over 2,300 patients were seen in the Harris Health System from January to December 2012 for anticoagulation monitoring. Many patients cannot be seen in time due to high patient volume. Efforts have been made to increase utilization of outpatient pharmacists. This is done by increasing the number of appointments for clinical pharmacy specialists. Also, a telephone clinical pharmacy service was established for staff pharmacists to provide telephone appointments to therapeutically controlled patients. We will evaluate efforts to increase access to anticoagulation services. This study is unique in that anticoagulation services will be provided by clinical pharmacy specialists and staff pharmacists.

Methods: Prior to the initiation of the study, Institutional Review Board (IRB) approval will be obtained, along with a waiver of informed consent. This is a retrospective cohort study using a quasi-experimental design. The primary objective of this study is to assess the total number of visits per month before and after increased pharmacist utilization. Secondary objectives include, the time to 3rd available appointment before and after increased pharmacist utilization per clinic site, proportion of patients in therapeutic range pre and post intervention at 30 days, and 30 day readmission due to anticoagulation adverse effects. To be included in this study, patients must have been previously seen by the clinical pharmacy specialist. The data will be collected from the time period of October 1, 2011 to April 1, 2014 for four clinics within the Harris Health System. In addition, a secondary analysis will evaluate productivity for the clinical pharmacy specialists by evaluating the number of completed publications and projects pre and post intervention. We will also evaluate the pharmacy productivity standards per month for the four clinics pre and post intervention.

Results: In Progress

Conclusion: In Progress

8-325

Title: Evaluation of procalcitonin use for bacterial infections at a VA medical center

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Purpose: The purpose of this project is to determine if the availability and use of procalcitonin (PCT) without formal provider education or an interpretive algorithm results in decreased antibiotic use without negatively impacting patient outcomes. The primary objective is to determine the proportion of patients who had antimicrobial de-escalation or discontinuation within 48 hours of a negative result (PCT <0.25 mcg/L).

Methods: After IRB approval, the investigators will gather data on all patients 18 years of age who had at least one PCT level measured from January 1 - August 31, 2013. The data to be collected will include the following: patient name, social security number, age, gender, height, weight, body mass index, ordering provider, location ordered, presumptive clinical diagnosis, hospital length of stay, ICU length of stay, antibiotic days, vital signs, complete blood count, inflammatory markers, PCT levels, date of PCT levels, source of infection, positive culture data in sterile sites, positive imaging data, immunosuppression, antibiotic status post-PCT level, co-morbidities, 30-day in-house morbidity and mortality, among others. Based on prior studies, the PCT interpretive cutoffs will be: PCT <0.1 mcg/L, strongly discourage use of antibiotics; PCT <0.25 mcg/L, discourage use of antibiotics, PCT 0.25-0.5 mcg/L, encourage use of antibiotics; PCT >0.5 mcg/L, strongly encourage use of antibiotics. These cutoffs will allow comparisons of actual antibiotic use and predicted antibiotic use in the presence of an algorithm in terms of initiation and continuation/discontinuation of antibiotics.

8-326

Title: Improving hospital pharmacists' geriatric competencies

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Purpose: Pharmacotherapy in the geriatric patient is challenging because of changes associated with advanced age in pharmacokinetics and pharmacodynamics, increased complexity of and number of disease states, and declining functional status. With the increasing geriatric population, it is important for all healthcare professionals to be educated in basic geriatric concepts to help prevent medication errors. The aim of this study is to determine if geriatric pharmacotherapy competencies improve among hospital staff pharmacists.

Methods: This study is pending approval from the Institutional Review Board (IRB). After IRB approval, an online survey assessing baseline competencies in geriatric medication usage will be distributed to all adult staff pharmacists on three hospital campuses. By agreeing to take the initial competency assessment survey, staff pharmacists voluntarily will be providing informed consent for this study. After completing the baseline survey, pharmacists will be educated by the post graduate year one (PGY1) pharmacy residents using a live 20 minute educational session on geriatrics. Those who are unable to attend the live presentation will be given access to a previously recorded version of the educational session that will be sent via an email attachment. After completing the education session, the competency assessment will be administered again. The assessments will be linked to an email that will only be known by the designated investigator. The competency assessments and pharmacy education will focus on the following geriatric competencies: (1) The American Geriatrics Societys Beers Criteria, (2) polypharmacy, and (3) pharmacokinetic/pharmacodynamic differences in geriatric patients.

8-327

Title: Increasing the confidence of grocery store-based community pharmacists in providing diet and nutritional counseling

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Purpose: Grocery store chains are striving to integrate pharmacists and other healthcare professionals into a team which provides the best patient care and makes the stores centers for health and wellness. Grocery store-based community pharmacists are easily accessible to patients with questions regarding their medications or disease; however, they often have questions about nutritional items and foods sold in the store. The purpose of this study is to prepare pharmacists to answer patient questions regarding nutrition and supplements and ensure patient safety by assessing interactions of these items with a patients drugs or disease states.

Methods: This study will be submitted to the Institutional Review Board for approval. Pharmacists practicing in a regional grocery store-based community pharmacy will be surveyed to assess their confidence, knowledge, and frequency of recommending nutritional products, supplements, healthy foods, recipes, and determining drug or disease state interactions with these items. An educational module will be prepared by a pharmacist and registered dietician. Another survey will be given to the pharmacists after completion of the education module. The results of the two surveys will be compared. The analysis will determine if the education was effective by assessing the changes in scores on the survey and the frequency of recommendations made regarding nutrition and supplement products.

8-328

Title: Pharmacists use and perceptions of a prescription drug monitoring program for controlled substances: A survey of chain community pharmacists in Texas

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Purpose: To assess community pharmacists opinions and utilization of the online statewide prescription drug monitoring program (PDMP) for controlled substances.

Methods: On August 20, 2012 the Prescription Access in Texas (PAT) program went online for voluntary use by any licensed Texas pharmacist willing to enroll in the program. Once enrolled, pharmacists can search for a patients prescription dispensing history for Schedule II-V controlled substances during the previous 365 days. Currently no information is available regarding pharmacists use of PAT and perceived benefits from the program. Data will be collected from licensed community pharmacists in the state of Texas. Participants will complete an anonymous online survey designed specifically to assess pharmacists knowledge of the PAT program, frequency of use, and perceptions of its usefulness and ease of use. Data collected from this study will be analyzed to produce an estimate of pharmacists use and attitudes toward the PAT program. This study will be submitted to the Institutional Review Board for approval and informed consent will be obtained from all participants.

8-329

Title: Evaluation of the appropriateness of vitamin k1 dosing at a Veterans Affairs Medical Center (VAMC)

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Purpose: Vitamin K1 is utilized to manage over-anticoagulation with warfarin therapy. Despite clinical practice guidelines provided by the American College of Chest Physicians, there is inconsistency regarding proper vitamin K1 dose and route of administration. The purpose of this study is to determine appropriateness of vitamin K1 dosing at our institution and the need for a vitamin K1 protocol. The primary objective is to determine appropriateness of vitamin K1 therapy for warfarin reversal based on national guidelines. Secondary objectives are to determine time to return to therapeutic INR and rate of thromboembolic events within 30 days of initial vitamin K1 dose.

Methods: This study will be submitted to the Institutional Review Board for approval. A retrospective chart review will be conducted for patients receiving vitamin K1, or phytonadione, from July 1, 2012 to July 1, 2013. Inclusion criteria are at least 18 years of age and on warfarin therapy for a minimum of 2 weeks before phytonadione administration. Exclusion criteria include phytonadione administered for non-warfarin reversal indications, warfarin reversal indicated for a procedure, warfarin not withheld, no INR measured within 24 hours following phytonadione administration, severe liver dysfunction, known sensitivity to phytonadione, or pregnancy upon phytonadione administration. Our computerized patient record system will be utilized to determine patient demographics, nursing unit, service line, warfarin indication, target INR range, phytonadione indication, INR when phytonadione was administered, dose, route, and frequency of phytonadione administration, phytonadione adverse reaction documentation, fresh frozen plasma and packed red blood cells utilization, timeframe from phytonadione dose to outpatient follow-up, timeframe from phytonadione administration to first post-dose INR, thromboembolism risk factors and history, INR stability before phytonadione dose, time to return to therapeutic INR and warfarin re-initiation, occurrence of thromboembolism within 30 days of phytonadione dose, time to occurrence and type of thromboembolism.

8-330

Title: Survey of pharmacy presence and practice models in pediatric emergency departments across the United States

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Purpose: Pharmacy services in the emergency department (ED) were first described in the 1970s and have since become a specialty practice, which continues to progress. In 2011, the ASHP Guidelines on Emergency Medicine Pharmacist Services aimed to define the role of ED pharmacists and provide recommendations to meet institution specific needs. This survey aims to further describe the role of dedicated ED pharmacists exclusively in freestanding pediatric hospitals in the United States. The primary objective of this survey is to evaluate pharmacy presence and practice models of pediatric ED pharmacist services.

Methods: A questionnaire with standardized responses was developed to assess pharmacy presence, the role of pharmacists, and practice models in emergency departments of freestanding pediatric hospitals. Freestanding childrens hospitals are defined as follows: an institution that is not integrated with any other entity as a main provider, a department of a provider, a remote location of a hospital, a satellite facility, or a provider based entity. IRB approval will be obtained prior to survey commencement. The questionnaire will be validated through survey administration to an internal group of ED pharmacists, as well as two external pediatric ED pharmacists. Survey participants will be identified using databases from the Childrens Hospital Association and Medicare and Medicaid Services. Two individuals from each hospital will be deemed the hospitals representatives, ideally the ED pharmacist, critical care pharmacist, or pharmacy clinical director. One of the hospitals representatives will participate in the survey via telephone communication to allow for elaboration of standardized responses when appropriate. Nonresponders will be defined as failure of the hospitals first and second identified representatives to respond within seven days each, to two emails and two follow up phone calls. Descriptive statistics will be used to analyze the data collected through the questionnaire.

8-331

Title: Implementing patient-centered medical home (PCMH) through clinical pharmacists and physician co-visits and its impact on A1c goals

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Purpose: Patient-centered medical home (PCMH) was introduced in 2004, by the American Academy of Family Physicians. One of the purposes of PCMH, as defined by the American Academy of Family Physicians, is to provide patients with access to comprehensive and integrated healthcare, focusing on quality and safety through ongoing relationships with medical professionals. PCMH is new in the outpatient setting and though its implementation has been described, reporting of patient outcomes is limited. The goal of this study is to describe the implementation of this service and how it has affected diabetes treatment, specifically A1c goals.

Methods: PCMH at CommUnityCare-North Central is defined as coordinated co-visits. Co-visits are defined as the clinical pharmacists seeing patients on the same visit as they are scheduled to see the physician. Part of the visit can include: education, addition/discontinuation of new medication(s), dose adjustments, laboratory monitoring, monitoring of adverse events and drug interactions. This is a retrospective, chart review, for patients who were seen through PCMH and have a diagnosis of diabetes. The study will be conducted using electronic health record (EHR). Data collected will include: age, gender, ethnicity/race, co-morbidities, medications, and A1c values. Patients will be identified during the time period of March 1, 2013 November 1, 2013. Patients will need documentation of at least two A1c values for inclusion. The following will be reported: description of implementation of PCMH in the CommUnityCare-North Central clinic, focusing on the role of the clinical pharmacist, description of the goals for implementing PCMH and lastly comparison of percent decrease in A1c for patients seen by a pharmacist through PCMH. This study is pending IRB approval.

Results: Data collection in-progress.

Conclusion: Expected in the Spring of 2013.

8-332

Title: Extended vs. Intermittent Infusions of Meropenem in Critically Ill Patients in the ICU

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Purpose: Increased prevalence of resistant organisms coupled with decreased development of new antimicrobials has required more innovation with current treatment options. Administering antibiotics, such as carbapenems, in a way that optimizes the pharmacokinetics of the drug should theoretically lead to increased effectiveness. However, the translation to improved patient outcomes has not been widely studied. The objective of this study is to determine if patients treated with extended infusions of meropenem achieve a greater clinical cure as compared to those receiving the standard intermittent infusion.

Methods: Before initiating data collection, this study will be submitted to the Institutional Review Board for approval. Patient identifiers will be removed from all data for confidentiality. A list of all patients > 18 years old receiving intermittent meropenem infusions who were located in the ICU from March August will be retrospectively compiled from the institutions electronic medical record system. In addition, patients > 18 years old receiving extended meropenem infusions who are located in the ICU will be prospectively compiled. Patients with cystic fibrosis, immunosuppression, transplant, comfort care, intermittent HD and a CrCl of < 25 mL/min will be excluded. The clinical cure, culture clearance, mortality, length of stay, meropenem treatment cost and adverse effects will be recorded for each patient. The clinical cure rate and associated secondary efficacy outcomes and safety outcomes will then be compared between the intermittent and extended infusion groups.

8-333

Title: Effect of inappropriate initial antibiotic therapy on outcomes of patients with gram-negative urinary tract infections

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Purpose: Microorganisms that cause Urinary Tract Infections (UTIs) are becoming increasingly resistant to antimicrobials. Inappropriate initial antibiotic therapy has been associated with higher mortality in a variety of infections. However, no studies have been published examining inappropriate initial antibiotic therapy in patients with UTI. This study will assess the impact of inappropriate initial antibiotic therapy on outcomes of patient with Gram-negative UTIs by evaluating clinical microbiological cure rates, infection progression and relapse, duration of hospitalization, and hospital readmission rates. The purpose of this study is to determine time to clinical cure for patients with Gram-negative UTIs treated with empiric antibiotics.

Methods: This study will be submitted to the Institutional Review Board for approval as a retrospective observational study. This study will evaluate the time to clinical cure in patients with Gram-negative UTIs. Clinical cure will be defined as resolution of all signs and symptoms or improvement or lack of progression upon completion of treatment without receiving additional antimicrobial therapy for UTI or patient responded to treatment as inpatient and discharged on an oral equivalent antibiotic without readmission, within 30 days of discharge, due to UTI by the same causative organism. Information will be collected regarding the patients symptoms, temperature, lab work, microbiology susceptibilities as well as the choice of antibiotics, duration of therapy, and if the antibiotics were changed. In order to analyze this data, baseline characteristics between groups the Students t-test will be used for continuous data following a normal distribution and chi-squared test or Fishers exact test will be used for categorical data for 2 groups being compared.

8-334

Title: A prospective review: the significance of procalcitonin levels in the evaluation of pediatric patients presenting to the emergency department with fever

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Purpose: Several diagnostic methods have been proposed to aid in identification of bacterial illnesses presenting as fever with no clear source of infection. Procalcitonin (PCT) is a biomarker used in adult and pediatric patients to help identify the presence of bacterial infections and subsequently, decrease patients length of stay, hospital costs, and patient exposure to unnecessary antibiotics. This two-part, prospective study was formulated to educate pediatric physicians and medical residents on PCT, and to evaluate the use of PCT as a diagnostic marker for serious bacterial infections in pediatric patients presenting to the Emergency Department.

Methods: After obtaining Institutional Review Board approval, a two-part prospective evaluation will be conducted. Part I is a qualitative analysis of PCT surveys by pediatric and emergency medicine residents. Surveys consist of 6 and 7 closed-ended questions to find their baseline knowledge of PCT. Results from the pre- and post-surveys will be compared to identify improvement and learned understanding. Part II is a prospective study including patients aged 0 to 18 years with a temperature greater than or equal to 100.4 degrees F (38 degrees C). Exclusion criteria includes burn patients, immunocompromised patients, age less than 72 hours, patients with cystic fibrosis, metabolic disorders, surgery in the previous 7 days, and immunizations or antibiotics in prior 48 hours. Procalcitonin will be obtained by simple blood draw and analyzed on admission along with other pertinent labs and cultures. All patient information will be de-identified by a randomly assigned number and information kept in a secure computer database. PCT values along with C-reactive protein and positive and/or negative bacterial cultures will be analyzed for statistical significance and correlation.

8-335

Title: Impact of pharmacist discharge counseling on medication-related hospital consumer assessment of healthcare providers and systems (HCAHPS) scores and readmission rates

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Purpose: Hospital reimbursement for Medicare is influenced by the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) scores and readmission rates. The HCAHPS survey is a national questionnaire assessing patient satisfaction during their hospital stay. Medication-related questions on the HCAHPS survey are a nationwide concern, and there are opportunities for improvement. Hospitals are assigned penalties for reimbursement when readmission rates within 30 days of discharge are higher than nationally set standards. The objective of this study is to evaluate the effectiveness of pharmacist-driven counseling on hospital reimbursement by increasing medication-related HCAHPS scores and reducing hospital readmission rates.

Methods: This is a prospective, single-center, quality assurance and improvement study taking place October 1, 2013 through April 30, 2014. Resident pharmacists and pharmacy students participate in patient rounds on the gastrointestinal and general medical floors Monday through Friday. Each day potential discharge patients are identified and choose to accept or decline discharge prescription delivery services and additional pharmacist counseling. The intervention group will receive additional pharmacist-driven counseling that emphasizes and clarifies medication regimens by reviewing indications, use, potential side effects, and importance of adherence. The control group, which consists of patients who refused the service or do not require discharged prescriptions, will not receive additional pharmacist medication counseling and education at the point of discharge. The primary endpoints of the study include medication-related HCAHPS scores and readmission rates at 30 days post-discharge. The secondary endpoints include self-reported patient medication adherence, estimated cost-savings from readmissions, and number of pharmacist interventions.

8-336

Title: Implementation of pharmacist provided telephone home blood pressure monitoring and management in a limited resource setting (TIPBP Study)

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Purpose: The current best practice for managing hypertension is a team-based approach involving multiple healthcare providers. The beneficial effect of pharmacist managed hypertension through remote monitoring has been demonstrated in several recent studies. The following study is designed to demonstrate the benefit of using patient-centered home blood pressure monitoring via telephone reported readings versus standard care in a small ambulatory care clinic with limited resources. The primary aim of this study is to determine the difference in blood pressure reduction between the pharmacist managed home blood pressure group versus the patients managed through standard care physician office visits.

Methods: The project will be approved by the institutional review board prior to data collection. Once patient eligibility is determined, patients will be randomly selected to participate in one of the two phases of the study. Phase I patients will be enrolled in the pharmacist home blood pressure monitoring group, during which phase II patients will serve as the comparator group undergoing standard physician management. After 4 months, the patients enrolled in phase II will be offered similar clinical pharmacy services for management of their hypertension (outcomes will not be reported). Data will be obtained by chart review and prospectively. Inclusion criteria: greater than or equal to 21 years of age, one documented primary care physician visit in the past year, access to a home blood pressure monitor, telephone access, and an average of 3 documented blood pressure readings above their specified goal. The primary outcomes include the average change in systolic and diastolic blood pressures and the percent achieving goal blood pressures. Descriptive statistics will be used to assess baseline characteristics and chi-square tests will be utilized to compare the two groups. The study will be 4 months in duration.

8-337

Title: Clinical outcomes of alternative meropenem extended infusion dosing strategies in intensive care unit patients

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Purpose: To assess the rates of in-hospital mortality and 30-day mortality for ICU patients receiving one of two extended infusion dosing strategies of meropenem, 1g every 8 hours or 500mg every 6 hours.

Methods: This study is pending IRB approval prior to the initiation of data collection. This is a single-center, retrospective cohort study assessing clinical outcomes in ICU patients receiving meropenem by 3 hour extended infusion, either 1g every 8 hours or 500mg every 6 hours. Patients' baseline demographics, disease severity, labs, pertinent medical history and selected outcomes are being collected by chart review for patients meeting inclusion criteria between May 1, 2012 and October 31, 2013. The primary outcomes are the rates of in-hospital and 30-day mortality. The secondary outcomes are length of stay and duration of therapy. Inclusion criteria are ICU patients 18 years of age or older who received at least 48 hours of meropenem treatment. Patients that received off-protocol dosing of meropenem, had a diagnosis of cystic fibrosis or suspected meningitis are excluded.

8-338

Title: The impact of extended-infusion cefepime in patients with gram negative infections

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Purpose: Increasing resistance to antibiotics is associated with significant increases in morbidity, mortality, and health care costs. Current data suggests that extended-infusion beta-lactams achieves a higher probability of maximizing bactericidal effects compared to intermittent infusion. The effect of extended-infusion cefepime on clinical outcomes remains unclear. The purpose of this study is to determine if extended-infusion cefepime can significantly improve patient clinical outcomes due to suspected gram-negative infections.

Methods: This study will be submitted to the Institutional Review Board for review. This is a single center, retrospective, observational cohort study which aims to compare adult patients who received intermittent infusion cefepime over 30 minutes to patients who received extended-infusion cefepime over 4 hours. All patients admitted to the hospital who received cefepime for at least five days will be included. Patients will be excluded if they received both intermittent and extended-infusion cefepime, a concurrent beta-lactam antibiotic, or had a pathogen with an MIC reported as resistant. Data collection will include patient demographics, concomitant antimicrobial therapy, source(s) of infection, microbiological data, and clinical outcomes. The primary endpoint of this study is 30 day in-hospital mortality. Secondary endpoints include hospital length of stay, ICU length of stay, antibiotic-associated length of stay, clinical failure, and microbiological failure.

8-339

Title: Evaluation of hospital practice in empiric therapy for febrile neutropenia in cancer patients

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Purpose: In patients with febrile neutropenia, it is essential that broad-spectrum antibiotics treating both Gram-positive and Gram-negative organisms be initiated immediately. As part of the antimicrobial stewardship program within our hospital system, carbapenems and piperacillin-tazobactam must be approved by the Infectious Diseases team prior to their use in any patient, while cefepime does not carry this restriction. The primary objective of the study is to evaluate whether the empiric antibiotics being used to treat febrile neutropenia in our system are appropriate and whether our restriction on the use of carbapenems should include an exception for use in patients with febrile neutropenia.

Methods: This study will be submitted to the Institutional Review Board for approval. It will be a retrospective cohort study of patients admitted to the hospital with documented febrile neutropenia between August 1, 2010 and August 30, 2013. Patients will be included if they are 18 years of age or older and have received empiric antibiotics for cancer chemotherapy-induced febrile neutropenia. Patients will be excluded if they had negative cultures after diagnosis of febrile neutropenia. Data collected from each medical record will include patient age, gender, if the patient had been hospitalized at one of our facilities within the previous six months, if the patient had a history of infection with an ESBL-producing organism, oral temperature readings, initial empiric antibiotic used for treatment of febrile neutropenia, length of neutropenia, hospital length of stay, death within hospital stay, and antimicrobial cultures and sensitivity analyses. Appropriate therapy will be defined as initial empirical antibiotic therapy that had activity against the bacteria subsequently grown in culture, based on susceptibility results. Patient characteristics will be compared between the two groups, appropriate versus inappropriate therapy. Categorical data will be compared using chi-square test, and continuous data will be compared using Student's t-test.

8-340

Title: Extended interval aminoglycosides in cystic fibrosis patients: evaluation of optimal dosing and outcome measures

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Purpose: Extended interval aminoglycosides are beneficial for cystic fibrosis (CF) exacerbations due to their ability to obtain higher peaks and avoid prolonged elevated troughs. There is limited information available on the optimal starting dose for extended interval aminoglycosides in patients with cystic fibrosis. Clinical outcomes data associated with extended interval aminoglycoside use in patients with cystic fibrosis is also limited. Our primary objective is to determine the optimal extended interval aminoglycoside starting dose for patients with cystic fibrosis. The secondary objectives are to evaluate the effect of extended interval aminoglycosides on length of time between CF exacerbations and FEV1 % predicted.

Methods: This study has been submitted to the Institutional Review Board for approval. Both inpatient and outpatient electronic medical records will be used to identify patients with cystic fibrosis who have been treated with extended interval aminoglycosides both before and after the implementation of a CF extended interval aminoglycoside protocol. Aminoglycoside doses, weight at the time the dose was given, aminoglycoside levels, FEV1 % predicted, and time between admissions for CF exacerbations will be collected via retrospective chart reviews. Optimal dose data will be collected for admission from April 1, 2011 through September 30, 2013. FEV 1 % predicted and time between exacerbations will be collected from October 1, 2011 through September 30, 2013. Data will be de-identified and recorded on a password-protected data collection form to maintain confidentiality. Aminoglycoside dosing will be analyzed by using scatter plots and averages. FEV1 % predicted and time between admissions for CF exacerbations will be analyzed via paired-T tests.

8-341

Title: Impact of the incorporation of a vancomycin weight-based dosing selection into a computerized physician order entry system

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Purpose: Vancomycin is utilized for treatment of methicillin-resistant Staphylococcus aureus infections. Attentive monitoring is essential to ensure eradication of infection, avoid treatment failure and reduce the occurrence of resistance. Trough concentrations correlate well with vancomycin efficacy and appropriate initial dosing is critical to achieve therapeutic trough concentrations in a timely manner. Fixed-dose vancomycin regimens potentially lead to delays in therapeutic trough concentration attainment. Current guidelines recommend scheduled weight-based doses of 15-20 mg/kg vancomycin to attain therapeutic trough concentrations. A vancomycin weight-based dosing selection was incorporated into a computerized physician order entry (CPOE) system in 2013 to improve weight-based dosing practices.

Methods: The primary objective of this study is to determine if a vancomycin weight-based dosing selection in a CPOE system increased the number of appropriate initial scheduled vancomycin doses (15 mg/kg/dose). The secondary objectives are to evaluate the time to therapeutic serum trough concentrations and hospital length of stay. This retrospective chart review will include data collected six months prior to and six months after incorporation of the vancomycin weight-based dosing selection in CPOE. Approximately 400 charts will be reviewed using an electronic medical record, and data will be stored in a password-protected database. Vancomycin orders and serum concentrations will be collected to assess utilization of the weight-based dosing selection in CPOE and time to therapeutic trough concentrations, respectively. Patients included in this study will be adults who received three or more vancomycin doses. Patients with renal dysfunction, defined as a creatinine clearance of <50 mL/minute or on dialysis, will be excluded. The following data will be collected: patient age, gender, weight, height, baseline serum creatinine, hospital length of stay, source of infection, microbiology results, vancomycin doses and vancomycin levels. This study will be submitted to the institutional review board for approval before beginning data collection.

8-342

Title: Pharmacoepidemiology of paralytic use in patients with acute respiratory distress syndrome

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Purpose: Acute respiratory distress syndrome (ARDS) is defined as acute hypoxemia with bilateral pulmonary infiltrates in the absence of elevated left atrial pressures. It is a significant contributor to intensive care unit morbidity and mortality worldwide. Although various ventilator management strategies and prone positioning have been studied in patients with ARDS, the value of paralytic use in these patients is unknown. Guidelines recommend utilizing paralytics in instances of ventilator dyssynchrony; however its true value in ARDs has yet to be determined.

Methods: We conducted a single-center, retrospective, observational study, with data from Baylor University Medical Center, with 100 patients from July 1, 2012 to June 30, 2013, and a diagnosis of ARDS, using the ICD-9 Code 518.28. Patients with ARDs were medically managed using standard mechanical ventilation utilizing goal inspiratory volumes of less than or equal to 6mL/kg ideal body weight, with or without prone positioning, or were placed on high frequency oscillatory ventilation. Each treatment group was then stratified by exposure to continuous infusion of a neuromuscular blocking agent. Severity of illness was assessed using the APACHE II score and SOFA scores in each patient. Severity of ARDs was compared using FiO2/SpO2 ratios. Relative risk of mortality among paralyzed patients was compared with non-paralyzed, using hazards ratios from Cox Regressional models. Investigational Review Board approval is pending.

8-343

Title: Outcomes in Community-Acquired Pneumonia, a comparison of Moxifloxacin versus Ceftriaxone and Azithromycin

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Purpose: Ceftriaxone and azithromycin are a common recommendation for the treatment of community-acquired pneumonia (CAP). In addition to their spectrum of activity, macrolides have pleiotropic effects, which may reduce mortality. Another choice for the treatment of CAP is moxifloxacin as it has activity against typical CAP pathogens, and has been found as effective as ceftriaxone and azithromycin in treating CAP. Statins have immunomodulatory benefits and may demonstrate benefit in CAP. It's been reported that macrolides may attenuate the anti-inflammatory benefit of statins in CAP, suggesting that moxifloxacin may be a better choice for the treatment of CAP in patients taking statins.

Methods: This study evaluates the effectiveness of moxifloxacin in comparison to azithromycin and ceftriaxone in the treatment of CAP. Additionally, we will investigate any potential difference in outcome in patients taking a statin who are then treated with azithromycin. The primary objective of this study will be to evaluate the effect of treatment with moxifloxacin compared to azithromycin and ceftriaxone on 30-day all-cause mortality in patients admitted for CAP. Secondary objectives will include hospital length of stay (LOS), Intensive Care Unit (ICU) admissions, ICU LOS, hospital mortality and 30-day all-cause mortality in patients taking statins. A retrospective chart review of adult patients diagnosed with CAP will be conducted a Veterans Affairs Medical Center, including patients admitted with a diagnosis of CAP between June 2011 and June 2013. Data will include vital signs, lab values, Pneumonia Patient Outcomes Research Team (PORT) scores, LOS, microbiology cultures, drug therapy, and other data as needed. Descriptive statistics will be performed on patient demographic data and reported with the measures of central tendency. Inferential statistics will be performed on collected data using the Students t-test or Chi-squared test as appropriate. Regression analysis will be conducted to determine outcomes correlation with data.

8-344

Title: Conventional versus high dose steroids in severe asthma exacerbations requiring continuous albuterol administration in a general pediatric setting

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Purpose: Severe acute asthma exacerbations in pediatric patients increase the potential for intubation, which should be avoided to reduce possible airway damage. The objective of this study is to determine if high dose methylprednisolone reduces the number of patients transferred from the general pediatric unit to the pediatric intensive care unit (PICU) when unable to wean continuous albuterol for treatment of severe asthma exacerbations.

Methods: This retrospective study will be submitted to the Institutional Review Board for approval. Pediatric asthma patients admitted to the general pediatric unit from 2008 through 2013 and still on high dose continuous albuterol (15-20mg/hr) more than 12 hours after admission initially started on conventional dose steroids (1-2mg/kg/day) will be included. Patient data collection will include patient demographics, temperatures, white blood cell counts, glucose levels, hospital length of stay, PICU transfer (time from admission to transfer and length of PICU stay),whether intubation was necessary, dosing and duration of continuous albuterol and corticosteroids, and concomitant medications. Patients who receive high dose methylprednisolone (>2mg/kg/day) will be compared to the conventional dose group (1-2mg/kg/day) and analyzed to determine the percentage of patients requiring transfer to the PICU and/or intubation, time from admission to transfer to the PICU and length of PICU stay, and dose/duration of continuous albuterol and corticosteroid therapy. This study will potentially identify a possible strategy to prevent PICU transfer and/or intubation in pediatric patients with severe acute asthma exacerbations.

8-345

Title: Outcomes in neutropenic oncology patients with Pseudomonas aeruginosa bacteremia

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Purpose: Few studies have been published in the last decade on the treatment outcomes of neutropenic oncology patients with Pseudomonas aeruginosa bacteremia. This study will characterize the outcomes of neutropenic oncology patients with Pseudomonas aeruginosa bacteremia at a large academic medical center and evaluate the time to switch to oral antibiotics and associated treatment outcomes.

Methods: This Institutional Review Board approved retrospective chart review will be conducted on neutropenic oncology patients with Pseudomonas aeruginosa bacteremia who were treated with antipseudomonal antibiotic therapy during the time period from January 1, 1999 to September 4, 2013. Pertinent information will be obtained from the reviewed medical records, and data will be recorded without patient identifiers and maintained confidentially. Inclusion criteria will be as follows: patients 18 years or older with an underlying malignancy, at least 1 positive blood culture for Pseudomonas aeruginosa, and neutropenia (defined as absolute neutrophil count < 1000/mm3) within 2 days of the first positive blood culture. The following data will be collected: absolute neutrophil count at time of first positive blood culture; presence of concomitant pneumonia or septic shock at time of first blood culture; time from first blood culture to onset of appropriate antipseudomonal therapy; appropriate antipseudomonal therapy; monotherapy versus combination therapy; and dose, choice or length of intravenous antibiotics and oral antipseudomonal fluoroquinolones. This study will also evaluate the time to switch to oral antibiotics, rate of cure and rate of failure.

Results: Pending

Conclusion: Pending

8-346

Title: Risk factors, treatment patterns and clinical outcomes of Clostridium difficile infection in patients with cirrhosis

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Purpose: Previous studies have demonstrated that comorbidities such as liver cirrhosis are associated with poor outcomes in patients with concurrent Clostridium difficile infections (CDI). The purpose of this study is to evaluate risk factors, treatment patterns and clinical outcomes of CDI in patients with cirrhosis, as well as the interactions between the two disease states, at a large, university-affiliated tertiary teaching hospital.

Methods: A retrospective, case-controlled study will be performed in adult patients diagnosed with CDI and cirrhosis from January 2007 to August 2013. Primary endpoints will assess risk factors as well as global- and CDI- related outcomes. Secondary endpoints are to evaluate utilization of metronidazole versus oral vancomycin for the treatment of first or second episode of CDI; to assess treatment failure of CDI stratified by initial CDI treatment; and to identify significant parameters associated with treatment failure. Data collected will include: patient demographics, diagnosis of cirrhosis and disease-related complications, admission reason(s), prophylactic and treatment antimicrobials received for both CDI and non-CDI related issues, time between admission and onset of CDI, pertinent vital signs and lab values, duration of CDI therapy, length of hospital and ICU stay, comorbidity (Charlson comorbidity scale), severity of underlying disease (Horns index), prior and concomitant use of proton pump inhibitor, discharge disposition. Statistical analysis will be performed by using the Chi-square or Fisher exact test for nominal data and the Students T-test for normally distributed continuous data. Regression analysis will be used to determine significant risk factors. This study has been submitted to the Institutional Review Board for approval.

8-347

Title: Assessment of provider awareness of The United States Food and Drug Administration risk communications regarding simvastatin, citalopram, and zolpidem at a rural family medicine training program

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Purpose: Recent Drug Safety Alerts have been issued by the United States Food and Drug Administration (FDA) regarding the dosing of simvastatin, citalopram, and zolpidem. While many questionnaires have been used and data published regarding practioner awareness of drug safety issues, no studies have been published using a questionnaire to assess provider awareness of the recent Drug Safety Alerts regarding simvastatin, citalopram, and zolpidem. The purpose of this study, therefore, is to assess prescriber awareness of these most recent Drug Safety Alerts and to assess the effects of these Drug Safety Alerts on prescribing patterns within a rural family practice clinic.

Methods: All medical residents, physicians, and physicians assistants from the University of Wyoming Family Medicine Residency Program in Casper, Wyoming, will be recruited to participate in this study. Those who opt out of participation or who are unable to be contacted to participate will be excluded from the study. Participants will be asked to complete a questionnaire in which they identify the resources they utilize to access drug safety information and their awareness of recent Drug Safety Alerts will also be assessed using clinical scenario questions. No personal identifiers will be collected and all responses will be confidential. Once the questionnaires are completed, the data will be compiled to determine participant awareness of recent Drug Safety Alerts. Following the collection of questionnaires, a Drug Utilization Review analyzing the prescribing of simvastatin, citalopram, and zolpidem prior to and following the FDA issuing the recent Drug Safety Alerts. Institutional Review Board approval for this project is pending.

8-348

Title: Evaluation of the impact of pharmacist intervention on high dose opioid regimens among veterans with non-malignant chronic pain

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Purpose: In an effort to reduce opioid related deaths, Veterans Affairs (VA) Medical Centers around the nation are revolutionizing team oriented care. The VA has implemented the Opioid Safety Initiative (OSI) to decrease the use of high dose opioids among veterans with non-malignant chronic pain. This project was designed to evaluate the effectiveness of pharmacist intervention in achieving safe and effective chronic pain management among high dose opioid users. The primary goal is to optimize non-opioid therapy with the goal of reducing the daily morphine milligram (mg) equivalents by 20% for patients with non-malignant chronic pain.

Methods: Patients prescribed greater than 200 mg of morphine equivalents were identified using a computer software program compiling opioid therapy data within the VA. Patients were reviewed by the pharmacist in one of three ways: 1) a face-to-face clinic appointment, 2) a telephone appointment, or 3) through chart review. The patients history was evaluated for trials with non-opioid medications, use of physical therapy and other non-pharmacological treatments, use of concurrent sedating drugs, and refill histories (queried through state prescription drug-monitoring programs). Urine drug screens were recommended for all patients without one in the past year. Following the VA guidelines on the Management of Opioid Therapy in the Treatment of Chronic Pain and the Opioid Safety Initiative, a detailed recommendation was provided to the provider including a plan for deescalating the opioid dose through multiple modalities. Finally, the daily morphine mg equivalent doses for each patient were pulled from the VA computer software two months after each intervention and compared to the original dose. Per VA handbook 1058.05 and 1200.19, this study is exempt from review by an Institutional Review Board (IRB) due to the fact that the study is defined as quality improvement with the purpose of improving patient care.

8-349

Title: Outpatient antimicrobial stewardship: evaluating compliance rates to infectious disease guidelines following pharmacist provided education in Veterans Affairs patients with community acquired pneumonia

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Purpose: The Infectious Disease Society of America (IDSA) Community Acquired Pneumonia (CAP) guidelines identify specific recommendations for the treatment of outpatient pneumonia. Patients receiving antibiotics outside of these recommendations have been shown to experience higher rates of hospital mortality. The objective of this study is to determine if pharmacist provided education for Veterans Affairs (VA) emergency department (ED) providers in conjunction with the implementation of a treatment algorithm will increase the percentage of patients who receive appropriate antibiotics and decrease the number of days of antibiotic use for patients with community acquired pneumonia.

Methods: VA patients that presented to the ED with CAP and received outpatient treatment will be included in this study. The following data will be collected: age; gender; ethnicity; weight; height; renal function; comorbidities; medications; dose, frequency, and duration of antibiotics. A pharmacist will perform a chart review to determine the appropriateness of treatment. The definition of appropriate antibiotic treatment will be based on patient specific characteristics and the IDSA guidelines. A pharmacist will educate ED providers regarding appropriate treatment for outpatient CAP and will provide a treatment algorithm based on the IDSA guidelines. Following pharmacist provided education and implementation of the algorithm, patients who present to the ED with CAP will be identified. The duration of antibiotic therapy and the percent of patients treated appropriately prior to pharmacist provided education and implementation of the algorithm will be compared to the duration of therapy and the percent of patients treated appropriately following education. All data will be recorded without patient identifiers and will be maintained confidentially. 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.

9-001

Title: Evaluation of colony stimulating factor use in inpatient and outpatient settings: a retrospective review for appropriateness

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Purpose: Colony stimulating factors (CSFs) represent an integral part of oncology treatment, allowing for fewer chemotherapeutic dose reductions and prevention of cycle breaks. The use of CSFs allow patients marrow to recover quickly after high dose or myelosuppressive chemotherapy. Indications for CSFs continue to evolve to allow more flexibility in provider prescribing. In addition, the American Society of Clinical Oncology (ASCO) updates clinical practice guidelines on use and manufactures provide definite cutoffs for CSF use. The objective of this study is to re-evaluate adherence of prescribers to ASCO guidelines and package inserts in prescribing CSFs to inpatient and outpatient oncology patients.

Methods: This study was submitted to the Institutional Review Board (IRB) for approval. This is a quality improvement project within the health system, and was granted exempt status by IRB. Patients will be identified through dispensing of formulary approved CSFs. The following data will be collected: cancer type, current chemotherapy, last day of chemotherapy, prescribing doctor, age, weight, gender, CSF used, duration of use, and does patient meet ASCO and package insert guidelines. Additionally, the patients white blood count (WBC), absolute neutrophil count (ANC) and platelet count prior to and after receiving a colony stimulating factor will be evaluated for medication appropriateness. Data collected will be recorded without patient identifiers and maintained in a secure format. Patients who have been dispensed a CSF from August 19th to September 19th 2013 will qualify for evaluation. ASCOs 2000 update of recommendations for the use of hematopoietic colony-stimulating factors: evidence-based, clinical practice guidelines and the CSF package inserts will be used to evaluate appropriateness of therapy. Patients therapy will be deemed either inappropriate or appropriate based on guidelines and clinical need. Data obtained will be presented to the Pharmacy and Therapeutics committee for evaluation and review to determine if additional CSF protocols are needed.

9-002

Title: Pharmacist-managed anemia protocol in an inpatient setting for the use of erythropoietin-stimulating agents

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Purpose: There are many guidelines for the use of erythropoietin-stimulating agents in the treatment of anemia due to their associated risks. The objective of this study will be to pilot a pharmacist-managed anemia protocol for the use of erythropoietin-stimulating agents and evaluate if the protocol increases appropriateness of use with regards to standards set by the Food and Drug Administration, American Society of Clinical Oncology, Kidney Disease Outcome Quality Initiative and Center for Medicaid and Medicare Services.

Methods: This study will be a prospective-interventional study with a retrospective comparator. The pilot protocol developed by the investigation team will be used for both components. For the retrospective comparator, the protocol will be used to evaluate orders for erythropoietin-stimulating agents (ESAs) over the past ninety days on appropriateness of use. Data that will be collected includes indication for use, product choice, hemoglobin, hematocrit, blood pressure, ferritin, transferrin saturation, and the number of interventions made over the course of the study. Data will be de-identified for analysis and maintained confidentially. Following retrospective analysis, the pilot protocol will be implemented for prospective orders over a course of ninety days. The protocol will allow pharmacists to review each order for an ESA to determine whether or not administration is appropriate with regards to safety and efficacy. The pharmacist will then be able to verify the order without changes, consult the physician for further information prior to authorization, or stop the order if inappropriate for use. An analysis of the retrospective data versus prospective data will observe for changes in appropriate ESA use and number of pharmacist interventions. This study will be submitted to the Institutional Review Board for approval.

9-003

Title: Evaluation of the use and appropriateness of insulin infusion therapy and the transition to basal/bolus insulin therapy

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Purpose: The objective of this review is to evaluate the use, appropriateness, and transition of insulin therapy. Secondary endpoints include monitoring of hypoglycemic events, the impact of delays in treatment, and hyperglycemic interventions prior to insulin infusion initiation.

Methods: This retrospective review will look at patients at Cox South who received insulin infusion therapy in August 2013. Patients are identified using insulin infusion software. Data collection will include (but is not limited to) ordering physician, hyperglycemic interventions prior to insulin infusion, diagnosis for insulin infusion, process of transitioning to basal/bolus therapy, and number of overdue nursing tasks. This data will help to identify areas of improvement in the current process and will be presented to the diabetes sub group of the Medication Administration Safety Team and the Pharmacy and Therapeutics Committee. This review has been granted exemption by the Institutional Review Board.

9-004

Title: Pharmacist involvement in heart failure management

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Purpose: Drug-therapy related problems pose a serious medical and economic problem. Due to the complexity of care involved with managing heart failure, patients with this condition are at increased risk of developing these problems. The intent of this project is to demonstrate the value of introducing a pharmacist into an already existing heart failure clinic in order to mitigate these issues.

Methods: This study is a prospective review of patient data to identify drug-therapy related problems. Drug-therapy related problems are defined as untreated indication, improper drug selection, subtherapeutic dosage, failure to receive drugs, overdosage, adverse drug reactions, drug interactions, or drug use without indication. Patients with heart-failure are scheduled for immediate follow-up with a nurse-practitioner within 7 days of hospital discharge for a heart-failure related admission. The pharmacist will review these specific patients medication records and look for the opportunity to improve their current plan by providing recommendations to the other providers involved in these patients care. The pharmacist will also interview patients face-to-face prior to being seen by the nurse-practitioner. Cost savings to the patient will be calculated as appropriate when recommendations are accepted, and quality of care will be assessed by the degree of compliance with the 2013 ACCF/AHA Guidelines for the Management of Heart Failure. The IRB Review Board considers this a Quality Improvement project as it involves a process within the hospital; therefore this project was granted a notice of exemption by IRB review.

9-005

Title: Effect of high dose vitamin D supplementation and vitamin D formulation in a long term care facility

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Purpose: To evaluate and analyze the effects of changing from ergocalciferol to cholecalciferol as well as modifying the dose frequency from weekly administration to a frequency dictated by serum 25-OH vitamin D levels. Serum calcium and albumin levels will be used to calculate corrected calcium levels and determine if high dose, multiple weekly administrations of vitamin D replacement leads to hypercalcemia. Additionally fall and fracture rates will be included in the evaluation as evidence supports a relationship between fractures, falls, and 25-OH vitamin D levels.

Methods: This study will be submitted to the Institutional Review Board for approval. A list will be electronically generated identifying study subjects residing in the long-term care facility who are 65 years or older and have an active order for vitamin D replacement during the study time periods. Subjects with severe renal impairment (creatinine clearance less than 20 mL/min), hypercalcemia (calcium levels greater than 10.5 mg/dL), or calcitriol use will be excluded. There will be no active subject participation in this study. Data from the subjects identified will be collected and include: demographic information (age, gender, ethnicity, and body mass index), laboratory information (serum 25-OH vitamin D, calcium, and albumin levels), and prescription information (formulation, dose, and frequency of vitamin D replacement ordered). Corrected calcium levels will be calculated. The rates of falls and/or fractures will be assessed. The generated subject list will initially contain HIPPA information. After the necessary information has been collected, all data documented in the electronic database will be de-identified prior to analysis.

9-006

Title: Ketamine for postintubation sedation in the emergency department

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Purpose: The primary objective of this study is to evaluate the effect of ketamine on the incidence of postintubation hemodynamic instability (PIHI). A retrospective study demonstrated an increase in inhospital mortality, intensive care unit (ICU) length of stay (LOS), and hospital LOS in patients with PIHI. Because hypotension is a common complication of analgesics and sedatives it is reasonable to suggest that medications administered following intubation may contribute to the incidence of PIHI. In contrast to other commonly used sedatives, ketamine preserves and often improves cardiac output making it an attractive agent for use in hemodynamically unstable patients.

Methods: Study data will be compared to historical data of hypotensive patients intubated in the emergency department during the same period of time in the previous year. The treatment group will consist of patients meeting inclusion and exclusion criteria that are sedated with ketamine following intubation in the emergency department during the study period. Inclusion criteria include age greater than or equal to 18 years, hypotension (defined as a MAP less than 65 mmHg or SBP less than 90) and the need for endotracheal intubation in the emergency department. Exclusion criteria include pregnancy, traumatic brain injury (TBI), acute coronary syndromes (ACS), and heart failure. At the conclusion of the study period data points will be extracted from the electronic medical record. The primary outcome measure is the use of a vasopressor agent, MAP less than 65 mmHg, or SBP less than 90 mmHg within the first sixty minutes following intubation. Secondary endpoints include the use of a vasopressor within ninety minutes of ketamine discontinuation and the use of and cumulative doses of fentanyl, morphine, hydromorphone, lorazepam, and midazolam administered in the emergency department following ketamine utilization. Safety endpoints to be collected include the incidence of emergence reactions and hypertension.

9-007

Title: Hypoglycemia in patients admitted on home anti-diabetic regimen

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Purpose: Hypoglycemia is defined by the American Diabetes Association (ADA) as a blood glucose level 70 mg/dl and has well-established correlation to increased morbidity and mortality. Through better understanding of characteristics placing patients at risk for hypoglycemia, physicians may more accurately tailor regimens to prevent occurrence. The purpose of this study is to identify factors contributing to hypoglycemia in diabetic patients admitted to the health system on their home anti-diabetic regimen within the first five days of admission.

Methods: A retrospective chart review of all patients admitted on their home anti-diabetic regimen will be completed. This study has been submitted to Saint Luke's Institutional Review Board for approval prior to commencement. All diabetic patients 18 years or older admitted to a metropolitan institution within the health system between January 1, 2013 and September 30, 2013 on their home anti-diabetic regimen will be included. Patients will be excluded if: admitted for hypoglycemia, initial hypoglycemic episode occurred greater than five days into hospitalization, and newly initiated or modified anti-diabetic regimens. Data collected will include: patient age, gender, ethnicity, admission weight, medication regimen, type of nursing unit (ex: surgical, ICU, medical, etc), admission diagnosis, case mix index, serum creatinine, creatinine clearance, patient diet, hemoglobin A1c, diabetes type, glucose reading (at time of event), glucose test performed (ex: point of care, blood draw), time to event, hypoglycemia recurrence during hospitalization, admission date, and discharge date. The primary endpoint is predicting patient specific factors associated with hypoglycemic episodes. Data analysis will be performed in conjunction with hospital statisticians. The results will be used to develop strategies to decrease hypoglycemia in high risk patients within the health system.

9-008

Title: Evaluation of the safety and efficacy of prophylactic amiodarone for prevention of postoperative atrial fibrillation (POAF) in cardiothoracic surgery patients

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Purpose: Postoperative atrial fibrillation (POAF) is the most common tachyarrhythmia occurring after cardiothoracic surgery (CTS). Current ACCF/AHA/ECS guidelines suggest oral beta-blocker therapy as first line prophylaxis for prevention of POAF after CTS. However, immediate administration of beta-blockers is often difficult due to postoperative hypotension. As such, implementation of postoperative amiodarone has been initiated to further reduce the incidence of POAF. The objective of this study is to evaluate the safety and efficacy of postoperative amiodarone therapy. Additionally, a risk score will be established for CTS patients to determine which patients may benefit from postoperative amiodarone therapy.

Methods: This single center, retrospective chart review will be conducted at a 450-bed community hospital and submitted to the Institutional Review Board for approval. CTS patients who received postoperative amiodarone therapy (0.5 mg/minute intravenously for twenty-four hours, then 200 mg orally three times daily until discharged) from February 2012 to November 2013 will be included. Patients with a history of atrial fibrillation with or without antiarrhythmic treatment will be excluded. Primary outcomes include the incidence of POAF and acute amiodarone adverse effects. Incidence of ventricular arrhythmias will be considered a second outcome. Data from primary and secondary outcomes will be analyzed using either Students t-test for continuous data or chi-square for categorical data. A subgroup analysis will be performed in patients who develop POAF with two or more risk factors for POAF. A univariate analysis will be performed to examine the association between POAF, and demographic, surgical, and medication utilization characteristics. A multiple logistic regression analysis will be performed to assess and quantify risk factors for POAF. All data will be recorded without patient identifiers and maintained confidentially.

9-009

Title: Rationale for the validation of an anti-Xa assay for use with rivaroxaban

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Purpose: Rivaroxaban is a novel, oral anticoagulant that inhibits factor Xa. Monitoring is not required with rivaroxaban; however, there are circumstances, such as an acute ischemic stroke, that require the degree of anticoagulation to be determined. Anti-Xa assays have been shown to correlate well with rivaroxaban activity when calibrated. At Mercy Hospital St. Louis (MHSL), the anti-Xa assay is currently validated for use with unfractionated and low-molecular weight heparin only. Due to the large volume of stroke admissions and the increasing prevalence of rivaroxaban use in our patient population, this study seeks to validate the anti-Xa assay used at MHSL.

Methods: Prior to beginning, this study will be submitted to the Institutional Review Board for approval. This study will be a prospective data collection study. Patient consent will be obtained. Patients will be included if they are 18 years of age or older, are receiving rivaroxaban 20 mg by mouth daily for primary stroke prevention in the setting of non-valvular atrial fibrillation, and have established IV access. Exclusion criteria will be the receipt of unfractionated or low molecular weight heparin within previous 48 hours, renal dysfunction (CrCl <50 mL/min), active bleeding, and concomitant dual CYP3A4 and P-gp inducers or inhibitors. Participants will have a total of 5 blood draws throughout a 24 hour period beginning when rivaroxaban is administered with the evening meal. Blood draw times will be staggered throughout the study with each patient in order to capture the entire factor Xa activity curve. Samples will be frozen and batched at a later date. Primary data analysis will include descriptive statistics.

9-010

Title: Optimal vancomycin dosing to yield therapeutic trough levels in 13 to 18 year old patients

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Purpose: The optimal vancomycin dose needed to achieve therapeutic steady state levels in adolescents is currently unclear as IDSA guidelines do not address this specific age group. Published studies have demonstrated that dosing regimens of 45 mg/kg/day and 60 mg/kg/day result in frequent subtherapeutic (100 percent) and supratherapeutic (18.5 percent) levels, respectively, in these patients. Previous analysis of this institutions general pediatric dosing protocol showed 37 percent of the non-therapeutic levels occurred in this population. The purpose of this study is to determine the optimal vancomycin dose to achieve therapeutic levels while avoiding nephrotoxicity in adolescents.

Methods: This is a non-randomized, non-blinded, single center retrospective chart review analyzing patients between the ages of 13 and 18 years who received vancomycin with at least one documented vancomycin trough level between January 1, 2011 and August 31, 2013. The study has been submitted to the institutional review board for approval. Patient exclusion criteria include diagnosis of cancer, cystic fibrosis, spina bifida, cerebral palsy, chronic renal disease, burn patients, and pregnant patients. Lab exclusion criteria includes trough levels not at steady state (defined as prior to the fourth dose or later), vancomycin obtained through home infusion, and inappropriately drawn trough levels. Data collection includes parameters necessary to determine appropriate vancomycin dose as well as presence of nephrotoxicity. Descriptive statistics are utilized to analyze data.

9-011

Title: Impact of pharmacist review of antibiotic therapy at discharge

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Purpose: In 2012, the Center for Medicare and Medicaid Services was required to begin reducing payments to hospitals with excess readmissions; making 30 day readmission rates a target for many performance improvement initiatives. Studies have shown that pharmacist counseling and education can increase rates of patient compliance which should in turn decrease readmission rates. The purpose of this study is to determine if pharmacist intervention and counseling on antibiotics at discharge can decrease readmission rates and provide cost savings to patients.

Methods: This study will be submitted to the Institutional Review Board for approval and informed consent will be obtained prior to patient counseling. The pharmacist will contact a representative from two preselected medical floors in the hospital daily to determine planned discharges. The electronic medical record system will be used to identify patients being discharged on antibiotics for the treatment of pneumonia or chronic obstructive pulmonary disease (COPD). The pharmacist will review the discharge orders, assessing antibiotic appropriateness per guidelines considering the possibility for a more affordable alternative, and if it is appropriate to continue antibiotic therapy after discharge. The antibiotic dispense quantity on the prescription will also be reviewed taking into consideration the days of therapy given as an inpatient. Patients being discharged on antibiotic therapy will then be counseled. Data collected will include: demographic information, previous antibiotic use, cultures and susceptibilities, previous health-system admission within 90 days prior, readmission within 30 days, any changes recommended, whether the recommendation was accepted, completion of counseling, time pharmacist spent reviewing and counseling, anticipated pharmacy to fill the prescription, and if the prescription was filled. The primary endpoint will be assessing the impact of pharmacist intervention on 30 day readmission rates.

9-012

Title: Evaluation of four-factor prothrombin complex concentrate in the management of warfarin-related intracranial hemorrhage

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Purpose: Warfarin is a medication that poses potential risks for patients, including intracranial hemorrhage. Reversal of warfarin can be a life-saving measure in these incidents. Previously, fresh frozen plasma or three-factor prothrombin complex concentrate (3F-PCC) and activated recombinant factor VII (rFVIIa) have been used for warfarin reversal in major bleeding. A four-factor prothrombin complex concentrate (4F-PCC) has been recently approved with the indication of urgent reversal of warfarin in adults with acute major bleeding. The purpose of this study is to evaluate the efficacy, safety, and pharmacoeconomic impact of a four-factor prothrombin complex concentrate in the management of warfarin-related intracranial hemorrhage.

Methods: This study will be approved by the appropriate institutional review board. Billing codes upon discharge will be utilized to identify patients who were admitted or experienced an intracranial hemorrhage at or during hospital admission. Chart review will be utilized to collect the following data: age, sex, weight (kg), concomitant anti-platelet therapy, warfarin indication, length of warfarin therapy, history of hypertension, history of heart failure, malignancy, history of cerebrovascular event, Charlson Comorbidity index, initial International Normalized Ratio (INR), intracerebral hemorrhage (ICH) score, 30-minute post-infusion INR, evidence of thromboembolic events, troponin, administration of vitamin K, INR less than 1, time to INR less than 1.5, time to treatment, and acquisition cost. Chart review will also be utilized to determine which reversal products were used, including Vitamin K, fresh frozen plasma, 3F-PCC, rFVIIa, or 4F-PCC. The primary endpoint is 30-minute post-infusion INR of less than 1.5. Secondary endpoints include evidence of a venous thromboembolic event , INR less than 1, time to INR less than 1.5, acquisition cost per patient, and in-hospital mortality. Data will be reviewed to analyze effectiveness, safety, and fiscal impact of the 4F-PCC product.

9-013

Title: Evaluation of vancomycin dosing in the obese patient population.

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Purpose: Proper dosing of vancomycin is vital to maximize efficacy and minimize nephrotoxicity, yet limited data is available on the optimal empiric dosing in the obese patient population. Available data concerning pharmacokinetics in the obese indicates that an accelerated renal clearance of vancomycin exists, suggesting that a weight-based dosing regimen may be appropriate. This study seeks to evaluate the appropriateness of current vancomycin dosing regimens in obese patients being treated on an in-patient basis at our hospital.

Methods: Electronic medical charts will be utilized to conduct a retrospective chart review. Obese patients with a body mass index (BMI) greater than 30 kg/m2 who received vancomycin dosed per pharmacy protocol over the study period and had at least one trough level reported will be included in the study. Patients who are pregnant, less than 18 years of age, lack a serum vancomycin trough, have creatinine clearance less than 20 ml/min, receive serial vancomycin dosing, or a BMI less than 30 will be excluded. Patient data that will be gathered includes demographics (sex, age, and weight), vancomycin dose and frequency, indication with target therapeutic range, serum creatinine, creatinine clearance, and reported trough level. The primary outcome will evaluate the percentage of included patients receiving vancomycin dosed per pharmacy protocol who achieved a therapeutic trough level on initial regimen. The secondary outcomes will evaluate the percentage of patients receiving vancomycin who reached a therapeutic trough level of 10-20 mcg/mL and 15-20 mcg/mL and the percentage of patients with a Cockroft-Gault calculated creatinine clearance above or below 60 ml/min who reached a therapeutic trough level. This study has been approved by the Institutional Review Board.

9-014

Title: Improving home medication accuracy through the implementation of a medication reconciliation program at a community hospital

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Purpose: In April 2013 Baptist Hospital initiated a medication reconciliation program in an effort to reduce home medication discrepancies, and as a result, reduce medication adverse events and increase patient safety. The medication reconciliation team consists of four medication reconciliation technicians, one medication reconciliation pharmacist, and all staff pharmacists at Baptist Hospital. The objective of this project is to examine the effect the medication reconciliation program has had on home medication inaccuracies.

Methods: Three random samples (39 patients per sample) of inpatients' medication histories were retrospectively reviewed at three different times: prior to initiation of the medication reconciliation program (from Feb 20, 2013 to March 3, 2013) when primarily RNs completed the histories; at approximately 2 months into program implementation (from May 21, 2013 to June 7, 2013) when a combination of pharmacists and the medication reconciliation technicians completed the histories from 1400 to 2300 Monday through Friday; and approximately 6 months after program implementation (from Sep 1, 2013 to Sep 5, 2013) when the medication reconciliation technicians completed all histories from 0700 in the morning to 2300 in the evening Monday through Friday. The medication histories were reviewed for completeness and accuracy with respect to drug, dose, route, frequency, and duplications.

Results: First, our review pre-implementation of the program showed approximately 92% of the patients (36 out of 39 patients) had at least one medication inaccuracy. Second, our review mid-implementation of the program showed approximately 18% of the patients (7 out of 39 patients) had at least one medication inaccuracy. Third, our review post-implementation of the program showed approximately 8% of the patients (3 out of 39 patients) had at least one medication inaccuracy. The most common type of inaccuracy was lack of dose and frequency due to the inability to get this information from the patient, family, physician, and outpatient pharmacy. The second most common inaccuracy was incorrect frequency. Statistical analysis and IRB-approval of the project are pending.

Conclusion: The successful implementation of a medication reconciliation program at Baptist Hospital has had a significant impact on home medication inaccuracies, thus resulting in reduction of medication adverse events and increased patient safety. Because pharmacy technicians and pharmacists specialize in knowledge of medications, they are able to foresee most medication inaccuracies and proactively correct them. Additionally, having a dedicated group of people focused soley on acquiring accurate

medication lists allows for a more thorough, refined, and timely process than was previously established at Baptist Hospital.

9-015

Title: Protein and energy intake during the first week of life and brain growth and development in preterm neonates

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Purpose: Preterm neonates are at high risk for postnatal growth failure as well as neurologic impairment. Inadequate nutrition may result in anthropometric growth failure and decreased brain growth, contributing to neurodevelopmental impairment. Early aggressive protein and caloric provision has been postulated to influence brain growth and maturation. The purpose of this study is to determine the association between early protein and energy intake in preterm neonates and brain growth and development at term equivalent age.

Methods: Prior to commencement, this study was approved by the Institutional Review Board of the Washington University School of Medicine. A retrospective chart review using the institutions electronic medical records system will be used to collect demographic and clinical data on preterm neonates who received magnetic resonance imaging (MRI) of the brain at term equivalent age. Data collected on each patient will include: nutrition source and daily protein, fat, carbohydrate, and energy intake for the first week of life. Brain images will be analyzed for both macrostructural growth (brain metrics and volumes) and microstructural development (diffusion). A linear regression analysis controlled for appropriate covariates will be performed to describe the relationship between nutritional variables and MRI measures.

9-016

Title: Effect of antifungal susceptibility testing on prescribing patterns of antifungal therapy

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Purpose: Candida species are the most common source of invasive fungal infections, with non-C. albicans species more commonly isolated than C. albicans. Non-C. albicans species are more likely resistant to fluconazole, specifically C. glabrata and C. krusei, thus echinocandins are typically utilized which are more costly and possess a broader spectrum of activity. Antifungal susceptibility testing was initiated at our facility on 17 July 2012. An analysis was performed to assess the effect antifungal susceptibility testing had on antifungal prescribing patterns and overall antifungal agent hospital cost.

Methods: The institutional review board approved this randomized cohort study. Patients were included into our study if they had Candida isolates cultured from sterile sites, including bone, blood, tissue, and drainage. Patients were excluded if they received an antifungal agent within one year before the incident culture or were immunocompromised. Antifungal prescribing, adjustments, and overall hospital costs for antifungal agents for the eighteen months pre-implementation of antifungal susceptibility testing (1 January 2011 through 30 June 2012) and eight months post-implementation (17 July 2012 through 7 March 2013) were analyzed and compared.

Results: Overall, 10 patients met inclusion criteria pre-implementation and were compared to 5 patients post-implementation. The average number of fluconazole (9.9 vs. 11.4) and micafungin (4.2 vs. 11.0) days was lower pre-implementation compared to post-implementation, respectively. The average cost of fluconazole therapy ($157.91 vs. $86.72) was higher pre-implementation while the average cost of micafungin ($213.36 vs. $565.18) therapy was higher post-implementation. Empiric therapy was adjusted in 70% (7/10) of patients pre-implementation, all after identification of species. Of the 7 adjustments to empiric therapy in the pre-implementation group, 6 adjustments were de-escalation of therapy and 2 patients had multiple adjustments to their antifungal therapy. Empiric therapy was adjusted in 60% (3/5) of patients post-implementation, all after determination of susceptibilities. Of the 3 adjustments to empiric therapy in the post-implementation group, 1 was de-escalation of therapy and no patients had more than one adjustment to antifungal therapy.

Conclusion: Antifungal susceptibility testing did not result in a numerical difference in average days or cost of antifungal therapy, but delayed final determination of antifungal therapy until after susceptibility results were available.

9-017

Title: Management of hyperkalemia: before and after evaluation of a treatment protocol

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Purpose: Hyperkalemia is a common complication and its estimated that it occurs in up to 10% of hospitalized patients. It can range from a benign laboratory value to a life-threatening complication if not treated promptly and appropriately. The purpose of this evaluation is twofold: firstly to evaluate the current management of hyperkalemia at this institution. Secondly, we will implement a treatment protocol guiding providers to the most appropriate treatment options. We will then evaluate if the protocol limited the treatment appropriately to those patients that truly needed it.

Methods: This is a randomized, retrospective, cohort medication-use evaluation (MUE) of appropriateness of specific agents used to treat hyperkalemia before and after implementation of a hyperkalemia treatment protocol. This study will be occurring at CoxHealth South Medical Center. Hyperkalemia is defined as a potassium value ≥5.6 mEq/L for the purposes of this study. Patients will be included if they are greater than 18 years of age, have a qualifying, non-hemolyzed potassium value (≥5.6 mEq/L), and received at least one of the following forms of treatment for hyperkalemia: Beta-agonist, Insulin +/- glucose, resin potassium binders, sodium bicarbonate, dialysis, or calcium salts. We will examine if any differences in treatment occur based upon the severity of the hyperkalemia. Patients will be grouped by their potassium values: 5.6-5.9 mEq/L, 6.0-6.4 mEq/L and ≥ 6.5 mEq/L. Other variables we will examine are if patients were receiving hemodialysis or have chronic renal insufficiency, if the patients had any electrocardiogram abnormalities, and whether or not the patient had iatrogenic hyperkalemia from any form of supplemental potassium.

9-018

Title: Analysis of compliance to inpatient hypoglycemia protocol

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Purpose: The primary purpose of this study is to assess whether our hospital is adhering to the protocol for management of hypoglycemic events in an effort to determine if additional education for hospital staff is needed.

Methods: This study will be conducted in the form of retrospective drug utilization evaluation. Using the electronic medical record, an initial report will be generated to produce a list of patients who have experienced hypoglycemic event(s) from September 1, 2013 to October 30, 2013. Eligible patients will include those who are 18 years of age and older, have received insulin or oral anti-diabetic medication, and have one or more episodes of hypoglycemia with blood glucose of less than 50 mg/dL during hospitalization. Information to be collected includes: age, gender, recorded hypoglycemic glucose value, time of event, current anti-diabetic regimen, estimated creatinine clearance, diet status, hypoglycemia treatment, and whether the patient has an existing diagnosis of type 1 or type 2 diabetes mellitus. This information will be used to determine whether the treatment of hypoglycemia at our hospital is in compliance with the hypoglycemia protocol. The primary outcome will assess the percentage of hypoglycemic events that are appropriately managed per the protocol. This study was approved by the Institutional Review Board.

9-019

Title: Evaluation of Antimicrobial Utilization on Bacterial Susceptibility Patterns within the Saint Luke's Health System

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Purpose: Inappropriate antimicrobial use has contributed significantly to the selection of multi-drug resistant bacteria. It has been reported that up to 50% of antimicrobial use is unnecessary or inappropriate. One important aspect of antimicrobial stewardship is to address the issue of antimicrobial resistance in health care facilities. Thus, understanding the relationship between antimicrobial utilization and bacterial susceptibility is pivotal in impacting changes in practice within the health care setting. The objective of this study is to describe the relationship between antimicrobial use and bacterial susceptibility patterns of several hospitals within a health system from January 2011 to June 2013.

Methods: The study was limited to four metro hospitals within the Saint Luke's Health System. Included in this study were adult intensive care units (ICUs) and non-ICUs of each hospital. First, total patient days of hospitalization for each hospital were obtained and divided into quarterly intervals. This census data was used to normalize antimicrobial usage data for each quarter. Second, antimicrobial purchase history for each hospital was collected and transferred to a spreadsheet. All doses were converted into grams and expressed as defined daily doses (DDD) using the World Health Organization (WHO) 2013 Anatomical, Therapeutic, and Chemical (ATC)/DDD index. Defined daily doses were combined with census data to generate antimicrobial consumption rate, expressed as DDD/1000 patient-days. Third, identification and susceptibility testing were performed using disk diffusion method or VITEK automated system, in accordance to guidelines provided by the Clinical and Laboratory Standards Institute (CLSI). Susceptibility data were obtained from hospital-specific antibiograms. Finally, the trend in antimicrobial consumption (in DDD/1000 patient-days) and bacterial susceptibility over time were analyzed using simple linear regression. For each area (ICU versus non-ICU), the usage of each antimicrobial agent was analyzed against the organism's susceptibility. A P-value <0.05 was considered statistically significant.

9-020

Title: Analysis of subjective procalcitonin ordering in a tertiary health care system

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Purpose: Procalcitonin has emerged as a useful biomarker to assist in decreasing antibiotic usage. It serves as a specific marker for bacterial infections and studies have shown its usefulness in infectious processes such as lower respiratory tract infections and sepsis. Our health system has witnessed an exponential rise in procalcitonin ordering, without one of the aforementioned suspected presentations. The goal of this study is to analyze procalcitonin usage in bacterial infections with lower levels of evidence in order to assess the effect on antimicrobial stewardship, with respect to duration of antibiotic therapy and financial impact on the health system.

Methods: This study is pending approval by the Institutional Review Board. Data will be electronically gathered in order to determine all patients with procalcitonin levels drawn during their hospitalization from March to September 2013. The patient's age, gender, race, length of stay, primary and secondary ICD-9 codes at discharge, length of antibiotic therapy, antibiotics used, procalcitonin levels and co-morbidities will be collected. A second cohort of patients without procalcitonin levels drawn will be electronically gathered using the same ICD-9 codes from the first group of patients. These two patient populations will be matched with the corresponding diagnosis code in order to determine if a difference exists in the total duration of antibiotic therapy. Patients greater than 18 years of age will be included within the study and patients with lower respiratory tract infections and severe sepsis or septic shock will be excluded.

9-021

Title: Guideline compliance and outcomes in spontaneous intracerebral hemorrhage

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Purpose: Clinical practice guidelines are published by professional organizations to assist healthcare practitioners in providing evidence based standards of care. However, variability in practice patterns exist that may affect the rate of compliance with guidelines. The objective of this study is to determine rates of compliance to the American Heart Association and American Stroke Associations Guidelines for the Management of Spontaneous Intracerebral Hemorrhage (sICH) at a primary stroke center certified academic medical center and the associations between guideline compliance and outcomes in patients with sICH.

Methods: This study will be submitted to the local Institutional Review Board for approval. The electronic medical record system will identify patients admitted with a diagnosis of sICH from July 2012 to October 2013. The following data will be retrospectively collected from the electronic medical record system: patient demographics, past medical history, ICU and hospital length of stay, in hospital mortality, ICH score, hematoma expansion, discharge disposition, and modified Rankin Scale (mRS). In addition, clinical parameters relating to 18 selected guideline recommendations will be collected, including venous thromboembolism prophylaxis, coagulopathy reversal, control of blood pressure and blood glucose, use of prophylactic antiepileptic drugs, as well as data relating to imaging and surgical recommendations. Primary endpoints include rate of full compliance as well as percentage of overall compliance to the sICH guidelines. The effect of guideline compliance on in hospital mortality, length of stay, hematoma expansion, discharge location, and mRS will be investigated. Data will be analyzed using descriptive statistics and multivariate logistic regression.

9-022

Title: Piperacillin/Tazobactam for Management of Appendicitis in the Pediatric Patient

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Purpose: The purpose of this research is to improve patient outcomes and lower costs associated with antimicrobial therapy for appendicitis with the utilization of piperacillin/tazobactam as monotherapy. The choice of antimicrobial management of appendicitis at the research hospital is often a combination of ampicillin, clindamycin, and gentamicin. This regimen is unfavorable because of the multiple agents involved, cost, required therapeutic drug monitoring and potential adverse effects. The 2006 IDSA guidelines on management of intra-abdominal infections as well as clinical trials suggest that piperacillin/tazobactam provides adequate coverage to treat appendicitis as monotherapy, and is equally as effective

Methods: This study will compare patients admitted to the research hospital between December 1, 2012 and March 31, 2013 with appendicitis (retrospective control) to those admitted between December 1, 2013 and March 31, 2014 with appendicitis (prospective intervention). The intervention is to recommend piperacillin/tazobactam for all patients in the prospective group. Inclusion criteria are patients < 18 years old admitted with appendicitis. Patients will be excluded if they have co-existing infections or conditions that indicate the use of antimicrobials other than piperacillin/tazobactam, such as febrile neutropenia, documented MRSA infection, or a true penicillin allergy. The primary outcome is length of stay. Secondary outcomes are hours febrile after antibiotic initiation, cost associated with antimicrobial therapy, the incidence of ototoxicity and nephrotoxicity, as well as Clostridium difficile. The Fisher's Exact test will be used to detect statistically significant differences between the means of primary and secondary outcomes. A significance level of 0.05 will be utilized. There is no power calculation, as the sample size is dependent on the number of patients admitted to the research hospital with appendicitis within the specified time frame.

9-023

Title: Evaluating the efficacy of tranexamic acid in adult trauma patients with, or at risk for, significant hemorrhage

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Purpose: Significant hemorrhage due to trauma is a life-threatening emergency. Recently, two well designed, randomized, controlled trials, CRASH-2 and MATTERs, showed that administration of tranexamic acid in trauma patients with significant hemorrhage reduced mortality. Given the evidence, the emergency department trauma provider order set at our institution has been revised to include tranexamic acid for the management of patients with significant traumatic hemorrhage presenting within three hours of injury. Tranexamic acid has the potential to decrease mortality, length of intensive care unit stay, days spent on the ventilator, as well as total blood product use.

Methods: The primary outcome of this study is to evaluate mortality rates pre and post-implementation of a newly revised emergency department trauma provider order set. Secondary outcomes will be assessed including intensive care unit days, ventilator days, and total blood product use. The control group for this study will be historical patients seen in the emergency department with, or at risk for, trauma-associated hemorrhage. Information will be gathered using Collector Trauma Registry, a national software system used specifically for collecting trauma data. Once approved by the Institutional Review Board, a monthly report will be generated identifying patients who receive tranexamic acid (1 gram/100ml 0.9% sodium chloride IV over ten minutes followed by tranexamic acid 1 gram/100ml 0.9% sodium chloride IV infused over eight hours) in the emergency department. The patients emergency department arrival date and time, admission reason, trauma classification, age, and gender will be documented. Systolic blood pressure, pulse, respiratory rate, Glasgow coma score, revised trauma score, and injury severity score will be recorded on arrival. The number of intensive care unit and ventilator days, need for transfusion, and transfusion requirements will be recorded as applicable. Appropriate medication administration will be evaluated in prospective patients.

9-024

Title: Retrospective analysis of dexmedetomidine in alcohol withdrawal at a university based hospital

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Purpose: Benzodiazepines, the primary treatment for alcohol withdrawal, may lead to complications including hemodynamic instability, respiratory depression, and ICU delirium. These complications can increase a patients ICU length of stay, which subsequently may increase cost. Dexmedetomidine, a central alpha 2 adrenergic agonist with anesthetic, anxiolytic, analgesic, and sympatholytic effects, appears to be a promising agent to help decrease benzodiazepine exposure in ICU patients with concomitant alcohol withdrawal. The purpose of this study is to determine if the use of dexmedetomidine in addition to benzodiazepines decreases ICU length of stay compared to benzodiazepines alone in critically ill patients experiencing alcohol withdrawal.

Methods: The study is designed as a single center, retrospective cohort. Patients will be included if they had an ICD 9 code for alcohol withdrawal from July 2012 to December 2013, had an ICU stay during hospitalization, were treated per the CIWA protocol, and received benzodiazepines and dexmedetomidine or benzodiazepines alone. Patients will be excluded if they were pregnant or had an ICU length of stay (LOS) less than 12 hours. The primary outcome is ICU length of stay in hours. Secondary outcomes include total benzodiazepine usage (mg) and duration of mechanical ventilation in hours. When diazepam or midazolam were administered instead of lorazepam, doses will be converted to lorazepam dosing using factors of 0.2 for diazepam and 0.5 for midazolam. Additional information that will be collected is as follows: demographics, illicit drug history, alcohol level upon admission, dose and duration of dexmedetomidine, CIWA scores, and adjunct medications for alcohol withdrawal symptoms. The students t test will be conducted to compare the primary and secondary outcomes and an alpha level of 0.05 will be set. The Chi squared test will be utilized to assess for differences in baseline characteristics. This study will be submitted to the Institutional Review Board for approval.

9-025

Title: Effect of liposomal bupivacaine on post operative pain in patients with total knee replacement

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Purpose: The benefits of liposomal bupivacaine (LB) for pain management in patients undergoing total knee replacement (TKR) are unclear based upon available literature. LB is currently being used for orthopedic surgeries at this institution, and it is unknown if this improves patient outcomes. The primary objective is to determine if LB decreases pain scores in TKR compared to conventional pain management methods. Secondary objectives will compare time to first narcotic use, total narcotic use in the first 24 hours, time to discharge, and admits to the emergency department within 72 hours of discharge related to TKR surgery.

Methods: This study will be submitted to the Institutional Review Board for exemption due to use of preexisting medical data. The electronic medical records of patients who underwent TKR in the first half of 2013 will be reviewed. The patients will be divided into two categories: those who received LB and those who did not. Population size was determined to be 100 patients per group using an alpha of 0.05, beta of 0.2, and effect size of 20%. Data collected for each group will include: patient age, gender, body mass index, pain scores after surgery, time to first narcotic use, total milligrams of narcotics used in the first 24 hours following surgery, time to discharge, admits to the emergency department related to TKR surgery within 72 hours of discharge, and any use of naloxone. Patients will be excluded if they were less than eighteen years of age, pregnant, or had any other surgical procedures completed at the same time of a TKR. All data will be kept confidential and patient privacy respected. The primary outcome will be evaluated using the t-test. Other data will be evaluated using the t-test, chi-square or descriptive statistics as appropriate.

9-026

Title: Evaluation of an extended infusion piperacillin tazobactam protocol at a university teaching hospital

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Purpose: Piperacillin tazobactam is a broad spectrum, beta lactam beta lactamase inhibitor antibiotic that exhibits time dependent pharmacodynamics. Achieving a high fraction of time free drug concentration is over MIC is important, especially for highly resistant organisms. Extending the infusion time is one method found to decrease mortality in the critically ill. In February 2011, an extended infusion piperacillin tazobactam protocol was implemented at a university hospital. The purpose of this study serves to determine whether there is a difference in mortality in patients who receive the extended infusion piperacillin tazobactam compared to those who receive the traditional 30 minute infusion.

Methods: This will be a retrospective, quasi experimental design study that will include patients 18 years of age or older with a documented Gram negative infection who receive either a 30 minute infusion of piperacillin tazobactam or a four hour extended infusion regimen. Patients with the following conditions will be excluded: cystic fibrosis, immunosuppression, resistant isolates to piperacillin tazobactam, urinary tract infections, concomitant beta lactam antibiotics with broad Gram negative coverage, inadequate coverage of mixed infections, and pregnancy. The electronic medical record and microbiology databases will be utilized to identify patients for this study. Patients will be divided into a pre implementation group from February 2008 to September 2010 while the post implementation group will be from February 2011 to September 2013. The primary outcome measure will be 14 day mortality while secondary outcome measures include 30 day mortality, ICU and hospital lengths of stay and costs. Other important data points to be collected include age, sex, gender, creatinine clearance at piperacillin tazobactam initiation, previous hospital exposure, MIC, duration of mechanical ventilation, infection type, isolate, total doses, duration of therapy, APACHE II score and concomitant antibiotics utilized. This study will be submitted to the Institutional Review Board for approval.

9-027

Title: Evaluate the use (and appropriateness) of dexmedetomidine in alcohol withdrawal

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Purpose: The purpose is to determine the appropriateness of using dexmedetomidine in alcohol withdrawal and to compare it with the current protocol that utilizes benzodiazepines. The comparison will look at the amount of dexmedetomidine and benzodiazepine given, the length of ICU stay and overall length of hospital stay. Should a difference in care and costs be determined to exist, a proposal will be made to either update the current withdrawal protocol to include dexmedetomidine, or to restrict the use of dexmedetomidine to ICU and procedural sedation.

Methods: This will be a retrospective review of patients in the ICU that have received dexmedetomidine for alcohol withdrawal and those that have received benzodiazepines in accordance with the current alcohol withdrawal protocol. The timeframe to be looked at will include 01 July 2011 to 30 Sep 2013. Per Joint Commission Guidelines, a sample size of 30 patients for each arm will be reviewed. Data collected will include, but not be limited to, benzodiazepines (name, dose, route, quantity used and duration of use); dexmedetomidine (dose, quantity used, duration of use); length of ICU stay; length of hospital stay. After all data is collected, a pharmacoeconomic analysis will be performed on each arm.

9-028

Title: Rationale for evaluation of rivaroxaban on length of stay for treatment of venoues thromboembolism, and implementation of post discharge dosing kit

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Purpose: The CHEST guidelines recommend warfarin plus bridging therapy for treatment of venous thromboembolism (VTE). The EINSTEIN pulmonary embolism (PE) and EINSTEIN deep vein thrombosis (DVT) trials have proven rivaroxaban is equally safe and efficacious when compared to standard therapy. However, limited data exists comparing treatments in terms of length of stay. No data is available to evaluate rivaroxaban's dose transition on day 22 of therapy. The objectives of this multiphase study are to 1) determine whether treatment of VTE with rivaroxaban impacts length of stay compared to standard therapy and 2) determine whether a rivaroxaban discharge kit impacts patient adherence.

Methods: This study will be a 2-phase open label, randomized, comparator controlled trial. Prior to commencement, the study proposal will be approved by the Institutional Review Board. Consenting patients will be enrolled into the phase 1 if they have an objectively confirmed acute DVT or PE. Computerized block randomization will allocate patients into the standard therapy group or rivaroxaban group. The primary outcome, length of stay, with be evaluated using a t-test and alpha of 0.05. Secondary outcomes will include treatment length and safety. For phase 2, patients in the rivaroxaban arm will be re-randomized into either the standard discharge education or the rivaroxaban patient assistance kit (R-PAK) groups. The standard education group will receive a Micromedex CareNotes patient handout and brief pharmacist education. The R-PAK group will receive a kit that includes a uniquely designed pill box for day 22 transition (from 1 pill twice daily to 1 pill daily), patient reminder card for day 22 and an educational leaflet providing information on rivaroxaban. The primary outcome, number of patients that properly transition on day 22, will be evaluated using a chi-square test and alpha of 0.05. Additional outcomes for phase 2 include patient adherence, satisfaction and safety.

9-029

Title: Evaluation of airway cultures and empiric combination antibiotic regimens: a quality improvement study

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Purpose: The objective of this study is to evaluate the frequency and susceptibility of bacterial pathogens from inpatient airway samples and compare them to current empiric antibiotic regimens. The evaluation of samples will include identifying the frequency of S. aureus, S. pneumoniae, and Gram-negative rods. Susceptibility of the Gram-negative rods will be documented and then organized into a combination antibiogram. The combination antibiogram will display sensitivities for various two antibiotic regimens (beta-lactam + quinolone, or, beta-lactam + aminoglycoside). The antibiogram will then elucidate which combinations are the most effective and identify areas for quality improvement.

Methods: The study has been granted a letter of exemption from the Institutional Review Board on the basis that data is recorded without patient identifiers to maintain confidentiality. The health systems electronic medical record system will be used to compile a list of all inpatient airway samples from January 1st through June 30th, 2013. Culture and sensitivity data for Gram-negative rods grown from airway samples will be compiled from the MicroScan WalkAway for the creation of the combination antibiogram. By matching the data from both sources, we can observe the frequency of organisms seen in pulmonary infections at our institution and create a combination antibiogram. The information from the combination antibiogram will then give insight as to how often institutional empiric regimens are covering the most frequently seen respiratory pathogens in our health system.

9-030

Title: Residency Program Directors' View on the Value of Teaching

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Purpose: The American Society of Health System Pharmacists requires pharmacy residents to achieve the outcome of providing medication and practice related education. No standardization for residency programs to offer specific teaching opportunities to residents currently exists. As the profession of pharmacy becomes more complicated, pharmacists should be able to educate members of the healthcare team. The lack of standardization for teaching opportunities leads to inconsistent outcomes regarding the quality of each residents' teaching skill set. The shortage of pharmacy faculty requires trained pharmacy educators which may be achieved through residency trained pharmacists who have completed a residency which provides teaching opportunities.

Methods: A twenty question survey was designed to assess the respondents perception of value of residency teaching opportunities and to describe teaching programs and opportunities offered by ASHP (American Society of Health-System Pharmacists) accredited PGY-1 (post-graduate year one) residency programs. A pilot survey was distributed to five local program directors to address survey format and clarity. Pilot survey results will not be used for the final data analysis. The final survey was distributed electronically to ASHP accredited PGY-1 Residency Program Directors. The primary outcome is to determine the perceived value of providing teaching opportunities to PGY-1 residents and to identify the features, depth and breadth of the teaching experience afforded to PGY1 pharmacy residents completing an ASHP accredited residency program.

9-031

Title: Design of an evaluation of vancomycin prophylaxis on the incidence of recurrent C. difficile infections in high risk patients

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Purpose: Clostridium difficile is a prevalent disease associated with high morbidity and mortality. In patients who develop an initial C. difficile infection (CDI), there is a 65% incidence of recurrent disease. There are numerous risk factors shown to increase the risk of recurrent infection. One such risk factor for recurrent infection is exposure to antibiotics. The use of prophylactic oral vancomycin may be an effective method to lower the incidence of recurrent infections. The objective of this study is to determine whether prophylactic oral vancomycin in high risk patients impacts the incidence of recurrent CDI.

Methods: Prior to commencement, this study will be submitted to the Institutional Review Board for approval. Data will be included for all high risk patients admitted or readmitted to Mercy Hospital St. Louis after a C. difficile positive PCR test from January 1, 2010 to December 31, 2012. Exclusion criteria will be all patients with an allergy to vancomycin, those receiving metronidazole for another indication on admission, those with a GI inflammatory disorder such as Crohns, diverticulitis, diverticulosis, inflammatory bowel disorder, ulcerative colitis, or any other GI bacterial infection, <18 years of age, or pregnancy. CDI will be defined as positive C. difficile toxins using PCR assay and/or endoscopic/histologic findings of pseudomembranous colitis. High risk patients will be defined as all patients receiving systemic antibiotics. Prophylaxis will be defined as those receiving vancomycin 125mg PO twice daily or 250mg PO twice daily for at least the duration of concomitant antibiotic administration. The primary outcome will be the absolute difference in the proportion of high risk patients who develop CDI with and without the administration of prophylactic oral vancomycin. Secondary outcomes will include subanalyses of the primary outcome as well as an evaluation of length of stay.

9-032

Title: Therapeutic Drug Monitoring of Itraconazole in Pediatric Patients

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Purpose: The purpose of this study is to assess itraconazole target concentration obtainment with current empiric dosing strategies utilized at St. Louis Children's Hospital. Other factors being assessed include the influence of patient demographics, formulation (capsule vs. solution), or interacting medications on target concentration obtainment.

Methods: This study is a retrospective chart review analyzing weight based dosing of itraconazole in pediatric patients and its correlation with target concentration obtainment. Other data points being collected include: dose necessary to obtain target concentration, number of dose adjustments necessary to obtain target concentration, medication formulation, concomitant medications, as well as patient demographics including age, gender, race, and underlying medical conditions. Safety will also be assessed by reviewing common adverse effects of itraconazole, including elevated liver transaminases.

9-033

Title: Pharmacist provided education for breast cancer patients beginning chemotherapy in a community hospital outpatient infusion center

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Purpose: Pharmacist involvement in providing education to patients receiving chemotherapy has been shown to have a positive impact on patient satisfaction. The purpose of this study is to determine the effectiveness of pharmacist provided education to breast cancer patients beginning chemotherapy on patient compliance to chemotherapy regimens and incidence of chemotherapy induced nausea and vomiting.

Methods: The protocol for this study will be submitted to the Institutional Review Board for approval and informed consent will be obtained prior to patient education. The oncology nurse navigator will alert the pharmacist of patients scheduled to receive chemotherapy for breast cancer. The pharmacist will provide education regarding chemotherapy agents, expected adverse effects, appropriate use of premedications to prevent nausea and vomiting, preparation for chemotherapy, and expectations of the chemotherapy session. The pharmacist will follow up with patients during subsequent infusions to document changes to therapy and adverse effects experienced by the patient. Patients will be given a diary to document administration of premedications, nausea, vomiting, and other adverse effects. Patients will also be given a confidential survey at the end of their education session to assess their satisfaction with the education. The following data will be collected: age, gender, breast cancer stage, date of education, time spent counseling patient, date of chemotherapy cycles, chemotherapy agents, premedications prescribed, premedication compliance, chemotherapy cycles completed, incidence of nausea and vomiting, other adverse effects, and hospitalizations during chemotherapy. Chemotherapy compliance rates and incidence of nausea and vomiting will be compared to breast cancer patients receiving chemotherapy who did not receive pharmacist led education.

9-034

Title: Evaluation of a pharmacy provided discharge counseling service on hospital readmission rates in the Mercy Hospital St. Louis ambulatory care clinics

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Purpose: Two Mercy Hospital ambulatory care clinics developed a pharmacy led discharge counseling service for clinic patients discharged from Mercy Hospital St. Louis. These medication reconciliation telephone calls may help identify medication discrepancies. To determine if this process is beneficial in promoting patient health and safety, the clinics would like to assess changes in hospital readmission rates since initiating these services. The objective of this study is to evaluate the impact of an outpatient clinical pharmacy discharge counseling service on the hospital readmission rates for the Mercy Hospital ambulatory care clinics.

Methods: This study will be submitted to the Institutional Review Board for approval prior to data collection. The study will be a retrospective, quasi-experimental design. Chart reviews will be performed on patients who received the pharmacy led discharge counseling calls from the time period of June 1, 2013 to December 31, 2013. The primary outcome will be the difference in readmission rates at 30 days after the initiation of the pharmacy led discharge service with secondary outcomes of readmission rates at 60 and 90 days. Specifically, readmission rates for patients with a discharge diagnosis of acute myocardial infarction, pneumonia, and congestive heart failure will be analyzed. The index date to calculate time to readmission will be the date of hospital discharge. To compare changes in readmission rates after the initiation of this program, chart reviews will be performed for the six month period of June 1, 2012 to December 31, 2012 for patients with a primary care physician practicing in the Mercy Hospital ambulatory care clinics.

9-035

Title: Comparison of enoxaparin with unfractionated heparin (UFH) for venous thromboembolism (VTE) prophylaxis in medically ill dialysis patients

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Purpose: The safety and efficacy of enoxaparin compared to UFH for VTE has been established in patients with normal and reduced renal function. However, its use is not recommended for VTE prophylaxis in patients receiving dialysis. Limited evidence exists on clinical outcomes of enoxaparin for VTE prophylaxis in dialysis patients, and historically many trials exclude patients with renal failure. The objective of this study is to determine if enoxaparin is at least as effective as UFH for the prevention of VTE in medically ill patients requiring dialysis.

Methods: Prior to commencement, this study will be submitted to the Institutional Review Board for approval. This single-center, retrospective, cohort study will be conducted at a 450 bed community hospital. Patients will be included if they are at least 18 years of age and are non-surgical patients on hemodialysis or peritoneal dialysis receiving at least 24 hours of thromboprophylaxis with either enoxaparin or UFH. Patients receiving continuous renal replacement therapy will be excluded. Patients will be enrolled consecutively, in reverse chronological order, beginning with July 1, 2012. The primary outcome will be occurrence of thromboembolic event (confirmed VTE based on ICD.9 codes). Secondary outcomes will include the occurrence of major bleeding (defined as intracranial bleeding or overt bleeding with either a decrease in hemoglobin of at least 2 g/dL or a blood transfusion of at least 2 units of blood throughout the duration of stay), minor bleeding (overt bleeding not meeting criteria for major bleeding but requiring medical intervention), and injection site hematoma (diameter greater than 5 centimeters). Two hundred patients per treatment group will be enrolled to yield 80% power to detect at 5% difference between groups for the primary outcome.

9-036

Title: Assessment of pain management guideline adherence and safety in post-operative patients

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Purpose: Standardized order sets have been used to promote adherence to clinical guidelines and enhance medication safety. The community hospital provides a post-operative order set and allows prescribers to order additional medications not included on the order set. The purpose of this study is to assess pain management guideline adherence and safety in post-operative prescribing.

Methods: This study will be submitted to the Institutional Review Board for approval. Enrollment begins upon Institutional Review Board approval, and will continue until at least 30 patients have been enrolled. Post-operative patients will be identified using the computerized physician order entry system and the operating room census. The following data will be collected: pain medications prescribed, pain medications administered, constipation medications prescribed, constipation medications administered, use of naloxone and methylnaltrexone, admission pain medications, type of surgery, and level of pain indication qualifier. The primary objective is to assess pain management guideline adherence in post-operative patients. The secondary objectives evaluate the safety of pain management medications used in post-operative patients.

9-037

Title: Time to recombinant tissue plasminogen activator (rtPA) administration for acute ischemic stroke and the occurrence of adverse events

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Purpose: Recombinant tPA is currently the only Food and Drug Administration (FDA) approved medication for treatment of acute ischemic stroke (AIS). Despite improved outcomes seen with rtPA administration, rtPA is given to less than five percent of patients who present with AIS symptoms within three hours of symptom onset, and is given to even fewer patients within four and a half hours of symptom onset, due to the increased risk of intracranial hemorrhage and other adverse events. The purpose of this study is to determine the relationship between the time to rtPA administration and the occurrence of adverse effects.

Methods: This Institutional Review Board-approved study is a retrospective chart review. Inclusion criteria include patients aged 18 years and greater who presented to the emergency department within five hours of stroke symptom onset or were already admitted at the onset of stroke symptoms between the dates of January 1, 2009 and August 31, 2013 and received rtPA 0.9 mg/kg up to a maximum of 90 mg for treatment of acute ischemic stroke. Exclusion criteria include unknown onset of symptoms, untreated hypoglycemia, administration of an anti-platelet or anti-coagulant within 24 hours after rtPA administration, imprisoned patients, and pregnant women. The primary objective is to compare the incidence of major bleeding that occurs after administration of rtPA for acute ischemic stroke, stratified based on time to rtPA administration. Secondary objectives are to (1) assess the incidence of minor bleeding, (2) assess the incidence of total bleeding, (3) determine association of patient age with adverse event rates, (4) evaluate association of blood pressure at rtPA administration and maximum blood pressure in the 24 hours after administration with adverse event rates, and (5) ascertain if there is a relationship between patients baseline NIHSS score and incidence of adverse events.

9-038

Title: Assessing the safety of tranexamic acid in knee and hip arthroplasties at a community teaching hospital: a retrospective evaluation

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Purpose: Tranexamic acid (TXA) has been used to reduce surgical blood loss in orthopedic surgeries for almost a decade. Many TXA clinical trials report efficacy but few focus on safety. The effect of TXA on thromboembolic events is uncertain given the current literature. The purpose of this study is to determine the safety of our TXA dosing strategy and whether there is a statistically significant increase in the number of thromboembolic events for patients receiving TXA for orthopedic surgeries during hospital admission and 60 days after hospital discharge.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify 300 orthopedic hip and knee arthroplasty patients whose surgeries used TXA and 300 surgeries without TXA. The following data will be collected after inclusion and exclusion criteria are screened: age, gender, body mass index, type of procedure, creatinine clearance, TXA dose, length of hospital stay, type of surgical procedure and duration in hours of surgery. The primary measure will be number of thromboembolic events during hospital admission. The secondary measures will include rate (percentage) and amount of blood transfusions (number of units), presurgery and postsurgery hematocrit and hemoglobin levels, as well as mortality and readmission for adverse events for 60 days. All data will be recorded with no patient identifiers and maintained confidentially.

9-039

Title: Utilization of three-factor PCC for acute reversal of warfarin in intracranial hemorrhage

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Purpose: Numerous studies have demonstrated prothrombin complex concentrates (PCCs) and/or fresh frozen plasma (FFP) with vitamin K as effective agents for urgent reversal of warfarin in patients with intracranial hemorrhage. The purpose of this study is to determine the median time to target INR of less than 1.4 following the administration of PCC and to determine if there is a difference in the incidence of hematoma expansion associated with delay of therapy between transfers and direct-admits to a Comprehensive Stroke Center. A secondary goal is to identify process improvement opportunities to reduce median time to INR less than 1.4.

Methods: A retrospective chart review of approximately 50-70 patients who were admitted to a Comprehensive Stroke Center either as direct admissions or transfers from January, 2011-August, 2013 and treated per an institution-approved PCC-based warfarin reversal protocol. The study population will include all patients with intracranial hemorrhage and known warfarin use with an INR greater than 1.4 that received vitamin K, three-factor PCC (Profilnine SD), with or without fresh frozen plasma (FFP). This study will be submitted for approval by the Institutional Review Board.

9-040

Title: Impact of a pharmacist discharge counseling service on readmission rates for acute myocardial infarction (AMI) patients

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Purpose: Hospital data related to AMI patients is publically reported through the Centers for Medicare and Medicaid Services and subsequently affects accreditation and reimbursement. There are several core measure criteria for patients with acute myocardial infarction (AMI) and it is critical to meet all of these criteria. Multidisciplinary approaches for improving patient care have demonstrated improvement in meeting core measure criteria, particularly for patients with AMI or heart failure. The purpose of this study is to compare the rates of AMI and all-cause readmission rates before and after the implementation of a pharmacist discharge service at a community hospital.

Methods: This is a retrospective cohort study observing the effects of a pharmacist discharge counseling service. This study is pending approval from the Institutional Review Board. A pharmacist discharge counseling service for AMI patients was implemented in January 2013. A control group of patients will be identified from January 2012 to December 2012. Beginning in January 2013 with the implementation of the service, study patients will be included through September 2013. These two groups will be compared based on reports of readmission rates and core measure compliance. Any fall-outs will be descriptively analyzed and included. Pharmacist interventions associated with the discharge counseling service will be quantified and categorized. The acceptance rate of pharmacist interventions will also be reported. Other data collection will include age, sex, comorbidities, and medication lists.

9-041

Title: Efficacy and safety of high dose dexmedetomidine in cardiac and medical intensive care patients

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Purpose: Dexmedetomidine is a centrally acting, alpha-2 agonist indicated for sedation of mechanically ventilated patients. While only FDA approved for use in doses of 0.2-0.7mcg/kg/hr, additional evidence has led to its use at higher doses. Doses up to 1.4mcg/kg/hr are frequently used in clinical practice based on major trials. Despite lack of studies, doses greater than 1.4mcg/kg/hr have been used at Vidant Medical Center in the cardiac and medical intensive care units. The purpose of this study will be to determine the efficacy and safety of high dose dexmedetomidine (>1.4mcg/kg/hr) compared to standard dose dexmedetomidine (≤1.4mcg/kg/hr).

Methods: This retrospective study will evaluate patients admitted to the cardiac intensive care unit or medical intensive care unit at Vidant Medical Center (VMC) between July 1, 2012 and September 30, 2013 who received dexmedetomidine for at least 24 hours while mechanically ventilated. Patients will be divided into two groups: those who received ≤1.4mcg/kg/hr of dexmedetomidine and those who received >1.4mcg/kg/hr of dexmedetomidine. The primary outcome will compare the percentage of RASS scores at goal among the high dose and standard dose dexmedetomidine groups. Secondary outcomes will evaluate the safety of high dose dexmedetomidine compared to standard dose dexmedetomidine based on the incidence of hypotension, hypertension, bradycardia, tachycardia and delirium. The impact of high dose dexmedetomidine on concomitant opioid analgesics and as needed sedation medications will also be compared to standard dose dexmedetomidine. The results of this study will provide safety and efficacy data in using higher doses of dexmedetomidine and have the potential to impact use within both VMC's intensive care units and in patients outside the institution.

9-042

Title: First dose administration time for levofloxacin ordered in an emergency department

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Purpose: This study will evaluate the amount of time that passes from when levofloxacin is ordered in the emergency room to when the first dose is received by the patient. The goal is to identify factors that can be modified to reduce the time between prescribing and administration of levofloxacin. The information gathered will be used to educate staff on ways to more efficiently administer first doses of antibiotics.

Methods: The Institutional Review Board exempted this study because it is a retrospective medical record review with patient information de-identified. Admitted patients prescribed levofloxacin in the Emergency Department in July 2013 will be reviewed. The following data will be collected: admitting floor, admission date and time, date and time patient leaves the emergency department, drug name, drug frequency, drug route of administration, date and time physician ordered levofloxacin, date and time pharmacist ordered levofloxacin to be given, and date and time levofloxacin order was administered by nursing staff. All data will be recorded without patient identifiers and maintained confidentially. Time from order to levofloxacin administration will be calculated for patients who receive levofloxacin while in the emergency department and for those who receive the first dose later on the floor. Order to administration times will be further stratified as <1 hour, 1-4 hours, 4-24 hours, and >24 hours. The reviewers will evaluate transfer times, administration times chosen by pharmacists on order entry, and nursing administration times to look for potential antibiotic administration delays. This information will be used to educate staff on ways to minimize antibiotic first dose administration delays.

9-043

Title: Evaluation of a vancomycin dosing protocol in an acute care community hospital

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Purpose: Vancomycin therapy is frequently used in hospitalized patients, as both empiric and targeted therapy, to provide adequate coverage against common hospital-associated pathogens such as methicillin-resistant Staphylococcus aureus (MRSA). Vancomycin dosing and monitoring is conducted by pharmacists at our institution. Our vancomycin dosing protocol was updated and modified in June 2012 to reflect current practice standards and Infectious Disease Society of America (IDSA) guidelines. The goal of this project is to validate the vancomycin protocol, and its ability to achieve a therapeutic serum level.

Methods: Prior to data collection, this study will be submitted to the institutional review board for approval. Electronic medical records will be reviewed to identify patients with a pharmacy consult of vancomycin during the time period of March 1, 2013 through June 30, 2013. Patients will be excluded if they are <18 years of age, if they received a one time dose, if they were receiving a form of renal replacement therapy, or if they hold a diagnosis of chronic kidney disease stage V or end-stage renal disease. Baseline patient demographics will be collected including age, sex, height, weight, and body mass index (BMI). Other important patient-specific data points collected will include serum creatinine, creatinine clearance, white blood cell count, indication for vancomycin, goal vancomycin trough listed, culture results, initial dose and dosing interval for vancomycin, and initial vancomycin serum level. To evaluate the success of using the updated vancomycin protocol, we will assess percent of time first serum level was therapeutic. Subgroup analyses will be conducted to determine outcomes based on patient weight, patient age, goal trough, and admission to ICU.

9-044

Title: Transition of care: Impact of targeted marketing of outpatient pharmacy services on readmission rates

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Purpose: Hospital readmission rates are proposed as indicators of care quality given that they may result from actions taken or omitted during the initial hospital stay. According to the most recent available readmission rates from CMS, 30-day readmission rates in NC for heart failure and pneumonia were 24.3 and 18.6, respectively. This projects objective was to compare readmission rates for heart failure, chronic obstructive pulmonary disease (COPD), and pneumonia patients at FirstHealth Moore Regional Hospital (MRH) who did or did not obtain their discharge medications at FirstHealth Moore Regional Hospital Outpatient Pharmacy.

Methods: This study will be submitted to the Institutional Review Board for approval. A random sample of patients with the primary diagnosis of heart failure, COPD, and pneumonia discharged from MRH from 01/01/2013 06/30/2013 will be identified. The subset of these patients who were readmitted to MRH within 30 days of discharge will also be identified. The patient sample will then be cross-referenced with patients who filled discharge prescriptions at the outpatient pharmacy. Data elements to be collected and analyzed include: percentage of patients with one of these primary diagnoses who filled discharge prescriptions at the outpatient pharmacy and percentage of disease related discharge medications filled by this patient sample. Data will be further analyzed to identify trends regarding the relationship between number of discharge medications and 30-day readmission rate. Data will be used as baseline data for phase 2 of the project, pharmacist-led targeted marketing of outpatient pharmacy services to patients with primary diagnosis of heart failure, COPD, and pneumonia. Phase 2 will be modeled after the current pharmacist-led targeted marketing of outpatient pharmacy services to patients receiving orthopedic surgery.

9-045

Title: Evaluating the Potential for Drug Vial Contamination when Utilizing a Closed Vial Adapter

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Purpose: Drug vial optimization (DVO) is a concept of safely extending the beyond-use-date (BUD) of a medication vial longer than the 6 hours currently recommended by USP. DVO takes into account the stability, which is determined by the drug manufacturer, and sterility of the drug. Sterility tests are conducted to determine the extent to which the contents of a drug vial remain sterile. The purpose of this study was to test the DVO concept on a new closed vial adapter (SmartSite VialShield).

Methods: Study procedures were developed based on current USP <797> guidelines. All aseptic manipulations were conducted in a Biological Safety Cabinet certified with ISO 5 air conditions. The study test medium was tryptic soy broth (TSB) in 50 mL IV bags and 25 mL vials. The initial IV bags were prepared aseptically by the pharmacy department and incubated for 7 days prior to use at 35◦C 2◦C, to verify sterility. Aliquots of 5 mLs were removed from each vial at 0 hours, 24 hours, 48 hours, 72 hours, and 168 hours (7 days) and transferred to the IV bags. A total of 305 samples (61 samples at each time point) were evaluated. Each IV bag was properly labeled to correspond with one of the 61 TSB vials, which were used for each time point. The SmartSite VialShield device was used to transfer 5 mLs from each vial to the corresponding 50 mL TSB filled IV bag. Each IV bag was incubated and observed for contamination for 14 days by the hospitals Microbiology Department. Visual inspections were documented on all samples. Six negative controls and one positive control (5 mLs of 0.5 CFU/mL) were used for each time point.

Results: A total of 305 manipulated TSB filled IV bags were produced at 5 different time periods (0 hours, 24 hours, 48 hours, 72 hours, and 168 hours). None of the TSB manipulated IV bags showed signs of growth. This resulted in a zero percent contamination rate. No growth was observed in the 30 negative controls. All 5 positive controls tested positive with visible signs of growth within 24 hours.

Conclusion: Microbiological testing using the SmartSite VialShield device resulted in a zero percent vial and IV bag contamination rate. This study demonstrated that the SmartSite VialShield device, when used under USP <797> standards, is capable of maintaining the sterility of an attached drug vial up to 7 days (99% reliability and 95.5% confidence).

9-046

Title: Dispensing investigational drugs: an analysis of safe medication practices and perceptions

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Purpose: Unlike FDA-approved prescription products, rigorous practices for the safe and efficient dispensing of investigational medications are not standardized. The purpose of this study is to determine how various Investigational Drug Services (IDS) around the country ensure safe dispensing of study medications to research participants and to describe the culture of safety that exists. The objective is to characterize error-prevention processes and strategies utilized in the provision of investigational drug dispensing services within the national Veteran Affairs (VA) Health System, as well as pharmacists perceptions about the safety risks posed by investigational drugs.

Methods: This will be a survey-based investigation approved by the local Institutional Review Board. An electronic questionnaire will be distributed via email to a nationwide audience of investigational drug services (IDS) personnel to assess practices related to the safe and accurate dispensing of study drugs. Participants will be accessed through email listing on a national VA listserv for IDS staff. All VA facilities involved in investigational drug services will have the opportunity to participate in this study. The survey will examine multiple facets of the IDS at individual VA Medical Centers. It will be comprised of three components corresponding to demographic information, perceptions of medication safety, and standard processes used to support investigational drug protocols. The tool will systematically evaluate staffing practices, pharmacists perceptions about the safety risks posed by investigational drugs, as well as processes related to storage, security, ordering, dispensing, documentation, and error reporting. The survey will remain open for 30 days (January 14 through February 12, 2014). Initial survey distribution will occur at the beginning of the study period. Follow up emails will be sent after approximately two and four weeks. Upon closing of the survey on February 12, 2014, the responses will be retrieved, summed, and analyzed.

9-047

Title: Comparison of subcutaneous versus intravenous patient-controlled analgesia in sickle cell pain crisis

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Purpose: Vaso-occlusive pain crises are the most common cause of recurrent emergency department visits and inpatient hospitalizations in sickle cell patients. Patients often require treatment with parenteral opioids in the form of patient-controlled analgesia (PCA). Subcutaneous (SQ) administration of opioids via PCA is considered to be equivalent to intravenous (IV) administration in European guidelines, but remains an underutilized route of administration in the US. The objective of this study is to compare the effectiveness of SQ versus IV PCA in sickle cell pain crisis in our hospital.

Methods: This retrospective, single-center observational study will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify patients who were admitted for sickle cell pain crisis, were hospitalized for at least 24 hours, and received opioids via PCA. The following data will be collected: patient age, gender, average pain score, total amount of opioids used, length of stay, and presence of injection site infection. All data will be recorded without patient identifiers and confidentiality will be maintained. Patients will be divided into two groups based on whether they received SQ or IV PCA. Average pain score, amount of opioids used, length of stay, and incidence of injection site infections will be calculated and compared between the groups.

9-048

Title: Outcomes of prothrombin complex concentrate use in patients with intracerebral hemorrhage

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Purpose: Progressive bleeding is a primary cause for early deterioration in a patient experiencing an intracerebral hemorrhage (ICH). The hematoma itself can lead to neuronal cell death, and ICH expansion is predictive for increased morbidity and mortality. Stabilization of the hematoma is imperative. There is little data published on ICH expansion or stabilization after administration of Profilnine SD, a three-factor prothrombin complex concentrate (PCC). Outcome data with a three-factor product is relevant in light of the recent FDA approval of a more expensive four-factor product.

Methods: This is an Institutional Review Board approved, retrospective study using data from an electronic chart review. Inclusion criteria: 18 years of age or older, ICH on admission, utilization of three-factor PCC, and baseline and follow-up cranial computed tomography (CT) scans. There are no exclusion criteria. The primary objective is to assess intracerebral hematoma expansion after the administration of three-factor PCC based on cranial CT scans. Secondary objectives include(1) hematoma expansion comparison between patients who received fresh frozen plasma (FFP) plus PCC or PCC alone; (2) International Normalized Ratio (INR) reduction comparison in patients who received FFP plus PCC or PCC alone; (3) number of patients undergoing a surgical intervention after receiving PCC; (4) occurrence of thrombosis during hospitalization; and (5) mortality.

9-049

Title: Pharmacist conducted pediatric asthma medication discharge counseling

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Purpose: Asthma affects approximately 6 million pediatric patients in the United States. Children miss school, visit emergency departments, and are hospitalized when asthma is not controlled. The National Asthma Education and Prevention Program guidelines reinforce the importance of education from all members of the healthcare team in the management of asthma. As medication experts, pharmacists are in an ideal position to provide medication education to patients and their caregivers prior to discharge from the hospital. The purpose of this study is to evaluate the impact of pharmacist education on patient and/or caregiver understanding.

Methods: This is a prospective single center study conducted in a 30-bed general and 8-bed intensive care unit pediatric hospital. Initial steps include development of educational documents on proper inhaler technique, medication use, and integration with the asthma action plan. Patients will be identified using the electronic medical record if they have a diagnosis of asthma and are under 18 years of age. Informed consent will be obtained prior to inclusion in the study. Patients and/or caregivers will be evaluated for knowledge of asthma medications by survey before counseling. Understanding will be measured using a teach back method and demonstration of inhaler technique after counseling. Patients and/or caregivers will also be contacted via telephone post discharge to assess compliance and technique. Patient and/or caregiver understanding of medications assessed before and after pharmacist-led counseling is the primary outcome. Time required from pharmacists, readmission rates, proper long-term medication technique, and nursing and physician satisfaction will also be assessed. Data will be evaluated by reviewers to determine the change in patient and/or caregivers level of understanding. This study will be submitted to the Institutional Review Board for approval.

9-050

Title: Retrospective assessment of therapeutic voriconazole concentrations comparing two dosing strategies

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Purpose: Therapeutic drug monitoring of voriconazole concentrations is utilized due to significant inter- and intra-patient variability. A therapeutic trough concentration range of 1.0 to 5.5 mg/L is considered to maximize therapeutic efficiency and minimize adverse effects. Voriconazole is currently dosed either as a fixed dose or based on patient weight. The objective of this study is to compare the success rate in attaining therapeutic voriconazole concentrations using a fixed versus weight-based dosing strategy.

Methods: This retrospective study based on chart review has been approved by the Institutional Review Board. The clinical laboratory will provide a list of adult patients (at least 18 years of age) during a period from April 1, 2012 to July 1, 2013 who had documented steady-state voriconazole concentrations. Collected data will include patient demographic information, medical service, use indication, voriconazole dosing strategy (fixed vs. weight-based), dosing regimen, route of administration, plasma concentrations, markers of liver and renal function, and concomitant medications that may inhibit or induce voriconazoles metabolism. If available, CYP2C19 genotype will also be noted. The primary endpoint for the study will be the success or failure of the first trough sample taken at least five days after start of therapy to achieve a therapeutic concentration. Assuming that fixed and weight-based dosing strategies will achieve target-concentration frequencies of 50 percent and 75 percent, respectively, 60 patients per dosing group will be needed to achieve a power of 80 percent. The primary analysis will use logistic regression to compare odds of success in achieving therapeutic concentrations with the two dosing strategies, after adjustment for relevant covariates.

9-051

Title: Excess patient cost related to Medicare Part D vs. Medicare Part B billing for insulin administered by continuous subcutaneous insulin infusion pump

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Purpose: Patients who depend on Medicare Part D for prescription drug coverage are at risk of reaching the coverage gap (CG) which includes temporary limitations on coverage, and thus, increased out-of-pocket prescription drug costs (OOP PDC). Medicare Part B covers continuous subcutaneous insulin infusion (CSII) pumps and insulin infused via these pumps. Pharmacies often bill insulin used in CSII through Medicare Part D despite Medicare Part B coverage. Thus, this study will evaluate the impact of insulin billing and the cost difference for patients when insulin is billed through Medicare Part D compared to Medicare Part B.

Methods: This study was approved by the Institutional Review Board. The study will be conducted at UNC Hospitals Endocrine Clinic. Study personnel identified 60 patients using insulin pumps covered by Medicare Part B. Telephone calls were conducted to screen for eligibility and assess interest. Patients were sent a study information sheet, consent form, and HIPAA authorization form. Patients were asked to return the latter two forms. The HIPAA authorization will be faxed to pharmacies to acquire 2011-2012 expense reports. The following data will be collected and analyzed: Medicare Part D cost for insulin prescriptions, date of reaching the CG, length of time spent in the CG, and the patients annual OOP PDC for insulin. Assuming proper billing of insulin to Medicare Part B, we will estimate the date of reaching the CG, annual Part D OOP PDC, annual Part B OOP PDC, and excess annual cost due to suboptimal billing practices and earlier entry into the CG. We hope to identify patient factors which predict who will benefit from billing insulin to Medicare Part B.

9-052

Title: Assessing the appropriateness of concomitant aspirin therapy with oral anticoagulation in patients with atrial fibrillation

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Purpose: Current guidelines do not recommend aspirin therapy in addition to oral anticoagulants in patients with atrial fibrillation due to an increased bleeding risk. The primary objectives of this study are to describe overall use of concomitant antiplatelet and oral anticoagulant therapy in atrial fibrillation patients, note the use of dual therapy among those without any known atherosclerotic cardiovascular disease, determine if the addition of antiplatelet therapy is associated with risk for subsequent bleeding events and determine patients bleeding and stroke risks based on risk stratification scores.

Methods: This study will be submitted to the Institutional Review Board for approval. A retrospective chart review of up to 250 patients that were coded at discharge at a community hospital with atrial fibrillation between July 2010 and July 2013 will be conducted. These patients will be identified through the hospital's electronic medical record system using ICD-9 codes for atrial fibrillation. Once the list has been generated, the patient population will be evaluated for concomitant use of aspirin with warfarin, dabigatran, rivaroxaban, or apixaban without any known atherosclerotic cardiovascular disease. Patients will be evaluated for bleeding event on admission or during their admission using ICD-9 codes for bleeding. Bleeding and stroke risks for these patients will be assessed based on risk stratification scores, CHA2DS2-VASc, HAS-BLED, and HEMORR2HAGES. To isolate the adjusted impact of concomitant aspirin use separately from newer antiplatelet agents (clopidogrel, prasugrel, and ticagrelor), patients receiving other antiplatelet drugs will be excluded. The population will be stratified by the use of aspirin alone or in combination with oral anticoagulants. Baseline characteristics, atrial fibrillation status, and stroke and bleeding risk profiles will be compared between the groups.

9-053

Title: Cost analysis of emergency department interventions by a pharmacist

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Purpose: The Agency for Healthcare Research and Qualitys (AHRQ) critical analysis of patient safety practices recommends incorporation of pharmacists into clinical teams within emergency departments (ED) to mitigate adverse events. Pharmacists are increasingly involved in EDs but economic factors are barriers for optimization of pharmacy services. The purpose of this investigation is to demonstrate the cost benefits of a pharmacist review of patients in the ED.

Methods: This study is pending approval with the Institutional Review Board. Patients will be identified by the electronic medical record system after presentation to the ED. Eligible patients will have medications, radiology reports, laboratory, and microbiology results reviewed by a pharmacist with recommendations communicated to the physician. The primary outcome is demonstrated cost savings of pharmacist interventions. Secondary outcomes include compliance with best practices, therapeutic interchanges, formulary management and measurement of physician and nurse satisfaction with pharmacist presence in the ED. The following data will be collected: number and types of interventions, and hard and soft dollar values associated with interventions. Number of hours spent and number of charts reviewed will be documented. Per hour cost and number of interventions will be calculated from this data. In addition, surveys provided to physicians and nurses will be collected and analyzed.

9-054

Title: Implementation of an extended infusion piperacillin-tazobactam program at a community teaching hospital.

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Purpose: Pharmacodynamic optimization of antibiotics is encouraged based on recommendations from the IDSA Antimicrobial Stewardship guidelines. Our institution will be transitioning from traditional dosing of piperacillin-tazobactam to the extended (4 hour) infusion (EI). The primary goal of this project is to evaluate the education process and challenges encountered in implementing an EI piperacillin-tazobactam program.

Methods: This study will be presented to the hospitals institutional review board for approval. Prior to implementation of the EI protocol, pharmacists, nurses and physicians will be educated. Education will be pharmacy led, with the initial education provided to pharmacy staff through live presentations. Once pharmacists are educated, they will then provide education to the nurses on each patient care floor and the ICUs through brief in-service presentations. A required online education piece will also be implemented for the nursing staff. Physicians and physician extenders will be educated through poster presentations in the physician lounges. Descriptive statistics will be utilized to evaluate the number of pharmacists and nurses educated. As part of the education piece for pharmacists and nurses, a pre-EI implementation survey will be given to determine baseline knowledge of this program. After implementation, a follow-up survey will be given to pharmacists and nurses to evaluate the education process and challenges of the program. Additionally, data will be collected for acquisition costs of piperacillin-tazobactam before and after the implementation of the extended infusion program.

9-055

Title: Impact of pharmacist-led insulin management to improve glucose control and transition of care in the community hospital setting

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Purpose: The purpose of this study is to determine if pharmacist involvement in inpatient insulin management will improve glucose control as well as patient understanding and adherence in transition of care. Home insulin regimens for patients with uncontrolled diabetes are often times continued while the patient is in the hospital. Subsequently, sliding scale insulin coverage is utilized to treat hyperglycemia rather than adjusting the patients home insulin regimen. We propose that pharmacist-led insulin management coupled with inpatient diabetes counseling will improve inpatient glucose control as well as patient understanding and adherence to modified insulin regimens in transition of care.

Methods: Patients will be selected for the study if they meet the criteria of a hemoglobin A1c greater than 9% or a glucose level greater than 210 mg/dl. A historical control group will be selected from the previous years admissions using the same criteria. On admission, medication reconciliation will be performed by a pharmacist to assess for treatment appropriateness based on glucose levels, demographics, and adherence. During each patients stay, the pharmacist will make recommendations about the patients insulin therapy based on close monitoring of glucose levels to achieve a target between100 and 180 mg/dl. The pharmacist will also provide diabetes counseling prior to discharge with a follow-up phone call 24-72 hours after leaving the hospital. The phone call will consist of scripted questions to determine patient comprehension and compliance. The primary outcome of this study is to determine the value of pharmacist-led insulin management. This will be measured by calculating the average time it takes the subject group to achieve therapeutic glucose levels and comparing it to the historical average of the control group. Secondary outcomes will include patient comprehension and compliance to medications and follow-up care. This study has been submitted to the ethics committee for approval.

9-056

Title: Association between antibiotic use and length of stay for patients hospitalized with acute exacerbations of asthma, bronchitis or COPD

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Purpose: The primary objective of the study is to determine if there is a difference in the average length of stay for antibiotic use versus no antibiotic use in patients with acute exacerbations of asthma, bronchitis or COPD. Secondary objectives include: to identify factors affecting length of stay in patients with acute exacerbations, to examine the relationship between antibiotic use and Clostridium difficile infections during hospital stay, and to examine the relationship between antibiotic use and readmissions for acute exacerbations or Clostridium difficile infections.

Methods: This study will be submitted to the Institutional Review Board for approval. We will retrospectively review patients discharged from a community hospital between January 1, 2010 and September 30, 2013 for an acute exacerbation of asthma, bronchitis or COPD. Patients will be included if they had a principal discharge diagnosis code indicating dyspnea and respiratory abnormalities paired with a secondary discharge diagnosis indicating COPD and allied conditions. The antibiotic group will include patients that were prescribed one of the following antibiotics: amoxillicin-clavulanate, azithromycin, ceftriaxone, cefuroxime, doxycycline or moxifloxacin. Patients will be excluded if they had a final discharge diagnosis other than the principal and secondary discharge diagnosis, prescribed antibiotics other than those listed in the inclusion criteria, discharged from the emergency department, younger than 18 years of age, pregnant or known to be prisoners. The following data will be collected: age, gender, positive cultures, bronchodilator use, inhaled corticosteroid use, systemic corticosteroid use, antibiotic prescribed, antibiotic route, and antibiotic duration. The primary outcome will be the difference between the groups in average length of stay. Secondary outcomes will include: Clostridium difficile infection during hospital stay and readmission for acute exacerbation or Clostridium difficile infection within 30 and 60 days after discharge.

9-057

Title: Evaluation of Beta Blocker Dose Titration in Heart Failure with Reduced Ejection Fraction

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Purpose: Heart failure is a significant cause of morbidity and mortality in the United States. Beta blockers carvedilol, metoprolol succinate, and bisoprolol have been shown to improve survival in heart failure with reduced ejection fraction (HFrEF). Although guidelines recommend titration of beta blocker doses to levels achieved in clinical trials (carvedilol 25-50 mg twice daily, metoprolol succinate 200 mg daily, bisoprolol 10 mg daily), little evidence exists that this is occurring in clinical practice. This study will evaluate how beta blocker titration occurs including how long it takes to achieve appropriate target doses and what percentage of patients receive them.

Methods: A retrospective chart review of patients with HFrEF started on therapy with a beta blocker under the treatment of the Durham VA Medical Center (DVAMC) between January 2008 and December 2012 will be conducted. One group of 50 patients will be randomly selected from those with at least two visits at the Durham VA heart failure clinic and compared to an age, gender, and ejection fraction matched group of patients seen by primary care providers DVAMC. Patient charts will be analyzed at the time of beta blocker initiation and 12 months following to evaluate whether or not the patient's beta blocker had been appropriately chosen and titrated and what reasons might exist for a patient's dose to not have reached target levels. The number of beta blocker titrations occurring as well as hospitalizations due to heart failure within the 12 month period will also be analyzed. Primary endpoints will include the percentage of patients started on an appropriate beta blocker and titrated to a target dose and the average time to target beta blocker dose. Secondary endpoints will evaluate the differences in beta blocker titration between patients followed by the heart failure clinic and by primary care.

9-058

Title: The Addition of a Pharmacist's Pharmacotherapy Optimization and Targeted Patient Education to a CHF Transition of Care Team

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Purpose: Due to the substantial financial burden associated with heart failure readmissions, Medicare and other public sector insurances have reduced reimbursements to hospitals with excessive readmission rates. Hospitals nationwide have begun focusing on improving the transition of care to help reduce costly readmissions and improve patient outcomes. The purpose of this quality improvement project is to evaluate the impact of pharmacist-directed medication optimization and patient education on 30-day CHF readmissions when added to a transition of care team.

Methods: All patients admitted to the Progressive Coronary Care Unit at Carolinas Medical Center-NorthEast diagnosed with CHF from January to February 2014 will be enrolled into a quality improvement program. Upon admission to the unit, a pharmacist will assess the patients medication list for potential pharmacotherapy optimization recommendations, which will be tracked as accepted or not. Any patient discharged Monday through Friday before 3 pm during the two month time frame will have a pharmacist-patient pre-discharge counseling session, consisting of an adherence assessment and extensive medication education. Readmission rates of patients receiving pre-discharge counseling sessions will be compared to patients who did not, to assess impact of the pharmacists intervention.

9-059

Title: Impact of a critical propofol shortage on the cost of care at a 435-bed community hospital

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Purpose: Drug shortages are known to have a significant impact on the healthcare system. Since October 2009, propofol has been listed as a medication shortage resulting in the use of alternative sedatives. The purpose of this study is to determine the effect of a critical propofol shortage on patient care and outcomes.

Methods: A retrospective chart review will be conducted utilizing electronic medical records. Data will be gathered on adult patients who were sedated in a critical care unit and remained mechanically ventilated for at least 12 hours. The number of occurrences and costs that are associated with the total number of days hospitalized, days in critical care units, hours of mechanical ventilation, and medications used for sedation before (June 21, 2012 to December 20, 2012) and during (December 21, 2012 to June 21, 2013) a critical propofol shortage period will be assessed. In addition, patient extubation, self-extubation, and re-intubation rates will be measured and compared between the two groups. De-indentified information including: patient demographics, comorbidities, allergies, medications used for sedation, admitting diagnosis, and indication for mechanical ventilation will be collected for analysis. A dollar per day cost assessment and an unpaired T-test will be performed to determine difference between the two study arms regarding the number of days a patient stayed in a critical care unit, days hospitalized, hours of mechanical ventilation, and medications used for sedation. This investigation will be submitted and reviewed by the CaroMont Health Institutional Review Board prior to study commencement.

9-060

Title: Continuous intravenous heparin infusion dosing and safety in patients with obesity

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Purpose: Current CHEST Guidelines recommend a dosing protocol of unfractionated heparin (UFH) for anticoagulation based on actual body weight. Because UFH has significantly lower distribution into adipose tissue, there is concern for excessive dosing and increased risk for bleeding when dosing in obese patients. The objectives of this study are to compare dosing of continuous intravenous UFH infusions in obese and non obese adult patients, the time to reach a therapeutic heparin concentration, the percentage of time within therapeutic range, and the incidence of supratherapeutic heparin concentrations and bleeding events to determine if modification of the institutions current nomogram is warranted.

Methods: This study is an Institutional Review Board approved, retrospective chart review of inpatients who were initiated on an intravenous heparin continuous infusion using an institutional heparin nomogram for thrombosis and acute coronary syndromes identified by the electronic medical record system of an academic medical center. Cohorts of 100 obese (BMI of 30 or greater) and 100 non obese patients (BMI less than 30) will be selected for each nomogram. Data collection will capture deidentified patient records from September 2010 through August 2012 until the sample size for each nomogram is obtained. Data to be collected include: age, sex, race, weight, height, BMI, specific nomogram utilized, heparin concentrations during therapy, use of transfusions or intravenous pressors, and other pertinent laboratory values. Based on the information collected, the percentage of time within the therapeutic range and time to reach therapeutic range will be calculated. This information will be used to determine if differences exist between the cohorts in regards to continuous intravenous heparin infusion dosing requirements and the time patients are within the therapeutic range. The study will also be used to determine if differences exist in the incidence of bleeding events and supratherapeutic heparin concentrations between the cohorts.

9-061

Title: Inpatient use patterns of rituximab in an adult and pediatric population at a single center

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Purpose: Rituximab is a chimeric monoclonal antibody used for numerous oncologic and non-oncologic indications that targets CD20 surface marker on B lymphocytes. Rituximab is classified as a high alert medication by both the Institute for Safe Medication Practices and our healthcare system, which confers a significant risk of harm if used erroneously. The purpose of this evaluation is to examine the prescribing, dispensing, administration, and monitoring of rituximab. Additionally, an assessment of compliance with protocols and identification of doses that could have potentially been administered in the outpatient setting will be conducted.

Methods: The criteria for this medication use evaluation were approved by the Pharmacy and Therapeutics Committee. All adult and pediatric inpatients that received at least one dose of rituximab between July 1, 2012 and June 30, 2013 will be evaluated. Data will be collected retrospectively through electronic chart review and evaluation of paper chemotherapy orders. Criteria for prescribing will be based on indication for use, reason for admission, justification for inpatient administration, completeness of written order, infusion directions, hepatitis B screening, and attending physician prescribing in hard copy form consistent with protocol. Individual doses will be assessed for compliance with FDA recommended doses and total dose will be captured in patients receiving more than one dose. The dispensing process will be evaluated by correct pharmacist order entry into the electronic system, including infusion rates. Pharmacy interventions for order clarification will also be evaluated. The administration process will be assessed by ensuring receipt of premedications and completion of infusion. The incidence of infusion reactions will also be recorded. Descriptive statistics will be reported by for both key patient characteristics and treatment outcomes.

9-062

Title: Implementation of transitional care management services using new current procedural terminology (CPT) codes in an ambulatory residency clinic

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Purpose: Transitional care to home after hospital discharge has been a recent focus to reduce readmissions, improve patient safety and satisfaction, and diminish healthcare costs. Close follow up post-discharge has been shown to improve patient satisfaction, decrease adverse events, and decrease emergency department (ED) visits and hospital readmissions within 30 days of discharge. The purpose of this project is to evaluate a change in 30-day readmission rate after implementation of new transitional care management codes and pharmacist-led post-discharge telephone services in a family medicine clinic.

Methods: This study will be submitted to the Institutional Review Board for approval. A new process will be initiated at our family medicine residency clinic using the workflow outlined by Medicare's CPT transitional care management codes. Continuity patients with Medicare will be contacted via telephone within 2 days of hospital discharge. During this telephone call, the pharmacy resident will review discharge medications, answer patient questions and ensure face-to-face follow-up is scheduled with primary care physician (PCP). The pharmacy resident will assess patient understanding of medications and evaluate need for current and future patient education. Pharmacy resident will communicate identified areas of concern to physician and identify areas for follow-up. A separate face-to-face pharmacy visit will be scheduled with patient as necessary. The primary outcome is 30-day readmission rate and secondary outcomes include: 30-day ED visits, rate of patient attendance to PCP visit, and number and type of pharmacy interventions.

9-063

Title: Prospective evaluation of a pharmacist-led osteoporosis service in a collaborative primary care setting

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Purpose: Osteoporosis is a preventable disease that affects approximately 10 million while another 34 million have osteopenia in the United States according to the Foundation for Osteoporosis Research and Education. Fractures and their complications are relevant clinical sequelae of osteoporosis associated with excessive financial burden and potential mortality. The objective of this study is to evaluate the impact of a pharmacist-led osteoporosis management service on optimization of medication regimens.

Methods: Primary care physicians refer patients that have osteopenia or osteoporosis to the clinic pharmacist. During the clinic visit, the pharmacist assesses for the risk of bone fracture by using the fracture risk assessment tool (FRAX) and provides the following educational services: disease state, fall prevention, diet and lifestyle modification education and assessment of calcium and vitamin D intake. The pharmacist evaluates potential pharmacological therapy for patients at an increased risk of developing osteoporosis and evaluates pharmacologic appropriateness and medication adherence for patients receiving treatment for osteoporosis. The pharmacist assesses and optimizes the current drug regimen and makes changes as needed. Modifications to a medication regimen are discussed and approved by the referring physician during the clinic visit. All data collected will be recorded without patient identifiers and maintained confidentially. This study will be submitted to the Institutional Review Board for approval.

9-064

Title: Evaluating the impact of a comprehensive patient screening (ComPaS) tool in prioritizing inpatient pharmacy workflow

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Purpose: Patients with complex medication regimens and disease states are at high risk for readmissions. Many transitions in care programs, such as Project BOOST (Better Outcomes in Older Adults through Safe Transitions), have demonstrated success in reducing readmission rates using a screening criteria. However, a standardized pharmacy approach at targeting and managing high risk patients within the inpatient setting remains to be seen. This study evaluates the impact of a comprehensive criteria based patient screening tool (ComPaS) for the prioritization of inpatient pharmacy delivery of patient care compared to current prioritization methods.

Methods: This study will be submitted to the Investigational Review Board for approval. Upon approval, a prospective cohort study with historical control comparisons will be performed on a single nursing unit in a community based hospital. The study will include patients identified with the comprehensive patient screening tool in a two week prospective evaluation to determine differences between ComPaS and current methods. The tool will be implemented and an additional two weeks of data collection will be performed. The following data will be collected: age, gender, renal function, number of medications, past medical history, prior hospitalizations, number of ED visits, admission, discharge and readmission date and diagnosis and pre-determined value based purchasing measures. Pharmacist time, number and type of interventions, and medication errors will be compared between both groups. The clinical data for each patient will be extracted from patients electronic medical record and will be maintained in an encrypted Excel spreadsheet without patient identifiers.

9-065

Title: Severe anaphylaxis following crotalidae polyvalent immune fab administration for copperhead snake bite

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Case Report: This case presents a rare and serious anaphylactic reaction to crotalidae polyvalent immune fab (CroFab), believed to be the worst reaction to this antivenom ever recorded. A 68-year-old white male was bitten by a copperhead snake while mowing his lawn. The patient was bitten twice, once on his dominant left hand as he tried to brush it towards the woods, and a second time on his right hand as he swatted the snake in retaliation. The patient self-administered diphenhydramine after the envenomation and then sought immediate medical care. Upon presentation to the emergency department, signs of progressive envenoming were observed. Tenderness and swelling had advanced 12 centimeters along each arm, and the patients platelet count dropped from 225,000 to 163,000 platelets per microliter. Of note, the patients home medications included the angiotensin converting enzyme inhibitor, enalapril, which has the potential for synergistic action with the envenomation. It was determined he was a candidate for antivenom therapy. An initial dose of CroFab six vials (250 mL total) intravenous (IV) was ordered. The start of the infusion was slowly administered at a rate of 50 mL per hour during the first 10 minutes. The patient tolerated this initial infusion, and as a result, the rate was increased to 250 mL per hour. While partially infusing, the patient had an adverse drug reaction to CroFab, characterized by urticaria and mild hypotension (systolic blood pressure of 94 mmHg). Despite this, the patient wanted to proceed. One liter of normal saline, diphenhydramine 25 mg IV, famotidine 40 mg IV, and methylprednisolone 125 mg IV were administered during the remainder of the infusion. After the antivenom was administered, the patient reported his hands were less tight, painful, and tender. Objectively, the patients hands were less swollen. However, shortly after completing the CroFab infusion, the patient developed hypotension with systolic blood pressures decreasing to the 60s, abdominal pruritis that rapidly progressed to urticaria, and significant angioedema of the tongue. The patients tongue tripled in size over ten minutes, but no stridor or wheezing was observed. A subcutaneous dose of epinephrine 0.3 mg was administered approximately 30 minutes after the start of the allergic reaction. The tongue stopped swelling and subsequently reduced to double in size over the next ten minutes. The patients systolic blood pressure normalized to the 100s. The patient began to verbalize his convalescence and his color improved. By early the next morning, all signs of an allergic reaction had resolved. Despite the fact that fab antivenom is safer than the previously available whole immunoglobulin formulation, and copperhead envenomation tends to be milder than that of other pit vipers, CroFab administration can still be associated with serious adverse events. Therefore, it is debated whether antivenom should be utilized at all for the subset of patients bitten by copperheads. This case

epitomizes the rationale for this debate. Further study is needed to determine the safety and efficacy of CroFab therapy for copperhead envenoming.

9-066

Title: Tolvaptan utilization and safety at an academic medical center: results of a medication use evaluation

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Purpose: Tolvaptan is currently approved for the treatment of hypervolemic or euvolemic hyponatremia by the Food and Drug Administration (FDA) but is also used to treat heart failure and autosomal dominant polycystic kidney disease. Tolvaptan requires frequent monitoring and is associated with several adverse events such as hypovolemia and osmotic demyelination syndrome. Tolvaptan was also recently found to increase the risk of serious liver injury resulting in drug manufacturer labeling changes. The objective of this medication use evaluation is to assess the prescribing, monitoring, and outcomes of tolvaptan use at an academic medical center.

Methods: This study was exempted from Institutional Review Board approval since this is a quality improvement project. A retrospective chart review was conducted on all patients who received tolvaptan from January 1, 2012 to August 31, 2013. Electronic medical records were utilized to collect data including: prescriber, indication for use, use in populations with listed contraindications and precautions, dose and duration of administration, incidence of serious adverse events, use of concomitant interacting drugs, and monitoring of sodium and liver enzyme levels. In addition, therapy discontinuation or dose reduction due to adverse effects, mean change in sodium levels at hospital discharge from baseline, and sodium level greater than a critical value of 146 mEq/L at any time during tolvaptan therapy were collected. Descriptive statistics will be provided for all data abstracted. This data will be utilized to identify prescribing patterns and evaluate the safe use of tolvaptan at an academic medical center.

9-067

Title: Development of hypotension following the administration of single-dose etomidate for induction in rapid sequence intubation (RSI).

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Purpose: Rapid sequence intubation (RSI) is a technique used to provide or protect an airway. To help reduce the risk of certain adverse events, patients undergo pretreatment with a variety of medications based on their mechanism of action and how the side effects could benefit or harm a patient. Etomidate is currently the gold standard for sedation in this setting due to the neutrality of its hemodynamic effects and relatively few contraindications. Etomidate is known to cause adrenal insufficiency; though the clinical significance is currently debated. Prospective data examining the development of hypotension after etomidate administration for RSI is lacking.

Methods: This prospective study will include patients ages 18-89 receiving etomidate for induction in the emergency department from October 2013 to April 2014 and will be submitted for IRB approval. The primary objective is the incidence of hypotension during the first hour and within 48 hours after etomidate administration. Secondary objectives include: vasopressor and stress dosed steroid use, incidence of hypotension by indication for intubation, and in-hospital mortality. Exclusion criteria includes: pregnancy, repeat etomidate administration, chronic steroid use, and transfer, discharge or death within 48 hours of intubation. The following data will be collected: age, gender, race, ICU and hospital LOS, duration of mechanical ventilation, height, weight, past medical history, etomidate dose, baseline blood pressure (BP) and heart rate, and a minimum of two recordings per day (plus any change in BP of at least 20mmHg). The primary outcome will be analyzed using a relative risk ratio and logistic regression analysis including age, use of agents known to cause hypotension, and baseline hypotension. A sample size of 100 patients is needed to detect a difference of 14mmHg in BP with 80% power and $p<0.05$. All continuous, normally distributed data will use a paired t-test and descriptive statistics for all categorical data.

9-068

Title: Medication use evaluation of phytonadione for the reversal of warfarin at a tertiary care institution

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Purpose: Warfarin is one of the most common anticoagulants used in the inpatient and outpatient settings. Indications for anticoagulation with warfarin include, but are not limited to, atrial fibrillation, prosthetic heart valves, and venous thromboembolism. The therapeutic index for warfarin is narrow; as a result patients with subtherapeutic or supratherapeutic international normalized ratio (INR) are at risk for thrombosis or bleeding, respectively. One of the modalities used to reverse the anticoagulant effects of warfarin is phytonadione. This evaluation assessed the appropriateness of phytonadione use for warfarin reversal at our institution by evaluating the prescribing, dispensing, administration, monitoring, and outcomes of therapy.

Methods: A retrospective chart review of adult inpatients on warfarin who received at least one dose of phytonadione between June 1, 2013 and August 31, 2013 for the reversal of the anticoagulant effects of warfarin was conducted. Patients who were not on warfarin but received phytonadione for other reasons, such as documented history of liver disease or pre- and post-partum were excluded. Criteria for this evaluation were based on review of the current literature, including the 2012 update to the evidence-based management of anticoagulant therapy guidelines from the American College of Chest Physicians. Some data collected included indication for use, dose, route of administration, and outcomes of phytonadione use. The incidence of adverse effects and pertinent laboratory monitoring parameters were also documented. The outcome evaluated was the successful reversal of the anticoagulant effects of warfarin, defined as reversal to goal INR, reversal based on physicians judgment, or complete reversal in the event of a bleed. This medication use evaluation did not require Institutional Review Board approval, however the criteria for the evaluation was presented and approved by the Pharmacy and Therapeutics Committee at our institution.

9-069

Title: Effects of statin use on the incidence of urinary tract infections in Veterans Affairs settings from 2008 to 2012

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Purpose: Statins have been described as having pleiotropic effects, in addition to cholesterol lowering effects. Some studies have investigated a correlation between statins and a reduction in urinary tract infections (UTIs) but data are lacking. The primary objective is to evaluate if there is a correlation between statin use and UTIs by comparing the number of positive urinalysis results with a temporal relationship to a UTI antibiotic prescription in statin users and nonusers. The secondary objectives will assess if there are particular pathogens present with the correlation, and if adherence or higher potency statins correspond to a lower incidence of UTIs.

Methods: This study will be a retrospective cohort study for patients that have concomitant statin prescriptions and urinary tract infections from 2008 to 2012 at all Veterans Affairs locations. Patients will be included if they are at least 18 years of age, and have any active statin prescription (rosuvastatin, simvastatin, atorvastatin, pravastatin, fluvastatin, lovastatin) on January 1, 2008 and December 31, 2012. The following data will be collected: patient age, name, SSN, gender, race, specific statin medication and dose, medication adherence, urinalysis results, and number of UTI prescriptions (nitrofurantoin monohydrate/ macrocrystals, trimethoprim/sulfamethoxazole, fosfomycin, cephalexin, ciprofloxacin, levofloxacin, amoxicillin,amoxicillin/clavulanic acid). Each UTI antibiotic prescription will need to be prescribed within 7 days of a positive urinalysis to be considered a UTI. Specifically, the urinalysis will need to show a positive leukocyte esterase. If culture results are available, data will be collected on bacterial pathogens for subgroup analyses. A non-user (control) group will be matched to each statin user on age and sex and will have no active statin prescription on January 1, 2008 and December 31, 2012.

9-070

Title: Impact of pharmacist counseling and interventions on medication adherence in chronically ill, elderly patients taking numerous medications

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Purpose: Medication adherence in patients with chronic disease states is generally low ranging from 50 to 65%. Barriers to adherence are varied and include forgetfulness, difficulty swallowing, cost, and complaints of adverse effects. Another warning sign for non-adherence is the belief by the patient that they are taking too many medications. Non-adherence and polypharmacy are both associated with significant morbidity and mortality in the elderly population. This study examines the effect of pharmacist-provided medication management on patient adherence scores and pill burden in elderly patients taking multiple medications who also suffer from multiple chronic disease states.

Methods: Patients will be enrolled based on pharmacist identification and physician referrals. Patients that are to be enrolled in the study must be at least 65 years of age, suffer from at least 3 chronic medical conditions, and also be taking at least 8 chronic medications. The visit with the pharmacist will consist of a comprehensive medication review, information on potential adverse effects, counseling on proper administration of the medications, as well as options to reduce pill burden to recommend to the physician. The primary outcome will be the change in adherence scores as calculated by the MedAdhIR-ST scoring tool at a follow-up of 1 month after the initial visit. Secondary outcomes will include dosage units taken per day, number of administration times per day, and patient satisfaction scores in regards to the clinical pharmacy services. Demographical data will also be reported, including age, gender, types of disease states encountered. Data will be analyzed using descriptive statistics.

9-071

Title: Effect of modified heparin protocol implementation on medication errors

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Purpose: With a charge of improving the safety of heparin infusions, our institution recently formed a multidisciplinary task force to revise our heparin protocols. These protocols standardized the heparin ordering process at the physician level and simplified the dose calculation/administration process at the nursing level. The goal of this medication use evaluation (MUE) is to evaluate the effects of heparin protocol revisions on the incidence and type of medication errors at our institution. This study will identify whether the new changes are reducing heparin-related medication errors and future opportunities for improvement.

Methods: This retrospective chart review will include all patients > 18 years of age who received an intravenous heparin infusion. Patients receiving heparin subcutaneously for prophylaxis or for an indication outside the scope of the continuous infusion protocols will be excluded. Implementation of the revised heparin protocols occurred on August 6, 2013. To assess the impact of the revisions, patients receiving heparin from June 1, 2013-August 6, 2013 will serve as the control group, and those receiving heparin after August 6, 2013 until October 5, 2013 will serve as the comparator group. The primary endpoint is a composite outcome for the incidence of all types of heparin-related medication errors post-implementation of the new heparin protocol as compared to pre-implementation. Heparin-related medication errors will be defined as any of the following: selection of incorrect indication, incorrect initial bolus dose calculation based on weight and indication (including improper dose rounding), incorrect initial maintenance rate calculation based on weight and indication, incorrect timing of aPTTs (relative to heparin initiation and dosage changes), and incorrect bolus use/drip rate changes based upon nomogram for all subsequent dosage modifications. The secondary endpoints will consist of separate evaluations of each component of the primary endpoint.

9-072

Title: Implementation of decentralized pharmacy technicians into direct patient care activities in a community teaching hospital

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Purpose: Pharmacy technicians are currently utilized in distributive and operational roles. The purpose of this project is to implement pharmacy technicians into a more direct patient care role. This will improve patient care by increasing pharmacy staff availability to the patient and increasing the amount of time the pharmacist has to perform direct patient care activities and patient education.

Methods: The project will be submitted to the Institutional Review Board for approval. The hospital Model of Care Committee will select two floors for the pilot floors as deemed appropriate. Four Pharmacy Technician Certification Board certified technicians currently employed by the pharmacy will be selected and educated on their increased patient care roles, which will include: completion of medication reconciliations, assisting with the discharge process, triaging pharmacy phone calls, resolving automated dispensing machine questions, medication procurement, and maintenance of the tube station. Once educated, the technicians will begin implementation of these tasks on two floors. The primary outcome will be the composite increased time pharmacists spend on drug monitoring, patient education, chart reviews, therapy route changes, medication identification, therapeutic duplication, required changes in therapy, medication therapy management, hospital core measures, drug information, allergy documentation, and drug interactions. These outcomes will be measured using the hospitals pharmacy documentation system. Secondary outcomes will include the change in medication reconciliations completed, nursing satisfaction, medication turnaround time, and number of missing doses.

9-073

Title: Relationship between age and body mass on requirements for extended interval dosing of intravenous tobramycin in Cystic Fibrosis patients with acute pulmonary exacerbations

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Purpose: The influence of age in predicting the extended-interval aminoglycoside dosing (EIAD) requirements of intravenous (IV) tobramycin in pediatric cystic fibrosis (CF) patients is unknown. The primary objective of this study was to determine the relationship between age and EIAD dose of IV tobramycin required to achieve a target peak serum concentration (Cpeak) of 30mcg/ml and an undetectable trough concentration (Ctrough) in CF patients with acute pulmonary exacerbations.

Methods: This single-center, retrospective cohort study evaluated CF patients 1-22 years of age (inclusive) admitted to the Pediatric Pulmonary Service of Duke Childrens Hospital between August 1, 2008 July 31, 2012 with a pulmonary exacerbation and received at least 1 dose of EIAD of IV tobramycin. Body surface area (BSA), body mass index (BMI), and creatinine clearance (CrCl) were determined for each subject. The IV tobramycin dose (observed or calculated) needed to achieve goal concentrations was determined for each patient using published kinetic equations. Linear regressions were performed to characterize relationships between age and the required target dose (expressed as mg/kg), as well as characterize relationships between the required target dose and body mass (expressed as actual weight, BSA, and BMI).

Results: A total of 50 patients were included in our analysis. A trend toward reductions in dosing requirement was observed for increases in all measured parameters (R2 0.19 for age, R2 0.34 for weight, R2 0.32 for BMI and R2 0.31 for BSA. However, colinearity between these factors prohibited analysis of interaction among these variables.

Conclusion: There is a trend toward a decline in consolidated IV tobramycin dose with age in younger patients with cystic fibrosis. In our study, most patients less than 6 years of age required >10mg/kg/day in order to achieve therapeutic concentrations, while most greater than 50 kg required <10mg/kg/day. Colinearity of actual weight ,BMI and BSA with age made it difficult to determine the relationship of these factors to dose independent of age. Close monitoring of tobramycin concentrations should be performed in patients with cystic fibrosis

9-074

Title: Evaluation of Inpatient Tolvaptan use in Congestive Heart Failure

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Purpose: Tolvaptan (Samsca) is a selective vasopressin (V2) antagonist FDA approved for the treatment of hypervolemic or euvolemic hyponatremia with serum sodium < 125mEq/L or less marked hyponatremia that is symptomatic. The 2013 ACCF/AHA heart failure guidelines assign vasopressin antagonists a class IIb level of recommendation stating short-term use is associated with improvements in serum sodium. The primary objective of this study will be to evaluate historical use of tolvaptan in congestive heart failure.

Methods: This study will be submitted to the institutional review board for approval. Evaluation of tolvaptan use will be done through a retrospective observation analysis. Patients will be included if they were at least 18 years of age, admitted for volume overloaded, decompensated heart failure in the years 2010-2012, and received at least one dose of tolvaptan. Data obtained will include age, gender, NYHA heart failure class, serum sodium levels, ejection fraction, weight throughout hospitalization, background medications, 30-day readmission rate, length of stay, and cost of stay. In patients that had a previous readmission for volume overloaded, decompensated heart failure, where tolvaptan was not administered, the two admissions will be compared to one another in length of stay and cost of stay. All data will be maintained without patient identifiers for confidentiality. The primary outcome will be to compare average length of stay and 30-day readmission rates for tolvaptan treated patients with institutional averages. As a secondary outcome for safety, evaluation of sodium levels will be done to determine the rate and extent of correction. Results will be analyzed using descriptive statistics.

9-075

Title: EFFECT OF WARFARIN-DRUG INTERACTIONS ON INR AND THE EVALUATION OF DOSAGE ADJUSTMENTS IN HOSPITALIZED PATIENTS

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Purpose: Oral anticoagulation is largely obtained using warfarin therapy and often managed by pharmacists; however, the presence of warfarin-drug interactions can influence a patients INR response to warfarin therapy. Drug interactions tend to be the culprit behind supra-therapeutic INRs in particular. One issue is determining how to adjust the patients dose to account for such interactions and to what degree should the dose be adjusted. The purpose of this study is to reduce supra-therapeutic INR incidences by determining the time interval and degree to which INR is affected by warfarin-drug interactions.

Methods: This will be a retrospective study. The cases of supra-therapeutic INRs from March 1, 2013 to June 30, 2013 will be obtained and assessed for inclusion/exclusion criteria. Patients with a supra-therapeutic INR upon admission will be excluded from the study. All other patients aged 18 years and older, on chronic warfarin therapy and admitted with a therapeutic or subtherapeutic INR; or patients started on warfarin therapy during admission will be included for data analysis. Dosing history of warfarin patients will be reviewed and evaluated for newly started interacting medications during their hospitalization and the trend in each patients INR results. The time interval after the start of interacting medications and rise in INR by 0.5 or more will be assessed in addition to whether the dosage was adjusted. Lastly, the data will be analyzed to determine any significant differences between a patients INR response when interacting medications are used concomitantly with patients on chronic warfarin therapy versus new warfarin therapy.

9-076

Title: Appropriateness of antibiotic therapy in emergency department sepsis patients after pharmacist intervention

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Purpose: Early goal directed therapy is the standard of care in the treatment of severe sepsis and septic shock. Current recommendations from the Surviving Sepsis campaign target broad spectrum antibiotic administration within one hour of recognition of sepsis. Postponement of antibiotic administration is associated with increased mortality. However, the practicality of adhering to this recommendation warrants further investigation. Several studies indicate that educational tools improve adherence to sepsis protocols, which could potentially have positive effects on patient outcomes. This study will investigate the effect of educational interventions by pharmacists on the adherence to antibiotic administration recommendations.

Methods: The primary objective of this descriptive study is to determine the effect of education by pharmacists on timely and appropriate antibiotic administration in patients with severe sepsis and septic shock. Appropriateness of antibiotics will be determined by culture susceptibilities, if available, or by suspected source of infection. Timeliness will be determined by whether or not antibiotics begin infusing within one hour of presentation to the emergency department (ED). Patients presenting to the ED who fit the criteria for severe sepsis or septic shock will be included in the study. Patients transferred from outside facilities or who have already been admitted to the hospital will be excluded. A retrospective analysis of patients who presented from November 1, 2012 to January 31, 2013 will be compared to patients presenting from November 1, 2013 to January 31, 2014 after education implementation. Education will be provided by a pharmacist to ED nursing staff in regards to identifying sepsis, IV antibiotic compatibility, obtaining blood cultures prior to antibiotic administration, and prioritizing administration of broad spectrum antibiotics within one hour. Education will also be provided to ED physicians regarding the purpose of and emphasizing adherence to the ED sepsis order set.

9-077

Title: Vancomycin versus Daptomcyin for Resolution of Methicillin-Resistant Staphylococcus aureus (MRSA) Bacteremia with a Vancomycin Minimum Inhibitory Concentration (MIC) of 2 mcg/mL

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Purpose: MRSA sensitivity to vancomycin has waned over the last 5-10 years, as evidenced by a slow and steady increase in vancomycin MIC values reported by hospital microbiology laboratories. Recent guidelines from the Infectious Disease Society of America (IDSA) recommend using an alternative antibiotic, such as daptomycin, when the vancomycin MIC is > 2 mcg/mL. With the significant cost difference between daptomycin and vancomycin, it is important to assess if there is a difference in clinical outcomes (white blood cell count, temperature, resolution of infection), length of stay and mortality.

Methods: A retrospective, chart-review of MRSA bacteremia, up to 1000 charts, from July 1, 2012 through June 30, 2013 will be performed to evaluate the occurrence of treatment failure, defined as persistent leukocytosis and fever, in patients being treated with vancomycin for MRSA bacteremia when the vancomycin minimum inhibitory concentration is 2 mcg/mL. Two groups will be created: Group 1 consists of patients that received vancomycin alone for MRSA bacteremia with a vancomycin MIC of 2 mcg/mL and Group 2 consists of all patients that received daptomycin for MRSA bacteremia with vancomycin MIC of 2 mcg/mL regardless of reason (i.e., no clinical improvement, vancomycin MIC of 2 mcg/mL, ease of outpatient administration or empirically). To assess the occurrence of treatment failure, the resolution of infection will be monitored by documenting a return to baseline of white blood cell count and resolution of fever. Data concerning cost of overall treatment, length of stay, and mortality will be collected for each arm of the study and compared as secondary objectives.

9-078

Title: Characteristics of postgraduate pharmacy residency programs at Veterans Affairs Medical Centers

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Purpose: As the American healthcare system transitions into a preventive model, clinical pharmacists will require at least one year of advanced training to best provide direct patient care. Consequently, quality programs are necessary to sustain the increasing demand for postgraduate opportunities. Residency programs have the flexibility to design a curriculum reflective of their strengths, but data comparing individual program attributes are lacking. The primary objective of this study is to describe program characteristics for Veterans Affairs Medical Centers (VAMCs) post-graduate year 1 (PGY1) and year 2 (PGY2) residency programs.

Methods: The present study will be a cross-sectional sampling of pharmacy residency programs offered by VAMCs across the United States. An online survey approved by the national Residency Advisory Committee will be used to assess characteristics specific to Veterns Affairs PGY1 and PGY2 pharmacy residency programs. This survey will be distributed electronically via a listserv to the residency program directors (RPDs) at all VAs that offer PGY1 or PGY2 residencies. The survey will remain open January 1 through January 31, 2014. Follow-up emails will be distributed via the listserv approximately 2 and 4 weeks after initial survey distribution, during which non-responders will be encouraged to participate. Endpoints will include general program information, recruitment, rotations and learning experiences, staffing requirements, research requirements, teaching requirements, characteristics of the residency program directors and preceptors, and facility demographics. Descriptive statistics will be used to evaluate and report the results.

9-079

Title: Evaluation of Proportion of Time in Target Mean Arterial Pressure during Therapeutic Hypothermia in Post-Cardiac Arrest Patients

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Purpose: Therapeutic hypothermia improves neurological outcomes and reduces mortality in cardiac arrest patients who achieve return of spontaneous circulation (ROSC); however, therapeutic hypothermia is not without adverse effects. Hemodynamic instability is common and may require treatment with intravenous fluids, inotropes and vasopressors. Unfortunately, the optimal post-arrest hemodynamic target has not been established. The current therapeutic hypothermia order set at our institution lists a target MAP of at least 75 mmHg, but this may be difficult to achieve. The primary objective of this retrospective chart review is to evaluate the proportion of time target MAP is achieved during therapeutic hypothermia.

Methods: All adult therapeutic hypothermia patients admitted between September 2011 and August 2013 will be identified. Patients will be excluded if they were pregnant, comatose prior to cardiac arrest, time from arrest to ROSC exceeded 60 minutes, or if hypothermia was terminated prematurely. The following data will be collected: age, gender, ethnicity, weight, baseline electrolytes, serum creatinine, complete blood count, serum lactate and pH, arterial blood gas, vital signs, Glasgow coma scale (GCS) score, cardiac rhythm at time of arrest, time from arrest to ROSC and ROSC to hypothermia initiation, time to target temperature, blood pressures, vasopressors/inotropes dose and duration, intensive care unit (ICU) length of stay (LOS), hospital LOS, discharge and disposition status. An Acute Physiology and Chronic Health Evaluation (APACHE II) score will be calculated for each patient. The primary outcome is the proportion of time target MAP is achieved within 48 hours of therapeutic hypothermia initiation. Patients will be subdivided into those who achieved target MAP for at least 50% or less than 50% of the time. Secondary outcomes include differences in vasopressor/inotrope doses, duration, and number of agents required to achieve and maintain target MAP, ICU LOS, hospital LOS, disposition status, and mortality between the two subgroups.

9-080

Title: Incidence of Nephrotoxicity with Combination Antimicrobial Therapy of Vancomycin and Piperacillin-tazobactam in Pneumonia Patients

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Purpose: The use of dual antimicrobial therapy for empiric treatment in patients with suspected pneumonia is common practice in the hospital setting. The most widely used agents include vancomycin and piperacillin-tazobactam. Recent retrospective observational studies suggest increased incidence of nephrotoxicity with the combination of vancomycin and piperacillin-tazobactam. The purpose of this study is to evaluate the incidence of acute kidney injury at Carolinas Medical Center-NorthEast with the combination antimicrobial regimen of vancomycin and piperacillin-tazobactam before and after the initiation of extended infusion piperacillin-tazobactam. Findings will be used to determine if our current practice has any impact on the incidence of nephrotoxicity.

Methods: This retrospective study will focus on patients with a pneumonia indication during January/February 2010 and January/February 2013. Eligible patients will include adults 18 and older on vancomycin and piperacillin-tazobactam for a minimum of 48 hours. Patients were excluded if they had chronic kidney disease stages 4 and 5, were on dialysis or admitted to the Intensive Care Unit. The primary end-point is the incidence of acute kidney injury (AKI) during the first 7 days of therapy. The secondary end-point includes the incidence of AKI with the use of concomitant nephrotoxic agents such as contrast media, amphotericin B, tobramycin, tacrolimus, aminoglycosides, and were initiated on angiotensin converting enzyme inhibitors or non-steroidal anti-inflammatory agents.

9-081

Title: Impact on patient satisfaction with pharmacist counseling on oral chemotherapy in the ambulatory setting

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Purpose: In southeastern North Carolina, Zimmer Cancer Center provides all-encompassing care for cancer patients, from diagnosis to treatment, and support of the patients and their families. In 2008 more than 1800 patients were treated at Zimmer Cancer Center. Currently, once the decision to begin therapy is made, patients starting oral chemotherapy regimens are educated by the nurse or physician during the office visit. Little data exists regarding the impact of pharmacist education on oral chemotherapy regimens. The purpose of this study is to evaluate patient satisfaction when a pharmacist is included in patient counseling on oral chemotherapy regimens.

Methods: Prior to commencement this study will be submitted to the Institutional Review Board for approval. The medical record system will be used to identify patients who are being started on oral chemotherapy agents at Zimmer Cancer Center. Patients younger than 18 years old will be excluded from the study. After approval, patients will receive the current standard of care counseling regarding their oral therapy. Within two business days patients will be contacted by phone and administered a validated survey to determine their satisfaction with the counseling received. In December, a pharmacist will be integrated into the care team and will provide verbal and written education to patients starting oral chemotherapy regimens. Like the control patients, these patients will be contacted by phone and administered the same validated survey within two business days. Additional analyses will be conducted to assess the impact of pharmacist counseling on patient adherence and recall of the proper use of the medication and indication. The impact of the pharmacist on patient care will be measured through pharmacist interventions, particularly dose adjustments, order clarifications, and adverse drug events.

9-082

Title: Evaluation of intravenous acetaminophen use and outcomes in orthopedic and trauma surgery patients

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Purpose: The American Society of Anesthesiologists recommend using a multimodal approach to manage perioperative pain. Several published studies demonstrate increased efficacy of intravenous acetaminophen in reducing opioid consumption and improving pain scores postoperatively. Currently, there is minimal information available comparing oral acetaminophen to intravenous acetaminophen postoperatively. The objective of this study is to assess the efficacy and differences of scheduled intravenous acetaminophen compared to scheduled oral acetaminophen in postoperative orthopedic and trauma patients.

Methods: This study has been submitted to the Institutional Review Board for approval. The electronic medical record system will identify orthopedic and trauma surgery patients who have been ordered age and weight specific postoperative order sets for scheduled and as-needed pain medications. Data collected will include: total rescue morphine equivalent dose administered at twenty-four and forty-eight hours postoperatively, average patient pain scores for forty-eight hours postoperatively, hospital length of stay, post-anesthesia care unit length of stay, total hospital costs, patient satisfaction, total acetaminophen daily dose, incidence of postoperative ileus, incidence of postoperative infection, incidence of hospital acquired delirium, use of reversal medications, use of antiemetic medications, and appropriate order set usage. Data will be collected without patient identifiers and confidentially maintained. Comparison of all endpoints between the patient receiving scheduled oral acetaminophen and scheduled intravenous acetaminophen will be performed using appropriate statistical tests.

9-083

Title: Budesonide/formoterol for asthma and chronic obstructive pulmonary disease (COPD) in underserved ambulatory clinic patients: a medication use evaluation (MUE)

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Purpose: Asthma and COPD contribute to high morbidity and mortality. A combination inhaled corticosteroid (ICS)/long acting beta agonist (LABA) is often prescribed for patients with moderate to severe asthma or COPD. Budesonide/formoterol metered dose inhaler (MDI) is the preferred ICS/LABA combination in the ambulatory clinics of the largest healthcare system in the Carolinas. Adherence with this therapy may decrease disease related emergency department visits and hospital admissions. This MUE will examine the prescribing, dispensing, monitoring, and outcomes of budesonide/formoterol MDI use at three ambulatory clinics that care for underserved patients.

Methods: Records of a total of 100 patients who received budesonide/formoterol MDI from the clinic pharmacies during October 2012 will be analyzed. Patients will be randomly selected from dispensing reports. Electronic patient prescription and medical records will be retrospectively reviewed for a nine month period from October 2012 to July 2013. Data collection will include indication, assessment of appropriate step up therapy to budesonide/formoterol MDI in newly diagnosed patients, medication possession ratio, oral steroids prescribed in the clinic setting for exacerbations, emergency department visits and hospitalizations for exacerbations, and demographics such as age and maintenance medication burden. Criteria were approved by the health system Ambulatory Pharmacy and Therapeutics Committee. Data will be secured via removal of identification, password protection, and storage on secure drives within the system network. Results of this MUE will be stratified by ambulatory care clinic.

9-084

Title: Medication use evaluation of four-factor prothrombin complex concentrate (human)

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Purpose: Kcentra is the first four-factor prothrombin complex concentrate to be approved in the United States and is indicated for the reversal of acute major bleeding in adult patients currently on vitamin K antagonist therapy. Dosing complexities exist, including the need for a pre-treatment international normalized ratio (INR), weight- and INR-based dose selection with maximum limits, and calculation of a specific infusion rate with a maximum limit. Administration is restricted to select patient care units, and a risk of severe thromboembolic events exist. The purpose of this evaluation is to assess the prescribing, dispensing, administration, monitoring, and outcomes of Kcentra use.

Methods: All adult patients receiving a dose of Kcentra within a 6-week period will be evaluated. Orders for Kcentra will be identified through pharmacy records using Discern Analytics software. Approval by the Institutional Review Board is not warranted since this evaluation is limited to measuring and reporting performance data for clinical, practical or administrative uses and thus is not considered human subject research. Data will be collected prospectively via electronic chart review. Appropriate prescribing will be evaluated based on the indication for use, selected dose, and orders for concomitant medications. Avoidance of adverse drug effects due to improper patient selection will be assessed based on the presence of contraindications and precautions. The dispensing process will be evaluated by assessing the time from order entry to dispensing and compliance with an established process for pharmacist dose rounding. Timeliness and location of administration, as well as the rate of infusion, will be examined. Monitoring will include an evaluation of the occurrence of adverse effects, including thrombotic events and hypersensitivity reactions, and the time to first post-treatment INR. Outcomes will include the time to an INR less than or equal to 1.3, achievement of effective hemostasis, and survival to discharge.

9-085

Title: Safety and efficacy of adjusted body weight versus total body weight with maximum bolus dose for weight-based dosing of unfractionated heparin in obese patients

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Purpose: Weight-based unfractionated heparin (UFH) adjusted based on aPTT values is recommended following venous thromboembolism (VTE) and acute coronary syndromes (ACS) by the AHA/ACC and CHEST guidelines. There is no consensus, however, regarding which weight to use (total, ideal, or adjusted), particularly in obese patients. A review of weight-based dosing found that obese patients require lower infusion rates per kilogram than non-obese patients. The purpose of this study is to compare the safety and efficacy of using adjusted body weight (ABW) versus total body weight (TBW) plus maximum bolus dose for weight-based dosing of UFH in ACS/VTE for obese patients.

Methods: This study will be submitted to the Institutional Review Board for approval. Patients will be identified as study candidates at the time of order verification by pharmacists. Study candidates will include patients ≥18 years old, BMI ≥30 kg/m2, and receiving UFH for ACS or VTE. Upon obtaining consent from the ordering prescriber and the patient/representative, the patient will be randomized to receive either the current institutional dosing of UFH with TBW dosing and bolus maximum of 7500 units or the intervention of ABW dosing without maximum bolus dose. The following data will be collected via electronic medical record: age, sex, height, weight, initial aPTT, subsequent aPTTs, initial bolus dose, initial and final infusion rate, hemoglobin, hematocrit, platelets, signs and symptoms of bleeding, length of stay, and inpatient mortality. All bleeding will be classified objectively as major or minor using the Thrombolysis in Myocardial Infarction (TIMI) bleeding criteria. The investigator will provide education regarding administration and documentation to nurses, physicians, and pharmacists. The primary outcome will be difference in time to therapeutic range of aPTT between treatment groups. Secondary outcomes will include the differences in number of supratherapeutic aPTTs, TIMI major and minor bleeding rates, and overall length of stay.

9-086

Title: Midodrine for the weaning of vasopressor infusions

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Purpose: Intravenous vasopressors are an essential component in managing severe hypotension in ICU patients. However, prolonged use may increase risk for adverse effects and extend hemodynamic monitoring duration and ICU length of stay (LOS). Midodrine, an orally available alpha1 agonist, may provide hemodynamic support to allow for more rapid vasopressor weaning. While it is often used off label for this indication, there is little data to support this use. The purpose of this study is to compare outcomes in ICU patients at our institution who received midodrine for vasopressor weaning versus control patients on vasopressors who did not receive midodrine.

Methods: This Institutional Review Board approved retrospective cohort study is an extension of a previously conducted study. Electronic chart review is being used for data collection. Inclusion criteria: 18 years or older, admitted to an ICU January 2007 to July 2013, received a continuous intravenous vasopressor infusion and midodrine to wean the infusion. Patients are being stratified into cohorts by etiology of hypotension (sepsis, trauma, or cardiovascular) and will be compared to an equal number of control patients per cohort who met inclusion criteria but did not receive midodrine. Primary outcome: total duration of vasopressor use in midodrine patients versus control patients. Secondary outcomes: mean arterial pressure (MAP) upon vasopressor initiation and discontinuation, ICU LOS, ICU readmissions, hospital LOS, and number of times vasopressor restarted after discontinuation in midodrine versus control patients. Midodrine-specific outcomes: MAP prior to and during midodrine administration, number of times vasopressor restarted after discontinuation before and after midodrine initiation, duration of vasopressor use before midodrine initiation, time to vasopressor discontinuation after midodrine initiation, percent vasopressor dose reduction 24 hours after midodrine initiation, and rates of significant hypertension, bradycardia, and hemodynamically significant tachyarrhythmias during 24 hours before and 24 hours after midodrine initiation.

9-087

Title: Retrospective evaluation of documentation of pharmacogenomic markers utilized to guide antineoplastic therapy

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Purpose: Pharmacogenomic markers are utilized in oncology to guide the selection and dosing of various antineoplastic agents. At our institution the results of these tests are not currently integrated in electronic decision support, such as interfacing with pharmacy systems to trigger alerts or recommendations when a drug-gene combination is initiated. While these tests may be completed, sporadic documentation may prevent the information from being accessible and easily utilized by members of the interdisciplinary team. The objective of this study is to create a snapshot of the utilization of pharmacogenomic tests in oncology based on documentation in the electronic medical record.

Methods: Ten gene-drug pairs where pharmacogenomics may be utilized in the management of patients with cancer have been identified. A search using institution-specific systems will identify patients receiving these 10 medications over the past 12 months (August 2012-2013). Inclusion criteria include adult patients (>18 years of age), treatment with at least one identified medication, and patients actively managed at our institution. Exclusion criteria include patients who are receiving the identified medication as part of a clinical trial and patients who are not actively managed at our institution. For identified patients who meet the inclusion criteria, a search of the WebCIS electronic medical record will be conducted to identify documentation of pharmacogenomic testing. Data obtained will be analyzed using descriptive statistics. This study will be submitted to the Institutional Review Board for approval.

9-088

Title: Effectiveness of motivational interviewing on lowering hemoglobin A1C in an ambulatory care setting

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Purpose: Diabetes is a chronic condition with growing prevalence; it is projected that over 50% of Americans will have diabetes or pre-diabetes by 2020. Costs of diagnosed diabetes to the healthcare system has risen to $245 billion annually. Self-management of this disease decreases progression, complications, and costs. A pharmacists role in patient education through diabetes clinics has been shown to improve clinical outcomes. Motivational Interviewing (MI) is an evidence-based approach to collaborate with patients to achieve incremental healthcare goals. Pharmacists have the opportunity to apply this technique in alignment with chronic disease management to improve disease control and outcomes.

Methods: Patients with a documented A1C greater than 9% within the last 12 months will be scheduled for a pharmacist led diabetes management appointment. Appointments will be guided by a MI protocol embedded with the core foundational skills of: questioning, educating, and listening. The goal of each appointment will be to identify ways to empower the patient to initiate behavior and lifestyle modifications not limited to: diet changes, increase in exercise, increased compliance with healthcare appointments, and improvements to medication adherence. During and at the conclusion of each appointment the pharmacist will assess, evaluate, and document patient specific information learned such as: identification of motivating factors and barriers to achieving diabetes control. This information will be used to identify opportunities for innovative strategies, additional education and/or resource utilization, and personalized medication management plans to be implemented over a 6-month period. All identified patients will receive hemoglobin A1C readings at baseline, 3-months, and 6-months. At the conclusion, percent reduction in A1C will be evaluated and compared to patients who did not receive MI contact. An assessment of pharmacist led motivational interviews on A1C reduction in patients with uncontrolled diabetes will be conducted and used to further guide our disease management clinics.

Results: Pending

Conclusion: Pending

9-089

Title: Impact of discharge counseling and follow-up medication therapy management (MTM) on readmission rates in heart failure patients at a community hospital

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Purpose: In 2012, the Readmissions Reduction Program was established under the Affordable Care Act. Under this program, the Centers for Medicare and Medicaid Services (CMS) reduces Medicare payments for Inpatient Prospective Payment System hospitals with excess 30-day readmissions for heart failure, acute myocardial infarction, and pneumonia.This study is designed to evaluate the effect that pharmacist-provided discharge counseling and follow-up medication therapy management (MTM) services have on 30-day readmission rates in heart failure patients.

Methods: Patients will be included in the study if they are admitted with a primary diagnosis of systolic heart failure, are at least 18 years of age, are fluent in English, and have access to transporation and a telephone. Patients will be excluded if they have an ejection fraction of greater than 40% or have severe cognitive impairment. Enrolled patients will be counseled by a pharmacist prior to discharge and receive follow-up medication therapy management services within 10 days following discharge. The primary endpoint is readmission rate at 30-days post-discharge. Secondary endpoints include cost of care and rate of pharmacist-initiated interventions. Data will be collected and analyzed for the prospectively enrolled intervention group and a retrospective control group. The following data will be collected: patient demographics of sex, race, age, height, and weight, comorbid conditions, ejection fraction, occurrence of readmissions within 30 days of discharge, rate of pharmacist-initiated interventions, cost of care, and medicare enrollment status. This study has been approved by the Institutional Review Board. Informed consent will be obtained from each patient in the prospective intervention group.

9-090

Title: Evaluation of dexmedetomidine compared to propofol for long-term sedation

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Purpose: The evidence for the use of dexmedetomidine compared to propofol for long-term sedation remains minimal. There was an increased use of dexmedetomidine during the recent national propofol shortage, allowing for an increased retrospective study population. The purpose of this study is to determine if long-term sedation (at least 24 hours) with dexmedetomidine decreases the length of time on the ventilator and the length of time in the ICU compared to propofol. Secondary objectives include a comparison of safety and efficacy of the two sedatives.

Methods: Electronic charts will identify all patients initiated on dexmedetomidine in the ICU from May 2009 through July 2013. Patients will be included if they were treated with dexmedetomidine for at least 24 hours. These patients will be matched with patients treated with propofol for at least 24 hours. Patients will be matched based on time period of medication, APACHE IV score, type of ICU patient (medical, surgical, neurotrauma), and age. The length of ventilator time and total ICU days will be compared between the groups; this data will be used to estimate cost of ICU stay and cost of total sedative used. Efficacy and safety will be compared between groups based on the following: percentage of time within desired sedation range, rate of mortality while in the ICU, heart rate, blood pressure, percentage of sedation holidays performed (when applicable), dose and frequency of intermittent benzodiazepine or propofol use during sedation, delirium prevalence, pain scores, and pain medications and dosages used during sedation. Safety and efficacy subgroup analyses will be performed on the dexmedetomidine group based on the amount of propofol used prior to the initiation of dexmedetomidine and based on the peak rate of dexmedetomidine. IRB has approved this study.

9-091

Title: Evaluation of C-reactive protein (CRP) and procalcitonin on antibiotic days in a neonatal intensive care unit (NICU)

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Purpose: Best practices recommend the evaluation of critically ill neonates' CRP to assist in the need for antibiotics due to high negative predictive ability. This value can be falsely elevated in some patients. Procalcitonin is used in critically ill adults when helping to determine need for antibiotics, and has been proposed as a method to help determine necessity of antibiotics in neonates. The objectives of this study are to evaluate the effect of drawing CRP and procalcitonin labs on the number of antibiotic days per patient, and to compare procalcitonin levels to CRP levels in sensitivity and specificity in the neonate.

Methods: This study will be submitted to the Institutional Review Board for approval. Number of CRP and procalcitonin labs ordered per NICU patient, and number of days on antibiotics per NICU patient July through August 2013 will be collected retrospectively from the hospitals historical data bank, representing the units baseline number of CRP and procalcitonin orders and antibiotic days per patient. Beginning November 2013, in all NICU patients receiving intravenous antibiotics, clinicians will be advised to order a CRP at 48 hours of life if ruling out sepsis, and to discontinue antibiotics if CRP <1 mg/dL. If CRP >1 mg/dL and patients have known infection, or unclear clinical picture, antibiotics may be continued, with another CRP drawn the day antibiotics are to be stopped, and the above protocol repeated. Patients on antibiotics, with negative cultures or unclear clinical picture, will have CRP drawn on the day antibiotics are to be discontinued, and the above protocol followed. Beginning January 2014, procalcitonin will be ordered in addition to CRP, and the above protocol followed. Final decisions on continuations or discontinuations of all antibiotics will be based on the clinicians evaluations. Patient identifiers will not be recorded and all data will be maintained confidentially.

9-092

Title: Aztreonam use in penicillin allergic patients: is there a role for penicillin skin testing?

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Purpose: Approximately 10% of hospitalized patients report a penicillin allergy, but a small fraction truly exhibit an allergic reaction upon receiving a penicillin antibiotic. These antibiotics are often avoided in patients with alleged allergies despite being the preferred antibiotic for an indication. One study estimated that the average cost of antibiotics in a patient with a reported penicillin allergy is 63% higher than in patients with no reported penicillin allergy. The purpose of this study is to evaluate the utilization of aztreonam in penicillin allergic patients and to identify the potential role for penicillin skin testing at a large community hospital.

Methods: This retrospective observational study is pending approval from the Institutional Review Board. For this study, the electronic pharmacy database will be utilized to identify patients who received aztreonam from January 1, 2013 to June 30, 2013. Adult inpatients who received >3 doses of aztreonam during the time period will be included in the analysis. If a subject has an aztreonam order within 24 hours of a previous aztreonam discontinuation, they will be defined as one event. Pediatric patients <18 years old, women who are pregnant or nursing, and patients without reported allergies to penicillin will be excluded. The aztreonam prescribing trends and patient population will be evaluated by collecting demographics, description of penicillin reaction, aztreonam indication and duration, aztreonam prescriber, ICU admission and ICU length of stay, presence of positive blood cultures for gram negative organisms, and type of organism isolated. A cost analysis will be performed to determine the economic impact of penicillin skin testing with use of a preferred beta-lactam antibiotic in this study population.

9-093

Title: Evaluation of pharmacy residency research training on residents actual versus perceived ability and interest to identify and solve practice-related problems

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Purpose: Health-systems nationwide recognize the limitations of the current pharmacy residency research training process; however, development of innovative strategies to enhance this process has been limited. Assessment of resident perceptions toward past training experiences and interest in solving practice-related problems coupled with an evaluation of research productivity and quality may allow for system based changes to enhance the residency research process. Objectives of this study include 1) assess residents actual versus perceived ability and interest to identify and solve practice related problems following completion of residency training and 2) design system-based improvements to enhance the residency research process at our institution.

Methods: Post-graduate year 1 (PGY1) pharmacy residents that have completed training at our institution between 2007-2013 (n=39) will be invited to participate in a brief cross-sectional survey administered through an online application (Qualtrics, Provo, UT). Participant demographics and residents' perceived ability and interest to identify and solve practice-related problems and self-reported research productivity will be assessed. Productivity measures including publication rates, time to publication, and other process measures will be captured. Quality of reporting will be graded using a modified STROBE checklist. Descriptive statistics will be performed to summarize data ascertained. This study has been approved by the Institutional Review Board.

Results: Outcomes remain under investigation as data collection and evaluation are completed.

9-094

Title: Medication use evaluation (MUE) of fluoroquinolone antibiotics in a Veterans Affairs Medical Center

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Purpose: Since fluoroquinolones are among the most commonly prescribed antibiotics in the United States, proper clinical oversight and adverse drug events are paramount to monitoring therapeutic effectiveness and patient safety. This vision is shared by the Veterans Affairs Office of Inspector General, who will be conducting a review of fluoroquinolone utilization. In 2008, a black box warning was added to fluoroquinolones due to the increased risk of tendinitis and tendon rupture. Furthermore, dosing requires consideration of renal function and drug-nutrient interactions. A retrospective chart review will evaluate whether appropriate proactive monitoring and education were provided to patients prescribed a fluoroquinolone antibiotic.

Methods: In order to complete this medication use evaluation, a randomized sample of approximately 100 individual outpatient fluoroquinolone prescriptions from the institution will be reviewed. This sample will consist of prescriptions for ciprofloxacin 500mg, levofloxacin 500mg and 750mg, and moxifloxacin 400mg from July 2012 to June 2013. The primary end point will be percentage of fluoroquinolone prescriptions with concurrent medication education performed. Secondary end points will include rates of drug-bug mis-match, appropriate dose and duration, rates of appropriate renal adjustments, and rates of adverse drug events. The electronic medical record will then be reviewed to assess the extent of patient education provided. Any reported adverse events including Clostridium difficile associated diarrhea, tendonitis, peripheral neuropathy, and QTc prolongation will be evaluated to determine patient safety. The data collected will be reviewed to identify and drive the need for specific interventions regarding fluoroquinolone prescribing and dispensing practices.

9-095

Title: Impact of pharmacist prospective medication review on medication reconciliation

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Purpose: Obtaining accurate and complete patient medication histories upon hospital admission is essential in prescribing safe and optimal inpatient medication regimens. The objective of this study is to identify the potential impact of a pharmacist prospective medication review in the medication reconciliation process. Order completion times, medication safety, and medication costs savings will be evaluated.

Methods: This study will be submitted to the Institutional Review Board for approval. Data will be collected from patients admitted to the hospital through the Emergency Department. Medication histories will be obtained by medication reconciliation assistants and nursing personnel. Prior to physician medication reconciliation, a decentralized pharmacist will review the medication histories and flag regimens that require intervention. Pharmacist recommendations will be guided by existing hospital policies, Pharmacy and Therapeutics Committee approved therapy management programs, and clinical judgment. Data collected will include: number of home medications per patient, type and number of pharmacist recommendations, number of recommendations accepted, order entry completion times for home medications, and admission bed locations. Data collected before and after program implementation will be compared. Accepted pharmacist interventions will be utilized to calculate medication cost savings.

9-096

Title: Development and review of a reversal protocol using four factor prothrombin complex concentrate for urgent bleeding with oral anticoagulants across thirteen community hospitals

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Purpose: A four factor prothrombin complex concentrate (4F PCC) is available in the United States for the urgent reversal of vitamin K antagonist therapy in patients with acute major bleeding. The purpose of this study is to review available literature for reversal of warfarin and novel oral anticoagulants and assist in the development of a corporate reversal protocol across thirteen community hospitals. Prospective medication use evaluation of 4F PCC will be conducted after the reversal protocol is implemented.

Methods: The authors will review available literature on reversal of urgent bleeding from warfarin, dabigatran, rivaroxaban, and apixaban. An anticoagulant reversal protocol will be developed, approved, and implemented for use across thirteen community hospitals. The protocol will address the appropriate indications for use of 4F PCC, necessary monitoring parameters, and potential adverse events such as arterial and venous thromboembolism. Contraindications and precautions such as heparin induced thrombocytopenia or recent thromboembolic events in prior three months will also be included within the protocol for appropriate use. Dosing will be based on international normalized ratio for warfarin reversal, and on available primary literature for reversal of novel oral anticoagulants. Tailored education and reference materials will be provided to physicians, nurses, and pharmacists. Protocol will outline a plan for direct pharmacist involvement in preparation of the 4F PCC in emergent situations. Prospective medication use evaluation will be conducted after reversal protocol approval and implementation. This study is pending approval by the Institutional Review Board.

9-097

Title: Comparison of creatinine clearance estimating equations with Isotope Dilution Mass Spectrometry (IDMS) methodology of serum creatinine measurement to measured 24 hour collected urine creatinine clearance

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Purpose: Laboratory methods for measuring serum creatinine changed in our corporation in November 2012 to adopt Isotope Dilution Mass Spectrometry (IDMS). IDMS assays have increased specificity for creatinine as compared to older methodologies and may produce higher creatinine clearance values when calculated with the Cockcroft-Gault formula. The purpose of this study is to evaluate the accuracy of the calculated creatinine clearance derived by estimating equations based on serum creatinine lab values as compared to measured 24-hour urine creatinine collection.

Methods: This study will be submitted to the Institutional Review Board for approval. The first part of this study will be a prospective assessment of renal function in patients with an indwelling Foley catheter via a 24-hour urine collection. Concurrently, there will be a retrospective evaluation of patients that have had a 24 hour urine collection completed after November 13, 2012. The practice of rounding up serum creatinine to 1.0 for patients 65 years old or older will also be evaluated for appropriateness. Data will be analyzed for comparison of estimating equations and 24-hour urine creatinine measurement. Some of the equations compared with the 24-hour urine values will be the traditional Cockroft-Gault, modified Cockroft-Gault, Cockroft-Gault converted for IDMS methods, Salazar-Corcoran, and the Jelliffe equations. Lines of best fit will be utilized to represent the comparisons with 24-hour urine collection results.

9-098

Title: Comparison of Trazodone and Zolpidem-Related Falls in Elderly, Hospitalized Patients: a Retrospective Cohort Analysis

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Purpose: Insomnia is common in the elderly however the most medications used to treat this condition are associated with falls in this population. While in the hospital, sleep issues can continue often resulting in the need for such medication. Zolpidem has been shown to cause an increase the rate of falls in the inpatient population, while there is limited data on other sleep medications such as trazodone. The purpose of this study is to determine if there is an increased risk of falls associated in elderly patients receiving trazodone compared to elderly patients receiving zolpidem.

Methods: This will be an IRB approved retrospective cohort analysis of hospitalized patients ages 65 years and older who have active orders for either trazodone or zolpidem and have received at least one dose. Patients included in the study were admitted to one of the general medicine floors at Vidant Medical Center (VMC). Data collected for study subjects will include demographics, active medications, and active disease states. The primary endpoint is to compare the falls rate, reported in falls/1000 patient days, in patients receiving trazodone and zolpidem. The secondary endpoint will examine the relationship rate of falls and the dose of the sleep medication received using descriptive statistics.

9-099

Title: Impact of medication safety alerts on prescribing patterns of potentially inappropriate medications for older adult veterans in a primary care setting

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Purpose: Prescribing in older adults may be challenging due to multiple chronic diseases that necessitates polypharmacy. Further, older adults are more susceptible to drug-drug and drug-disease interactions with subsequent poor outcomes. The 2012 Beers Criteria serves to guide prescribing in older adults by identifying potentially inappropriate medications (PIMs). Medication alert messages at the point of computerized order entry at a VA Medical Center have been developed to identify a medication as potentially inappropriate. The purpose of this study is to evaluate the impact of medication alert messages on the rate of PIM prescribing in older adults within a primary care setting.

Methods: This retrospective, cross-sectional cohort study will begin following Institutional Review Board approval. Rate of PIM prescribing before and after medication alert message implementation will be defined by the number of new PIMs over total new medications prescribed in adults older than 65 years of age and receiving VA primary care services. A six month period pre- and post-implementation, one year apart will be utilized in order to control for seasonal effects and consistency within the resident academic year. PIMs have been defined through consensus by local experts adapted from the 2012 Beers Criteria Table 2. Potential predictive factors for PIM prescribing in both providers and patients will be stratified and evaluated in a pre-post manner and by use of multivariate and hierarchical analysis. Potential predictive factors include clinic type, provider experience (e.g. resident vs. attending), provider relationship to the patient (primary vs. consultative), age of patient, number of total medications and number of chronic conditions per patient. Health Insurance Portability and Accountability Act (HIPAA) regulations will be strictly followed in the interest of patient privacy. Data will be generated by used of customizable computerized reports that access a VA data warehouse.

9-100

Title: Feasibility and efficacy of a targeted medication therapy management protocol for ambulatory clinic, outpatient pharmacy, and inpatient discharge follow up.

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Purpose: To demonstrate a significant improvement in objective and subjective health measures for patients recruited into medication therapy management through a protocol involving inpatients post-discharge, provider referrals, and pharmacist requests.

Methods: This study will be submitted to the institutional review board of Cherokee Indian Hospital for approval before implementation. The study population will be drawn from inpatients to be discharged, provider referrals from clinic visits, and pharmacist requests from an outpatient pharmacy. Eligible enrollees include patients with chronic disease states who are over the age of 18 years, not pregnant, and have consented with a letter of intent. Patients will receive at least two sessions of face-to-face medication therapy management in 30 day increments. Initial visits will involve formulating a recommendation, screening for high priority problems, and identifying potential pharmacotherapy issues. Subsequent visits, scheduled depending on urgency and achievable goals, will be targeted on specific disease states. Patients will take surveys at each visit that determine their level of comfort with their medication knowledge, and objective measures including: blood pressure, A1C, lipid level, BMI, immunizations, adherence, and inpatient readmission rates will be assessed. Feasibility will be determined by comparing number of appointments kept vs no-shows and evaluating patient satisfaction. Data will be analyzed for at least three months, and results will be compiled to determine a change in objective and subjective health measures.

9-101

Title: Medication use evaluation (MUE) of dipeptidyl-peptidase-4 (DPP-4) inhibitors and glucagon-like peptide-1(GLP-1) agonists in a Veterans Affairs Medical Center

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Purpose: Currently, several medication classes are utilized in the treatment of Type 2 Diabetes. Among these different classes, the use of DPP-4 inhibitors and GLP-1 agonists remains unclear due to lack of evidence demonstrating advantages over existing therapy with respect to safety and efficacy. To promote evidence-based selection of patients and follow-up monitoring, the Veterans Health Administration Pharmacy Benefit Management (VHA PBM) Service implemented criteria for use (CFU) for the DPP-4 inhibitors and GLP-1 agonists in 2009 and 2010, respectively. This MUE will assess whether the CFU and necessary follow-up monitoring were consistently applied to patients prescribed these agents.

Methods: This MUE was presented to and approved by the institutions Pharmacy and Therapeutics Committee in May 2013. For this evaluation, all patients with an active prescription for a DPP-4 inhibitor or GLP-1 agonist as of September 24, 2013 will be included in a retrospective chart review, which consists of a total of 134 patients. The primary endpoint of this evaluation will be to assess adherence to the VHA PBM CFU for these agents. Once the CFU are evaluated, the secondary endpoints of this evaluation will include an assessment of the appropriateness of dosing regimens with respect to both renal function and concurrent medications. Medication effectiveness will also be evaluated by a decrease in Hemoglobin A1c (HbA1c) from baseline of at least 0.5 percent. After all data is collected and reviewed, the need for specific interventions regarding the adherence and prescribing practices for DPP-4 inhibitors and GLP-1 agonists will be identified accordingly.

9-102

Title: Evaluation of hypoglycemia and potential risk factors in a Veterans Affairs extended-care facility

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Purpose: Management of hyperglycemia can be challenging for providers practicing in an extended-care population. Sliding scale insulin is often a mainstay of treatment for residents receiving hyperglycemia management; however, this treatment regimen has been identified as a potentially inappropriate medication in the 2012 Beers Criteria due to the risk of hypoglycemia. Older adults may be at an increased risk of complications. Currently, little is known regarding hypoglycemia in extended-care facilities. Therefore, the objective of this study is to describe hypoglycemic events in a VA extended-care facility and to determine potential predictive risk factors associated with hypoglycemia.

Methods: This retrospective review will begin following Institutional Review Board approval. Hypoglycemic events within a VA extended-care population will be analyzed by determining time to first event using Kaplan Meier Survival analysis. Baseline covariates that will be studied include age, gender, body mass index, race, type of stay, renal function, baseline A1c value, chronic condition count, hypoglycemic regimen, total daily insulin requirements (units/kg BW), and number of scheduled medications. Additionally, incidence of hypoglycemia during admission will be determined using a Poisson Regression analysis. Secondary endpoints will include risk of hypoglycemia during the first 7 days of admission. Subjects will be included into the study if they are admitted to a VA extended-care facility from June 1, 2009 to June 30, 2013 on insulin and/or an oral hypoglycemic agent. Health Insurance Portability and Accountability Act (HIPAA) regulations will be strictly followed in the interest of patient privacy. Data will be abstracted using the computerized patient record system.

9-103

Title: Effect of pharmacist intervention during an interdisciplinary hospital follow-up visit on 30-day hospital readmission and emergency department visits

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Purpose: Transitions of care initiatives have become a focus for local and national organizations due in part to new reimbursement models emphasizing quality and not quantity of care. Medication-related problems are a significant cause of readmissions and emergency department visits following hospital discharge. Pharmacists, with extensive medication use training, are uniquely suited to address medication-related problems encountered during transitions of care. This study aims to evaluate the effect of pharmacist intervention during an interdisciplinary hospital follow-up visit on the rates of 30-day re-hospitalization and emergency department visits.

Methods: The study will enroll patients who receive primary care at Kannapolis Internal Medicine and who are recently discharged from inpatient care at Carolinas Medical Center-NorthEast. Patients will be scheduled for an interdisciplinary hospital follow-up visit that will include a visit with a pharmacist and their primary care provider. The pharmacist visit will focus on medication reconciliation, which will include conducting a complete medication history, identifying and resolving medication discrepancies, counseling on appropriate medication use, and creating an updated medication list. Patients who attend an interdisciplinary hospital follow-up visit will be enrolled in the intervention arm. Historical patients who received a routine hospital follow-up visit involving only their primary care provider will be enrolled in the control arm. The pharmacist conducting the hospital follow-up visits will record interventions and classify medication discrepancies found during the visit. Rates of 30-day re-hospitalization and emergency department visits will be determined using the institutions electronic medical record. Institutional review board approval is pending.

9-104

Title: Improving medication adherence and reducing hospital readmission rates by using electronic medication reminders

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Purpose: To improve medication adherence and reduce hospital readmission rates through the use of dose reminders sent as text messages along with telephonic consultations at 7, 15, 30, and 60 days after hospital discharge.

Methods: Eligible participants are those 50 years of age, seen by a Novant Health provider, and have a hospital admission diagnosis of heart failure, myocardial infarction, or pneumonia. Patients will be enrolled in the program by inpatient pharmacists as part of hospital discharge counseling or within 7 days of hospital discharge by outpatient pharmacists. Within one week of discharge, a pharmacist will contact all enrolled patients telephonically for medication review and education. Patient information will then be entered into a web-based software program that will send a text message to the patients cell phone or newly issued Tracfone. The text reminder will be sent during the day each time at least one dose is due. Patients not interested in text messaging will receive a paper calendar that will be used as an adherence tool. Follow-up telephonic consultations will be provided by pharmacy technicians at 15, 30, and 60 days after discharge. Issues identified and recommendations will be documented. A survey will be administered to patients and hospital staff after participation in the program to determine satisfaction. In communication with the Institutional Review Board, with plans to submit for approval in January.

9-105

Title: Impact of pharmacist provided education on the knowledge of cardiovascular risk reduction in the pre-diabetic population

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Purpose: Studies have shown that patients with diabetes are at increased risk of cardiovascular disease (CVD) and events, thus these patients routinely receive treatment for known cardiovascular (CV) risk factors. In comparison, pre-diabetics remain at increased risk for CVD due to lack of specific recommendations for managing CVD risk factors in this population. Therefore, the purpose of this study is to determine the impact of pharmacist provided education on patient knowledge of CV risk reduction in a pre-diabetic population.

Methods: Initiation of this study will begin after Institutional Review Board approval at New Hanover Regional Medical Center (NHRMC). Participants that meet study criteria include patients with pre-diabetes, defined by the American Diabetes Association (ADA) as hemoglobin A1C of 5.7% to 6.4%, and enrolled in NHRMC employee diabetes health plan (DHP). Participants will be identified through DHP labs obtained from electronic medical record. Participants will be contacted for optional enrollment in this 3 month study. After obtaining written consent, a survey will be administered prior to initial appointment to assess participants baseline disease state knowledge. Monthly visits will contain education on CVD risk factors and risk factor management via lifestyle modification and medication management. The following data will be collected at each visit and maintained in a password-protected Excel spreadsheet: weight, height, BMI, BP and smoking status. A fasting lipid panel and A1C will be obtained at the final visit. Medication recommendations made to providers based on ADA guidelines will be tracked to determine acceptance of recommendations. The participants will complete a post survey to determine if the participants knowledge changed. Data will be analyzed to detect any differences between baseline and end of study period knowledge.

9-106

Title: Implementation of Project Re-Engineered Discharge (RED) for congestive heart failure (CHF) patients at a Veterans Affairs hospital

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Purpose: Project Re-Engineered Discharge (RED) was developed and tested at Boston University Medical Center (BUMC) and is the product of seven years of work funded by the Agency for Health Research and Quality and the National Heart, Lung, and Blood Institute. A randomized controlled trial revealed a 30 percent lower rate of hospital utilization 30 days post-discharge in patients who received RED compared to those receiving usual care. The purpose of this project is to implement Project RED for CHF patients at a Veterans Affairs hospital to reduce the CHF hospital readmission rate and subsequent costs to the healthcare system.

Methods: A retrospective review of readmission data for CHF patients from 2006 to present was conducted. Pre-RED data was retrieved to determine existing readmission rates to establish the need for RED implementation and to compare to post-RED readmission rates. A project leader and collaborative, interdisciplinary implementation team has been established and will implement the RED components which consist of 12 mutually reinforcing actions that the hospital carries out throughout the hospital stay and shortly afterwards to allow for a standardized, more effective transition at discharge. This will be accomplished primarily through the utilization of existing technologies within the VA computer system and with the guidance of the Re-Engineered Discharge Toolkit. The Agency for Healthcare Research and Quality (AHRQ) contracted with BUMC to create this toolkit to help hospitals reproduce RED. Implementation and outcome measures will be collected. Outcome measures, including 30 day readmission rates and rates of Emergency Department visits 72 hours post-discharge, will be compared and reported using descriptive statistics.

9-107

Title: Assessment of change in prescriber perception of treatment for neonatal abstinence syndrome after observational evaluation of babies born to mothers receiving methadone, burprenorphine, buprenorphine/naloxone

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Purpose: To assess change in prescriber perception of empiric treatment of infants born to mothers receiving methadone, buprenorphine or buprenorphine/naloxone during pregnancy after presentation of collected observational data. Data collected will look at the overall incidence of neonatal abstinence (NAS) in infants born to mothers receiving treatment during pregnancy as well as the correlation between maternal dosages of treatment medications with the onset, severity and treatment course of NAS.

Methods: Pending IRB approval, observational data collected will include infant: GA, BW, APGAR, hour of initial withdrawal symptoms, hour of initiation of treatment, initial morphine dose, maximum morphine dose, NAS score at initiation of therapy, all other NAS scores, addition of 2nd or 3rd tier therapies, duration of treatment, and Meconium analysis (if available). Mothers data will include: medication, dose, indication for treatment and urine toxicology screen (if available). Data collected will remain confidential with no patient identifiers. Data will be statistically analyzed to establish a correlation between maternal treatment doses and the onset, severity and duration of NAS. Onset of NAS will be measured with the initial NAS score. The severity of NAS will be measured with modified Finnigan NAS scores and morphine doses. The duration of NAS will be measured with the number of days of morphine treatment. The results of these analyses will be presented to the neonatal and pediatric prescribers and nurses at our facility as a means to assess their perception of the clinical appropriateness of empiric treatment of infants born to mothers receiving treatment during pregnancy. This observational analysis and prescriber assessment will allow for optimization of treatment of babies with NAS.

9-108

Title: Medication use evaluation of dornase alfa at an academic medication center

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Purpose: The purpose of this retrospective medication utilization evaluation is to assess the use of dornase alfa inhalation (Pulmozyme) due to increased utilization.

Methods: After IRB approval is obtained, patients who received dornase alfa inhalation during the study period will be identified using Siemens Pharmacy System. Information on administration of this agent within the study group will be used to assess the appropriateness of prescribing as compared with the FDA approved indication of cystic fibrosis. Data collection will not require direct patient interaction and will be limited to review of patient medical records.

Results: TBD

Conclusion: TBD

9-109

Title: Impact of pharmacist participation in sepsis management in the emergency department

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Purpose: The Surviving Sepsis Campaign Guidelines were recently updated and published in 2012. Current recommendations state that administration of broad-spectrum antibiotics should be completed within three hours of patient presentation. The objective of this study is to assess the impact of pharmacist participation in a newly implemented sepsis alert process in the emergency department (ED).

Methods: This study is a before and after, Institutional Review Board approved, cohort study of adult patients meeting sepsis alert criteria with a presumed diagnosis of sepsis. Patient populations are defined as pre-implementation and post-implementation of the sepsis alert process. Data in the post-implementation population will be collected prospectively on patients recruited after sepsis alert implementation. Participating pharmacists will receive education about the new sepsis alert process. At the receipt of the alert, the pharmacist will respond to the bedside and assist the provider with antibiotic selection and expedite administration of antibiotics. The following data will be collected: demographic information, allergies, determination of renal and liver dysfunction, vital signs, diagnostic tests, clinical, and medication interventions performed by the pharmacists. All data and pharmacist interventions will be collected on a standardized data collection form. Data for the pre-implementation population will be collected retrospectively from the electronic medical record. All data will be de-identified and maintained confidentially. The primary objective of this study is to determine the percentage of patients with severe sepsis or septic shock completing their first antibiotic within three hours of presentation to the ED before and after implementation of a sepsis alert and pharmacist intervention.

9-110

Title: An evaluation of tranexamic acid for the prevention of blood loss during hip and knee surgery

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Purpose: Tranexamic acid is an antifibrinolytic agent that prevents the conversion of plasminogen to plasmin by preventing lysine from binding to sites on plasminogen. This effect leads to stabilization of fibrin clots. Tranexamic acid is known to prevent blood loss during hip and knee surgeries, and thereby decreases the need for allogenic blood transfusions which carry the risk of disease transmission and increases health care costs. The purpose of this study is to compare the estimated total blood loss between patients that receive tranexamic acid and those patients that do not receive tranexamic acid for elective hip and knee arthroplasty.

Methods: The study will be submitted to the Institutional Review Board for approval. The study will consist of a retrospective drug utilization review of patients that had elective hip and knee arthroplasty from the dates of January 1, 2013 to June 1, 2013. Inclusion criteria include patients 18 years of age and older. Exclusion criteria include patients that are on warfarin, dabigatran, and rivaroxaban. Baseline data will include patient age, weight, height, gender, hematocrit, hemoglobin, international normalized ratio, activated partial thromboplastin time, platelet count, surgery approach, and use of ticagrelor, prasugrel, clopidogrel, and aspirin. Hematocrit and hemoglobin will be obtained post procedure. The primary end point of the study will be estimated total blood loss. Secondary data will include change in hematocrit from baseline. Estimated total blood loss will be calculated using formula VL=EBV X ln(H0/Hf) which has shown accuracy in humans. Estimated blood volume will be based on the patients body mass index.

9-111

Title: Drug-Replacement Programs as Alternative Methods of Reimbursement

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Purpose: Ensuring reimbursement for services is a high priority of medical centers in the United States. Many patients, both with insurance coverage and without, are unable to meet the financial burden of prolonged or unexpected medical needs. For this reason, it would be beneficial to seek alternative avenues of reimbursement that can be utilized when patients are unable to provide payment for medical services provided to them. The purpose of this study is to determine the feasibility of using manufacturer sponsored drug replacement programs as alternative methods of reimbursement for patients who cannot afford their medical care.

Methods: This study will be submitted to the Institutional Review Board for approval. Some medical centers allow patients to apply for indigent patient programs, which provide hospital services at no cost to those unable to afford their medical care. The electronic medical records of patients qualifying for indigent care will be reviewed, and those administered one or more medications with an available drug replacement program during the past 6 months will be identified. Qualifying criteria for the indigent care program and manufacturer sponsored drug replacement programs will be compared to determine if administered medications are eligible to be replaced. Potential cost savings over the time interval studied will be calculated. To determine if a large scale, self-sustaining program of this nature would be feasible, a small pilot program shall be employed. This program will be created by selecting 6-8 medications with available reimbursement programs, and implementing a system to assist with the identification of eligible patients and application process for a period of 3 months. All patients qualifying for indigent care will be screened, and those administered one or more of the selected drugs will be included. The pilot program will be used to validate projected savings gathered from the retrospective analysis.

9-112

Title: Evaluation of optimal duration of augmentation therapy using an atypical antipsychotic in conjunction with an antidepressant to prevent relapse or recurrence of major depressive disorder

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Purpose: The American Psychiatric Association recommends augmentation of antidepressant medications in patients with major depressive disorder who fail to respond to an adequate trial of an antidepressant. The efficacy of atypical antipsychotics as augmenting agents has been established and three atypical antipsychotics currently have an FDA approved indication for augmentation in major depressive disorder. However, the adequate duration of augmentation therapy is still unknown. This study will use the time to relapse or recurrence of a depressive episode as a predictor of the optimal duration of augmentation therapy.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will be used to conduct a retrospective chart review of patients aged 18 and older who achieved remission of treatment resistant major depressive disorder using an atypical antipsychotic to augment the effects of a selective serotonin reuptake inhibitor or a serotonin norepinephrine reuptake inhibitor. Complete remission will be defined as a Patient Health Questionnaire (PHQ 9) score of less than 5. Patients using aripiprazole, olanzapine, quetiapine, risperidone, or ziprasidone will be included in the analysis, as these atypical antipsychotics have been found effective as augmenting agents in major depressive disorder. An increased PHQ 9 score at follow up ambulatory provider visits, as well as documented emergency department visits or inpatient admissions for a psychiatric event will be used to indicate relapse or recurrence of a depressive episode. The number of patients who have had a relapse or recurrence of a depressive episode will be evaluated at 2 week intervals for up to 52 weeks. The time to relapse or recurrence of a depressive episode will be used to evaluate the optimal duration of combination therapy.

9-113

Title: Impact of chronic opioid use on pain control and opioid utilization in surgical patients

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Purpose: Patients with uncontrolled postoperative pain can experience lengthened recovery time, increased morbidity and mortality, and decreased satisfaction with care. While over 80 percent of surgical patients experience postoperative pain, certain surgeries are associated with higher intensity pain, including orthopedic and neurosurgeries. The objective of this study is to identify differences in the amount of opioid analgesics used during the perioperative period, the degree of pain control achieved, and the adverse effects experienced between opioid-tolerant and opioid-nave patients. Results of this study may be used to further the optimization of postoperative pain control.

Methods: Institutional Review Board approval will be obtained prior to data collection. Patients admitted for orthopedic and back surgeries during the selected time period will be identified using daily surgery schedules. Charts will be reviewed retrospectively to determine if the patient uses home opioid or non-opioid analgesics. Control patients who do not use home pain medications will also be selected. Inclusion criteria include patients undergoing total hip arthroplasty, total knee arthroplasty, or back surgery. Exclusion criteria include age less than 18 years or patient inability to report pain. Data collected will include: age, gender, type of surgery, date of surgery, pertinent past medical history, home pain medication regimen, quantities of opioids administered prior to and throughout the surgical procedure, whether or not a block was given, and length of block. All opioids given for 72 hours following surgery will be recorded, and total quantities will be calculated in morphine equivalents. Pain scores as charted by nursing will be documented for 72 hours post-procedure. Adverse effects experienced, the suspected causative medication, and the resulting action taken will also be collected. Statistical analysis will be conducted to determine trends in opioid consumption, pain scores, and adverse effects between the patient groups.

9-114

Title: Impact of pharmacists' interventions through medication therapy management on adherence and adverse effects in patients taking oral chemotherapeutic agents

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Purpose: The increasing prevalence of oral chemotherapeutic agents shifts many responsibilities onto patients, including management of often complex medication regimens and monitoring for adverse effects. This study will evaluate the extent to which a pharmacist led medication therapy management program improves patient safety with oral chemotherapeutic agents, looking closely at enhanced compliance and management of adverse effects.

Methods: Approximately ten oral chemotherapeutic agents will be analyzed by retrospectively reviewing data for two months from the electronic medical record. Prescription fill history, drug interactions, dose adjustments and duration of therapy will be evaluated. Subsequently, a prospective review will be performed, looking at the same medications over a two month period. During the prospective review, a pharmacist will meet with patients for initial consultations, medication reconciliation, intensive counseling and follow up appointments, while also evaluating medication compliance, drug interactions, dose adjustments and duration of therapy. Retrospective and prospective data will be compared to determine if pharmacist involvement through intensive counseling and regular follow up visits improves medication compliance and decreases the incidence or severity of adverse effects. This study was submitted to the Institutional Review Board and was not found to meet the regulatory requirements for human subjects' research, as it is intended to contribute to quality improvement and assessment.

9-115

Title: Retrospective analysis of dexmedetomidine use for alcohol withdrawal syndrome in critical care patients

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Purpose: Dexmedetomidine is a promising yet largely untested treatment option for alcohol withdrawal. Compared with benzodiazepines, the mainstay of treatment for alcohol withdrawal, dexmedetomidine has a shorter half-life, does not cause respiratory depression, can produce sedation with less delirium, can be more easily titrated, and tends to result in a shorter length of hospital stay. To date, there is limited evidence supporting the use of dexmedetomidine for alcohol withdrawal. The purpose of this study will be to analyze in critical care patients being treated for alcohol withdrawal the efficacy and safety of dexmedetomidine compared to standard of care with benzodiazepines.

Methods: This retrospective study has been approval by the Institutional Review Board. Study participants will be identified through a systematic, computerized search of pharmacy billing records. To be included in the data analysis, patients must be at least 19 years old and have received dexmedetomidine, lorazepam, midazolam, or chlordiazepoxide in the intensive care unit for treatment of alcohol withdrawal. Data to be collected will include: age, gender, race, height, weight, comorbidities, vital signs, chemistry panels, length of ICU stay, concurrent medications, in-hospital complications, use of alcohol withdrawal protocol, and variables pertaining to dexmedetomidine, lorazepam, midazolam, and/or chlordiazepoxide administration (day of initiation, duration of treatment, dose per day, total dose, route of administration, frequency of administration, adverse events, duration of intubation). The primary endpoint for efficacy will be duration of stay in the intensive care unit. The primary endpoint for safety will be hypotension, bradycardia, serum osmolality, and metabolic acidosis. Descriptive statistics will be performed with parametric and non-parametric tests, such as Students t-test, Chi-square test, and/or Fisher's exact test. Correlation coefficients, univariate regression modeling, and/or multivariate modeling may be used to assess the relationships between study variables and the outcomes of interest. All patient data will be de-identified.

9-116

Title: A retrospective analysis of the effectiveness and compliance with heparin protocols for ACS and VTE

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Purpose: Intravenous heparin is widely used as an anticoagulant for the treatment of acute coronary syndromes (ACS) and venous thromboembolism (VTE). Historically, practices have used fixed doses of heparin. Studies have shown weight-based nomograms to be superior in achieving in the therapeutic activated partial thromboplastin time (aPTT) in a shorter period of time compared to standard dosing regimens. The anticoagulant effect of heparin is monitored using aPTT. The objective of this study is to evaluate the effectiveness of and compliance with CUMCs Weight-based Heparin Standard Anticoagulation (VTE) and Weight-based Heparin Reduced Anticoagulation protocols (ACS) and time needed to achieve therapeutic aPTT.

Methods: This will be a retrospective cohort study of patients ≥ 19 years of age admitted to CUMC from July 31st, 2012 to July 30th, 2013 on intravenous heparin therapy for longer than 24 hours for treatment of VTE or ACS. Patients who were started on intravenous heparin at CUMC using the Weight-based Heparin Standard Anticoagulation or Weight-based Heparin Reduced Anticoagulation protocols will be eligible to be included in this data analysis. Data collected includes: demographics (age, gender, weight, co-morbidities); information regarding hospitalization (dates of admission to the hospital, discharge dates, in-hospital complications, service ordering heparin, use of heparin protocols); and heparin therapy and monitoring (indication for use, first aPTT after bolus dose, length of therapy, aPTT monitoring per protocol, total number of aPTT drawn to achieve therapeutic aPTT, time it took to achieve therapeutic aPTT, number of subtherapeutic aPTT, concurrent medications, CBC monitoring per protocol and complications). Patients excluded from this study will include age < 19 years old, intravenous heparin initiated outside of CUMC, use of subcutaneous heparin for DVT prophylaxis, use of Low Intensity/Post-Surgical Heparin Infusion (fixed dose) and use of IV heparin less than 24 hours.

9-117

Title: Dosing of recombinant antithrombin III in neonatal and pediatric patients undergoing extracorporeal membrane oxygenation (ECMO)

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Purpose: Maintaining anticoagulation is important for patients placed on extracorporeal membrane oxygenation (ECMO). During ECMO, a patient's blood is exposed to the artificial surfaces of the ECMO circuit, activating the clotting cascade and placing the patient at risk for clotting. Anticoagulation on ECMO is achieved primarily by heparin. Heparin's mechanism of action is to activate antithrombin III. Antithrombin III deficiency is a common finding in pediatric patients requiring ECMO. This deficiency may result in ineffective anticoagulation by heparin. The objective of this retrospective, descriptive study is to evaluate the use of recombinant antithrombin III (ATryn) in pediatric patients receiving ECMO.

Methods: Following approval by the Institutional Review Board, patients less than 18 years of age who received recombinant antithrombin III (ATryn) while on ECMO will be identified using the electronic medical record system at Children's Hospital & Medical Center. The following data will be collected: age, sex, weight, adverse effects (including bleeding), loading doses, boluses, and maintenance continuous infusions of ATryn given to patients while on ECMO as well as any antithrombin III levels drawn. Morbidity and mortality prior to discharge will also be collected.

9-118

Title: Use of fluconazole as prophylaxis for invasive Candida infections in preterm infants: a retrospective chart review

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Purpose: Invasive Candida infections are associated with high mortality and poor outcomes in preterm infants. Fluconazole is the antifungal agent of choice for invasive Candida infection prophylaxis due to its excellent pharmacokinetic profile. However, the extent of fluconazole use in preterm infants differs by birth weight, gestational age, and risk factors between institutions. The objective of this study is to determine whether the use of fluconazole prophylaxis has reduced the incidence of invasive Candida infections among infants with birth weight of less than 1,500 grams since implementing the routine prophylaxis at a level III neonatal intensive care unit in June 2008.

Methods: This study will be reviewed by the Institutional Review Board for an exemption prior to conducting a retrospective analysis of preterm infants who were born less than 30 weeks gestation, weighed less than 1,500 grams, and had central venous access within a five year pre- and post-prophylaxis periods. Infants will be excluded if they started the fluconazole prophylactic course during the pre-prophylaxis period, met the criteria but did not receive fluconazole prophylaxis during post-prophylaxis period, initiated on fluconazole prophylaxis a week or longer after birth, or died from a cause other than Candida prior to completing the prophylactic course. Approximately 300 patient records from an electronic medical record database will be reviewed and all patient information will be de-identified. Secondarily, the incidence of adverse events, mortality rate due to Candida infections, and length of hospital stay will be assessed. Specific risk factors associated with Candida infection will be evaluated: use of antibiotics, histamine-2 blockers, systemic corticosteroids, and methylxanthines; supplementation with total parenteral nutrition; and mechanical ventilation. A subgroup analysis will then be made between infants who had a birth weight between 1,000 and 1,499 grams in comparison to those with a birth weight of less than 1,000 grams.

9-119

Title: Evaluation of antimicrobial stewardship in an academic medical center emergency department

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Purpose: Antimicrobial treatment of patients being discharged from the emergency department (ED) presents unique challenges for clinicians. Some EDs have chosen to utilize antimicrobial stewardship programs (ASPs) to help combat these challenges. ASPs are one proven method to help control antimicrobial resistance patterns and improve overall quality of patient care. However, there is a lack of published evidence regarding the positive impact of a pharmacist-driven ED ASP. The objective of this pre-test/post-test quality assurance project is to assess the effectiveness of transitioning the culture-review responsibility from the ED Physician Assistant (PA) to a pharmacist.

Methods: This is a retrospective review of our positive-culture follow-up process for patients discharged from our ED and will be exempt from IRB approval (review of existing process). All patients with a positive culture, including but not limited to, urine, blood, skin/soft tissue, throat, and DNA, and are discharged home from the ED will be included for review. The included patients ED medical record will be reviewed to determine whether or not they were discharged on appropriate antimicrobial therapy. Appropriateness will be based upon the culture/sensitivity results, IDSA Guidelines, and patient-specific laboratory information (i.e. renal function, pregnancy/lactation status, etc.) If a patient is determined to have received inappropriate antimicrobial therapy, we will attempt to contact the patient via telephone. If the patient cannot be reached via telephone, a letter will be sent to their stated address. If a therapy change is warranted, a new prescription will be called into the patients pharmacy of choice. All therapy changes will be first discussed with the ED attending present. In order to obtain baseline information regarding our current process, observational data will be collected for two months of the current PA-management of this process. Outcomes will be compared between the pre- and post-intervention periods.

9-120

Title: pH Liquid Integrity Test of FDA ONB Approved Closed-System Transfer Devices

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Purpose: Since 1999, six Closed-System Transfer Devices (CSTDs) have received FDA 510K approval as medical devices to reduce occupational exposures to hazardous drugs. In 2012, the FDA established a new category for CSTDs under an ONB code to better categorize products that are intended to be used for safe handling. Today, only two CSTDs have received FDA approval for the new ONB code: PhaSeal and ChemoLock. This study will evaluate the liquid containment of PhaSeal and ChemoLock in comparison to the traditional needle and syringe method for drug transfers at varying pH levels.

Methods: Based on the pH characteristics of drugs on the market, this assessment mimics the full-scale composition of hazardous drugs spanning from pH 4, pH 7, and pH 10. For each ONB CSTD and needle and syringe method, 20mL of each pH buffer solution was placed in 3 separate 30mL glass vials and sealed. CSTD vial adaptors and syringe connectors were placed on vials and syringes accordingly. Ten (10) manipulations were performed with each pH buffer solution for each of the PhaSeal, ChemoLock, and syringe/needle systems. For each manipulation, 1mL of pH buffer solution was drawn into the syringe from the vial. After disconnect, the vial and syringe connection points were placed onto a piece of blue litmus paper and inspected for color change. A new piece of litmus paper was utilized with each manipulation. The study was repeated in duplicate for a total of 180 manipulations and 360 litmus paper tests. Each syringe connector and vial adaptor was used in ten (10) consecutive manipulations without being changed, in accordance with the FDA approved limitations of the devices.

Results: The traditional needle and syringe method had 43% (52 of 120) of the total litmus tests with noticeable droplets and pH litmus change, (pH 4, 22/20; pH 7, 17/20; pH 10, 13/20). PhaSeal had 1.7% (2 of 120) with litmus color change (pH 4, 1/20; pH 7, 1/20; pH 10, 0/20). PhaSeal litmus color changes occurred during two separate manipulations with one manipulation noted to have a visible droplet of solution on the tip of the PhaSeal syringe adaptor. The ChemoLock system litmus test resulted in zero (0) of 120 litmus paper color changes with no solution droplets visible during manipulations.

Conclusion: When sterile compounding is performed, the data suggests that CSTDs are necessary for safe preparation of hazardous drugs as the needle and syringe method failed to contain all three pH solutions within the transfer process. The PhaSeal product improved solution containment but had two failed manipulations in a relatively small sample size. The ChemoLock product had no litmus paper color changes and no visible droplets evident during manipulations. The currently approved FDA ONB CSTD

systems demonstrated containment of acid, base and neutral solutions when compared to the traditional syringe and needle method.

9-121

Title: Pharmacist identified discrepancies in nursing performed medication histories of hospitalized patients and resultant medication reconciliation interventions

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Purpose: Incomplete and inaccurate medication histories have resulted in clinically significant prescribing errors and patient harm in hospitalized patients. Pharmacists can play a key role in identifying discrepancies in the patients medication history and help prevent errors from reaching the patient during the medication reconciliation process. The purpose of this study is to determine the extent and type of discrepancies identified by a pharmacist performing medication reconciliation in comparison to nurse performed medication reconciliation in adult inpatients at a single community hospital. The study will illustrate the interventions made by the pharmacist and the time spent on the medication reconciliation process.

Methods: This study did not require IRB approval, as it is designed as a quality improvement project with all data de-identified and reported in aggregate. Data collection will take place over a 6 month period from October 1, 2013 to March 31, 2014. Patients included will be 18 years of age and older under the care of one internal medicine physician. Medication histories will be gathered by a nurse within 24 hours of admission according to hospital policy. The pharmacy resident will then perform a medication and allergy history on each eligible patient as soon as possible with the goal being for the resident to complete their medication reconciliation activities within 36 hours of admission. The resident will review the history and allergy information obtained by the nurse to verify the accuracy and amend any changes or omissions. Discrepancies in dose, dosage form, route, and allergies as well as omissions, therapeutic duplications, drug interactions, and vaccination status will be documented. Discrepancies will be communicated directly to the participating physician by phone. Additional data collected will include the source of medication history, pharmacist recommendations and resulting physician orders.

9-122

Title: Evaluation of the treatment of acute major bleeding in a community hospital system

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Purpose: The objective of this study is to evaluate the management of patients with acute major bleeding within our community hospital setting. This information will help determine a future role for a new anticoagulation reversal agent, 4-Factor Prothrombin Complex Concentrates (4F-PCC).

Methods: This study will be submitted to the Institutional Review Board for approval. Using an electronic medical record system, patients with acute major bleed diagnoses and concurrent oral anticoagulation therapy will be retrospectively identified for inclusion. Patients will be excluded if pregnant, prison inmate, or if acute major bleeding did not occur. The following patient data will be collected: age, parenteral or oral antithrombotic agents, indication for anticoagulation or history of thromboembolic complication in the past 3 months, type of bleed, laboratory data, anticoagulation reversal therapies used, and need of and time to surgery if applicable. Evaluation of this data will help determine the potential role for 4F-PCC in the management of patients with acute major bleeding induced by anticoagulants.

9-123

Title: Evaluation of adverse glycemic events following discontinuation of metformin in mild to moderate chronic kidney disease

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Purpose: Metformin is a first-line therapy for type 2 diabetes, but current U.S. standards of practice recommend discontinuing metformin in chronic kidney disease based on manufacturer published serum creatinine cutoffs (1.5, males; 1.4, females) to reduce the risk of developing lactic acidosis. Available data estimate the risk as extremely low, even in patients with elevated serum creatinine. Given that metformin provides considerable benefits to patients, it is unknown whether these benefits outweigh the supposed risks of lactic acidosis associated with continuation of metformin. Also unknown is whether discontinuation of metformin leads to more adverse effects on glycemic control.

Methods: We designed this study as a retrospective, case-control, crossover chart review in which patients will serve as their own controls. We plan to review charts of patients who were on metformin and subsequently discontinued therapy due to worsening renal function to assess changes in glycemic control. The primary outcome of this study will be to contrast the rates of hyperglycemic and hypoglycemic events before and after discontinuation of metformin prompted by worsening chronic kidney disease. Secondary outcomes for this study will be to contrast average A1c and the proportion of patients with A1c values greater than 9% before and after discontinuation of metformin, and assess the addition, change in dose, and number of anti-diabetic agents used before and after discontinuation of metformin. Patients who will be included are those who were prescribed metformin at a dose of 1 to 2 grams per day for at least 6 months, have a diagnosis of type 2 diabetes, a stable eGFR of 30-60mL/min/1.73m2 as measured by two readings at least one month apart, and whose renal function subsequently prompted discontinuation of metformin. All data will be collected from the VA Computerized Patient Record System.

9-124

Title: Comparing the clinical effectiveness of alternate meropenem dosing strategies

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Purpose: The FDA-approved dosing of meropenem in patients with normal renal function is 500-1000mg IV every eight hours. At our institution, meropenem is dosed using both the FDA-approved regimen and 500mg every six hours, as this alternate dosing strategy has been shown to achieve similar pharmacokinetic and pharmacodynamic outcomes. However, little data is available to show that alternate regimens are equivalent to traditional, FDA-approved regimens in regards to clinical outcomes. The objective of this study is to compare clinical outcomes between traditional and alternative dosing strategies of meropenem.

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 at least 48 hours of treatment with meropenem between August 1, 2011 and July 31, 2013. Patients will be excluded if they have severe renal dysfunction or have a diagnosis of cystic fibrosis in their electronic medical record. The primary outcome of this study will be clinical failure, defined as in-hospital mortality or readmission for recurrent infection within 30 days. Secondary outcomes will include hospital length of stay, 30-day mortality, and cost of meropenem treatment. To assess these outcomes, the following data will be collected via a retrospective chart review: patient age, gender, weight, height, patient type (medical or surgical), meropenem regimen, days of treatment with meropenem, total daily dose of meropenem, other antibiotics used during hospital stay, indication for meropenem use, serum creatinine on day of meropenem initiation, SIRS score on day of meropenem initiation, culture and susceptibility results, hospital length of stay, in-hospital mortality, 30-day mortality, readmission within 30 days, and cost of meropenem per day. All data will be recorded without patient identifiers and maintained confidentially.

9-125

Title: Evaluation of clot and bleed rates in post-operative knee or hip replacement patients receiving rivaroxaban, warfarin, or enoxaparin for PE/DVT prophylaxis

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Purpose: Routine post-operative anticoagulation for pulmonary embolism (PE) and deep venous thrombosis (DVT) prophylaxis after orthopedic surgery is recommended by the American College of Chest Physicians. Traditional anticoagulants like warfarin and low molecular weight heparins are cumbersome due to necessary INR monitoring and daily injections, respectively. Newer agents like rivaroxaban circumvent these issues, with comparable rates of post-operative clot formation or bleeding. However, no three-arm study has yet compared these agents against each other. The objective of this study is to examine the incidence of these events in orthopedic surgery patients who received warfarin, enoxaparin, or rivaroxaban for PE/DVT prophylaxis.

Methods: This study is a retrospective analysis of patient records from a large tertiary hospital in New Mexico. The protocol for this study will be submitted to the study site's Institutional Review Board for approval prior to data analysis. The health system's electronic medical record system will be used to retrieve records for patients that meet inclusion criteria. Patients will be included if they are at least 18 years or older and underwent total knee or hip replacement surgery at the hospital. Patients will be excluded if they were on anticoagulation therapy prior to surgery. Information from the index hospitalization will be analyzed, as well as records from follow-up appointments with each patient's surgeon. Overall data on clot and bleed rates in each arm, as well as data regarding the type of clot or bleed will be collected. Demographic information, pertinent lab values, and dosing information to determine appropriateness of therapy will be recorded. Additionally, time to event and information regarding potential drug interactions will also be collected. Statistical analysis will determine if any significant difference exists between agents regarding these variables and outcomes.

9-126

Title: Adherence to antiepileptic drugs in a Native American population

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Purpose: Many patients receiving antiepileptic drug regimens struggle with achieving optimal adherence. The consequences of failing to take seizure medications appropriately are associated with significant morbidity, including increased risk for status epilepticus, hospitalization, and loss of personal autonomy. The objective of this study is to investigate the effectiveness of multiple techniques in improving adherence within this unique patient population.

Methods: This study has received approval from our Institutional Review Board. Data will be collected from patients seen in an epilepsy clinic that is managed by a neurologist, with an assisting pharmacist. Adherence information will be obtained by pharmacist-led patient interview, review of refill dates, and medication serum concentrations (if applicable). Following assessment of these criteria, pharmacists are to rate patient medication adherence on a scale of 1 to 10, with 1 scoring as poor and 10 scoring as optimal. Patients will also be asked to rate personal adherence on a 10 point scale. Additional collected data will include patient age, gender, number of seizures per month in the past 3 months, number of hospitalizations since last visit, and number of episodes of status epilepticus since last visit. Baseline data will be collected retrospectively via chart review from the electronic health record. Patients with adherence scores less than 9 per pharmacist assessment will be targeted for an adherence improvement intervention. Adherence scores and other data will continue to be gathered post-intervention and then compared to baseline data.

9-127

Title: Treatment Outcomes using Protease Inhibitors for Hepatitis C Virus Infection in Clinical Practice

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Purpose: In May 2011, two protease inhibitors (PIs), boceprevir (Victrelis) and telaprevir (Incivek), were approved for the treatment of hepatitis C virus (HCV) genotype 1 infections. In clinical trials, cure rates were significantly higher with combination therapy including a PI than with peginterferon and ribavirin alone. Previous community-based studies of treatment with peginterferon and ribavirin alone have generally failed to replicate the results of clinical trials. The purpose of this study is to determine the cure rates of HCV genotype 1 infected patients treated with PIs through Project ECHO (Extension for Community Healthcare Outcomes) and compare them to the clinical trials.

Methods: This study is approved by an institutional review board. Patients treated through Project ECHO will be included if they: (1) are between the ages of 18 and 65, (2) have chronic HCV genotype 1 infection, (3) and began treatment with a PI-based therapy on or after 6/1/2011 with completion or discontinuation of therapy on or before 12/31/2013. Patients will be excluded if their baseline laboratories demonstrate an absolute neutrophil count less than 1,500 cells/mm3, platelets less than 75,000 cells/mm3, or a serum creatinine greater than 2 mg/dL. Patients co-infected with hepatitis B virus or human immunodeficiency virus, with decompensated liver disease, or with a history of solid organ transplant will be excluded. Descriptive statistics will be used to assess demographics, history of prior treatment, treatment outcomes, and reasons for treatment failure. Cure will be determined by SVR. SVR rates achieved through Project ECHO will be determined for each PI, and these rates will be compared to the pooled SVR rate of the respective clinical trial using a Chi-square test.

9-128

Title: Impact of pharmacist intervention combined with novel pathogen identification technologies in patients with confirmed bacteremia

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Purpose: Novel molecular technologies are emerging in the healthcare market to more quickly and accurately identify pathogens from patient blood samples. Many laboratories in New Mexico have recently acquired two new pathogen identification modalities. Antibiotic stewardship initiatives have been shown to decrease antibiotic resistance and improve patient outcomes. The purpose of this study is to examine the impact that the combination of antibiotic stewardship and new molecular technologies have on clinical outcomes in patients with bacteremia. Primary outcomes will be antibiotic duration of therapy, hospital length of stay and time to optimization of antibiotic therapy. Secondary outcomes will include healthcare costs.

Methods: This cohort study will take place within a tertiary hospital system. The protocol will be submitted for review by the study sites Institutional Review Board. The initial cohort will involve a retrospective analysis. Electronic medical records will be utilized to identify patients with positive blood cultures from a pre-defined three month period. Patients less than 18 years of age and with pathogen-negative cultures will be excluded. For both study phases, demographic data including age, weight, gender, drug allergies and co-morbidities will be collected. The following data points will also be documented: time of positive blood culture, initial antibiotic therapy, time to gram stain result communication, time to change in antibiotics, hospital length of stay, antibiotic duration of therapy and healthcare costs. The prospective phase will begin in January 2014. Protocols for automatic pharmacy therapy adjustment will be developed using current guidelines and with the assistance of an Infectious Disease pharmacist. Over a period of three months, positive blood culture samples will be analyzed utilizing new technology and results will be communicated to pharmacy. Antibiotic therapy will then be changed according to the predetermined protocols. The two cohorts will then be compared for differences in clinical outcomes.

9-129

Title: Comparison of glycemic control with insulin vials versus insulin pens in general medicine patients

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Purpose: Inadequate glycemic control in non-intensive care unit hospitalized patients is associated with poor outcomes. Inpatient glycemic control is achieved in part with short-acting insulin injections, administered via pen devices or vials with syringes. Recent concern over bloodborne pathogen transmission associated with pen devices has led the Institute for Safe Medication Practices (ISMP) to recommend that hospitals discontinue routine use of insulin pens. At our institution, the transition from insulin pens to insulin vials has instigated concern for worsened glycemic control. We hypothesize that glycemic control in medicine patients is not significantly different with insulin pens versus insulin vials.

Methods: This retrospective cohort study has been approved by the Institutional Review Board. This study will compare glycemic control between patients receiving insulin lispro via pens versus patients receiving insulin via vials. Data will be collected from the electronic medical record. Eligible patients will be directly admitted from the emergency department to a pre-specified subacute care floor and cared for by the medicine service. They will have a diagnosis of type 2 diabetes and at least 24 hours of glucose monitoring while on an insulin protocol. Patients with type 1 diabetes or diabetic ketoacidosis on admission or inpatient use of octreotide or non-insulin anti-hyperglycemics will be excluded. One hundred patients from each group will be randomly selected. Only capillary blood glucose values will be analyzed. Glycemic control will be assessed by mean and median glucose, incidence of hyper- and hypoglycemia, and area under the curve (AUC) analyses adjusted for patient length of stay. AUC analyses will allow for measurement of area above, below, and within goal range of 70 to 180 mg/dL to account for hyperglycemic and hypoglycemic excursions. Data will be adjusted for covariates as appropriate.

9-130

Title: Improving overall hospital performance measures within an outpatient, pharmacist-run clinic setting

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Purpose: The Government Performance and Results Act of 1993, also known as GPRA, requires that federal agencies establish standard performance measures to assess each agencys effectiveness. The Indian Health Service (IHS) is required to report its GPRA measures annually to Congress; the information is used to make budgetary decisions. This project will attempt to improve specific GPRA scores throughout the pharmacist run clinics using meaningful use criteria established by the Center for Medicare/Medicaid Services (CMS).

Methods: GPRA data has been collected and assessed to determine which measure(s) were not met; the GPRA measure that will be studied is Coronary Heart Disease (CHD). A policy and procedure will be proposed and subsequently implemented in specific outpatient, pharmacist-run, clinics at the Northern Navajo Medical Center. The electronic health record (EHR) system will identify patients with CHD over the age of 22 for the following: blood pressure documented at least twice in the prior two years, LDL completed during the past year, tobacco use assessed, BMI available, and whether the patients have received any lifestyle counseling. Once the policy and procedure have been implemented, the intervention will continue for six months. After six months, results data will be collected and analyzed for effectiveness, improvement in GPRA scores, and the possibility of extending the project into other applicable areas of the Northern Navajo Medical Center.

9-131

Title: Implementation of a pharmacy driven inpatient antibiotic stewardship at an Indian Health Service medical center

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Purpose: Antibiotic stewardship programs (ASPs) have been shown to improve patient outcomes by reducing antibiotic resistance rate, hospital-acquired infections, and inappropriate antibiotic use. The purpose of this study is to quantify the impact of a pharmacy driven inpatient ASP at an Indian Health Service medical center using best practices consistent with Infectious Disease Society of America (IDSA) recommendations.

Methods: A committee consisting of physicians, nurses, and pharmacists will be established to implement the Antibiotic Stewardship Programs (ASP). An adult ASP protocol will be created to detail pharmacists' involvement in antibiotic regimen selection, utilizing institution's established antibiotic guidelines and antibiogram. In addition, an intravenous to oral automatic substitution per IDSA best practice will be developed and adapted. The following data will be collected and reported back to the ASP committee quarterly: number and type of pharmacist interventions made, number of such recommendations accepted by providers, antibiotic cost per patient day, and the rates of hospital-acquired Methicillin-resistant Staphylococcus aureus (MRSA) and Clostridium difficil. For communication improvement and quality assurance purposes, a secure and comprehensive database will be utilized to store all patient laboratory data and documented antibiotic interventions. This database will also be utilized to facilitate discharge and transition of care processes.

9-132

Title: Effectiveness of a pharmacy based glycemic control intervention in Native American type 2 diabetics

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Purpose: Rates of diabetes among American Indians and Alaska Natives (AI/AN) have increased dramatically over the past decade. The IHS also reports that in recent years the number of deaths from diabetes in the AI/AN population was almost 3 times higher than all other races. The intention of a pharmacy-run diabetes clinic is to reduce these numbers for the Crownpoint Service Unit and allow for a better quality of life for our patient population. The mission of our clinic includes lowering of A1C and fasting blood glucose levels, and also lowering cardiovascular risk.

Methods: In starting a pharmacy-run diabetes clinic at the Crownpoint Service Unit, many steps have occurred and many still remain. Collaboration with a medical-staff member has been critical to our mission. Data synthesis included defining a patient population to focus on, conducting a literature search on existing pharmacy based clinics, and hosting a journal club on appropriate articles. Our defined population has been set as adults with an A1C greater than 9. The purpose of the literature search was to assess the effectiveness of a pharmacy based intervention to improve glycemic control for patients with type 2 diabetes. A PubMed based search was used using the following search terms: "diabetes" AND "collaborative" OR "pharmacy" AND "a1c". Remaining steps include drafting the protocol for the clinic, presenting the protocol to the medical and executive staff, and then initiating the clinic. The clinic will run on a referral system, with the medical staff referring patients to the pharmacy for diabetes management.

9-133

Title: Dose-adjusted enoxaparin for venous thromboembolism (VTE) prophylaxis in special populations: the morbidly obese and underweight

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Purpose: Venous thromboembolism (VTE) is a major public health problem and common cause of morbidity and mortality in hospitalized patients. While trials in both surgical and medically-ill patients have demonstrated the efficacy and safety of enoxaparin for VTE prophylaxis, they failed to adequately represent both morbidly obese and underweight patient populations. At our institution, we empirically adjust enoxaparin doses for VTE prophylaxis in patients at extremes of weight. In our study, we will assess anti-factor Xa levels and clinical outcomes associated with adjusted-dose enoxaparin to determine the efficacy and safety of this strategy in the morbidly obese and underweight populations.

Methods: This study has been approved by the Institutional Review Board. We will conduct a retrospective chart review of morbidly obese and underweight patients from October 2009 to February 2014 who received VTE prophylaxis with adjusted-dose enoxaparin. Inclusion criteria includes patients greater than 18 years of age, receiving dose-adjusted enoxaparin, a BMI greater than 40 kg/m2 or weight less than 50 kilograms, and at least one anti-factor Xa level drawn 3-5 hours after two or more consecutive doses of enoxaparin. We will collect data on patient demographics, VTE prophylaxis indication, additional VTE risk factors, enoxaparin dosing regimen and administration times, and anti-Factor Xa collection times. If patients have more than one anti-Factor Xa level, only the first appropriately drawn level for each admission will be included. If patients had an out-of-range level and subsequent dose adjustment, only the first appropriately drawn post-adjustment level will be included. The primary outcome is the percentage of patients in each population achieving target anti-Factor Xa levels, defined as 0.2-0.6 IU/mL. Multiple linear regression analysis will be conducted to evaluate the impact of individual variables on anti-Factor Xa levels. Secondary outcomes include the incidence of symptomatic VTE and major bleeding up to 30 days post-discharge.

9-134

Title: Hepatitis A and B vaccination rates in American Indian and Alaska Native (AI/AN) patients with chronic liver disease (CLD) or hepatitis C

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Purpose: AI/AN patients have a disproportionately higher risk of CLD and hepatitis C than their White counterparts. Patients with CLD or hepatitis C who are co-infected with hepatitis A or B have worse clinical outcomes. Given that hepatitis A and B are vaccine-preventable diseases, an algorithm has been designed by the Department of Veterans Affairs to identify unimmunized patients. This study's objectives are threefold: to determine the number of patients in a population with CLD or hepatitis C who lack complete hepatitis A or B vaccination, to determine the algorithm's accuracy in an AI/AN population, and to estimate vaccination costs.

Methods: The 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. This study will be conducted using patient data from the Indian Health Service's electronic health record. A database search for the algorithm's ICD-9 and CPT codes will be performed to identify patients with a CLD or hepatitis C diagnosis. Of these patients, only those who had a clinic visit during the 2012 calendar year and were 18 years or older at the time will be evaluated for hepatitis A and B immunization status. Chart reviews will be conducted to confirm the CLD or hepatitis C diagnosis and hepatitis A or B vaccination histories. These data will be used to determine the algorithm's positive predictive value. Cost estimations will be based on the number of patients in need of vaccination and the cost of the vaccinations from the contracted wholesaler.

9-135

Title: Methicillin resistant Staphylococcus aureus (MRSA) infective endocarditis (IE): a ten year retrospective analysis from a tertiary care, academic medical center

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Purpose: Staphylococcus aureus is the leading cause of IE in the United States, and approximately thirty percent of these cases are infected with MRSA. MRSA IE is associated with significant morbidity, mortality and high rates of treatment failure. Changes in MRSA strain characteristics over time have been evaluated although not in IE specifically; moreover, evaluations of patient characteristics, clinical presentation, and treatment outcomes in recent years are limited. The purpose of this study is to describe the patient and strain level characteristics seen among individuals with MRSA IE over a 10 year period.

Methods: This is a retrospective single-center cohort study of patients who: (i) were admitted between January 1, 2003 and December 31, 2012; (ii) greater than 17 years of age; (iii) had at least one MRSA positive blood culture; and (iv) met definitive or possible criterion for IE using the modified Duke criteria. Vancomycin MIC for all isolates has been confirmed by broth dilution method. The accessory gene regulator (agr) type, agr functionality and MRSA strain type were evaluated using known methods. Electronic medical record information obtained includes demographic data, hospital stay data, MRSA risk factors and clinical course data. The primary objective is to describe the patient and strain level characteristics, treatments and outcomes of MRSA IE patients. The secondary objective is to determine if any characteristics impact outcomes. Descriptive statistics will be used to analyze baseline demographics. Dichotomous variables will be compared using chi square analysis. A univariable analysis will be used to identify patient, treatment and strain level variables predictive of treatment failure. Predictor variables associated with the outcome at alpha less than 0.20 will be included in the multivariable logistic regression model.

9-136

Title: Medication-associated fall risk in adults in the inpatient setting: a focus on general medicine units at a large academic medical center

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Purpose: Falls in the inpatient setting represent a common and serious incident, increasing healthcare costs and length of stay. Certain classes of medications, such as agents with central nervous system effects, have been associated with increased fall risk in recent literature. The objective of this study is to determine if number and type of medications administered within 24 hours are associated with an increased incidence of falls at our institution.

Methods: This case-control study will be submitted to our institution's investigational review board for approval. Patients will meet the following inclusion criteria: at least 18 years of age, admission to a general medicine unit in 2013, fall reported in the hospital adverse event reporting database, fall reported at least 24 hours after admission, and at least 2 medications received within 24 hours prior to fall. A control group will be matched 1:1 based on the following criteria: age within 5 years, gender, inpatient admission during 2013 with no fall reported, shared diagnosis-related group codes, and admission duration equivalent to time elapsed between case patient's admission and fall. Total number of medications administered within 24 hours prior to fall time or respective 24-hour period will be obtained from chart review. For medications previously associated with increased fall risk, the following will also be recorded: drug class, number of doses received, and number and drug classes of therapeutic duplications. Additional data to be collected related to falls includes: nursing shift, blood pressure and blood glucose measurements, harm score, circumstances at time of event, and reports of incontinence. An appropriate regression will be performed to determine any predictors of falls.

9-137

Title: Evaluation of daptomycin prescribing pre- and post-implementation of a high-dose daptomycin (> 6 mg/kg) algorithm

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Purpose: Daptomycin use at our institution is currently restricted to the Infectious Diseases and Antimicrobial Stewardship (ASP) teams. It is typically reserved for patients who have failed, or are intolerant to, vancomycin therapy. According to recent data from the University HealthSystem Consortium (UHC), the use of daptomycin at our hospital consistently exceeds a composite benchmark of large, geographically diverse hospitals with ASP programs in both dose and duration of therapy.

Methods: This study was submitted to the University of New Mexico Human Research Review Committee for approval. A high-dose daptomycin (>6 mg/kg) algorithm will be constructed and implemented by the ASP. Education on how to use the daptomycin algorithm will be provided to pharmacists and the Infectious Diseases team. Daptomycin prescribing habits pre- and post-implementation of the high-dose daptomycin algorithm will be evaluated using a retrospective chart review of patients electronic medical records. Patients will be included if > 18 years of age and admitted while receiving daptomycin for > 48 hours. Patients will be excluded if < 18 years of age. Data collection will include antibiotic allergies, renal function, indication, pathogen(s), daptomycin dose and duration of therapy. Additionally, prior antibiotic exposure, adverse events and clinical outcomes will be analyzed. The data between the two populations will be compared using similar pre- and post-implementation time-frames to account for seasonality differences. Finally, the data will be compared to UHC data to trend use versus a composite benchmark. All data will be de-identified and presented in aggregate to maintain patient confidentiality.

9-138

Title: Association between achieving goal serum vitamin D concentrations and fall rates in home based primary care (HBPC) veterans

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Purpose: Multiple studies have shown that vitamin D supplementation is associated with a reduced risk for falling. However, few studies have looked at the association between serum vitamin D (25(OH)D) levels and fall rates. The objective of this study is to determine if the facility's home based primary care (HBPC) program's standard practice of targeting a goal serum 25(OH)D level of 30 ng/mL is associated with a reduction in fall rates among the older veteran population.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will be used to identify veterans admitted to HBPC over a two year period meeting the following criteria: admitted for one year, age 60 or older, at least one fall the previous year, and had serum 25(OH)D levels measured within 2 months, 5 to 7 months, and 11 to 13 months of admittance. Veterans meeting a serum 25(OH)D level of 28.5 ng/mL will be categorized as met goal and fall rates for 12 months following the date they met goal will be documented. Veterans not meeting a serum 25(OH)D level of 28.5 ng/mL within 13 months of admittance will be categorized as did not meet goal and fall rates over their first 12 months of admittance will be documented. Fall rates will be collected by reviewing the monthly fall log and electronic chart notes. The following baseline characteristics will be collected: fall rates the year before admittance, gender, medications and medical disorders associated with falls, alcohol and illicit drug use, physical/occupational therapy consults, time to goal, and compliance with vitamin D supplementation. All data will be recorded without patient identifiers and maintained confidentially.

9-139

Title: Patient self-testing in the long-term management of warfarin therapy

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Purpose: Patients on long-term warfarin therapy must have their serum international normalized ratio (INR) tested regularly to ensure it is within therapeutic range to avoid complications such as bleeding or clotting events. The 2012 CHEST guidelines suggest patient self-testing (PST) for patients who are motivated and can demonstrate competency in self-management strategies rather than the traditional outpatient clinic visit of INR monitoring. The purpose of this project is to develop a protocol for patients on long-term warfarin therapy to self-test their INR value and to evaluate whether implementing warfarin self-management strategies is beneficial to both our patients and pharmacy-managed anticoagulation clinic.

Methods: This study will be submitted to the Institutional Review Board for approval. A protocol will be developed to determine who and how patients will self-test their INR as well as how information will be documented. Patients and/or caregivers who meet the following criteria will be enrolled into the study; English-speaking patients who: own a working touch-tone telephone, have insurance coverage for an INR point-of-care instrument, have been on warfarin for at least 3 months, show understanding of their drug therapy and diagnoses, and manual dexterity to operate the device. Patients will undergo a face-to-face educational program on anticoagulation management, and must be able to demonstrate the correct use of the device prior to initiating testing at home. PST will be performed weekly following Centers for Medicare and Medicaid Service recommendations. Patients will utilize their home touch-tone phone to relay their INR value to an automated system. For an INR value not within therapeutic range, an anticoagulation pharmacist will advise patients on dose adjustments. Data collected will include: medication compliance, dietary changes, adverse effects, patients satisfaction of PST, number of dose adjustments required, and time in therapeutic range.

9-140

Title: Evaluation of FDA approved ONB Closed-System Transfer Devices utilizing cyclophosphamide

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Purpose: Healthcare workers who handle hazardous drugs are at risk of occupational exposure. Closed-System Transfer Devices (CSTDs) are specifically designed to minimize this risk. Since their 1999 introduction, it's estimated that less than 45% of facilities use a CSTD. In 2012, the FDA established a new category of CSTDs under a new ONB code that categorizes products to be used for safe handling. Only two CSTDs have received FDA approval for the ONB code: PhaSeal and the newly approved ChemoLock. This study examines the containment potential during the drug transfer process using cyclophosphamide (CP) as a marker for the ONB devices.

Methods: Decontamination procedures were used to minimize CP contamination on vials and surfaces prior to the study. Based on published studies, four common surface sampling zones within and around the biological safety cabinet workbench that were suspected to be the most likely contaminated surfaces were selected and demarcated using colored tape. Each CSTD system consists of a vial access device, syringe adaptor, and intravenous bag spike. The systems were used according to the FDA approved package insert by a certified pharmacy technician. For the assessment, three trials that included three individual transfers of 16 mL of drug from each of four vials, followed by disconnecting and reconnecting from vial to IV bag occurred. A total of 72 individual compounding transfers were completed for the study. Wipe samples were taken by an independent Certified Industrial Hygienist from the four sampling zones and from the compounder's gloves after each trail was complete. Between each device, the sample zones were decontaminated to prevent potential cross contamination bias between devices. Samples were prepared and analyzed by a credentialed laboratory specializing in chemical analysis using a liquid chromatograph that was equipped with dual mass spectrometers (LC-MSMS) with a lower limit quantitation of 2.00 nanograms (ng) CP.

Results: Wipe samples collected from vials following the initial decontamination procedure and prior to use in the study were free of detectable CP. CP was detected on one surface prior to the ChemoLock trial and no detectable CP was found on surfaces prior to the PhaSeal trial. For the ChemoLock system, no CP was detected on working surfaces or the compounders gloves. For the PhaSeal system, CP was detected on the biological safety workbench following trials 2 and 3 and no CP was detected on the technicians gloves. On one occasion during trial 2 of the PhaSeal system, the internal needle of the product became unintentionally exposed with a fluid droplet observed on the needle tip.

Conclusion: The results of this study suggest that the ChemoLock system was effective in preventing detectable surface contamination during three separate trials of simulated compounding activities with known amounts of cyclophosphamide. It appeared that the PhaSeal system was effective in preventing detectable contamination when the product functioned as designed. The ONB FDA approved devices demonstrate minimization of contamination to the work environment for CP.

9-141

Title: Tolerability of weekly isoniazid and rifapentine in the treatment of latent tuberculosis in a real world setting

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Purpose: The CDC has recently recommended isoniazid and rifapentine administered weekly for 3-months as an alternative first line treatment for latent tuberculosis infections (LTBIs). Because of the favorable length of therapy and recent isoniazid shortage, this weekly regimen may be preferable to isoniazid administered daily for 9-months. Therefore, the objective of this study is to compare the tolerability of isoniazid 900 mg and rifapentine 900 mg administered weekly under direct observed therapy (DOT) for 3-months (INH+RPT-3) with the standard regimen of isoniazid 300 mg daily, self-administered, for 9-months (INH-9) in patients with confirmed LTBI in a real world setting.

Methods: This study is a retrospective chart review of patients who were diagnosed with LTBI and were treated with either INH-9 or INH+RPT-3. Patients will be identified from the electronic medical record system. All patient data will be de-identified and maintained confidentially. Data collected will include patient demographics (e.g., age, sex, comorbidities, and medications). To assess tolerability, patient charts will be reviewed for presence of any adverse drug reactions attributable to the LTBI treatment. These will include, but not limited to, peripheral neuropathy, rash, nausea and vomiting, diarrhea, and LFT abnormalities. In addition, adherence and discontinuation rates will be assessed. Adherence will be assessed by reviewing refill history (for INH-9) and health care provider notes. Discontinuation rates, defined cessation of therapy prior to set treatment end date, will be assessed through health care provider notes. This study will be submitted to IRB for approval.

9-142

Title: Insulin pen knowledge and experience: surveying New Mexico community and ambulatory care pharmacists

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Purpose: Insulin pens offer consistent, accurate dosing and, for many patients, greater preference and acceptance compared to conventional vials and syringes. However, one study found 75% of patients were not properly administering and/or storing their insulin pens. Initial education by a pharmacist or nurse was found to improve patients' correct usage of their insulin pen. To the best of our knowledge, no studies have evaluated community and ambulatory care pharmacists' knowledge of correct insulin pen usage. The purpose of this study is to evaluate New Mexico community and ambulatory care pharmacists' knowledge of insulin pen usage, injection technique and storage.

Methods: A prospective survey of attendees at a state pharmacists association meeting will be conducted. This study will be submitted to the Institutional Review Board for approval. Attendees will be asked to complete a four-part questionnaire as part of an educational program. The questionnaire evaluates demographic information, community pharmacy-specific information, basic diabetes knowledge and insulin pen usage, injection technique and storage knowledge. A continuing education (CE) course utilizing a didactic and hands-on learning session will be provided. Attendees will be asked to complete the same questionnaire, less the demographic information, after completing the CE course. Survey data will be collected utilizing audience response technology. The primary outcome is to assess pharmacists' knowledge of correct insulin pen usage, injection technique and storage. Secondary outcomes include the most common components of limited insulin pen knowledge, pharmacist-specific factors for limited insulin pen knowledge and comparison of pharmacists' knowledge pre- and post-provision of a CE course. Data will be analyzed utilizing the Statistical Package for Social Sciences. Descriptive analyses, Chi-square, Fishers exact, logistic regression, paired t-tests and McNemar tests may be employed.

9-143

Title: Impact of enhanced pharmacy counseling service for patients with a high risk of readmission

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Purpose: Numerous hospitals have implemented interdisciplinary teams in order to reduce readmissions. At the Mount Sinai Medical Center, the Preventable Admissions Care Team (PACT) targets patients at high risk for readmission, defined as those with at least two admissions in six months or one admission in thirty days. Patients are currently referred for pharmacist counseling by e-mail if a patient is on greater than 10 outpatient medications or has a new diagnosis of congestive heart failure. This project will evaluate the impact of an enhanced pharmacy counseling service for patients with a high risk of readmission.

Methods: This study was approved by the Medication Use and Safety Committee, Pharmacy and Therapeutics Committee and Pharmacy Performance Improvement Committee as a performance improvement project. Patients will be referred by PACT social workers for pharmacist counseling by e-mail if a patient is on greater than 10 outpatient medications or receives a new diagnosis of asthma, chronic obstructive pulmonary disease (COPD), or congestive heart failure. The pharmacist will counsel identified patients on medication names, medication use, compliance, possible side effects and identify any medication related barriers preventing the patient from managing their chronic disease. The pharmacist will provide medication cards to the patients, which contain information about each individual medication. Educational booklets on asthma, COPD, and congestive heart failure will be given to the patient diagnosed with any of these disease states. All counseling will be documented as a progress note in the electronic medical record of the patient. In addition, the pharmacist will conduct follow-up phone calls four days and four weeks after discharge. This follow-up will address questions the patient has on their medications and will encourage the patient to seek follow-up care. The primary end point evaluated will be the 30-day readmission rate.

9-144

Title: Comparing a basal plus regimen with sliding scale insulin (SSI) alone for glycemic management of hospitalized patients

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Purpose: The purpose of this study is to determine if our hospital can accomplish better glycemic control with a basal plus regimen (basal plus sliding scale) in place of sliding scale insulin monotherapy. The primary outcome of this study is achievement of a targeted glucose defined as fasting blood glucose levels less than 150 mg/dl. The secondary outcomes are rates of hypoglycemic events, total daily dose of sliding scale insulin used, and number of hyperglycemic events

Methods: A retrospective study will be conducted to compare the glycemic control in basal plus and SSI alone regimens. The health system's electronic medical record will be used to identify type 2 diabetes patients who were admitted to medical and surgical units for a period of one month. Included patients must be between ages of 18 and 80, must have SSI alone or basal plus insulin on their profile. Patients admitted to intensive care unit, underwent cardiac surgery, were on corticosteroids, had any blood glucose levels greater than 400 mcg/ml, were pregnant, and those who had hepatic and renal impairment will be excluded. The following data will be collected for the first 3 days from admission: fasting blood glucose (FBG), point of care (POC) glucose, and total daily basal and regular insulin units administered. Once baseline data is analyzed, an educational session that includes the results of our retrospective study and primary literature will be presented to the medical team. After a 30 day period, we will conduct a second retrospective review collecting the same data to measure for improved glycemic control.

9-145

Title: Therapeutic drug monitoring (TDM) of vancomycin in pediatric patients

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Purpose: Determining vancomycin dosing in the pediatric population to achieve therapeutic troughs remains a challenge. Major pediatric references for vancomycin recommend a daily dose of 40 mg per kg per day for empiric therapy and a dose of 60 mg per kg per day for central nervous system infections. Some clinicians deviate from standardized dosing of vancomycin often leading to supra-therapeutic and sub-therapeutic levels requiring further drug monitoring for levels outside the therapeutic range. The aim of this study is to review prescribing practices of vancomycin TDM and determine the optimal dose to achieve appropriate trough levels in pediatric patients.

Methods: Retrospective data review of target of thirty patients admitted to a community teaching hospital treated with vancomycin between January 2011 and December 2012, who received intravenous vancomycin will be evaluated. Pediatric patients 1 through 17 years of age who had a steady state trough vancomycin serum level observed and received vancomycin doses will be included in the study. A steady state trough will be defined as trough prior to the fourth dose, consequently patients who received atleast three to four doses will be included in the study. This would allow sufficient time for at least 1 steady state trough to be collected. Neonates and adult will be excluded from this study. Electronic medical record will be reviewed and data including initial vancomycin dose, respective serum trough concentration, time to first therapeutic trough concentration, renal function, indication for vancomycin use and concomitant drug interactions will be recorded. Patient demographics including age, weight, and gender will also be documented. The primary outcome is to determine vancomycin dosing that resulted in therapeutic troughs in the hope of creating a pediatric specific nomogram based on findings.

9-146

Title: Taking steps to win the war on warfarin: utilizing pharmacist services to improve warfarin management and monitoring processes at a teaching hospital

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Purpose: The Joint Commission's 2013 Patient Safety Goals call for the reduction of patient harm resulting from anticoagulation therapy and recognizes patient education as a critical step. Warfarin remains a significant contributor to our institution's adverse drug reactions with noted supratherapeutic INRs on admission. These aberrant values may complicate the patient's hospital course through increased risk, length of stay, and cost. The primary purpose of this project is to identify the patient-specific factors likely responsible for supratherapeutic presentation upon admission. A secondary objective is to describe the benefits of pharmacist improved and customized patient education on subsequent INR results.

Methods: This project is exempt from IRB approval as it is a standard of care quality improvement project. Inclusion of patients will be prioritized by severity of INR greater than 4.5 and selected from daily admission reports. Those who are unable to participate in verbal counsel sessions will be excluded. Patients will be interviewed using a standardized process to determine any identifiable deficiencies in warfarin management. Causes of supratherapeutic INR will be categorized by type of interaction such as drug or food, disease, social factors, non-compliance, and whether these are preventable. Other at-risk characteristics to be collected include: evidence of polypharmacy, past warfarin education, comorbidities, age, and previous hospitalizations. To supplement current practice and maximize re-education, a pharmacist developed brochure will be provided to patients with warfarin information and customizable instructions in a concise format. Patients are then offered pharmacist follow-up by telephone as a means to monitor their progress post-discharge. This secondary objective is to be measured by INR trends at two-week intervals. Following data analysis using descriptive statistics, in-services will be arranged for healthcare practitioners to increase awareness of warfarin mismanagement issues. Recommendations will then be provided to prevent recurrence of supratherapeutic values on admission.

9-147

Title: Assessment of a pharmacist driven medication consultation on a chosen unit and the impact on the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) and patient satisfaction

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Purpose: The Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) is a survey implemented to assess the prospective of patients on their hospital experience. This data is publicly compared between hospitals with the aim of improving quality of care and to enhance accountability in healthcare. The score for the 9A inpatient oncology unit is low at St. Lukes - Roosevelt Hospital, New York, NY. The objective of this study is to assess the impact of a pharmacist driven medication consultation on a chosen unit and the impact on HCAHPS and patient satisfaction.

Methods: The study proposal will be submitted to the Institutional Review Board for approval. The publicly reported HCAHPS scores for the 9A unit are currently below the national average. We are targeting to consult 25 to 50 patients. Patients will be enrolled based on the Center for Medicare and Medicaid criteria for eligibility in HCAHPS. Patients will be eligible for inclusion if they are 18 years old at the time of admission, have at least one overnight stay in the hospital as an inpatient, non-psychiatric Medicare Severity Diagnosis Related Groups (MS-DRG)/principal diagnosis at discharge, alive at the time of discharge and admitted to the 9A unit at Roosevelt Hospital. The exclusion criteria will include: discharged to hospice care or nursing homes or skilled nursing facilities, court/law enforcement patients (i.e., prisoners) and patients with a foreign home address. Over a period of three months, a pharmacist will counsel patients on their newly prescribed medications and their potential side effects. The patients will be assessed on the knowledge of their medications before and after counseling sessions. Data will be analyzed using the Statistical Package for the Social Sciences (SPSS).

9-148

Title: Impact of a new pharmacist driven medication education program for inpatients with a history of poor medication adherence on 30 day readmission rates

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Purpose: Evidence suggests that targeted education to improve patient medication adherence may be beneficial in reducing hospital readmissions. This analysis is proposed to evaluate effectiveness of a pharmacist-provided medication adherence education program initiated November 2012. The primary outcome is 30 day readmission rates for inpatients receiving pharmacist-provided medication education from November 2012- November 2013 (education cohort), compared to eligible inpatients who did not receive the education (no education cohort), and to veterans admitted during this period the prior year (standard cohort).

Methods: This study was submitted to the Institutional Review Board for approval. Pharmacists assessed inpatients medication adherence within 24 hours of admission using the Modified Morisky Medication Adherence Scale-4, a validated tool that stratifies non-adherence risk from 0-4, with lower scores representing lower adherence. Patients scoring <2 were entered on a spreadsheet; pharmacists provided targeted medication education within 48 hours and additional targeted medication education at discharge. Electronic medical records of patients eligible for education November 2012- November 2013 will be reviewed to determine readmissions within 30 days of discharge, age, sex, and diagnosis. A report will be generated from electronic medical records listing patients admitted during this period the prior year with age, sex, and diagnosis. A matched number of patients will be randomly selected from this report. Records will be reviewed to determine readmissions within 30 days of discharge. Thirty day readmission rates will be compared using Fishers exact tests. Cohorts will also be divided into six diagnosis categories. An ANOVA will analyze 30-day readmission rates as a function of cohort, diagnosis, and the interaction of these variables. Baseline characteristics will be compared using t-tests for continuous variables (age, length of stay) and chi-square tests for categorical variables (sex).

9-149

Title: Assessing compliance with venous thromboembolism quality core measure at a teaching institution

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Purpose: In an effort to reduce the incidence of venous thromboembolism (VTE) and improve patient care, The Joint Commission (TJC) has established a set of six core measures for institutions to assess their safety and quality standards. Compliance with VTE core measures will affect reimbursement from Centers for Medicare and Medicaid Services (CMS). The VTE core measure 5 (VTE-5) addresses specific warfarin therapy instructions that patients should receive prior to discharge. The purpose of this study is to assess hospital compliance with VTE warfarin therapy discharge instructions.

Methods: The study proposal will be submitted to the Institutional Review Board for approval. Computerized reporting system will be used to identify the patients that were discharged on warfarin therapy from August 1, 2013 through October 31, 2013. A retrospective chart review will be conducted. Information that will be collected includes patients demographics, education documentation, and the use of the VTE risk assessment and patient/family education forms. The primary endpoint will be to evaluate percent compliance with VTE-5. Secondary endpoints will include percent compliance with the use of VTE risk assessment form, readmission rates, and identification of the healthcare professional that provided the education.

9-150

Title: Incidence of adverse events and breakthrough fungal infections resulting in discontinuation of voriconazole use following allogeneic hematopoietic stem cell transplantation (allo-HSCT)

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Purpose: Voriconazole is the preferred antifungal agent at our institution for primary prophylaxis against invasive fungal infections post allogeneic hematopoeitic stem cell transplantation (allo-HSCT). Voriconazole has a nonlinear pharmacokinetic profile with wide inter- and intraindividual variability. Studies have shown a correlation with higher voriconazole blood trough levels and adverse events (AEs) and lower trough levels with breakthrough fungal infections. AEs, which may result in drug discontinuation, include visual disturbance, rash and hepatotoxicity. The objective of this study is to assess the need for voriconazole therapeutic drug monitoring post allo-HSCT by evaluating the incidence of discontinuations from AEs or breakthrough fungal infections.

Methods: This study was approved by the medication use and safety committee. A retrospective chart review will be conducted for adults who underwent allogeneic hematopoietic stem cell transplantation (allo-HSCT) at our institution between January, 2012 and December, 2012. Data that will be collected includes: patient age, gender, ethnicity, weight, underlying malignancy, source of stem cells, donor type, conditioning regimen, date of transplant, liver function tests, concurrent medications, and dose and duration of voriconazole therapy. Premature discontinuation of fungal prophylaxis with voriconazole related to adverse events (AEs) or treatment failures will be determined by one or more of the following: new anti-fungal agents added to treatment regimen, provider documented reason for discontinuation, reported AEs, documented fungal infection, pertinent physical findings and laboratory values. All information will be recorded without patient identifiers to maintain patient confidentiality. Upon completion of data collection, rates of voriconazole discontinuations will be calculated. Based on the findings, secondary analyses examining the effect of patient demographic factors and concurrent medications on rates of voriconazole discontinuation may be conducted.

9-151

Title: Missed opportunities: an analysis of how consistently patients receive appropriate medication therapy during transfer from the critical care unit to the medical floor

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Purpose: The purpose of this study is to identify the frequency of specific drug therapy problems that occur when patients are transferred from the intensive care unit (ICU) to the medical floor in a large community hospital. This information will be used to determine whether implementation of a protocol for medication review at this transition of care would be a beneficial use of quality assurance resources. Both patient safety factors and healthcare cost will be evaluated.

Methods: This is a prospective, observational, single center, cohort study. This study will be submitted for approval to the Institutional Review Board. All ICU patients with a complete admission medication reconciliation transferred to the general medical unit will be included. Patients discharged home from the ICU will be excluded. All subjects will be evaluated for three drug therapy problems: absent or delayed restart of home medications, inappropriate stress ulcer prophylaxis, and the continuation of medications that require more specialized monitoring than provided on the medical floor. This study intends to quantify and qualify the outcomes associated with delayed restart of home medications, number of patients continued on unnecessary stress ulcer prophylaxis, and the duration of inappropriate continuation of drips that require monitoring beyond the scope of a general medical floor. Descriptive statistics will be used to summarize the data.

9-152

Title: Use Evaluation of Ciprofloxacin at Erie County Medical Center

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Purpose: Since late 2005, Erie County Medical Center (ECMC) has had restrictions on ordering ciprofloxacin, with the current policy restricting use to critical care areas, urology, transplant service, or approval by the infectious disease service. Aside from antibiograms, ciprofloxacin has not been subject to a medication use evaluation since it became restricted within this facility. Objectives: Primary objective: To evaluate ciprofloxacin usage compared to clinical practice guidelines and institutional policies regarding its use. Secondary objectives: - To identify commonalities that may exist between cases in which ciprofloxacin was not ordered appropriately. - To review adverse drug events related to ciprofloxacin usage.

Methods: Identification of Patients and Recruitment: Potential subjects will be identified via an inquiry of the MEDITECH electronic health records for patients at ECMC who received ciprofloxacin during the period from January 1, 2010 through June 30, 2013. Eligible patients will be identified based on inclusion criteria via chart review of potential subjects. Data Analysis: Data will be collected only from patients meeting the inclusion criteria. The year during which treatment with ciprofloxacin was initiated will be recorded for statistical purposes. Demographic data collection will include patient age, weight, height, sex, hospital location, and admitting diagnosis. Treatment data collection will include type and site of infection, culture results, hospital service of prescriber ordering ciprofloxacin, dose and route of ciprofloxacin, number of doses of ciprofloxacin received and duration of therapy, evidence of adverse effects, other antibiotic use within 7 days prior to initiation of ciprofloxacin, other medications ordered concurrently with ciprofloxacin, and discharge antibiotics. Statistical Methods: Information collected with regard to the primary outcomes will be analyzed using descriptive statistics for characterization of hospital-wide ciprofloxacin utilization. The secondary outcome concerned with commonalties between cases of inappropriate ciprofloxacin usage will be explored using the Chi-square and Students t tests for categorical or continuous data, respectively.

9-153

Title: Adherence to Clostridium difficile infection institutional treatment guideline at a community teaching hospital

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Purpose: Clostridium difficile infection (CDI) has become one of the most significant nosocomial infections, resulting in added morbidity, mortality and cost to institutions. CDI can be difficult to treat as nearly 1 in 4 cases results in recurrent disease. University of Rochester Medical Center, Highland Hospital, developed and implemented a treatment guideline for CDI utilizing recommendations from IDSA/SHEA and available literature. Evaluation to ensure adherence to the institutional guideline is critical to help optimize CDI therapy. The purpose of this study is to assess adherence to the institutional guideline implemented at Highland Hospital for treatment of Clostridium difficile infection in adults.

Methods: We are performing an institutional review board approved retrospective analysis of adherence to the treatment guideline for presumed or documented CDI in adults at Highland Hospital in all patients who received treatment or prophylaxis with metronidazole (oral or intravenous) or vancomycin (oral or rectal) for CDI from 10/1/2011 to 3/31/2013. Cases of CDI will be defined by IDSA/SHEA criteria and excluded if CDI disease severity cannot be determined. Severity will be determined based on imaging findings, laboratory tests, vital signs and previously documented CDI disease as defined in the institutional guideline according to criteria by IDSA/SHEA and Zar et al. Adherence will be measured as a dichotomous variable (yes =1, no = 0). Data to characterize protocol adherence such as consulting services, concomitant antimicrobials, patient location and alternative treatments will be collected. Descriptive statistics will characterize the patient sample by age, sex and other characteristics relevant to comparing study results to other patient populations or practice settings. Logistic regression will be used to identify patient, service and visit characteristics that explain variation in adherence to the institutional guideline.

9-154

Title: Have laboratory ordering practices changed?: the influence of pretest probability scoring on PF4 ordering for heparin induced thrombocytopenia

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Purpose: Heparin induced thrombocytopenia (HIT) is a clinical pathologic syndrome that is easily misdiagnosed. Through the use of the 4T Score, you can more accurately identify those at intermediate - to-high risk of having HIT. Recent practice changes at our institution now require clinicians to submit the 4T score before ordering a PF4-antibody (Ab) assay. The purpose of this study is to determine if requiring the 4T score has decreased the ordering of inappropriate laboratory tests on patients with low risk of having HIT.

Methods: A combined retrospective and prospective chart review will be conducted on Albany Medical Center inpatients from June 2013 to April 2014. Patients over 18 years of age who have suspected HIT will be identified by use of an electronically generated report of all PF4-Ab assays that were ordered during the specified time period. Once these patients are identified; medical records, medication administration, and laboratory data will be reviewed. Data collection will include medical and surgical history, recent medications, platelet count trends, relevant imaging tests, prescriber submitted 4T score, PF4-Ab and serotonin release (SRA) assay results. This data will be utilized to independently calculate a 4T score. Both the independently calculated 4T score and the prescriber submitted 4T score will be compared against the results of the PF4 and SRA. Lastly, the study results will be compared to the results of a previous study from our institution prior to mandating 4T score submission.

9-155

Title: Daptomycin-induced hyperkalemia in a patient with normal renal function

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Case Report: We report the first case of hyperkalemia associated with daptomycin administration in a patient with normal renal function. A 46-year-old female with a past medical history of HIV/AIDS, leukopenia, anemia, seizures, depression, anxiety, osteochondroma, and Bergers disease was admitted to our hospital with the complaint of a swollen, painful right shoulder for several weeks. The patient was empirically started on vancomycin for the right shoulder abscess and then switched to daptomycin after her blood culture grew methicillin-resistant Staphylococcus aureus (MRSA) with a minimum inhibitory concentration (MIC) of 2 mcg/mL for vancomycin. On day 10 of daptomycin therapy, the patient was noted to have a potassium level of 5.4 mEq/dL that rose to 6.1 mEq/dL on day 11. Her hyperkalemia was treated with sodium polystyrene sulfonate and the daptomycin was held for 1 day. During the hold period, the potassium level normalized. After daptomycin was resumed at a lower dose, the patients potassium level increased again to 5.5 mEq/dL. For the remainder of the hospitalization, her potassium level was controlled with daily administration of sodium polystyrene sulfonate, and she was discharged with prescriptions to continue daptomycin and sodium polystyrene sulfonate via an ambulatory infusion service. Throughout the hospital stay, almost all home medications were continued without modification, and daptomycin and heparin were the only additions. The temporal relationship between the daptomycin regimen and the fluctuations of the potassium level lead to the conclusion that the adverse reaction was probably a result of daptomycin administration with a Naranjo probability score of 7. Health care professionals should be aware of this potentially serious adverse effect and monitor serum potassium levels when administering daptomycin.

9-156

Title: Correlating Anti-Xa Levels with the Dosing of Enoxaparin in Obese and Renally Impaired Patients

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Purpose: It is recommended that patients with obesity and/or renal insufficiency using enoxaparin for treatment and prevention of venous thromboembolism (VTE) should dose adjust according to anti-Xa levels. However, there is no recommended method for dose adjustment once levels are obtained. Also unknown is the anti-Xa level ranges when using enoxaparin for VTE prophylaxis or whether a maximum dose exists for obese patients. The primary objective of this study is to utilize serum anti-Xa levels to determine when dose adjustment is necessitated and whether a maximum enoxaparin dose exists when used in the prophylaxis or treatment of VTE in this population.

Methods: This study has been submitted and approved by the Institutional Review Board. This is a retrospective chart review to be performed at North Shore University Hospital, a quaternary care facility. A list of patients who received enoxaparin for thromboprophylaxis or treatment of VTE and had anti-Xa levels drawn during October 2011 to July 2013 will be obtained using the Electronic Medical Record. Patients will be included into the study if they are 18 years of age or older admitted to North Shore University Hospital and who fit all three of the following criteria: (1) have either obesity or renal impairment, (2) used enoxaparin for VTE prophylaxis or treatment during their hospital stay, and (3) have anti-Xa levels lab results drawn 4 hours after subcutaneous enoxaparin injection. Patients will be excluded if they are under 18 years old, pregnant, had a history of heparin-induced thrombocytopenia, or if the anti-Xa level was not drawn at the appropriate time. The following data will be collected from the patients' medical charts, Sunrise Clinical Manager, and pharmacy records: sex, age, height, weight, serum creatinine, hemoglobin, hematocrit, platelet count, treatment indications, dose and frequency of enoxaparin, total doses received, anti-Xa levels, and frequency of bleeding events.

Results: Pending

Conclusion: Pending

9-157

Title: Medication Use Evaluation of Palivizumab in the Pediatric Patient Population at NewYork-Presbyterian Hospital

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Purpose: Respiratory syncytial virus (RSV) is the most common cause of lower respiratory tract infections among infants and children. Palivizumab is the only Food and Drug Administration (FDA) approved medication available for the prophylaxis of RSV. While current American Academy of Pediatrics guidelines recommends prophylaxis in high-risk patients, it is unclear if inpatient administration of palivizumab decreases hospital length of admission. The objective of this medication use evaluation (MUE) is to assess NewYork-Presbyterian Hospitals (NYP) current prescribing and dispensing practices of palivizumab to evaluate potential areas of improved use and cost savings opportunities.

Methods: The intent of this retrospective analysis was to evaluate current prescribing and dispensing practices of palivizumab at NYP. Patients were eligible for inclusion in this study if they were less than 18 years of age and received at least one dose of palivizumab between September 2011 and May 2013. Data collected includes: patient demographics (date and time of birth, gestational age at birth, birth weight, gender, race, date of admission, date of discharge and/or death), medication related data (total number of palivizumab doses, date(s) of administration, age and weight at each palivizumab administration, dose, indication(s) for prophylaxis, and approval source for non-indicated doses), laboratory data (respiratory panel including RSV PCRs), and cost data (number of vials needed per dose). Further analysis of the collected data will determine the percentage of patients who inappropriately received palivizumab prophylaxis. The current NYP guideline will be modified to reflect the data discovered during this MUE with a subsequent analysis during future RSV seasons that evaluates the impact of guideline enhancement on cost and prescribing habits.

9-158

Title: Esomeprazole-induced hypomagnesemia, hypocalcemia and hypokalemia: a case report

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Case Report: Proton pump inhibitors (PPIs) are used widely in both the inpatient and outpatient settings. In 2009, PPIs were ranked as the third highest class of drugs sold in the United States. PPIs are used to treat acid related diseases such as peptic ulcer disease, symptomatic gastroesophageal reflux disease, erosive esophagitis, pathological hypersecretory conditions, stress ulcer prophylaxis and for the prevention of NSAID-induced gastropathy. Hypomagnesemia is an adverse event of PPIs that is underappreciated. PPI-induced hypomagnesemia was first reported in 2006, after which multiple similar case reports have been published. This led the Food and Drug Administration (FDA) to issue a safety warning in 2011 regarding the association between the use of PPIs and hypomagnesemia. According to the FDA, hypomagnesemia has been reported in patients taking PPIs for at least three months, with most cases occurring after a year of treatment. We present the case of a 69 year-old male who is admitted from a nursing home to the emergency department with severe hypomagnesemia, hypocalcemia and hypokalemia. After taking esomeprazole 20 mg for GI prophylaxis for approximately five years, the patient was discovered to have severe electrolyte abnormalities with a magnesium of 0.5 mg/dL (normal: 1.7 - 2.6 mg/dL), potassium level of 2.7 mEq/L (normal: 3.5 - 5.1 mEq/L) and corrected calcium of 7 mg/dL (normal: 8.4 - 10.2 mg/dL). Patient had been experiencing weakness and spasms of the fingers which coincide with the clinical presentation of his electrolyte abnormalities. His other concurrent medications included docusate, finasteride, escitalopram, NPH insulin, insulin aspart, prednisone, quietapine, montelukast, levothyroxine, multivitamin, budesonide inhalation, metoprolol, chlorhexidine, ferrous sulfate, simethicone and oxycodone. A review of his concurrent medications and comorbid conditions did not reveal any findings that could have contributed to the hypomagnesemia, hypokalemia and hypocalcemia. At the emergency department, the patient presented with prolonged QTc interval of 508 msec. The patient was on quetiapine 200 mg twice a day which in addition to the hypokalemia and hypomagnesemia, may have contributed to the QTc prolongation. Due to the possible side effect of hypomagnesemia, esomeprazole was discontinued and famotidine 40 mg once daily was initiated. He was treated with intravenous and oral electrolyte supplementation and discharged after three days. The electrolytes normalized and the patient was discharged in a stable condition and was continued on famotidine 40 mg once daily for GI prophylaxis. Currently, he resides in a nursing home and his electrolytes are within normal limits. There are several proposed mechanisms of how hypomagnesemia can occur secondary to PPI use, but the primary mechanism is through its effect on transient receptor potential melastatin subtype 6 or TRPM6. TRPM6 is responsible for the absorption of

magnesium in the kidney and GI tract and it is positively regulated by extracellular protons. The blocking of the H+/K+ ATPase activity through the action of PPIs prevents the release of protons that normally regulate the TRPM6 channel. By preventing the normal regulation of TRPM6, magnesium is not properly absorbed, leading to hypomagnesemia. Regardless of the numerous case reports, PPI-induced hypomagnesemia continues to remain underappreciated. Health care professionals should be cognizant of this adverse event when they prescribe long-term PPI therapy.

9-159

Title: Analysis of thirty-day readmission rates of patients enrolled in the medication management clinic over a one-year period

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Purpose: The thirty-day readmission rate, in our institution, for patients with Heart Failure (HF) in 2010 was 29.4%. In October 2010, the HF Medication Management Clinic (HFMMC) was established to reduce readmission rates for patients by providing medication reconciliation and counseling in an outpatient setting. After implementation, the baseline HF readmission rate for patients followed in the clinic was <3%. Due to such success, on June 1, 2012 the HF clinic was expanded to include patients with uncontrolled Asthma, COPD, and Diabetes and renamed the Medication Management Clinic (MMC). This study aims to analyze thirty-day readmission rates of MMC patients.

Methods: This study will be submitted to the Institutional Review Board for approval. This will be a retrospective cohort study in which information in the MMC database will be compiled and analyzed. This information will include patient demographics, pharmacist interventions, and thirty-day readmission rates. All patients who were followed in the MMC from June 1, 2012 through June 30, 2013 will be included. The primary endpoint will be the thirty-day readmission rates of patients in the MMC. Secondary endpoints will include the number and type of pharmacist interventions stratified by disease state, sixty-day MMC readmission rates, ninety-day MMC readmission rates, and reasons for readmission.

9-160

Title: The impact of a pharmacist-led tobacco cessation program

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Purpose: Tobacco dependence is a chronic condition that leads to serious health problems. Cessation is difficult and often requires multiple attempts. Among the 23.7 million current U.S. adult smokers, 68.8% report that they want to quit completely, and millions have attempted to quit smoking. Our objective is to initiate a pharmacist-led tobacco cessation program to identify and counsel admitted patients who are current everyday smokers. The goal is for patients to quit smoking or reduce the number of cigarettes smoked per day at day 30 post-counseling.

Methods: This study will be submitted to IRB for approval. This is a prospective study to evaluate the impact of pharmacist-led counseling on tobacco cessation. Patient inclusion criteria are: cognitive hospitalized patients 18 years or older, current everyday smokers, non pregnant, and English-speaking. The pharmacists will implement an organized workflow via the electronic medical record to identify these patients. Afterwards the pharmacist will administer a survey to assess the patients willingness to quit smoking and counsel the patients who are willing to quit smoking. The counseling program will consist of a 10 minute discussion concerning the hazards of smoking and techniques to quit smoking. Nicotine replacement therapy will also be offered to the patient, unless contraindicated. A follow-up telephone survey will be conducted at 30 days post-counseling session to determine whether or not the patient reduced the number of cigarettes smoked or quit all together.

9-161

Title: Evaluation of Inhaled Budesonide Use with Interacting Antiretroviral Medications in an Urban Institution

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Purpose: Asthma and COPD are common chronic disease states which can be more challenging to manage in patients also infected with HIV due to drug-drug interactions. Fluticasone and budesonide may cause HPA axis suppression when metabolism via CYP3A4 is inhibited by antiretroviral medications ritonavir or cobicistat (component of Stribild). The purpose of this study was to categorize the prevalence for co-administration of budesonide/formoterol with ritonavir or Stribild within an urban, institutional setting serving a large HIV population to evaluate the need for additional ICS/LABA combinations on hospital formulary.

Methods: This is a retrospective chart review, which did not require IRB approval, looking at prescribing patterns of budesonide/formoterol within our institution over a six month period from Feb-Aug 2013. The electronic medical record for the reported admission dates of all patients ordered budesonide/formoterol will be reviewed for interacting antiretroviral medications. For patients found to also be on ritonavir or Stribild, further data collection will include use of Symbicort prior to admission and intervention by pharmacy if one occurred. Descriptive statistics will be used to categorize the frequency of the offending interaction, as well as the number of interventions made by pharmacy. A cost-effective analysis will be performed to determine if it is justifiable for our institution to make additional ICS/LABA combinations available on formulary for use in this patient population.

9-162

Title: Evaluating the clinical safety and fiscal ramifications of two-hour co-infusion of ifosfamide and mesna: a retrospective chart review

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Purpose: The purpose of this study is to determine the incidence of minor and major urotoxicity associated with administration of a two-hour co-infusion of ifosfamide and mesna. Secondary goals of the study include conducting a cost analysis of the two-hour co-infusion of mesna as compared to traditional fractionated mesna dosing, and assess the need for therapeutic interventions for suspected hemorrhagic cystitis.

Methods: The incidence of major and minor drug induced urotoxicity associated with the non-traditional two hour co-infusion of ifosfamide and mesna will be evaluated through a retrospective chart review. All adult patients treated with two-hour co-infusion of ifosfamide and mesna as part of either an inpatient or outpatient regiment from October 1st 2012 to October 1st 2013 will be included in the chart review. Specific markers for toxicity, which will be analyzed, include the presence of blood in the urine as per urinalysis, urinalysis RBC/hpf, serum creatinine, serum albumin, blood urea nitrogen, and the presence or absence of any neurotoxicity. Other factors, which may contribute towards urotoxicity, such as the concomitant use of urotoxic drugs or virology data confirming the presence of BK virus or adenovirus serotype 11 or 21 of subgroup B, will be taken into account. Additionally, the need for intervention with hemorrhagic cystitis rescue therapy will be assessed and quantified. As a secondary objective, a cost analysis comparing the non-traditional two-hour co-infusion of mesna to the standard multiple bolus method of administration will be conducted.

9-163

Title: Pharmacist led dyslipidemia management in a patient centered medical home

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Purpose: Various studies have demonstrated pharmacists in outpatient settings have improved health outcomes in diabetes and hyperlipidemia. A novel setting for pharmacists includes the patient centered medical home (PCMH) which focuses on improving patient care through team based collaboration and increasing access to health care services. Utilizing a clinical pharmacist is a desirable way to help diabetic patients reach their lipid goals. This study aims to determine the utilization of a clinical pharmacist at a PCMH for dyslipidemia management in diabetic patients.

Methods: This study will be submitted to the Institutional Review Board for approval. Patient population includes those who are diabetic and have an LDL > 100 mg/dL stratified into two arms. One arm will include high risk patients defined as either having A1c > 9%, non-adherent or LDL > 130 mg/dL that have been difficult to manage. A clinical pharmacist with physician collaboration will manage the high risk group. The second arm will include low risk patients defined as an LDL < 130 mg/dL and will receive management by physicians who will also be provided with education on lipid management from a clinical pharmacist. Primary endpoints include LDL < 100 mg/dL and or those who reached an LDL lowering of at least a 30% reduction. Secondary endpoints include, total cholesterol, triglycerides, patient and physician satisfaction surveys, cardiovascular events, and hospital visits. A lipid panel will be measured at baseline and again after the study period concludes. Endpoints will be compared to patients that attend a separate PCMH that received usual care. Patients will be followed through office visits and phone calls. Monthly meetings will be held throughout the study period to educate physicians on dyslipidemia management and to discuss patient progress.

9-164

Title: Optimizing Communication Strategies with Pharmacy Staff

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Purpose: Interdepartmental communication is crucial to smooth departmental operations. In the past, both managers and pharmacy staff have suggested several different routes and methods of communication. The project seeks to improve departmental communication of pertinent information by identifying the communication method associated with the highest degree of information recall by pharmacy staff.

Methods: We will use four different methods of communication available to our departmentmessages in the electronic health record, a departmental email, the large information TV screen in the pharmacy distribution area, and the pharmacy newsletter. Our goal will be to identify the optimal source for department communications. We will use information from the September Therapeutics Meeting so that each of the 4 communication methods has the same information but one unique fact that the others do not contain. These will be distributed through normal mechanisms. A survey to pharmacy staff will be conducted 2-3 weeks later on the information contained in the communications to assess which communication tool resulted in the best staff retention of information.

9-165

Title: Caffeine citrate for optimization of electroconvulsive therapy: a case report

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Case Report: An electric current was first used to induce seizures in 1938 as a method for treating schizophrenia. The use of electroconvulsive therapy (ECT) soon became widespread throughout the world, but suffered a decline in the 1970's due to inaccurate public portrayal and erroneous perceptions. However, ECT continues to be an effective and safe form of treatment for severe depression and other mental disorders. Typically, the minimal effective duration for an ECT seizure is 15 - 20 seconds as measured on electroencephalography (EEG). As treatment continues, the seizure duration will decrease in the majority of patients due to an increased seizure threshold. Augmentation strategies for increasing seizure length include increasing the energy charge administered, decreasing or discontinuing concomitant medications that increase seizure threshold, hyperventilation prior to the seizure, changing the anesthetic used, or intravenous caffeine. The traditionally used agent, caffeine sodium benzoate, is produced by a single manufacturer who suspended production in April 2011. This case report describes the use of caffeine citrate for optimization of seizure duration in ECT. The FDA-approved indication for caffeine citrate is apnea of prematurity in neonates at maintenance doses of 5 mg/kg daily, either oral or intravenous route. An 80-year old African-American woman was admitted to the inpatient geriatric psychiatry unit from an adult home for major depressive disorder with psychotic features. According to family members, ECT had been utilized in the past and was considered effective, so ECT was initiated. As is expected, the patients length of seizure decreased over the course of each treatment. After maximizing the energy level on the ECT device, augmentation methods were considered. The patient was administered a trial of oral caffeine citrate for two sessions of ECT. The first dose of 400 mg oral caffeine citrate, given 1.5 hours prior to the treatment, resulted in a 100% increase in seizure duration from 18 seconds to 36 seconds. During the next session, the patient was given 600 mg oral caffeine citrate and showed an increase in seizure duration by 19% from the previous caffeinated ECT session, to 43 seconds. On later visits, intravenous caffeine citrate was used to better facilitate patient compliance with therapy. During one ECT procedure, an intravenous dose of 600 mg led to a 132% increase in seizure duration from 22 to 51 seconds, compared to the immediately prior non-caffeinated session. Subsequent treatment sessions utilized smaller doses of intravenous caffeine citrate ranging from 120 mg to 300 mg. These produced increases of 27 - 78% in seizure length. A literature search did not identify any reports on the use of caffeine citrate for prolonging seizure duration in ECT. As this case report suggests, caffeine citrate may be an option for seizure length augmentation during ECT. The use of both enteral and parenteral caffeine citrate on separate occasions helped increase seizure duration to a therapeutically beneficial range.

9-166

Title: Assessment of Conivaptan and Tolvaptan Use at a Large Academic Medical Center

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Purpose: Hyponatremia is the most common electrolyte abnormality in hospitalized patients and has been associated with increased morbidity and mortality. Vasopressin receptor antagonists promote aquaresis and are approved for the treatment of euvolemic and hypervolemic hyponatremia. Rapid correction of hyponatremia can cause osmotic demyelination syndrome that can lead to seizures, coma and death. The objective of this study is to evaluate compliance of conivaptan and tolvaptan prescribing practices with current New-York Presbyterian Hospitals (NYPH) policies and assess safety and efficacy associated with vaptan use.

Methods: This retrospective chart review will include adult patients who received at least one dose of conivaptan or tolvaptan at the two major NYPH campuses (Columbia University Medical Center and Weill Cornell Medical Center) between June 2012 and May 2013. The primary endpoint is the proportion of patients who received vaptan therapy in compliance with hospital policy. Secondary endpoints include the proportion of patients who received conivaptan or tolvaptan when sodium serum concentration <132 meq/L and <130 meq/L respectively, 24 hour net fluid balance, change in serum sodium at 24 hours, initial dose and dosing regimen of vaptans, proportion of patients receiving conivaptan >1 day and tolvaptan >30 days, number of basic metabolic panels monitored within 24 hours and incidence of adverse events. This study was submitted to the institutional review board at NYPH for approval.

9-167

Title: Impact of pharmacy resident involvement in hospital acquired clostridium difficile infection (CDI) reduction strategies in a community hospital

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Purpose: To determine if pharmacy resident involvement in reduction strategies will further decrease the rate of hospital acquired CDIs.

Methods: This study will be submitted to the Institutional Review Board for approval. Clostridium Difficile Associated Diarrhea (CDAD), CDIs, and Pseudomembranous Colitis (PMC) are among causes of morbidity and mortality in hospitalized patients. Multiple strategies were developed to minimize hospital associated CDI in patients meeting inclusion criteria. Strategies include, but not limited to, using doxycycline in conjunction with ceftriaxone in lieu of azithromycin in patients with Community-acquired pneumonia (CAP), limiting use of moxifloxacin in CAP patients, conversion of Proton Pump Inhibitors (PPI) to H2 Antagonists, and initiation of Saccharomyces Boulardii (Florastor), the probiotic agent of choice, in patients receiving antimicrobial therapy. Pharmacy resident will ensure compliance with strategies by reviewing daily utilization reports of azithromycin therapy, PPIs, and targeted antimicrobial agents. To further promote reduction strategies pharmacy resident will review patient profiles, make recommendations during interdisciplinary rounds, and conduct educational in-services. Involvement of pharmacy resident in implementation of reduction strategies will be evaluated by pharmacy purchasing history, and number of provider orders for PPIs, probiotics, and targeted antimicrobials.

9-168

Title: Successful management of Clostridium cadaveris bacteremia in a paraplegic patient

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Case Report: Clostridium cadaveris is an enteric, gas-forming, anaerobic gram-positive bacterium, which normally colonizes the gut flora and is considered non-pathogenic. Infectious C. cadaveris in humans is extremely rare. The majority of published cases describe infections of intestinal origin in immunocompromised hosts. Of the nine pathogenic C. cadaveris case reports found in current literature, only one has documented bacteremia in an immunocompetent host secondary to necrotic pressure ulcers. This case raised speculation that infected pressure ulcers, in the absence of immunosuppression, may exist as a risk factor for invasive anaerobic infection by C. cadaveris. To our knowledge, we report the second case of C. cadaveris bacteremia in a paraplegic host with competent immune function. A 23-year-old male, 510, 59 kg, with paraplegia and suprapubic catheter status post gunshot wound (2012) was admitted with the chief complaint of severe lower-mid back pain and diarrhea that began two days prior. Multiple pressure ulcers were present (i.e., three stage II of left heel, right foot, right knee; one stage III of sacrum; three stage IV of sacrum, and bilateral buttocks). His past medical history is significant for deep vein thrombosis and urinary tract infections. No recent trauma was noted. Medications prior to admission included warfarin, ascorbic acid, and a multi-vitamin. Upon admission, the patient was anemic (hemoglobin 7.7 grams per deciliter; hematocrit 24 percent), tachycardic (pulse 119 beats per minute), slightly febrile (99.8 degrees Fahrenheit), and hypokalemic (3.3 milliequivalents per liter). Urinalysis revealed cloudy urine with a large amount of leukocyte esterase present. Empiric treatment with piperacillin/tazobactam 3.375 gm IV every 6 hours was initiated. White blood cell count of 5,600 cells per cubic millimeter was recorded at admission, but rapidly increased to 19,800 cells per cubic millimeter the following day. The blood specimen from admission yielded anaerobic gram-positive rods. Subsequently, antibiotic therapy was adjusted to vancomycin 1 g IV q12h and doripenem 500 mg IV q8h on day 3. On day 5, identification of C. cadaveris was established. At this time, patient had already received 2 doses of piperacillin/tazobactam, 10 doses of doripenem, and 6 doses of vancomycin. On day 6, the infectious disease team initiated metronidazole 500 mg IV q8h with the intention of eradicating C. cadaveris; however, a blood culture drawn the day prior revealed resolution of C. cadaveris. Sensitivity and susceptibility reports became available on day 9 of admission which showed C. cadaveris susceptible to ampicillin/sulbactam, cefotaxime, cefoxitin, ceftizoxime, chloramphenicol, clindamycin, metronidazole, penicillin, pipericillin, and tetracycline. Temperature normalized and leukocytosis resolved by day 10. Six repeat blood cultures drawn day 5 through discharge on day 17 remained negative for C. cadaveris. A MEDLINE search (1950 August 2013)

was conducted using the following keywords: Clostridium cadaveris, cadaveris, Clostridium capitovale, and capitovale. The search revealed only 7 case reports and 1 case series consisting of 2 cases. Thus far, metronidazole and beta-lactam antibiotics have been the primary agents of choice for C. cadaveris bacteremia. This report adds to the paucity of literature and provides further information regarding the organisms susceptibility to antimicrobial therapy. As described in this case, our patient was successfully treated with the combination of piperacillin/tazobactam, doripenem, and vancomycin. Although C. cadaveris bacteremia secondary to extra-intestinal origin is rare, providers must be cognizant that advanced stage pressure ulcers increase the risk of acquiring this pathogenic infection, irrespective of immune function.

9-169

Title: Evaluation of the prescribing pattern and pharmacoeconomics of intravenous acetaminophen at a large tertiary care hospital

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Purpose: Intravenous acetaminophen is approved for mild to moderate pain and moderate to severe pain in conjunction with opioids. This formulation is costlier and more invasive than the oral form and superior clinical efficacy has not been definitely proven. Currently, a protocol for prescribing this medication is underdeveloped and unenforced. The primary objective of this study is to determine whether IV acetaminophen is being prescribed appropriately, with regard to patients' ability to take oral medications and the maximum daily dose. Secondary objectives include comparing the pharmacoeconomics of IV and oral acetaminophen and determining the frequency of use with other pain medications.

Methods: This study will be submitted to the Institutional Review Board for approval. Patients who were prescribed IV acetaminophen from May 2013 through July 2013 will be identified via the electronic medical record system. The following information will be collected: whether the patient was taking other oral medications, if the IV acetaminophen was ordered as needed or as a scheduled order, other pain medications received, other medications containing acetaminophen administered, and antiemetics given. If a patient was prescribed other oral medications but was not receiving them during the time of IV acetaminophen administration, the patient's chart will be reviewed to identify any contraindications to oral medications. All data will be confidential and individually identifiable information will be removed. Percentages of the following will be calculated: patients receiving IV acetaminophen while receiving other medications orally, other pain medications administered, and patients receiving more than the maximum daily dose of acetaminophen. A pharmacoeconomic analysis comparing IV and oral acetaminophen will also be conducted. If inappropriate prescribing is occurring frequently and is associated with significantly higher cost, a plan for restricted IV acetaminophen ordering will be developed. Data are currently being collected. The results will be presented at the 2013 ASHP Midyear Clinical Meeting.

9-170

Title: Evaluation of the use of computerized physician order entry (CPOE) heparin protocols

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Purpose: Unfractionated heparin (UFH) remains an important parenteral anticoagulant for the treatment of several thrombotic disorders. A study evaluating 400 patients being treated for pulmonary embolism demonstrated that patients who achieved a therapeutic aPTT in <24 hours had lower-in-hospital and 30-day mortality rates compared to those who did not. In June 2013, the heparin protocols at this institution were converted to Computerized Provider Order Entry (CPOE) and are now being ordered as electronic ordersets. Given the recent change to CPOE, the purpose of this evaluation is to assess the appropriate implementation of the CPOE heparin protocols.

Methods: This retrospective chart review of adult patients initiated on one of four heparin protocols will be conducted over a 4-month period, or until 25 patients have been collected for each protocol. Data will be collected via the patients electronic medical record. Data gathered will include patient demographics, the specific heparin protocol ordered, baseline laboratory values, appropriate monitoring ordered according to the protocol, time aPTT was ordered, the time aPTT came back, time the rate was adjusted or a bolus was given, and time to achieve therapeutic aPTT. Information regarding adverse effects such as thrombocytopenia and bleeding will also be collected. The data will be analyzed to determine if the heparin protocols are being implemented appropriately. Patient outcomes with regards to supra and sub-therapeutic aPTTs will be evaluated as well as thrombocytopenia. The protocol for this evaluation and all research conducted during this process has been approved by the Pharmacy and Therapeutics Committee. Review by the Institutional Review Board is waived as this research will be used for quality assurance purposes only.

9-171

Title: Impact of the implementation of medication flashcards and patient-centered drug information email service on patient satisfaction survey scores (HCAHPS)

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Purpose: The Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) is a survey that objectively measures patient satisfaction and their perception of their hospital stay. CMS has begun setting reimbursement levels based on HCAHPS scores, in which one component addresses how well the staff communicated with patients about their medication. Performance on this component could be improved with additional pharmacy assistance. The purpose of this study is to evaluate the effect of the varied implementation of pharmacy-designed teaching interventions on patient scores, utilizing Press Ganey survey scores as a surrogate to the final HCAHPS survey.

Methods: This study is a quality improvement project and was approved by the Pharmacy Quality Improvement Committee in lieu of the Institutional Review Board. The pharmacy department developed two interventions that will be implemented individually or in combination with one another on seven targeted nursing units. These interventions include utilizing medication flashcards as a teaching exercise and a patient-centered drug information email service to address medication-related questions. The medication flashcards were designed to facilitate learning through a teach-back methodology that is quiz-like in nature, allowing nurses to interactively engage with patients. The drug information email service will provide patients with an opportunity to express any concerns or questions about their medications, uniquely providing an extension of communication between pharmacy and patients post-discharge. The data collected in this study will consist of the patients' responses to the medication questions on the HCAHPS survey through using Press Ganey survey scores as a surrogate marker. These survey scores will be evaluated on a monthly basis, comparing the scores before and after the implementation of the project. Utilizing a design of experiments, this project will assess if either the flashcards or email service alone or in combination will provide a change in patient scores.

9-172

Title: Medication utilization evaluation of the novel oral anticoagulants: dabigatran, rivaroxaban and apixaban

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Purpose: Dabigatran, rivaroxaban, and apixaban gained recent popularity due to easier dosing, fewer interactions and lack of routine monitoring compared to warfarin. The American Heart Association/American Stroke Association recommend dabigatran, rivaroxaban and apixaban as alternatives to warfarin for stroke prevention in nonvalvular atrial fibrillation (AF). All three agents are indicated for prevention of stroke and systemic embolism in AF. Rivaroxaban has additional indications for treatment of deep vein thrombosis (DVT), pulmonary embolism (PE)and DVT prophylaxis post-orthopedic surgery. The purpose of this medication use evaluation was to analyze the appropriate use of all three novel anticoagulants.

Methods: An Institutional Review Board approval was not required for this research study. A retrospective chart review of patients who received at least one dose of the three oral anticoagulants (dabigatran, rivaroxaban or apixaban) from June 2013 through August 2013 was conducted. The primary endpoints are efficacy and safety of the novel oral anticoagulants. Secondary endpoints included analysis of appropriate dosing, readmission rates, and evaluation of other concomitant anticoagulant use.

Results: A total of 30 patients' electronic medical records were analyzed. The patients' average age was 68 years with more males (53.3 percent) compared to females (46.7 percent). The average length of stay was 5.6 days. Out of all patients, 10 received dabigatran, 16 received rivaroxaban and 4 received apixaban. All patients in the dabigatran and apixaban groups were being treated for stroke prevention due to AF, whereas the indications for rivaroxaban varied to include stroke prevention due to AF (25 percent), DVT/PE treatment (31.3 percent) and DVT prophylaxis (37.5 percent). One patient receiving dabigatran developed a pulmonary embolism. Forty percent of patients in the dabigatran group had documented subtle signs and symptoms of bleeding compared to 25 percent of patients in the rivaroxaban group. No thromboembolic events or documented subtle signs and symptoms of bleeding were noted in the apixaban group. There were no major bleeds in any of the three groups. All patients were dosed appropriately according to indication, creatinine clearance, and agent-specific recommendations. All patients received appropriate consults as per hospital policy. Ninety percent of

patients were discharged on their respective anticoagulant with a 13 percent non-medication related 30-day readmission rate. None of the patients analyzed expired.

Conclusion: According to this medication use evaluation of the three novel oral anticoagulants, the indications for which the agents are utilized are appropriate. Only a few patients experienced thromboembolic events and subtle signs and symptoms of bleeds. There were no medication-related 30-day readmissions or mortality in all three groups.

9-173

Title: Evaluation of combination antithrombotic medications for appropriateness of therapy and safety monitoring

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Purpose: To evaluate the usage of antithrombotic medications and to determine if patients receiving multiple antithrombotic agents have valid indications for usage, are being treated for the recommended duration of therapy, and are being monitored for safety.

Methods: This retrospective medication usage evaluation (MUE) was performed by collecting information from a list of patients who had active outpatient orders for aspirin, warfarin, or clopidogrel. Patients included in this MUE had any combination of two or three of the studied medications. Information was collected for a two month period via the facility's computerized record system. Data collected included medication name, indication, duration of use, interventions (stent placement, peripheral bypass graft, and carotid endarterectomy), past medical history of stroke, CHADS2 score, and laboratory values for INR, hemoglobin, hematocrit, and platelets. To determine if therapy was appropriate, antithrombotic regimens, durations of therapy, and aspirin doses documented in the computerized record system were compared with recommendations and suggestions published in the Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines.

Results: Data were collected for 96 patients; 5 were excluded. Triple antithrombotic therapy with warfarin, aspirin, and clopidogrel was appropriate in 50 percent (n equals 2) of patients. Dual antithrombotic therapy with warfarin and clopidogrel was appropriate in 87.5 percent (n equals eight) of patients. Dual antithrombotic therapy with aspirin and clopidogrel was appropriate in 53 percent (n equals 62) of patients. Dual antithrombotic therapy with warfarin and aspirin was appropriate in 89 percent (n equals 19) of patients. In 93 percent of patients, serum hemoglobin, hematocrit, and platelets were monitored within twelve months prior to the end of data collection, while 87 percent had these parameters monitored within the prior six months. In 79 percent of patients on warfarin, INR values had been checked within one month prior to the end of data collection.

Conclusion: American College of Chest Physicians guidelines were adhered to more strictly in patients who were receiving antithrombotic therapy with an anticoagulant (warfarin) and a single antiplatelet agent (aspirin or clopidogrel). In general, patients were adequately monitored for safety. There is opportunity for improvement in warfarin therapy monitoring. Further investigation should be performed to identify the necessity of dual antithrombotic therapy for patients who are receiving both

aspirin and clopidogrel. A larger patient population is needed to assess whether patients treated with triple antithrombotic therapy consisting of aspirin, clopidogrel, and warfarin are receiving appropriate antithrombotic therapy.

9-174

Title: Retrospective evaluation of 30 day readmission rate of patients with congestive heart failure (CHF)

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Purpose: Readmission of patients who were recently discharged after hospitalization with CHF represents an expensive and often preventable adverse outcome. Nationally, nearly 25 percent of CHF patients are readmitted within 30 days. Readmission rates are influenced by many factors, such as the continuity of care. The purpose of this study was to determine whether disruption in continuity of medication therapy post hospital discharge increased the rate of readmission in patients with congestive heart failure.

Methods: This was a retrospective drug-use evaluation involving 74 patient discharges after an inpatient visit with a primary diagnosis of CHF from June 2011 to June 2013. Institutional review board approval was not required. Outpatient prescription fill data were collected from software interface with insurance billing line summaries. Only patients whose discharge dates fell within a continuous date range of documented prescription fills to ensure data accuracy were included in this study. The primary outcome measure was the rate of 30 day readmission for CHF patients who did or did not fill their prescriptions, and those who filled their prescriptions late. Secondary outcome measures included: average time until prescription fill, quality of medication reconciliation for those who were readmitted within 30 days, and readmission rates for different lengths of stay (LOS).

Results: The 30 day readmission rates for those who filled prescription on day of discharge (day 0, n equals 13) was 7.69 percent compared with 31.08 percent for those who filled later (n equals 61). The readmission rates for those who filled their prescription within 1 day (n equals 24), 2 days (n equals 34), 7 days (n equals 51), 14 days (n equals 59), and 30 days (n equals 68) were 20 percent, 20.59 percent, 29.41 percent, 28.81 percent, and 26.47 percent, respectively. For those readmitted within 30 days, the average time until prescription fill was 27.09 days compared with those not readmitted within 30 days of 9.02 days. Medication reconciliation was done 100 percent of the time within 24 hours. However, 58 percent of the medication reconciliation for those who were readmitted within 30 days had either omissions in therapy or inappropriate prescriptions. The average length of stay was 7.13 days for those who were readmitted within 30 days and 6.16 days for those not readmitted within 30 days.

Conclusion: There was an association between when prescription was filled in comparison with the 30 day readmission rates of patients with CHF. The time to prescription fill was lower in the group who were not readmitted within 30 days. Medication reconciliation was always done in a timely manner. However, there was room for improvement in its content. The clinical significance of these findings must be determined in larger studies.

9-175

Title: Evaluation of prazosin use in veterans with posttraumatic stress disorder (PTSD)

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Purpose: PTSD is a debilitating anxiety disorder that impacts a large percentage of the United States population, in particular, veterans. Typically, patients develop recurrent nightmares and hyperarousal symptoms that can lead to insomnia. These symptoms may be due to a conditioned response that is regulated by norepinephrine. Prazosin, an 1 antagonist, can decrease levels of norepinephrine in the central nervous system, thereby reducing PTSD-related nightmares. Current data indicates that prazosin can improve sleep and reduce nightmares associated with PTSD. The objective of this study is to evaluate the efficacy of prazosin in reducing PTSD-related nightmares amongst veterans at our facility.

Methods: This is a quality improvement study. Approval by the Institutional Review Board is not required. The electronic medical record system will be utilized to identify and screen for veterans with an active outpatient order for prazosin prescribed by a mental health (MH) provider between September 1, 2012 to September 4, 2013. Patients meeting Diagnostic and Statistical Manual of Mental Disorders (DSM) IV criteria for PTSD, with PTSD-related nightmares will be included in the study. The following data will be collected without patient identifiers to maintain confidentiality: age, gender, combat history, Post-Traumatic Stress Disorder Checklist- Military Version (PCL-M) scores, living status, prazosin prescribing details and compliance, psychiatric comorbidities, adverse events, concurrent medications and non-pharmacological treatments, MH provider follow-up and monitoring, and the frequency of PTSD-related nightmares pre- and post- prazosin treatment. Data will be analyzed to assess for reduction of PTSD-related nightmares while using prazosin.

9-176

Title: Analysis of the rates of discontinuation of antibiotics based on procalcitonin levels in the hospital setting before and after institution of an informational program

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Purpose: Antibiotic stewardship continues to be an important part of pharmacy practice. The utilization parameters for procalcitonin remain largely undefined, however there is potential for use of procalcitonin levels as a tool for antibiotic de-escalation. We would like to assess the change in rate of antibiotics being discontinued if procalcitonin levels do not indicate infection, before and after education on use of procalcitonin was supplied to medical residents.

Methods: We plan to retrospectively assess the relationship between procalcitonin levels being ordered by physicians, and antibiotic discontinuation when the procalcitonin level indicates a low likelihood of infection. We will measure this parameter in average days on antibiotics. A retrospective study will be conducted over a two month period at Christus Spohn Memorial Hospital to provide baseline parameters. Then, we plan to conduct a primary literature-based educational presentation regarding parameters for the use of procalcitonin as a serum marker for existence of bacterial infection requiring antibiotic usage. For two months after the education is provided, we plan to re-assess relationship between procalcitonin levels being ordered by physicians, and antibiotic discontinuation and then evaluate the change in frequency.

9-177

Title: Impact of antimicrobial stewardship program with pharmacist intervention on inpatient piperacillin/tazobactam deescalation

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Purpose: Deescalation of broad spectrum antimicrobials is one of the key elements of an antimicrobial stewardship program (ASP). Deescalation prevents unnecessary antimicrobial exposure and decreases costs of therapy while allowing prompt initiation of appropriate treatment. Piperacillin/tazobactam (P/T) is one of the most frequently used antimicrobials in our institution, a 1400-bed teaching hospital in the Bronx, NY. According to results from the Evaluation and Research on Antimicrobial Stewardships Effect on Clostridium difficile Project, Clostridium difficile infection is highly associated with P/T use. This study will review the outcomes of pharmacist managed P/T deescalation with ASP guidance.

Methods: A daily report of patients who have been on P/T for greater than 72 hours without an infectious disease consult is generated. With guidance from the ASP team, a pharmacist reviews each patient and identifies opportunities for therapy deescalation based on diagnosis or presumptive diagnosis, culture/sensitivity data, drug toxicities or side effects, or availability of appropriate oral therapy. Impact of pharmacist intervention acceptance rate on duration of P/T therapy, appropriate deescalation of therapy, length of stay, Clostridium difficile infection rate, and patient readmission rate will be reviewed. This study is exempt from IRB review because it is a quality improvement initiative.

9-178

Title: Managing warfarin therapy in a patient receiving two hepatic cytochrome P450 (CYP450) inducers: nafcillin and rifampin

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Case Report: Warfarin is an oral anticoagulant indicated for the treatment and prevention of venous thromboembolism. Warfarin has a narrow therapeutic index and numerous interactions that necessitate careful monitoring and dose titration. Many of the clinically significant interactions associated with warfarin result from induction and inhibition of warfarin hepatic metabolism via the cytochrome P450 enzyme system. We report a case of nafcillin plus rifampin increasing warfarin metabolism. A 63-year-old female (5 feet, 67 kg, Scr 0.75 mg/dL, CrCl 59 mL/min) status post transesophageal fistula repair, with left hemiparesis secondary to a recent cerebrovascular accident was admitted to the traumatic brain injury unit for rehabilitation. Prior to admission, the patient was receiving warfarin 5 mg by mouth at bedtime for acute deep vein thrombosis and nafcillin 2 g intravenously every 4 hours plus rifampin 300 mg by mouth every 8 hours for mitral valve endocarditis due to methicillin sensitive Staphylococcus aureus. Rifampin and nafcillin were initiated 5 and 11 days prior to admission, respectively. The date of warfarin initiation could not be obtained. On admission, warfarin, nafcillin, and rifampin were continued at the pre-admission dosages, however the INR was subtherapeutic (1.13), and enoxaparin 70 mg subcutaneously every 12 hours was added for bridging therapy. It took 29 days of escalating warfarin doses up to 14 mg to achieve an INR of 2.05 (target 2 to 3). The INR remained within target range for only two days, prior to becoming subtherapeutic (1.59) on day 31. On day 32, rifampin and nafcillin were discontinued, and the warfarin dose was reduced to 8 mg to prevent a rebound increase in INR. Upon patient discharge on day 36, four days after nafcillin and rifampin were discontinued, the INR was subtherapeutic (1.48), and the patient was continued on warfarin 7 mg by mouth at bedtime and enoxaparin 70 mg subcutaneously every 12 hours for bridging therapy. Subtherapeutic INR at discharge may have been due to the large decrease in warfarin dose upon rifampin and nafcillin discontinuation. Prior case reports have demonstrated that nafcillin and rifampin's effect on INR wears off gradually, and a slow taper of the warfarin dose over a few weeks with frequent INR measurements is indicated. At an outpatient visit, one month after discharge, while on warfarin 10 mg per day, the patient's INR was found to be supratherapeutic (4.64), demonstrating increased response to warfarin when administered without concurrent rifampin and nafcillin. A MEDLINE search (1950 to August 2013) revealed nine case reports/series and two trials of rifampin-induced warfarin metabolism and seven case reports of nafcillin-induced warfarin metabolism. To our knowledge, there are no case reports of concurrent nafcillin plus rifampin enhanced warfarin metabolism. While the interaction between rifampin and

warfarin is well documented, nafcillin remains a poorly recognized warfarin inducer. Additionally, while the interaction of warfarin with rifampin and nafcillin has been recognized for many years, there are limited published data of these interactions and their management. Clinicians should be cognizant that nafcillin is an inducer, and the combination of rifampin and nafcillin may cause exaggerated induction and take days to wear off.

9-179

Title: Implementation and evaluation of a vancomycin dosing per pharmacy protocol in an inpatient oncology unit

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Purpose: Appropriate dosing and monitoring of vancomycin are necessary to prevent bacterial resistance, reduce adverse events, and optimize outcomes. Results from a prior medication use evaluation (MUE) assessing vancomycin dosing and monitoring in an inpatient oncology unit prompted the development of a vancomycin dosing per pharmacy protocol and policy to be implemented on that unit. The objective of this study is to evaluate the efficacy and feasibility of vancomycin dosing per pharmacy with the hopes of expanding the service to other inpatient units.

Methods: This study was approved by the Medication Use and Safety, Pharmacy and Therapeutics, and Pharmacy Performance Improvement Committees as a quality assurance initiative. Previously developed educational materials will be used to in-service pharmacists, physicians, and nurses staffing the inpatient oncology unit. A competency assessment exam will be given to pharmacists to evaluate their capability in dosing and monitoring blood levels of vancomycin. Data will be collected for three months post-implementation from computerized charts and pharmacist-generated patient monitoring sheets for all patients receiving at least one vancomycin dose per pharmacy protocol. This data will include patient age, gender, weight, serum creatinine and calculated creatinine clearance, dose, time of dose, vancomycin levels, and the time levels were drawn. To determine overall efficacy, outcomes under the protocol will be compared to those of traditional physician-managed vancomycin, as analyzed in the prior MUE. These outcomes will include percent of patients with correct initial dosing, frequency, and timing of levels, percent with levels obtained who were on five or more days of therapy, and percent attaining therapeutic range based on indication.

9-180

Title: Impact of clinical pharmacist interventions on 30-day readmission rate in hospitalized patients with acute myocardial infarction

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Purpose: Acute myocardial infarction (AMI) is a common disease with serious consequences in mortality, morbidity, and health care costs. Re-infarction is a major outcome of AMI and on average, 280,000 Americans experience a recurrent attack each year. Clinical pharmacists have been shown to improve the care of cardiovascular patients. The primary objective of this study is to evaluate the overall effect of clinical pharmacist interventions on preventing hospital readmissions and improving the health of patients with acute myocardial infarction.

Methods: This prospective, non-randomized study will be submitted to the Institutional Review Board for approval. The hospital's current, monthly rolling average on AMI readmissions will be used as the control group. For the study group, a report will be generated daily to identify patients admitted to the hospital with a diagnosis of AMI. The principal investigator will review this report daily Monday through Friday. If the patient meets the inclusion criteria, the principal investigator will then provide counseling to the patient as well as address and document the following points: names of medications, indications, dosages, frequencies, adverse effects, receipt of education booklet, reinforced physical activity (per physician), reinforced alcohol limit (per physician), smoking cessation (if applicable), and cost concerns. Documentation will also include the average time spent counseling the patient, as well as the utilization of translators by the health care team. The principal investigator will then provide a follow-up phone call to the patient within 48 hours of his/her discharge to address compliance and any issues with accessing the discharge medications. Thirty days after the patient has been discharged, the primary investigator will review the patient's chart to determine if the patient has been readmitted.

9-181

Title: Development of suicidal ideation in veterans after initiation of an antidepressant

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Purpose: The veteran population accounts for approximately 20% of suicides in the United States and an estimated 18-22 veterans die each day due to suicide. The purpose of this study is to compare the rates of suicidal thoughts and suicide attempts in patients admitted to the acute inpatient psychiatry unit after starting an antidepressant vs. those not on an antidepressant. Additional risk factors will be compared between groups.

Methods: This study will be a retrospective chart review of patients admitted to the inpatient psychiatric unit with suicidal thoughts or following a suicide attempt between January 2010 and January 2012. The data collection will include sociodemographic information and suicide risk and protective factors. Rates for suicidal thoughts and suicide attempts will be compared using summary statistics. Chi Square analyses will determine differences in categorical independent variables between groups. Logistic regression will look for significant differences in risk factors between the two groups (antidepressant therapy, Y/N). Risk and protective factors include previous suicide attempt, family history of suicide attempt, age (range), psychiatric provider (Y/N), psychiatric diagnoses, military sexual trauma, legal issues, presence of a significant other, employment, education, homelessness, drug abuse, alcohol abuse, terminal diagnosis, and psychiatric hospitalization within the last 30 days. For patients taking an antidepressant, the time since antidepressant was started and suicidal thoughts or attempt occurred will be reported. This study is estimated to have a 90% power to detect a difference between groups with a sample size of 132 patients in each group with significance accepted at P less than 0.05. This project has been submitted to the Institutional Review Board for approval.

9-182

Title: Comparison between actual and potential cost savings related to an inpatient antibiotic stewardship program.

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Purpose: The purpose of the inpatient antibiotic stewardship program is to establish guidelines to assist the medical staff in choosing antibiotic therapy that is efficacious, safe, and cost effective. A retrospective chart review comparing the cost of drug therapy between cases where recommendations from the antibiotic stewardship service were followed versus not followed, will be conducted to determine the actual savings and missed (potential) savings.

Methods: This study is exempt from IRB review as it is an internal program cost savings analysis. A list of patients that had recommendations made in the electronic medical records from January 1, 2012 to March 31, 2012 will be obtained via the antibiotic stewardship program data sheets (saved in Excel). The following data will be collected: the pre and post recommendation antibiotic regimens (drug name, dose, dosing interval), recommendation types, whether recommendations were followed, and the number of doses/days of each therapy administered. The cost of each pre and post recommendation drug regimen will be determined. Cost savings will be calculated by determining the cost of the final regimen and comparing it to the cost had the original regimen been continued for the same duration of inpatient therapy. The medication costs and cost savings will also be categorized by recommendation type.

9-183

Title: Patient satisfaction with service delivery in an ambulatory care anticoagulation clinic

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Purpose: Use of diagnostic tests such as INR help guide anticoagulant therapy and rapid access to INR test results is valuable when managing patients in an anticoagulation clinic (AC). Currently, in the AC, INR levels are obtained via laboratory venipuncture, which requires patients be present for extended periods of time while awaiting results. Point of Care (POC) testing would offer a convenient alternative to current practice, with a decreased wait time. Plans are in progress for implementing POC testing at this institution. The study aims to assess patient satisfaction with clinic services before and after implementing POC testing in the AC.

Methods: The study will be submitted to the Institutional Review Board for approval. Clinic patients will be included if they are taking warfarin and have been managed by the anticoagulation clinic for at least four weeks. Patients will be excluded if they are not capable of answering questions or do not speak the English language. Patient demographic data and survey responses regarding patient satisfaction will be collected and analyzed. The time that elapses between the patients registration and the time the patient is seen by a health care provider will be recorded as well. The primary outcome will be patient satisfaction with the services provided at the AC. Secondary outcomes include patient perception of clinic wait time and time spent with a health care provider, time that elapses between registration and meeting with a health care provider, and patient-reported adherence to the prescribed warfarin regimen. After POC testing is implemented in the AC, the same outcomes will again be assessed in clinic patients.

9-184

Title: Evaluation of the pharmacy-initiated dose adjustments for antimicrobial agents

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Purpose: The Pharmacy-Initiated Dose Adjustment for Specified Medications Policy (CL.35) was originally approved in August 2006, and most recently updated and approved in June 2007. This policy makes the pharmacist responsible for calculating an appropriate dose for the medications included in the policy based on a patients height, weight, age, estimated creatinine clearance, site of infection, and infecting pathogen. Dosage adjustment guidelines are provided within the policy. The purpose of this evaluation is to assess the appropriateness of the dosage adjustments made to medication orders and to ensure that orders that have been verified without a dosage adjustment were appropriate.

Methods: This is a retrospective chart review of adult patients admitted to the hospital who were initiated on specified antimicrobial agents. A total of five antimicrobial dosage adjustments per pharmacist will be assessed for those patients meeting the inclusion criteria. Patient information that will be extracted and recorded from the electronic medical record, and will include: patient demographics of age, weight, and renal function, antimicrobial treatment information, the pharmacist modifying or verifying the medication order, and any adverse outcome of the patient. The data will be analyzed to determine the appropriateness of the pharmacist interventions in which dosage adjustments were made per policy CL.35, and to assess the appropriateness of the verification of medication orders in which no adjustment was made, but may have been necessary. The protocol for this evaluation and all research conducted during this process has been approved by the Pharmacy and Therapeutics Committee. Review by the Institutional Review Board is waived as this research will be used for quality assurance purposes only.

9-185

Title: Post hip and knee arthroplasty venous thromboembolism prophylaxis: a retrospective comparison of failure rates between aspirin and standard treatment and potential risk factors for failure

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Purpose: Aspirin has not traditionally been recommended as monotherapy for venous thromboembolism (VTE) prophylaxis in post hip and knee arthroplasty patients. Recently, the 2012 American College of Chest Physicians (ACCP) guidelines recommended that aspirin can be used as monotherapy for VTE prophylaxis. The objective of this study is to retrospectively compare the rate of treatment failure in aspirin treated patients to patients who received standard treatment. In addition, risk factors for treatment failure will be investigated in patients who failed treatment with aspirin and standard treatment.

Methods: This study has been submitted to the Institutional Review Board for approval. Patients who underwent hip and knee arthroplasty between 1/1/2011 and 8/28/2013 will be identified using ICD-9 codes and these patients will then be screened for readmission within 35 days to assess for treatment failure. Treatment failures will also be identified through reviews of all patients and by selective chart review by a member of the quality management team. Data collected will include pharmacologic and non-pharmacologic VTE prophylaxis regimen, pertinent demographic information, length of admission, past medical history (e.g. heart failure, stroke) and family history of VTE. Rates of failure between patients treated with aspirin and patients treated with standard treatment will be compared using the Fischer exact test and binary logistic regression will be utilized to assess which risk factors are significantly associated with treatment failure.

9-186

Title: Evaluation of chronic obstructive pulmonary disease (COPD) management practices in a rural outpatient Veteran population

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Purpose: Chronic obstructive pulmonary disease (COPD) is a major cause of disability and death in the United States. Although it cannot be cured, optimal diagnosis and management provides symptom control, slows disease progression, and may improve quality of life. Despite efforts of the Global Initiative for Chronic Obstructive Lung Disease (GOLD) to provide healthcare providers with the best therapeutic guidance, management often becomes suboptimal when physicians fail to prescribe appropriate therapies or when patients fail to adhere to prescribed regimens. The purpose of this study is to evaluate current COPD management practices in a rural outpatient Veteran population.

Methods: This is a quality improvement study. Approval by the Institutional Review Board is not required. The Veterans Health Administration primary care almanac will be utilized to identify rural outpatient Veterans who have a diagnosis of COPD. The following data will be collected: patient age, gender, influenza and pneumococcal immunization history, tobacco history, date of most recent pulmonary function test (PFT) and corresponding values, COPD severity stage, current inhaled or oral medications, medication adherence, provider follow-up, and incidence of exacerbations and hospitalizations. All data will be securely maintained to protect confidentiality. Data will be reviewed to assess compliance with the GOLD guideline recommendations regarding diagnostic spirometry test measurement and classification of disease severity, pharmacologic therapies, and non-pharmacologic risk reduction measures to control symptoms, decrease exacerbations, and improve patient function and quality of life.

9-187

Title: Comparison of medication reconciliations performed by the pharmacy team to those conducted by medical residents and nurses for patients admitted to a family medicine unit

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Purpose: The Joint Commission requires accredited organizations to perform medication reconciliations in an effort to help reduce medication errors but does not specify who should. Medication reconciliation identifies common medication errors which can lead to corrective action. The purpose of this study is to compare medication reconciliations performed by pharmacy APPE students and a PGY1 pharmacy resident (pharmacy team) to those conducted according to hospitals standards, specifically by medical residents and nurses.

Methods: This study will be submitted for approval from the Institutional Review Board. The study will include family medicine inpatients admitted to the Family Medicine service and their medication reconciliation record. These records were completed by a member of the pharmacy team and either a medical resident or nurse. The pharmacy team medication reconciliation data will be obtained from a documented note from the patients chart, while the medication reconciliation completed by a medical resident or nurse will be obtained from the electronic medical system, PRISM. Within these lists, the name of the medication, strength, route, frequency, missing medications, refill history, prescriber information, and other related information will be collected. All data collected will not contain any patient identifiers. The data will be analyzed to see if a statistical difference could be found between the two groups as well as to identify which medication errors occurred most frequently during medication reconciliations performed at hospital admission on the Family Medicine unit.

9-188

Title: Safety and efficacy of nitrofurantoin in outpatient male veterans

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Purpose: The package insert for nitrofurantoin currently includes a contraindication for use in patients with a creatinine clearance (CrCl) of less than 60 mL/min. Historically, nitrofurantoin had been contraindicated in those patients with a CrCl of less than 40 mL/min. The reason for the change in threshold is unknown, but small studies have shown little drug recovery in the urine of those with CrCl less than 60 mL/min. The objective of this study will be to assess the safety and efficacy of nitrofurantoin in outpatient males with varying degrees of renal impairment treated for urinary tract infections (UTIs).

Methods: This study will be a retrospective chart review of males treated with nitrofurantoin for UTI as outpatients. The protocol has been submitted to the Institutional Review Board for approval. The electronic medical record (EMR) will be used to identify patients for inclusion based on prescriptions for nitrofurantoin. Patients will be divided into three groups based on renal function: CrCl greater than or equal to 60 mL/min, 40-59 mL/min, and less than 40 mL/min. The efficacy of nitrofurantoin will be compared between groups based on symptom resolutions, repeat cultures, and the use of additional antibiotics. Safety will be evaluated by comparing rates of adverse drug events (ADEs) including gastrointestinal distress, headache, peripheral neuropathy, rash, acute pulmonary reaction, hepatotoxicity, and hemolytic reaction. Patients will be assessed for ADEs for up to 7 days after completion of nitrofurantoin. This study will also look at the effect of an alert which was implemented in the EMR to investigate if the number of prescriptions in patients with a CrCl of less than 60 mL/min decreased after the alert was activated. This will aid in ensuring that nitrofurantoin is being prescribed appropriately.

9-189

Title: Validation of the effectiveness and safety of a vancomycin dosing nomogram

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Purpose: Vancomycin, a glycopeptide antibiotic, is used mainly for the treatment of gram positive bacteria especially Methicillin Resistant Staphylococcus Aureus (MRSA). Current consensus guidelines recommend aggressive dosing of vancomycin to achieve higher trough levels of 15 to 20 mcg/ml in order to maximize the effectiveness of treatment. A dosing nomogram incorporating these recommendations was implemented into the medical center's Computerized Physician Order Entry (CPOE) system on September 19, 2012. The purpose of this study is to evaluate the effectiveness and safety of vancomycin pre and post implementation of the new dosing nomogram.

Methods: This study will be submitted to the Institutional Review Board (IRB) for approval. This is a retrospective chart review of adult patients 18 years and older who received at least 3 doses of vancomycin pre and post implementation of the vancomycin dosing nomogram. Patients with creatinine clearance less than 20 ml/min and receiving renal replacement therapy will be excluded from this analysis. The percentage of initial therapeutic troughs (15-20 mcg/ml) and sub-therapeutic troughs (< 15 mcg /ml) will be evaluated. Secondary endpoints will include the incidence of nephrotoxicity, time to microbiological cure, and incidence of vancomycin failure. The appropriate timing and number of trough levels ordered will also be evaluated.

9-190

Title: A comparative study evaluating IV acetaminophen usage in surgery patients at a quaternary care teaching hospital

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Purpose: To assess whether IV acetaminophen reduces opioid related adverse effects compared to opioids in surgical patients. Adverse effects are defined as sedation, nausea, vomiting, constipation, dizziness, falls and respiratory depression. A secondary objective is to assess whether IV acetaminophen can appropriately achieve analgesia for these patients, thereby reducing opioid consumption.

Methods: This is a single-center, retrospective chart review including 100 surgical patients (acetaminophen, n=50; opioid, n=50) between July 1, 2012 and January 31, 2013. Patients were included in the study if they were at least 18 years of age and were hospitalized at least 24 hours post operatively. Patients were excluded if they were allergic to acetaminophen, acetaminophen was used to treat fever, they had a history of alcohol or drug abuse, they were a chronic opioid user, or they had severe hepatic injury. Intravenous acetaminophen and opioid use will be reviewed for dose, adverse effects, and pain score. Adverse effects include sedation, nausea, vomiting, constipation, dizziness, falls and respiratory depression. The primary endpoint is to assess the opioid sparing effects of IV acetaminophen in surgical patients. A secondary endpoint is to assess whether IV acetaminophen can appropriately achieve analgesia for these patients, thereby reducing opioid consumption.

9-191

Title: What if the community pharmacy integrated with the primary care provider electronic record?: Experience from an innovative model of community pharmacy practice

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Purpose: Pharmacists are great resources to prescribers for optimizing patients medication regimens. Several surveys have indicated the benefits of primary care providers utilizing pharmacists in their medication decision making process. The objective of this study is to analyze the Electronic Medical Record correspondences between Nurse Practitioners and Pharmacists. This will be achieved by retrieving electronic data and characterizing these interactions into three areas; types of questions, complexity and volume of questions.

Methods: Mobile Primary Care consists of a group of nurse practitioners who offer in home medical services. Mobile Pharmacy Solutions is a unique pharmacy establishment with many innovative services which includes direct communications between their clinical pharmacists and Mobile Pharmacy Care providers, via the Electronic Medical System Interface. This research project will be conducted by a Mobile Pharmacy Solutions PGY1 Resident who will review the email correspondences over a one year period utilizing the electronic medical record system. The data collected will be characterized into the type of questions most specifically; complexity, modification of therapies, dose adjustments, side effects, drug- drug interactions, drug information, counseling, increased adherence and facilitating insurance coverage. The responses will be recorded without patient identifiers to maintain confidentiality and a protocol will be submitted to the Institutional Review Board for approval. This research contributes to growing the field of integrated healthcare systems and will provide experience on how primary care providers will use community pharmacists when electronic integration is available.

9-192

Title: Comparison of two bupivacaine delivery systems for postoperative pain control following orthopedic surgery

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Purpose: Systemic opioid use frequently results in excessive sedation, respiratory depression, nausea and constipation. Nonopioid local anesthetics, such as bupivacaine, are utilized in orthopedic practice for their opioid sparing effects. Several formulations of bupivacaine are available. Exparel is a long acting liposomal formulation of bupivacaine that provides local analgesia for up to 72 hours. The On Q pump system allows continuous local delivery of bupivacaine. The primary objective of this study is to compare patient outcomes and pain medication use in postoperative orthopedic patients receiving bupivacaine as Exparel or through the On Q pump system.

Methods: Prior to commencement, this study will be submitted to the Institutional Review Board for approval. The proposed study will be conducted using a retrospective chart review of patients identified to have received bupivacaine for postoperative pain following orthopedic surgery. The collected data will include patient demographics (age, gender, weight), admitting diagnosis, surgical history, medical history, home medications, duration of hospitalization, pain scores and adjunctive pain medication use. All data will be kept confidential and will not include patient identifiers. Patients less than 18 years of age will be excluded. Data for patients who received Exparel will be compared to data collected for patients who were treated with bupivacaine through the On Q system. Specific data points to be compared include differences in pain scores, need for adjunctive pain medications and length of stay. Appropriate statistical analyses will be employed for all variables. Upon data analysis, recommendations will be made regarding current practice at our institution.

9-193

Title: Effects of Pharmacist-provided education on reducing medication errors in surgical wards

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Purpose: The objective of this study is to determine the impact of pharmacist-provided education to prescribers of post-surgical patients on medication errors.

Methods: This study will be submitted to Institutional Review Board for approval. Subjects that will be included are those 18 years of age or older, post colorectal surgery and transferred to the medical-surgical floor for inpatient care. All medication orders for the identified subjects will be reviewed daily by a pharmacist for accuracy and completeness. The medical or surgical teams will be notified daily regarding interventions discovered and the data will be recorded. The following data will be collected: subjects baseline characteristics, reason for admission, intervention category of recommendation made by pharmacist and acceptance or rejection of pharmacist recommendation. All data will be recorded without patient identifiers and maintained confidentially. Data collected will be trended in four-week periods over the course of three months. Data collected at week two of each four week period will be aggregated and presented to medical team to educate on most common medication errors and ways to correct these errors. The remaining two weeks of data in each period will allow us to trend changes in interventions and determine pharmacists benefit on medication errors by education.

9-194

Title: Evaluation of the efficacy of an argatroban protocol in achieving target aPTT

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Purpose: Argatroban is an intravenous direct thrombin inhibitor that is used most commonly in patients with heparin-induced thrombocytopenia (HIT). Argatroban is administered at our institution via continuous infusion according to a physician-driven protocol with routine aPTT monitoring by nursing. An evaluation of argatroban use is warranted to assess the efficacy of current practices in achieving target aPTT of 4590 seconds. The objective of this drug use evaluation is to determine the average length of time spent within target aPTT range according to current protocol. These data will be utilized to determine if adjustments to the protocol or hospital practice are required.

Methods: Patients prescribed argatroban over the past 12 months were identified from computerized pharmacy records for evaluation. Given the quality improvement nature of this drug use evaluation, it was exempt from IRB approval. Data collection includes patient demographics, liver function tests, indication for argatroban therapy, laboratory results for HIT testing, anticoagulation laboratory results, argatroban dosing, length of therapy, and anticoagulation started after discontinuation of argatroban therapy. The primary outcome is percentage of time that a patients aPTT was within the target range. Clinical events including bleeding and thrombosis events will be evaluated.

Results: Data collection to date has been completed for 15 patients. The current patient population is comprised of 10 males (66.7%) with a mean age of 60.7 years (SD: 15.8). The most common indication for argatroban therapy is suspected or confirmed HIT, in 8 and 3 patients, respectively. Hepatic impairment (defined as Child-Pugh class B or higher) was present in 46.7% of patients. Mean time spent within target aPTT was 58.6% and mean time to target aPTT was 7.11 hours. Supratherapeutic aPTTs were seen in 7 patients (46%), 6 of whom had some degree of hepatic impairment, and showed a mean time spent above the target aPTT range of 11.4 hours (SD: 8.8).

Conclusion: Results of this drug use evaluation suggest that while the current protocol is effective in achieving and maintaining target aPTT for most patients, a number of patients are experiencing prolonged supratherapeutic aPTT values. This is particularly true among patients with hepatic impairment. Changes to current argatroban dosing and monitoring practice may be warranted, but final conclusions cannot be made until data collection is completed.

9-195

Title: Pharmacist Alerts in a Computerized Provider Order Entry System

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Purpose: In a computerized provider order entry system, there are a variety of safety alerts that can be programmed to appear during the order entry process as well as during order verification. There are several different types of alerts including those for allergy interactions, inappropriate doses, and duplicate therapy orders. Research suggests that alert fatigue is a real concern and must be carefully weighed against removing these important safety mechanisms. This study will investigate the nature of alerts seen by pharmacists to determine actions taken for each alert in efforts to identify redundant or alerts that never result in therapy modifications.

Methods: This study will analyze all allergy interaction, dose, and duplicate therapy alerts over the period of one month at a large academic medical center. Alerts will be assigned to one of the following categories: viewed, removed, or overridden. Each alert will be reviewed and summarized according to pharmacist action in response to the alert. Alerts will be identified for deactivation within the system based on frequency and likelihood of change in therapy as a result. An iterative process will be outlined for continual review and identification of additional redundant alerts.

9-196

Title: Retrospective Evaluation of Tigecycline usage at a Tertiary Teaching Hospital

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Purpose: Tigecycline is a broad spectrum antibiotic with activity against many gram-positive, gram negative and anaerobic organisms and overcomes many existing mechanisms of resistance amongst bacteria. As a result it demonstrates activity to many multi-drug resistant bacteria strains including, but not limited to, carbapenemase producing enterobacteriaceae, methicillin-resistant Staphylococcus aureus, vancomycin-resistant enterococci, and multi-drug resistant Acinetobacter species. Unfortunately, overuse of tigecycline may lead to development of resistance. Therefore appropriate use is important to avoid emergence of resistance to tigecycline. Between 2011 and 2012, overall tigecycline usage increased by 27 percent. A medication use evaluation was performed to review usage of tigecycline.

Methods: Fifty patients were randomly selected from a computer generated report identifying patients treated with tigecycline from January 2013 to July 2013 and included in this study. Chart review was performed on all the selected patients and pertinent information extracted. Data collected included patient demographics, tigecycline indication, dosing regimen, duration of therapy, organisms cultured, tigecycline susceptibility, concomitant antibiotics, liver function tests, and incidence of Clostridium difficile infection. Appropriate indication is defined as targeted treatment for non- bacteremic infections caused by multi-drug resistant pathogens where other agents (i.e. beta-lactams, aminoglycosides) are either not active due to resistance or contraindicated due to severe allergy. Empiric treatment for non-bacteremic infections caused by suspected CRE or carbapenem resistant Acinetobacter infections was also considered appropriate. Dosing was interpreted as appropriate if the patient was given a 100 mg loading dose, followed by the proper dose and frequency as recommended by the manufacturer guidelines. Appropriateness of tigecycline was evaluated based on appropriate indication, dosing regimen and duration of therapy according to evidence based recommendations and manufacturer package information. Institutional review board approval was not required due to the non-interventional, retrospective nature of this study.

Results: The mean age of patients treated with tigecycline was 71.3 years (range 24 to 96 years) and the mean weight was 76.1 kg (range 34.5 to 159.1 kg). Loading dose of tigecycline was administered in 28 of 50 patients (56 percent). The mean duration of treatment was 8.78 days (range 1 to 41). Overall mortality occurred in 10 of 50 (20 percent) patients. The most frequent primary indications for tigecycline were pneumonia in 17 of 50 patients (34 percent), followed by skin and skin structure infections in 12 of 50 patients (24 percent) and urinary tract infections in 10 of 50 (20 percent) patients.

The most common organisms cultured at the primary infection site were Klebsiella pneumoniae, Staphylococcus aureus, and Acinetobacter baumanii in 36 percent, 22 percent, and 20 percent of patients respectively. Zero of 50 patients (0 percent) developed elevations of liver function enzymes caused by tigecycline. Tigecycline was used for an appropriate indication in 29 of 50 (58 percent) of patients and at the appropriate dosing regimen in 29 of 50 (58 percent) of patients.

Conclusion: The results of this evaluation suggest that tigecycline use can be improved. Reserving tigecycline for indications in which alternative therapies are not appropriate and educating clinicians regarding administering loading dose when initiating tigecycline is necessary.

9-197

Title: Evaluation of impact of varying levels of pharmacist intervention in a patient-centered medical home (PCMH) on the primary diabetes biomarker HbA1c

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Purpose: Pharmacists in the PCMH have capacity to conduct face-to-face consults and/or use electronic medical records to make recommendations without a patient visit. With the role of pharmacists in the PCMH continually evolving, research on the most effective patient interactions is needed. The primary referral reason in our clinic is diabetes mellitus. Our primary objective is to determine if face-to-face interactions are superior to individual patient reports (IPR) provided to physicians based solely on electronic review for the primary diabetes biomarker HbA1c. Secondarily, we will evaluate if both face-to-face consults and IPRs over the study period is superior to either alone.

Methods: The electronic medical record system will identify all patients of our clinic with T2DM, age 18 or older from the period between 2006 and 2012, who have had either: 1) a face-to-face consult, 2) an IPR electronic review, or 3) both an IPR and a face-to-face consult within the same year. Study subjects will be randomly selected from each group. The investigators are estimating a 1.0 plus/minus 2.2 difference in HbA1c between face-to-face consults and IPRs at 3 months compared to baseline. Therefore, a sample size of 82 patients in each study arm is required at α equals 0.05 and β equals 0.8. Secondary outcomes to analyze will include change in blood pressure and LDL. Descriptive statistics will summarize demographic and anthropometric characteristics of the study groups. For continuous variables the Students t-test will be used to detect statistically significant differences in the primary diabetes biomarker, HbA1c, and other metabolic laboratory values. For dichotomous variables, goal attainment, the Chi-square/Fishers Exact test will be used. All data will be recorded without patient identifiers and maintained confidentially. This study will be approved by the Institutional Review Board.

9-198

Title: Evaluating the appropriateness of antimicrobial therapy in the treatment of Klebsiella pneumoniae bacteremia

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Purpose: With the emergence of antimicrobial resistance, treatment of infections caused by multidrug-resistant (MDR) organisms can be challenging. Catalyzed by inappropriate use, resistance has been associated with increased mortality, hospital length-of-stay, and healthcare costs. Commonly produced by Enterobacteriaceae, including Klebsiella pneumoniae, extended-spectrum beta-lactamases (ESBL) are enzymes capable of hydrolyzing and inactivating penicillins, cephalosporins, and monobactams. Furthermore, some isolates may produce Klebsiella pneumoniae carbapenemase (KPC) resulting in a treatment dilemma for clinicians as carbapenems are rendered ineffective. The primary objective of this study is to assess the appropriateness of the treatment of K. pneumoniae bacteremia in our institution.

Methods: This retrospective chart review will be submitted to the Institutional Review Board for approval. Included in the analysis will be admitted patients aged 18 and older with a positive blood culture for Klebsiella pneumoniae during the study period from June 2012 to June 2013. Information to be collected will include: patient demographics, prior hospital admissions and/or antibiotic use within the previous 3 months, antibiotic(s) administered (including dose and duration), and source of infection. The presence of ESBL or KPC will be identified using susceptibility patterns. The primary outcome measures will be the appropriate selection and dose of antibiotic(s) based on the source of the infection. Secondary outcomes will include: length-of-stay and time to appropriate change in therapy, if applicable. Data will be confidentially recorded without patient identifiers. Appropriate statistics will be employed for all variables. Upon analysis of the data, recommendations concerning the antimicrobial empiric therapy for K. pneumoniae will be made at our institution.

9-199

Title: Delirium: the effect of dexmedetomidine versus other agents for sedation

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Purpose: The 2013 Pain, Agitation, and Delirium Clinical Practice Guidelines newly recognize dexmedetomidine as a preferred sedative in mechanically ventilated critically ill patients because of its association with improved clinical outcomes. This study intends to solidify the most recent recommendations in our own institution and patient population. The objective of this study will be to evaluate the influence that dexmedetomidine may have in delirium and in clinical outcomes.

Methods: This retrospective chart review has been submitted to the Institutional Review Board and is approved for exempt approval due to its retrospective design. Patient records will be selected if patients were mechanically ventilated and have been on dexmedetomidine alone for over 24 hours, on dexmedetomidine in adjunct to other sedatives over 24 hours, and if on other available sedatives for over 24 hours. These selected records shall be reviewed in a retrospective matter. Exclusion criteria will include patients who are under the age of 18 years, allergic to any of the sedative agents, receiving any other alpha-2 agonists, or those with documented dementia or any neurologic disorder. The following data will be collected: demographic information, reason for admission, CAM-ICU, APACHE II score, requirement of restraints, RASS scores, GCS scores, hospital outcomes, hepatic function, and renal function. The primary objective is to assess the incidence and prevalence of delirium, the number of delirium-free days, and the intensity of delirium with dexmedetomidine versus other agents. Secondary objectives will include length of ICU stay, time until extubation, sedation control, adverse effects, and hospital mortality. These assessments will reveal the role that dexmedetomidine has in delirium and clinical outcomes.

9-200

Title: Effect of pharmacist interventions in heart failure patients

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Purpose: The primary objective of this study is to evaluate the effect of pharmacist interventions on heart failure patients. The intention of this study is to assess medication reconciliation, patient education, and follow-up phone calls and their effect on readmission rates.

Methods: This is a single-center, prospective, comparative study that will include patients with a diagnosis of CHF, readmitted in the last 90 days, greater than 18 years of age, and admission to the pharmacist-based cardiology unit from November 2013 to April 2014. This study will exclude patients admitted for chemotherapy treatment and patients with planned transfer to a long-term care facility or rehabilitation center. Data collection parameters include baseline demographics, pertinent laboratory values, and inpatient medications. Pharmacist interventions, which include medication reconciliation and heart failure education, will take place during admission, throughout hospital stay, and at discharge. The subjects will be assessed for comprehension based on performance on the heart failure patient education tool. The pharmacist will also perform follow-up phone calls to reassess and reinforce patient education within 48 hours post-discharge, and one week post-discharge. The primary endpoint is 30-day readmission rates and the secondary endpoint is 90-day readmission rates and rate of improvement in education, based on the heart failure patient education tool.

9-201

Title: Creating an oral chemotherapy clinic to provide a continuum of care to the oncology patients at Winthrop University Hospital which improves clinical and economic benefit

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Purpose: Oral chemotherapy drugs are the newest agent to fight cancer. The previous methodology was administering chemotherapy at a cytotoxic maximally tolerated dose to kill the cancer cells in a single episode and recovery of the bone marrow which take several weeks. Since chemotherapy is cytostatic, these oral drugs are optimally because of its continuous exposure to tumor cells. By giving oral drugs at such low doses, these medications have adverse effect profile but not as prevalent as its intravenous counterpart. The creation of an oral chemotherapy clinic in the same hospital will enhance patient satisfaction, safety and provide additional revenue.

Methods: The study will have three time frames and will be measured by surveys. The first part uses two surveys, one of which is the Morisky 8-item Medication Adherence Questionaire, if the patient is on oral chemotherapy, and another survey is used to gauge the need for an oral chemotherapy center. The survey will alert the patient the hospital is planning on opening an oral chemotherapy clinic which has the same affiliation as where they receive infusion treatments and their oncologist. In the second stage another survey will be conducted when the oral chemotherapy dispensary is open; it will examine whether the patient had an adverse effect, the ease of seeking guidance when having an adverse effect, simplicity of purchasing from Winthops pharmacy versus their previous pharmacy, and if the service met their expectations. The last survey will find out how long they have been using Winthrops oral chemotherapy pharmacy, how convenient they find it, and how likely they will continue to use the service. The three time frames are immediate, once the chemotherapy pharmacy is open and three months after the opening. There will be an assessment of the financial stability of the project by calculating the revenue generated.

9-202

Title: Impact of a drug-associated falls prevention program established from a retrospective analysis of falls in an acute care setting

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Purpose: Falls is a serious event that requires ongoing attention due to the consequences of increased lengths of hospital stay and associated morbidity and mortality. Falls affect over 1 million US hospitalized patients annually resulting in a substantial financial burden of approximately $5 billion per year. A literature search using Medline revealed more than 200 published studies that assessed the implementation of a falls risk assessment with associated strategies to prevent falls within respective institutions. Our goal is to analyze the causes of in-hospital drug-associated falls (DAF) and assess the effectiveness of DAF prevention strategies at our institution.

Methods: Retrospective analysis of DAF will be performed by obtaining clinical data from de-identified patient health records. Participants aged greater than or equal to 18 years will include those who have suffered a fall during hospitalization from two medical units with high rates of falls from January to September 2013. DAF will be defined as an incident occurring within 4 hours of a patient receiving an immediate-release agent, within 24-hours of receiving an extended-release agent and/or at steady state of any high-risk agent. High-risk medication classes include antidepressants, anticoagulants, anticonvulsants, antipsychotics, bowel preparations, diuretics, insulin and secretagogues, opioids, anticholinergics/antihistamines, skeletal muscle relaxants, benzodiazepines, sedatives, and select antihypertensive agents. DAF cases will be categorized based on the number of high-risk medications administered. The frequency of drug monitoring at the time of the fall will also be evaluated. Our findings will guide the development of a dedicated DAF reduction program for physicians, nurses, and ancillary staff. Data analysis will be evaluated by descriptive statistics. Results of our project will be reported to the hospital's Falls and Medication Safety Committees. This project is currently pending Institutional Review Board approval.

9-203

Title: Evaluation of phenytoin and fosphenytoin prescribing practices and drug monitoring in an inpatient hospital setting

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Purpose: Intravenous (IV) and oral (PO) phenytoin as well as its prodrug fosphenytoin can be used in the treatment of status epilepticus, active or breakthrough seizures, and as a prophylactic measure to prevent seizures. Due to its altered pattern of distribution in hypoalbuminemia, severe renal impairment, and obesity, these agents must be carefully dosed and monitored. A medication use evaluation was conducted to assess the appropriate use of phenytoin and fosphenytoin.

Methods: A retrospective cohort study evaluated 87 patients with the following inclusion criteria: age over 18 years, and received a loading dose of either fosphenytoin (IV) or phenytoin (IV or PO). Data were collected from the electronic medical records from July 2011 to June 2013. Institutional review board approval was exempt. The primary endpoints were the following criteria for appropriate use: loading dose (LD) of 15 to 20 mg per kg (adjusted for obesity, defined as body mass index greater than 30 kg per meter squared), single PO LD not exceeding 400 mg and separated by 2 to 4 hours, phenytoin and fosphenytoin infusion rates of less than or equal to 50mg per min and 150mg phenytoin equivalents per min, respectively (or less than or equal to 25 mg per min or 75 mg per min, respectively, for patients greater than 65 years of age or with preexisting cardiovascular conditions), timing of serum phenytoin level, and appropriate management of corrected phenytoin levels for hypoalbuminemia (serum albumin less than 4 grams per deciliter) or severe renal impairment (creatinine clearance less than or equal to 26 ml per min) according to the Sheiner-Tozer equation. Secondary endpoints focused on administration or dose-related adverse effects.

Results: Thirty-eight of 87 patients met the inclusion criteria, of which 26.3 percent were over the age of 65, 34.2 percent were obese, and 7.9 percent had severe renal impairment. Mean treatment duration was 8.45 days. Inappropriate LD were seen in the following patients: 25 percent for status epilepticus and 77.3 percent for active seizures. Ninety percent of obese patients received an inappropriate LD. Sixteen patients required slower infusion rates; 6 patients were inappropriately infused, 2 of which experienced a hypotensive episode. Sixty percent of patients received an inappropriate oral LD, due to single doses exceeding 400 mg or doses administered outside of the recommended 2 to 4 hour interval range. A serum level was measured in 63.2 percent of patients, and was taken inappropriately in 83.3 percent of these patients due to timing of the level. Seventy-three of 109 serum levels obtained were reported to be within the therapeutic range, however only 58 of 109 serum levels were therapeutic

when calculated for hypoalbuminemia or renal dysfunction. Forty-eight out of 51 levels required intervention, of which only 24 levels were acted upon appropriately. Six patients were noted to have seizure activity while on maintenance therapy.

Conclusion: Inappropriate weight based LD were seen in the majority of patients receiving phenytoin or fosphenytoin, especially in the obese patient population. There is a lack of awareness regarding the requirement of a slower infusion rate in special populations. Additionally, prescribers should be cognizant of the recommendation to administer oral LD in divided doses not exceeding 400 mg and at appropriately spaced dosing intervals. There is potential for improvement in regard to timing of sampling and interpretation of serum phenytoin levels.

9-204

Title: Increased risk of hypoglycemia associated with antidepressant use

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Purpose: Worldwide, an estimated 350 million people suffer from depression. Specifically in the US, 6.7% of the adult population has depression and 51.7% of those diagnosed are receiving treatment. Therefore, it is important for healthcare providers to be aware of the various side effects of antidepressants. One side effect of particular concern is hypoglycemia. There have been several published case reports showing the use of antidepressants as a cause of hypoglycemia. However, the extent of this potentially dangerous side effect is not well known. The objective of this study is to quantify the incidence to which antidepressants cause hypoglycemia.

Methods: This study will be submitted to the Institutional Review Board for approval. An institutional database of patients with documented hypoglycemic episodes will be compared to a matched group of patients without documented hypoglycemia. The rates of antidepressant use in the two groups will be compared to determine whether antidepressant use is statistically associated with hypoglycemia. Patients less than 18 years of age will be excluded. The following data will be collected from both the control group and the study group: patient age, gender, ethnicity, current medications, and comorbid conditions. Statistical analyses will be conducted for comparison between both groups. Provider documentation will be reviewed to determine if alternative reasons for hypoglycemia are documented. All data will be recorded without patient identifiers to maintain confidentiality.

9-205

Title: Assessing the implementation of a state-mandated sepsis protocol with pharmacists as part of the interdisciplinary team approach

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Purpose: In May 2013, the New York State Public Health and Health Planning Council (PHHPC) approved regulations on hospital sepsis care requiring all hospitals in the state to implement a Department of Health (DOH)-approved sepsis protocol. At a 1,076-bed, full-service community hospital, a sepsis protocol was designed and implemented using an interdisciplinary approach in which the pharmacist plays a critical role. The objective of this study is to assess the impact of pharmacist involvement in the sepsis protocol.

Methods: This study has been submitted to the Institutional Review Board for approval. As part of the sepsis protocol, pharmacists will receive training regarding the institutional protocol and the management of sepsis. Pharmacists are expected to review each order, expedite medication availability and provide information on simultaneous intravenous administration compatibility. A survey will be provided to members of the healthcare team to assess satisfaction with the protocol and perceptions of process efficiency due to pharmacist involvement. Data six months before and six months after the implementation of the sepsis protocol will be analyzed. Inclusion criteria will be patients 18 years and older with a diagnosis of sepsis. Exclusion criteria include patients with a poor prognosis of less than 24 hours. The primary endpoint will be a composite of deaths due to sepsis, 30-day readmission rates, and hospital length of stay. The secondary endpoints will include the individual endpoints from the primary composite as well as time to administration of antibiotics and vasopressors and their correlation with the results of the satisfaction survey. Confidentiality for all recorded patient data will be maintained.

9-206

Title: Impact of pharmacist-collaborated inpatient counseling on the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey scores in an urban teaching hospital

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Purpose: When discharging a patient from inpatient services, there is often an interruption in the continuity of care. This gap in care can have a detrimental impact on the overall patient experience, and ultimately result in low HCAHPS scores from the patient. Upon discharge, medication regimens are frequently altered which requires in depth medication review and patient counseling to ensure the patient has a smooth transition of care. The objective of this study is to assess the impact of pharmacist discharge medication consultation on an inpatient units HCAHP scores.

Methods: This study will be submitted to the Institutional Review Board at Beth Israel Medical Center for approval. Inclusion criteria will be subjects who are at least 18 years of age, and are admitted to a medicine unit and will be discharged on at least 3 scheduled maintenance prescriptions. Patients who are unresponsive or have a diagnosis of dementia will be excluded from the study. Pharmacists will conduct in-person medication counseling on an inpatient unit prior to discharge, as well as perform a follow-up phone call within 3-5 days of the patients discharge. Pharmacist medication consultations will include but are not limited to medication regimen clarification, review of indications of each medication, education on medication administration, and answering any questions the subject or family member may have regarding the medication regimen. Patient satisfaction will continue to be measured using HCAHPS surveys via distribution by the normal hospital process. Primary outcomes for this study will include: the improvement in HCAHPS scores, decrease in length of stay, and decrease in 30-day readmission rates.

9-207

Title: Feasibility and impact of intravenous to oral therapy conversion in the Intensive Care Unit (ICU)

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Purpose: The CDC estimates that 41,000 central line-associated blood stream infections (CLABSI) occur annually. The estimated excess in cost and length of stay for the management of each CLABSI is $16,550 and 12 days respectively. Intravenous to oral (IV/PO) medication conversion may reduce the need for IV access, which in turn may reduce the risk of infections. Studies have shown that IV/PO conversion may also have a cost avoidance benefit. We looked at the feasibility and impact of IV/PO conversion in the ICU setting.

Methods: ICU pharmacists were provided with a protocol for IV/PO conversion in all patients admitted to MICU, SICU, CCU and CSICU (46 beds total). The protocol included a list of eligible medications and criteria the patients must meet for the IV/PO switch. Suitable medications had the following properties: high oral bioavailability (at least 80%) with rapid absorption, ideal pharmacodynamics effects (i.e. longer duration of action, similar clinical efficacy or less toxicity as compared to the IV form,) and availability as tablets or suspensions. Patients suitable for IV/PO conversion met one or more of the following criteria: hemodynamically stable, tolerating enteral nutrition, already taking other medications orally or via NG/OG tube, or extubated with good mental status and gag reflux. ICU pharmacists reviewed medication profiles and interacted with the ICU teams daily to determine if a patient met the criteria for IV/PO conversion. All interventions were documented and patients were monitored for adverse events. The data was collected over a 2-month period and the number of IV doses saved were counted until ICU discharge. The cost avdoiance was calculated based on the actual pharmacy acquisition cost.

Results: A total of 256 IV/PO conversions were documented within the study period. It is important to note that 10 of these conversions (3.9%) were not successful due to various reasons including therapy discontinuation, new NPO orders, and switching back to IV therapy due to clinical deterioration. A total of 1578 IV doses were saved by this service. No adverse events were observed after IV/PO conversions. The actual cost avoidance was approximately $11,500 over the two-month period. Twelve interventions were not associated with cost savings as the oral counterpart of the IV medication had a similar acquisition cost. The three most frequently converted medication classes were: GI prophylaxis, anti-epileptics, and corticosteroid. The top three medications converted were: famotidine, pantoprazole and levetiracetam. Medications associated with the most cost-savings per dose were: mycophenolate mofetil ($74/dose), nicardipine ($58/dose) and levothyroxine ($52/dose). Certain medications such as

azithromycin, dexamethasone, hydromorphone and vitamin K showed minimal to no cost benefits when converted to the PO form.

Conclusion: We evaluated the feasibility and cost avoidance of IV/PO conversion provided by the ICU pharmacy staff over a two-month period. The interventions were well accepted by the ICU team without adverse clinical impact to the patients. Although we were unable to measure the direct clinical benefits such as: reduction in CLABSIs, LOS, pharmacy time, nursing time, and equipment use, there was a significant direct medication cost avoidance of $11,500 in the ICU without compromising the care provided.

9-208

Title: Reducing the inappropriate use of stress ulcer prophylaxis through pharmacy intervention in an acute care hospital

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Purpose: For this study, a stress ulcer prophylaxis (SUP) stewardship initiative was started to determine whether inappropriate SUP use could be reduced through pharmacist interventions in the non-ICU setting. Patients were specifically targeted for proton pump inhibitor (PPI) use, since these agents carry a risk for Clostridium difficile, pneumonia, and other negative outcomes.

Methods: Using real time clinical surveillance software, patients currently on a PPI were identified on targeted medical/surgical units. Through medical record review by a pharmacist, patients were excluded from the study if they had an indication for their PPI. Once patients for pharmacy intervention were found, written feedback suggesting PPI discontinuation was left for the provider. To determine whether a change in provider practice occurred, SUP appropriateness was assessed at baseline (before the study) and during the post-intervention period. To show whether the pharmacy interventions used in this study were effective, provider acceptance and no acceptance results were compared. In addition, the time of PPI discontinuation and discharge were recorded for cost savings analysis. As of this abstracts writing, the study is currently in the process of IRB approval, and is expected to meet with exempt review status.

9-209

Title: Evaluation of intravenous immunoglobulin use at a large academic medical center

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Purpose: Multiple intravenous immunoglobulin products are available on formulary, which vary in dosage form, size, osmolality, pH, sugar, and immunoglobulin A content. The use of these agents generates an expenditure of about 1.5 million dollars annually at this institution. Intravenous immunoglobulin is approved by the Food and Drug Administration, but is often used off-label for treatment of diseases based on anecdotal reports and little data. The purpose of this medication use evaluation is to evaluate prescribing patterns and infusion reactions at our institution in order to identify if restriction criteria should be developed to guide therapy and reduce cost.

Methods: This is a retrospective patient chart review including in-patients greater than or equal to 18 years of age, who received at least one dose of intravenous immunoglobulin from July 1, 2012 through July 1, 2013 at this institution. Institutional Review Board approval was not required as this medication use evaluation investigates quality assurance and safety. The following data was collected from electronic medical records to evaluate the use of intravenous immunoglobulin: prescribing specialty, service, location, indication, previous use, dose, dosing frequency and duration, formulation, age, gender, ideal body weight, actual body weight, creatinine clearance, pre-medications, vital signs, allergy profile, immunoglobulin levels, and presence of dose-related infusion reactions. All data will be recorded without patient identifiers and maintained confidentially. The results will be presented using the mean and standard deviation for continuous data, and percentage for categorical variables. The primary outcome will be assessed to identify specialties and locations with the highest use and appropriate prescribing for labeled and non-labeled indications, other outcomes include use of pre-medications and correlation with infusion-related reactions.

9-210

Title: Integration of Neonatal Intensive Care Unit Clinical Pharmacist into the inpatient team decreases prevalence of medication errors

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Purpose: Pediatric patients have three times the potential risk of medication errors as that of adults. This risk of error increases exponentially for patients in neonatal intensive care unit (NICU) due to the complexity of weight based dosing and the fact that most medications are formulated for adults. An effective intervention to decrease this risk is accomplished by the participation of a clinical pharmacist on the ICU team. The purpose of this study was to analyze all interventions conducted by a clinical pharmacist in the NICU setting to determine their benefit in the unit.

Methods: A retrospective study to compare the collection of all interventions made by a clinical pharmacist from December 2012 to July 2013 to a two week intervention free period. The clinical pharmacist only visited the NICU when available during these months. The interventions made by the clinical pharmacist would consist of a review of all the medication orders for the patients admitted to the NICU, followed by recommendations given to the NICU team. Prescribing errors were scored when dosage changes were confirmed through order entry.

Results: During the intervention period, 98 interventions were accepted from the 19 days the clinical pharmacist was on the floor with the NICU team. 401 doses of medications were identified as errors during the intervention free period. Overdosing and under dosing made up the highest percentage of errors.

Conclusion: This study highlights the positive impact a clinical pharmacist has on avoiding medication errors and adverse drug events when integrated into the inpatient NICU team.

9-211

Title: Prevalence of patients own medications administered in the inpatient setting

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Purpose: Due to inpatient formulary restrictions for safety and cost containment measures, not all patient medications or therapeutic equivalents can be supplied by an inpatient pharmacy. Additionally, perceived cost savings for the patient can potentially exacerbate the use of patients own medications. Although hospital protocols attempt to control the use and process of extraneous medications, the administration of a patients own home medication in the inpatient setting increases the risk of preventable medication errors. This study aims to identify the incidence of administering a patients own medication in the inpatient setting and characterize the classes of medications frequently involved.

Methods: For this retrospective observational study, all inpatient medication administration records (MAR) at the University of Rochester Medical Center collected between July and August 2013 were included. MAR records were screened for terms patients own med, patient supplied, or patient may use own, and drug name and strength were recorded. Each documented administration of a patients own medication was further classified to determine if the medication is stocked at URMC Inpatient pharmacy per the URMC Pharmacy and Therapeutics Formulary or therapeutic alternative available per protocol. The overall incidence of administering a patients own medication will be reported as a primary outcome. Secondary outcomes include the incidence of administration of patients own medication per hospital unit and the categorization of medication classes frequently involved.

9-212

Title: Drug Use Evaluation of piperacillin/tazobactam use in an academic medical center

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Purpose: Piperacillin/Tazobactam (Zosyn) is a broad-spectrum antimicrobial commonly used for empiric coverage of numerous infection types. At our institution, approval by infectious diseases is required for most broad spectrum antibiotic, but approval is not required for piperacillin/tazobactam. Thus, it is unknown whether this agent is being used appropriately for empiric use and whether therapy is streamlined to a narrower spectrum agent when culture and sensitivity results are available. The objectives of this medication utilization evaluation are (1) to examine the utilization of piperacillin/tazobactam and (2) to determine if providers streamline antibiotic therapy appropriately when cultures and sensitivities are available.

Methods: A random sample of adult patients who were prescribed piperacillin/tazobactam are being evaluated. Given the quality improvement nature of the project, it was exempt from IRB approval. Data collection includes patient demographics, serum creatinine, allergies, dosing schedule, indication for therapy, length of therapy, culture and sensitivity results, and whether therapy was streamlined when appropriate. The primary outcome being measured by this drug use evaluation is missed opportunities for antibiotic streamlining. These data will be used to explore the feasibility of a pharmacist lead program for targeted daily evaluation of piperacillin/tazobactam utilization. Data will be analyzed using SPSS statistical software.

Results: To date, 32 patients have been reviewed. The mean age is 61.6 years and 18 (56%) patients have been male. Indications were most commonly pneumonia, UTI, and abdominal injury. Vancomycin was the most commonly prescribed adjunct antibiotic. Other adjunct antibiotics included metronidazole, ciprofloxacin, and azithromycin. Among the included patients, mean duration of piperacillin/tazobactam therapy was 8.25 days and 4 patients had a duration of therapy longer than 14 days. Longer durations of therapy were often associated with prophylaxis for abdominal surgery. Culture and sensitivity results yielded specific organisms in 13 (40.6%) of the included patients, with 5 of those 13 patients not being adequately streamlined.

Conclusion: Piperacillin/tazobactam remains a commonly prescribed first-line broad-spectrum antibiotic for patients with a wide variety of infections. From data collected to date, a significant number of patients treated with piperacillin/tazobactam are not having their therapy streamlined when culture and sensitivity results are available. A targeted review of piperacillin/tazobactam therapy by pharmacists at our institution appears to be a valuable process to reduce broad spectrum antibiotic use.

9-213

Title: Evaluating the use of argatroban and bivalirudin in critically ill patients at a large academic medical center

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Purpose: The American College of Chest Physicians recommends direct thrombin inhibitors (DTIs) in patients with heparin-induced thrombocytopenia (HIT), however, there is no standard dosing or titration recommendations in critically ill patients. At our institution, the antithrombotic therapy oversight committee has created protocols for both argatroban and bivalirudin specifically for the critically ill. The selection of DTIs centers on the pharmacokinetic differences of argatroban, which is primarily eliminated by the liver versus bivalirudin that has some reliance on renal elimination (20%). The main objectives of this evaluation are to assess adherence to DTI protocols and their effectiveness and safety in HIT.

Methods: An Institutional Review Board approval was not required because this medication use evaluation investigates quality assurance and safety. A retrospective chart review of adult patients who received either argatroban or bivalirudin for suspected or confirmed HIT, between December 1, 2011 and September 20, 2013 will be conducted. Patients 18 years old who received argatroban or bivalirudin for 24 hours and had a heparin/PF4 antibody sent will be included. Patients will be excluded if they receive bivalirudin for percutaneous coronary intervention (PCI) or less than 24 hours on DTIs. Data to be collected from medical records will include patient demographics, category/location, organ dysfunction, co-morbidities, recent surgery, length of stay and mortality. The evaluation of HIT will include all necessary tests to determine risk, diagnosis and complications. Data on DTIs and warfarin, will include platelet and INR measurements, all doses given, aPTTs, and duration of therapy. Bleeding events will also be recorded. Categorical variables will be presented using n (%) and continuous variables will be assessed using mean SD or median with ranges. The primary outcome will be adherence to DTI protocols and achievement of anticoagulation goals. Other outcomes will include occurrence of thrombosis and clinically significant bleeding.

9-214

Title: Adjusted enoxaparin dosing in post-surgical, obese and morbidly obese patients undergoing total joint arthroplasty and the impact on venous thromboembolism (VTE) rates

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Purpose: Venous thromboembolism (VTE) is a potential complication following surgical procedures. Pharmacological prophylaxis should be routinely implemented due to proven safety and efficacy. Patients undergoing major orthopedic surgery are at high risk for VTE. There is currently no guideline or protocol for thromboprophylactic dose adjustment in obese (BMI 30-39) or morbidly obese (BMI >=40) surgical patients. Published studies indicate that a higher dose of enoxaparin may increase pharmacologic efficacy with equivalent safety. The primary objective of this study to is to determine if increasing the enoxaparin dose can increase its effectiveness in preventing postoperative VTE.

Methods: Once IRB approval is obtained we will serve as the control group for a trial which utilized enoxaparin 40mg SC Q12H dosing as opposed to conventional dosing for post-surgical VTE prophylaxis in obese and morbidly obese patients. The study has been ongoing since September 2008. This will be a prospective study which will include a minimum of a 100 obese or morbidly obese patients who are postoperative for total joint arthroplasty. We will be collecting antifactor Xa levels to obtain steady state peak serum levels of enoxaparin. All collected patient information will be de-identified and confidential. Appropriate statistical analysis will be performed. Upon analysis we will show the incidence of VTE in obese and morbidly obese patients receiving conventional dosing for total joint arthroplasty versus an increased dose of enoxaparin 40mg SC q12h.

9-215

Title: A Retrospective, Computerized Evaluation of Safety and Efficacy of Incretin-Based Agents in a U.S Veteran Population with Type II Diabetes

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Purpose: The incretin-based agents (GLP-1 agonists and DPP IV inhibitors) have been available for more than 3 years but have not been studied in the Veteran population. The primary objective is to determine the safety and efficacy of these agents in the VA New York Harbor Healthcare System (NYHHS).

Methods: This is a retrospective, computerized database (CPRS) review with de-identified, summative data and no randomization or blinding of the subjects. The study will take place at the VA NYHHS. The study will evaluate the efficacy and safety of incretin mimetics. Subjects on GLP-1 agonists (Exenatide, Exenatide ER, Liraglutide) and DPP IV inhibitors (Linagliptin, Saxagliptin, Sitagliptin) will be identified. A total of 200 subjects, 100 from each group, will be identified and analyzed for inclusion into the study. The study will include male and female subjects 18 years and older with documented Type II diabetes treated in the VA from July 2012 to July 2013. The exclusion criteria will include subjects with a history of hypo/hyperthyroidism, baseline elevated calcitonin levels, pancreatitis, gallbladder disease and chronic alcohol consumption. The efficacy of the treatments will be determined based on the HbA1C lowering and weight loss. The safety endpoints will include cases of pancreatitis, thyroid carcinoma, and other relevant laboratory biomarkers. In addition, subjects on GLP-1 agonists will be assessed to determine proper titration schedule. Subjects will be stratified based on date of diagnoses, age, comorbidities, other medications that can contribute to weight gain, and other antidiabetic medications.

9-216

Title: Evaluation of calcium- versus non-calcium based phosphate binder use: The role of combination therapy for the treatment of hyperphosphatemia of chronic kidney disease.

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Purpose: The leading cause of death in Chronic Kidney Disease (CKD) patients is related to cardiovascular disease, with coronary artery calcification being predictive of future cardiac events. Phosphate binders have shown survival benefit in patient with CKD and are recommended for use in conjunction with dietary phosphate control. The purpose of this study is to evaluate the benefit of combination therapy with calcium-based and non-calcium-based phosphate binders compared with single-agent treatment in the management of hyperphosphatemia in patients with CKD. We hypothesize duel treatment will result in therapeutic duplication without additional benefit in phosphate control within the inpatient setting.

Methods: Methods: A retrospective drug utilization review will be performed to evaluate patterns of phosphate binder use and the comparative efficacy of monotherapy vs. combination therapy on phosphate control for inpatients with CKD stages 3-5. Investigators will query the electronic medical record database to identify and include all inpatients admitted to the general medical and surgical floors with CKD stages 3-5 and hyperphosphatemia between January 1, 2012 and December 31, 2012. Data collection will include: demographic information (e.g., age, sex, weight, cause of CKD); vitamin D analog, calcimimetic, and phosphate binder use; serum phosphate, calcium, and intact parathyroid hormone levels; and estimated glomerular filtration rate and stage of CKD. Using an Excel database, serum phosphorus and calcium levels will be compared from admission, discharge, and throughout the hospital course. This study will be submitted to the Institutional Review Board (IRB) for approval prior to data collection and analysis.

Results: Results: Investigators anticipate IRB approval and data collection will commence in November 2013. The results of this study will help to direct further recommendations institution-wide to optimize treatment of hyperphosphatemia in the CKD population.

9-217

Title: Transcending beyond adherence: The impact of a clinical pharmacist on quality care measures among HIV-infected veterans

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Purpose: Pharmacists are integral members of the healthcare team with a specialized knowledge and skill set, however they are often under-utilized. Literature currently available explicitly demonstrates the benefit of pharmacists in managing HIV infection, particularly in the area of adherence, as well as having favorable outcomes on HIV specific markers such as viral load. Multiple health organizations have collaborated and defined seventeen quality performance measures to determine the level of care that HIV-infected patients receive. The objective of this study is to determine the role of the clinical pharmacist in assisting the health care team meet these quality performance measures.

Methods: The electronic medical record system will be used to identify patients who are 18 years and older with a confirmed HIV diagnosis and have had at least two appointments with an HIV provider or clinical pharmacist. Information will be collected on baseline characteristics, co-morbidities, HIV viral load, CD4+ count, vaccination status, STD screening, opportunistic infection prophylaxis, diabetes, hypertension, and hyperlipidemia. The data will be compared before and after a clinical pharmacist was introduced to the health care team. A paired analysis will be used to determine the impact of pharmacist intervention on key quality performance measures. Covariates will be included in the analysis to account for confounding factors that may affect the outcomes. This study is currently under review with the institutional review board.

9-218

Title: Retrospective evaluation of intravenous (IV) desmopressin use and monitoring in a 431 bed community teaching hospital

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Purpose: Intravenous desmopressin is approved for the treatment of Diabetes Insipidus (DI) and bleeding associated with Hemophilia A and von Willebrands Disease (VWD). Recently, a case of intravenous desmopressin induced hyponatremia has been reported at this institution. Desmopressin dose, advanced age, high fluid intake, renal dysfunction and concomitant use of medications known to cause hyponatremia can potentiate desmopressin induced hyponatremia. Currently, there are no recommendations for the use and monitoring of IV desmopressin at this community teaching hospital. The purpose of this medication-use evaluation (MUE) is to assess the use of IV desmopressin and determine if opportunities for improvement exist.

Methods: The Institutional Review Board deemed this MUE exempt. Pharmacy software was used to identify desmopressin orders from January 1, 2013 to June 30, 2013. Patients who did not receive intravenous desmopressin or were diagnosed with central pontine myelinolysis were excluded. The following data was collected from the medical record: patient age, gender, height, weight, serum creatinine, blood urea nitrogen, hemoglobin, hematocrit, platelet count, fluid intake, other medications with the potential to cause hyponatremia, ordering physician, desmopressin indication and dose, number of doses, timing of dose, evidence of bleeding, amount of blood loss, comorbidities and length of stay. Hyponatremia, defined as a serum sodium less than 136 mmol/liter, was assessed by reviewing serum sodium level prior to desmopressin dose and one and two days after dose. Desmopressin induced hyponatremia (defined as hyponatremia within 24 hours of last desmopressin dose for those with normal renal function or 48 hours for those with a creatinine clearance (CrCl) of less than 50ml/min) was assessed. Time to hyponatremia if it occurred and symptomatic hyponatremia were also reviewed. Pharmacy software was used to determine if documented pharmacist intervention occurred.

Results: Twenty-nine patients were identified, three excluded. Ages ranged from 28-92, with 65% older than 60 years; 54% were female. Indications for use included: VWD (n = 6), bleeding during surgery or procedure (n = 10), gastrointestinal bleed (n = 6), hematoma (n = 1), DI (n = 1), unknown (n = 2). In six of 26 patients, serum sodium monitoring was limited (none n = 4; none within 24 hours of desmopressin n = 1; only at baseline n = 1). Nine patients (35%) had a CrCl less than 50ml/min, with seven of nine classified as having end stage renal disease. Fluid restrictions were not implemented. Twenty-one patients received additional medications suspected to cause hyponatremia. Two patients had pre-existing hyponatremia exacerbated by desmopressin (serum sodium: 132 mmol/L, 134 mmol/L) and one patient had desmopressin induced hyponatremia. Two of these three patients were symptomatic and

one required treatment with IV normal saline infused at 100-150ml/hr for an unknown duration. All three patients had risk factors for hyponatremia (age, renal function, desmopressin dose and concomitant medications with the potential to cause hyponatremia). Documented pharmacist intervention occurred in one patient.

Conclusion: Reviewing contraindications prior to desmopressin use and consistent monitoring of electrolytes throughout desmopressin use was not present in all patients. It will be recommended to the Pharmacy & Therapeutics Committee that a process for IV desmopressin be developed. To improve monitoring consistency, this process should include: patient screening, required serum sodium monitoring and safety alerts to the pharmacists.

9-219

Title: Incidence of ciprofloxacin induced psychosis or delirium in a veteran population

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Purpose: Medications are the most common reversible cause of delirium, contributing to 22-39% of all cases. Several case reports have suggested an association of delirium/psychosis with ciprofloxacin use. It has been well documented that older hospitalized patients are more likely to develop delirium from medications than their younger counterparts. It is unknown, however, if and to what degree preexisting psychiatric disorders or other patient factors increase the risk of delirium with use of medications such as ciprofloxacin. The purpose of this retrospective study is to determine the incidence of ciprofloxacin-induced psychosis or delirium in different patient populations

Methods: This study will be a retrospective chart review analyzing the incidence of psychosis or delirium developing in patients during ciprofloxacin therapy from 1/1/2005-7/31/2013. The study has been submitted to the Institutional Review board for approval. Data to be collected regarding ciprofloxacin use includes dose, route, indication, and time to onset of symptoms or total duration of ciprofloxacin if no psychosis occurred. Covariates include age, sex, height, weight, serum creatinine, lactate dehydrogenase, comorbidities, narcotic use, steroid use, anticholinergic use, psychiatric medication, presence of constipation, diarrhea, fracture upon admission, pain, a trip to the OR or orthopedic surgery during the admission. The overall incidence of psychosis/delirium in ciprofloxacin-treated patients will be determined using the Naranjo scale. Covariates will be analyzed to determine factors which may predispose patients to psychosis/delirium. A statistical analysis will be performed to determine if delirium/psychosis occurred more often in elderly patients (greater than or equal to 65 years old) vs. those under 65 years of age. A subgroup analysis will be performed to determine if preexisting psychiatric disease predisposes patients to psychosis/delirium with ciprofloxacin use.

9-220

Title: Retrospective review of the incidence of gastrointestinal bleed in patients taking selective serotonin reuptake inhibitors and non-steroidal anti-inflammatory drugs

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Purpose: Over the past few years, more attention has been paid to the association of selective serotonin reuptake inhibitors (SSRIs) with increased risk of upper gastrointestinal (GI) bleeding, particularly in combination with non-steroidal anti-inflammatory drugs (NSAIDs). Although generally a rare occurrence, it is still concerning because of the widespread use of both classes of medications and the complications that can develop from a bleed. The objective of this medication use evaluation was to determine the incidence of SSRI associated GI bleed in patients on concomitant NSAIDs in a VA healthcare system.

Methods: Outpatients that filled an SSRI and NSAID prescription concomitantly between May 24, 2013 and July 23, 2013 were included in the review. A list was generated from the VISTA dispensing system at the VA. SSRIs included in the search were sertraline, citalopram, fluoxetine, paroxetine, and escitalopram; NSAIDs included were ibuprofen and naproxen. There were no other exclusion criteria. Retrospective chart review was performed individually for each patient using the computerized patient record system (CPRS) at the VA. A string search of bleed was done throughout each of the patients progress notes. Any occurrences were analyzed to determine whether the bleed was GI related. The primary outcome was the percentage of patients that developed a GI bleed while taking an SSRI.

Results: There were 118 SSRI patients who matched the criteria. Of these patients, 28 percent were found to be on aspirin in addition to another NSAID. The remaining patients were on naproxen alone (26.3 percent) or ibuprofen alone (45.8 percent). There were 37 patients (31.4 percent) found to be taking a GI protective agent such as a proton pump inhibitor (PPI) or histamine-2 receptor antagonist (H2RA). For the primary endpoint of GI bleed, there were 3 cases. Only 1 case was of upper GI bleed (0.85 percent) and the other two instances were lower GI bleed (1.7 percent).

Conclusion: Overall, the data confirm previous literature reports that patients taking SSRIs have a low incidence of GI bleed even if they are taking medications that increase the risk such as NSAIDs. Based on these findings, prescribing patterns do not need to be modified at this time and additional laboratory monitoring is unnecessary. However, it is still recommended that patients be monitored for signs and symptoms of bleed, especially those patients that are at highest risk.

9-221

Title: Evaluation of appropriate recognition of sepsis and adherence to early goal directed therapy post-implementation of the St. John Sepsis agent in a 651-bed hospital

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Purpose: Clinical validation of the St. John Sepsis alerting tool was evaluated to ensure the accuracy of recognition of septic patients and to assess improvements for time to start of therapy. Pre-implementation data from fifty patients from January to June 2011 was used as a baseline to assess outcomes and process improvement to evaluate appropriate recognition of sepsis and adherence to early goal directed therapy within a 6 hour time frame post-implementation of the St. John Sepsis agent.

Methods: A retrospective analysis, exempt from IRB approval, was conducted on patients that meet sepsis criteria based on the St. John Sepsis Algorithm, which was implemented on August 27, 2013 at New York Methodist Hospital. Systemic inflammatory Response Syndrome (SIRS)/Sepsis alerts were evaluated to obtain a sample size of fifty patients who have confirmed sepsis. Inclusion criteria include: patients admitted after implementation with a Sepsis alert, which meet at least 2 SIRS criteria with possible infection and signs of sepsis-induced organ dysfunction. Exclusion criteria includes: patients less than 18 years old, a diagnosis of sepsis upon admission, consecutive Sepsis alerts for the same patient, SIRS alerts, and hospice encounters. Post-implementation data was gathered using reports generated by the health information system and manual chart review. Patient profiles were reviewed for the following: demographics (age, gender, weight, height, and race), time to start of therapy (of fluids, antibiotics, and vasopressors), appropriate laboratory drawings, and assessment of normalized lab values and vitals. Analysis was performed to assess outcomes and process improvement between pre-implementation and post-implementation data.

9-222

Title: Assessment of a new hypoglycemia protocol at Strong Memorial Hospital

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Purpose: Two years ago a new hypoglycemia protocol was introduced at Strong Memorial Hospital in order to standardize the response to hypoglycemic events, minimize overuse of carbohydrates, and prevent rebound hyperglycemia following initial hypoglycemic events. The protocol was included as a part of the insulin ordering panel, and is automatically triggered by any insulin order. The implementation of this protocol included extensive nursing education in order to ensure that all aspects of the protocol were being followed appropriately. This study was conducted in order to assess adherence to this protocol and its effectiveness in managing hypoglycemic events.

Methods: This study will be a retrospective chart review examining patient charts over the two years following implementation of the new protocol. 130 consecutive hypoglycemic events will be monitored for patients on general medicine units. The primary variables recorded will be the serum blood glucose of each event, whether or not therapy was administered and, if so, the therapy that was used. The specific therapy for hypoglycemic events is recorded in each patients electronic medical record by the patients nurse, and includes the agent used to correct hypoglycemia (orange juice, oral dextrose, intravenous dextrose, glucagon, etc.) as well as the amount or dose. Each hypoglycemic event will be assessed as to whether or not the management was appropriate according to the new protocol. The results will be used to reassess hypoglycemic management at Strong Memorial Hospital.

9-223

Title: Impact of an antimicrobial stewardship program (ASP) on antibiotic optimization in patients with gram-negative bacteremia

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Purpose: Gram-negative bacteremia is associated with significant morbidity and mortality. Early, empiric broad-spectrum antimicrobial therapy is critical. Subsequent identification of bacterial species warrants treatment escalation or de-escalation. Antibiotic de-escalation decreases exposure to broad-spectrum antimicrobials, while antibiotic escalation expands the spectrum of antimicrobial activity to include MDR organism coverage. The Rapid Antimicrobial Administration by Infectious Disease Specialist (RAIDS) protocol is an ASP initiative implemented at our institution to assure patients with bacteremia receive prompt, appropriate antimicrobial therapy. The objective of the study is to compare pre- and post-implementation of RAIDS on time to optimization of antimicrobial therapy for Gram-negative bacteremia.

Methods: The study will be a retrospective evaluation of patients identified as having gram-negative bacteremia at our institution. Patients will be included if they: 1) are greater than 18 years, 2) have gram stain on blood that is positive for gram-negative bacteria, and 3) have received greater than 24 hours of antibiotics. Patients being treated with a broad-spectrum gram-negative antibiotic(s) for infection at an alternative site will be excluded. The primary endpoint of the study will be to compare the time to optimization of antimicrobial therapy following initiation of empiric antibiotics for gram-negative bacteremia in pre- (March to May, 2011) and post- (March to May, 2013) RAIDS groups. For the purposes of this study, antimicrobial optimization is defined as the addition or reduction in the number of antibiotics and/or the expansion or narrowing of the antimicrobial spectrum prior to the fifth day of antimicrobial therapy. The secondary endpoints of the study include clinical and microbiological cure.

9-224

Title: Safety and efficacy of canagliflozin in the management of type 2 diabetes mellitus

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Purpose: To assess the effectiveness and safety of the first of a new class of oral anti-diabetes drugs, canagliflozin (a sodium-glucose cotransporter-2 inhibitor), in the treatment of type 2 diabetes mellitus (T2DM).

Methods: This study met exemption criteria by the Albany College of Pharmacy and Health Sciences Institutional Review Board (research involving the collection or study of data in which information is recorded by the investigator such that subjects cannot be identified.). This is a pre-post observational study using patient medical records of an endocrinology practice, which will assess the efficacy/tolerability of canagliflozin in a group of T2DM patients who were initiated on therapy. Potential 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, and SGLT-2 inhibitor. Individual records of identified patients will be reviewed to ascertain if all applicable study criteria are met. Primary study outcomes are changes in A1C and weight, and percentage of patients reporting adverse effects of therapy. Secondary outcomes are percentage of patients achieving an A1C of <7%, changes in systolic and diastolic blood pressures, changes in lipid parameters, and changes in the number of insulin injections per day and change in the average daily insulin dose. Paired and unpaired t tests, the Fisher exact test, and the Wilcoxon rank sum test, as appropriate, will be utilized for statistical analysis.

Results: 130 patient records fulfilling all study criteria have been identified. Baseline patient characteristics include an average age of 59 +/- 10 years, a mean duration of type 2 diabetes mellitus of 11 +/- 7 years, 56.2% of patients are male, and 97.7% are Caucasian. The baseline average BMI is 40.3 +/-22.2 and mean A1C is 7.5 +/- 1.2%. Data for 3-month follow up visits are currently being collected.

9-225

Title: Evaluation of intravenous insulin prescribing for the management of diabetic ketoacidosis (DKA) and implementation of a DKA protocol

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Purpose: Diabetic ketoacidosis is an acute, severe metabolic complication of uncontrolled diabetes mellitus manifested by a triad of hyperglycemia, anion gap metabolic acidosis and ketonemia. Anecdotal experience with management of DKA at The Brooklyn Hospital Center may not mirror clinical practice guidelines. The purpose of this study is to describe current intravenous insulin use and develop an evidence-based DKA protocol. We hypothesize that implementation of this protocol will improve time to resolution of hyperglycemia and acidosis with less risk of hypoglycemic events.

Methods: A retrospective chart review was conducted to describe the current management of diabetic ketoacidosis at The Brooklyn Hospital Center. Patients 21 years of age and older were included if they received intravenous insulin for DKA from October 1st, 2011 to September 30th, 2013. The protocol will be developed based on a systematic literature review including evidence-based guidelines and the study will be submitted to the Institutional Review Board for exempt approval. The data will be collected through the electronic medical records based on ICD-9 codes specific for diabetic ketoacidosis with patient de-identification. Data collection includes: patient age, sex, weight, diabetes type, capillary blood glucose, serum chemistries, serum ketones, pH, hemoglobin A1C, other antidiabetic regimens and length of stay. The primary endpoints are time to resolution of hyperglycemia (defined by glucose < 200 mg/dL) and acidosis (defined by pH > 7.3; bicarbonate > 15 mEq/L; normalization of anion gap </= 12). The secondary endpoints include blood glucose rate of decline (defined by rate of 50-75 mg /dL/hr), rates of hypoglycemia (defined by blood glucose < 70 mg/dL), and appropriate transition to subcutaneous insulin (based on nutritional diet status) assessed by rebound hyperglycemia (defined by blood glucose > 200 mg/dL).

9-226

Title: Efficacy assessment of post-traumatic stress disorder medication management clinic

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Purpose: Post-Traumatic Stress Disorder (PTSD) has emerged as a prominent mental health diagnosis in the Veterans Affairs patient population and much research have strived to answer which agents offer the optimum treatment outcome. Few studies have evaluated patient factors that influence effective PTSD medications usage. This study will look for independent variables associated with treatment efficacy in patients treated in an outpateint PTSD medication management clinic setting.

Methods: This retrospective chart review will use the electronic medical record system to identify patients with at least 3 consecutive months of treatment in the PTSD medication management clinic from February 2008 to August 2013. The time frame for individual data collection will be from initiation of treatment in the clinic until termination from clinic, defined as absence from the clinic of at least 3 months. There may be patients who are reinitiated in the clinic after a lapse in treatment. Each period of initiation and termination will constitute a separate event and compose a distinct set of data points. A surrogate marker for clinic treatment efficacy will be calculated: [number of changes to the dosing schedule of any PTSD treatment medication]/[number of PTSD medication clinic visits attended] Any medication re-initiation will equate to a change. This surrogate marker will be analyzed against various independent variables, e.g. patient demographics, PTSD medications used, psychosocial factors, and adherence to clinic appointments and medications prescribed. Inpatient mental health admissions and emergency department visits for anxiety and other reasons related to PTSD will be assessed for confounding. Admissions strictly for substance abuse detoxification will not be counted.

9-227

Title: Evaluation of post-operative atrial fibrillation management following cardiac surgery

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Purpose: Post-operative atrial fibrillation (AF) following cardiac surgery is associated with an increased risk of stroke, prolonged hospitalization, and increased costs. The incidence of post-operative AF ranges from 25% to 40% post-coronary artery bypass surgery (CABG) and up to 62% after a combined CABG and valve procedure when electrocardiogram is continuously monitored. The increased prevalence of post-operative AF in the past few decades may be related to the increase in cardiac surgeries in an aging population. This medication use evaluation will assess the effectiveness and outcomes of the current practices in the management post-operative AF.

Methods: Data for this research will be collected by a retrospective chart review of patients undergoing cardiac surgery from July 1, 2012 to June 30, 2013. Data gathered from electronic medical records will include patient demographics, relevant labs such as serum potassium, calcium, and magnesium, type of procedure performed, pharmacotherapy used in the prevention and management of post-operative AF (including the doses, route, frequency, and duration of use), and surgical interventions, if any. Adverse events believed to be related to the medication interventions will also be collected and compared. Data collected will be used to assess the appropriateness of medications used to prevent and manage post-operative AF. The Pharmacy and Therapeutics Committee has reviewed and approved the protocol for this medication use evaluation and all research associated with it. Since this research will be utilized solely for quality assurance purposes, review by the local Institutional Review Board has been waived.

9-228

Title: Evaluation of dexmedetomidine for facilitating weaning and extubation of critically-ill medical-surgical patients

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Purpose: Dexmedetomidine (Precedex) is a novel sedative agent with analgesic and anxiolytic effects. Recent clinical trials have demonstrated a reduction in time to extubation compared to midazolam and propofol. It does not cause significant respiratory depression, making dexmedetomidine an attractive option for anxiolysis during extubation. We aim to retrospectively analyze our hospitals use of dexmedetomidine during weaning and extubation of critically-ill medical-surgical patients who were intubated for 24 hours or more.

Methods: This project is exempt from institutional review board due to classification as departmental quality improvement project. We will identify patients who received at least one dose of dexmedetomidine between July 1st, 2011 to June 30th, 2013. We will collect the following data points: age, sex, reason for and duration of mechanical ventilation, past history of alcohol or substance abuse, history of psychiatric disorders, doses of sedatives and analgesics used at the time of dexmedetomidine initiation and at extubation, arterial blood gas at time of dexmedetomidine initiation, prior pressure support history within 48 hours of dexmedetomidine initiation, duration of dexmedetomidine use, dose of dexmedetomidine at initiation, dose of dexmedetomidine at extubation, Richmond Agitation Sedation Scale (RASS) score at time of dexmedetomdine initiation and discontinuation, Mean Arterial Pressure (MAP) and heart rate at 0, 2, 6, 12, and 24 hours after dexmedetomidine initiation and outcome on extubation at 12 hours and 24 hours. Our primary outcome is the rate of successful extubations (without reintubation) at 12 hours and 24 hours post dexmedetomidine initiation. Secondary outcomes include: effect on doses of concomitant analgesics and sedatives and mean time to extubation after dexmedetomidine initiation.

9-229

Title: Evaluation of the Use of the Electrolyte Replacement Protocol for Patients in Critical Care Units

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Purpose: Electrolyte abnormalities, which require careful monitoring, evaluation, and treatment, are commonly observed in critically ill patients, and may result in significant complications. An electrolyte replacement protocol including potassium, magnesium, and phosphorous was implemented within intensive care units (ICU) to standardize management of these abnormalities. Further complicating the optimal care of patients are recent medication shortages. The objective of this medication use evaluation is to assess the implementation and outcomes of the electrolyte replacement protocol, including review of replacement strategies in light of shortages, within the ICU.

Methods: This retrospective chart review of adult ICU patients initiated on the electrolyte protocol will be conducted over a two month period. Data will be collected via the patients electronic medical record. Data gathered will include patient demographics, electrolyte replacement dose and route, additional sources of electrolytes such as nutrition, and pertinent laboratory values, including instances of electrolyte imbalance, initial serum electrolyte level, related laboratory values for determination of replacement, and follow up serum electrolyte concentrations as ordered per protocol. The data will be analyzed to determine if the electrolyte replacement protocol is being implemented appropriately for potassium and magnesium. Patients with abnormalities in phosphorous levels will be reviewed to determine how the medication shortage impacted the ability of clinicians to address hypophosphatemia. Patient outcomes with regards to adequate correction of acute electrolyte imbalances will be assessed as well. Patients will also be evaluated for any adverse drug reactions believed to be associated with the medications included within the protocol. The protocol for this evaluation and all research conducted during this process has been approved by the Pharmacy and Therapeutics Committee. Review by the Institutional Review Board is waived as this research will be used for quality assurance purposes only.

9-230

Title: Assessing outcomes of adult oncology patients treated with linezolid versus daptomycin for bacteremia due to vancomycin resistant enterococcus

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Purpose: Vancomycin resistant enterococci (VRE) are an increasingly common type of bacteria associated with hospital-acquired infections. There is limited data concerning VRE bacteremia and treatment outcomes specifically in patients with malignancy. Linezolid is currently the preferred treatment for VRE blood stream infections (BSI). Daptomycin is not currently indicated for the treatment of VRE infections; however, its bactericidal activity against enteroccal species has translated to clinical use. Limited trials and case reports have shown successful treatment of VRE BSI with daptomycin. The objective of the present study is to examine VRE BSI treatment outcomes in cancer patients treated with linezolid or daptomycin.

Methods: A comprehensive list of all cancer patients undergoing treatment with linezolid or daptomycin at NSUH from October 1, 2011 September 1 2013 will be generated from the institutional information technology department database. After receipt of institutional review board approval, a retrospective chart review will be conducted to determine which of these patients had positive blood cultures for VRE. The primary endpoint is length of therapy (in days) required to achieve microbiological cure and rate of failure. Secondary endpoints include adverse events, length of stay, hospital mortality, and monitoring of creatine phosphokinase (CPK) in daptomycin patients. The following data will be collected: age , gender, microbiological cure, MIC for linezolid and daptomycin, type of malignancy, number that responded, number that failed, length of stay, and CPK value. All patients identified to have a positive blood cultures for VRE during hospitalization will be assigned a confidential identification number. The identification number will be linked to the patient name in an electronic file, which will be stored in a password-protected computer only accessible by the principal investigator. Multivariable analyses will be performed to compare the microbiological and clinical outcomes of both groups.

9-231

Title: Clinical and financial impact of an emergency medicine pharmacist for patients presenting with sepsis

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Purpose: While many hospitals are utilizing clinical pharmacists in the Emergency Department (ED) with positive outcomes, financial justification remains a debatable issue in other hospitals. The objective of this study is to evaluate the clinical and financial impact of a clinical pharmacist through interventions for ED patients presenting with sepsis. Sepsis is a relatively common, often fatal syndrome occurring in more than 1,600,000 patients in the US annually, with an estimated mortality rate of 40%. With the complexity of sepsis, there are multiple modalities in which a clinical pharmacist can intervene to ensure best practices are followed and improve patient outcomes.

Methods: This study will be conducted a community hospital currently without an ED clinical pharmacist. Upon IRB approval, the intervention will be the addition of a clinical pharmacist to the ED for 12 weeks. A prospective analysis will be conducted during the 12 week period. Data to be collected include time elapsed to antibiotic administration, number of clinical pharmacist interventions, specifically therapeutic and dosing recommendations, prevention or management of drug allergies and adverse drug events, drug-drug or drug-disease interactions and lastly, 30- and 90-day mortality rates. The appropriateness and dose of each antibiotic and vasopressor ordered will be analyzed. Additionally, the potential cost avoidance associated with each intervention will be analyzed using average cost and probability of harm. All data will be recorded without patient identifiers and maintained confidentially and appropriate statistical analysis will be performed for each variable. Upon analysis, it will be determined if the addition of a clinical pharmacist in the ED improves clinical outcomes in patients presenting with sepsis, while providing financial justification.

9-232

Title: Collaborative drug therapy management (CDTM) and medication therapy management MTM) in an outpatient clinic of a large urban New York City hospital

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Purpose: Chronic heart failure (CHF) is one of the most common diagnosis-related groups for hospital readmission. The goal of this clinic is to reduce readmission due to CHF exacerbation by improving patient education and medication adherence, decreasing the progression of CHF, and improving the quality of care for patients with CHF. The objective of this study is to evaluate whether patients who attended the CHF clinic had a decreased number of CHF readmission after 30 days compared to patients who did not attend the clinic.

Methods: This study, a retrospective chart review performance improvement project, was submitted to the Institutional Review Board for expedited approval. The primary endpoint is to look at the number of CHF readmissions after 30 days for patients who attended the clinic compared to patients who did not attend the clinic. We will also look at the following secondary endpoints: target blood pressure of < 140/90 mmHg (or < 130/80 mmHg for patients with comorbid diabetes or chronic kidney disease), target weight gain of < 3 lbs in one day or < 5 lbs in one week, and if patients achieved target doses of their diuretic, ACEI and beta blocker medications. There will be two groups of patients: Group A - patients who attended the clinic and Group B - patients who did not attend the clinic. The comparison between these two groups will be done using Fishers exact test. The following information will be collected: age, medical record number, date of admission, patient home and inpatient medications, blood pressure, and weight measurements. In order to maintain confidentiality, all data will be recorded without patient identifiers and all data with identifiers will be destroyed at the end of the study.

9-233

Title: Medication use evaluation of dabigatran and rivaroxaban at a large academic medical center

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Purpose: The utilization of novel oral anticoagulants dabigatran and rivaroxaban has been increasing due to the narrow therapeutic window for warfarin. Dabigatran is approved for prevention of stroke and systemic embolism in adult patients with nonvalvular atrial fibrillation. In addition to dabigatrans indications, rivaroxaban is approved for the treatment of deep venous thrombosis, pulmonary embolism, and to reduce the risk of recurrent venous thromboembolism after initial treatment. The purpose of this medication use evaluation is to interpret patterns of utilization with dabigatran and rivaroxaban according to dosing guidelines developed by the antithrombotic therapy oversight group at a large academic medical center.

Methods: An Institutional Review Board approval was not required because this is a medication use evaluation investigating quality assurance and safety. A randomized retrospective chart review was conducted using electronic medical records from January 1, 2013 through June 15, 2013. Patients were randomized using reports generated by an electronic computer system. Data points were collected for 60 adult patients admitted to a large academic medical center who received at least two doses of dabigatran or rivaroxaban. The following data was collected from the electronic medical records to evaluate the use of dabigatran and rivaroxaban: age, gender, comorbid conditions, prescriber specialty, indication for initiation, initiating dose, CHADS2 score, bleeding events, adverse events, significant drug interactions, reason for non adherence to protocol, and readmission rates. Patterns of use were analyzed to evaluate and interpret utilization with dabigatran and rivaroxaban according to dosing guidelines developed by the antithrombotic therapy oversight group. Categorical variables will be presented using percentages and continuous variables will be assessed using the mean plus and minus the standard deviation or the median with ranges.

9-234

Title: Retrospective argatroban medication-use evaluation (MUE) supports the implementation of a new process in a 431 bed teaching hospital

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Purpose: The suspicion, diagnosis and proper treatment of Heparin Induced Thrombocytopenia (HIT) encompasses a complex series of decisions. At this institution, the only standardization is the use of a mandatory argatroban order form. A MUE was performed to assess current argatroban utilization. This retrospective analysis should identify steps in the management of HIT that could be improved with increased pharmacist involvement.

Methods: The Institutional Review Board deemed this MUE exempt. A utilization report for argatroban was compiled using pharmacy software to identify patients with argatroban orders from January 1, 2013 June 30, 2013. To ensure no patients were overlooked, a lab report of Serotonin Release Assays (SRA) within the same time period was also generated. The single exclusion criterion was diagnosis with HIT prior to January 1, 2013. Evaluation of medical records included: anticoagulation regimens at admission and during hospitalization, baseline renal and hepatic function, platelet count on day 1 of heparin therapy and nadir platelet count, Heparin-associated Platelet Antibody (HAPA) and SRA results. In addition, initial dose and length of argatroban therapy, transition to warfarin and any adverse outcomes attributed to therapy or HIT were also assessed. A 4T-Score was calculated for each patient. Pharmacy records were reviewed to identify documented pharmacist interventions and to assess if the HIT diagnosis was accurately recorded in the allergy field. All data points were used to assess the continuum of care for newly suspected HIT patients.

Results: Twenty-seven patients were reviewed, seven excluded; the average age was 65 years old (range = 43-86). All patients were exposed to heparin or enoxaparin during their admission. Calculated 4T scores: 0-3 = 5 patients, 4-5 = 13 patients and 6-8 = 2 patients. All patients had a HAPA ordered regardless of 4T-score. Eighteen of twenty patients were started on argatroban when HIT was suspected. Optical density (OD) results: <0.4 (negative) = 8 patients; 0.4 1 = 5 patients; 1-2 = 3 patients; >2 = 4 patients. Argatroban was discontinued immediately in seven of eight patients with an OD <0.4. Four patients had a SRA ordered (HAPA negative, n = 1; HAPA positive, n = 3), all were negative. Some significant findings are as follows. Recognition of HIT and argatroban initiation was delayed in three patients with a 4T-score >5. One patient had HIT with a thrombus before argatroban therapy was initiated. Two patients had initial argatroban doses that did not conform to the institutions order form, six patients had transitions to warfarin that diverged from current guideline recommendations and two patients with true HIT did not have a heparin allergy documented in the pharmacy system.

Conclusion: Recognition of HIT, transition from argatroban to warfarin therapy and accurate allergy documentation all represent aspects of care that could benefit from standardization. This MUE supports the implementation of a protocol that increases pharmacist involvement in the recognition and management of HIT. Results of this MUE are being presented to the institutions Pharmacy and Therapeutics Committee for review and discussion at the next meeting.

9-235

Title: Evaluation of the efficacy of medications for bone pain induced by granulocyte colony stimulating factors

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Purpose: Filgrastim and pegfilgrastim are granulocyte colony stimulating factors (G-CSFs) that are commonly used in oncology patients receiving myelosuppressive chemotherapy to prevent infectious complications due to neutropenia. 20-50% of patients using G-CSFs experience bone pain. There is limited literature evaluating the use of medications, such as non-steroidal anti-inflammatory drugs (NSAIDs), antihistamines, and opioids to prevent G-CSF induced bone pain. Since guidance and literature about G-CSF induced bone pain treatment/prevention is limited, the purpose of this study is to evaluate, from patients perspective, which medications have been used and/or helpful in preventing and/or treating G-CSF induced bone pain.

Methods: This study will be submitted to the Institutional Review Board for approval. Data will be collected over two months for this cross-sectional, observational study utilizing a patient questionnaire. A survey was written and will be distributed at the ambulatory chemotherapy/transfusion center. Patients will be recruited while receiving chemotherapy or a G-CSF, and will sign an informed consent. Inclusion criteria for patients are: currently receiving a G-CSF, have experienced bone pain after receiving these agents, have tried at least one agent to prevent bone pain, receiving treatment for a solid tumor, and are 18 years of age or older. Patients unable to make cognitive decisions on their own, with depression, currently being treated for a chronic pain condition, bone metastases, or taking any of the survey medications for other indications will be excluded. The primary endpoint is to compare the pain relief of three different drug classes: NSAIDs, antihistamines, and opioids. The endpoints are reported as ordinal/categorical data ranking the perceived helpfulness into four categories. Investigators will compile survey results and perform retrospective chart reviews to compile data for evaluation by a statistician who will use appropriate statistical tests to analyze data.

9-236

Title: Variability in opioid equivalence

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Purpose: Several opioid outcomes studies and clinical guidelines are associated with maximum morphine equivalents (MEQ). A recent FDA petition to change opioid labeling restricting daily MEQ doses for non-cancer pain to a daily maximum of 100mg was rejected. There is no unilaterally accepted morphine conversion, and there is significant variability among conversion resources. The purpose of this survey is to analyze various clinician types (including physicians, pharmacists, nurse practitioners, and physician assistants) and to ascertain and compare the variability among their calculations from five opioids at preselected doses to corresponding daily MEQ doses.

Methods: The project is a multicenter collaboration, and, as such, the design format was submitted to IRBs at each site involved. Both institutions determined the project to be exempt from IRB review, validating exclusion under 45 CFR 46.101(b). A survey form was developed using Survey Monkey. Participation is currently being solicited by providing a link to the survey via social media (e.g. Facebook, Twitter, LinkedIn, etc.) and emailed to professional organizations for sharing with their members and followers. Data collected includes epidemiology (professional type, non-professional, state of licensure if applicable, etc.) and answers to the conversion of the following five preselected opioids at fixed doses to their MEQ dose: hydrocodone 80mg, fentanyl transdermal patches 1800mcg (as 75mcg/hour), methadone 40mg, oxycodone 120mg, and hydromorphone 48mg. Participants are also asked to provide their choice of reference source utilized to complete the conversions, including personal knowledge. Upon closure of the survey, data collected will be pooled and statistical analyses will be performed to establish the mean, median, and range of responses and whether statistical significance exists among all respondents collectively, as well as within and between each clinician group.

9-237

Title: Development of an automated dose rounding protocol for inpatient pharmacists

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Purpose: Currently there are limited policies giving pharmacists the ability to order or discontinue a medication without the providers permission at our institution. This analysis attempted to quantify the incidence of per protocol action (provider not notified) taken by a pharmacist compared to verbal with read back (provider notified) and to characterize the clinical scenarios where this functionality is being used. The goal of this research project is to develop policies surrounding common practices requiring pharmacist order intervention such as dose rounding and alternate formulation selection to minimize use of the verbal ordering mechanism.

Methods: Preliminary analysis included 7,331 medication orders that were placed via the electronic medical record at our institution as either per protocol or verbal orders by pharmacists during June/July 2013. Investigation showed that 77% (5666) of the orders in total were documented under the per protocol functionality in our electronic medical record. We defined dose rounding as medication orders that were discontinued and then reordered under the same order ID. This definition simulates a scenario when a pharmacist is rejecting one order and replacing with another to modify dose or formulation. We identified 962 orders that met this criterion for the months of June and July. Of the 962 total orders 81% (787) were presumed dose rounded under the per-protocol function. Data for these orders will be summarized regarding the nature of modifications seen. Secondary analysis will include collecting data from the institutions medical record database on the most common dose rounded medications to develop dose-rounding tolerances for implementation of the protocol.

9-238

Title: Comparing the incidence of falls in elderly veterans receiving benzodiazepines to those without benzodiazepine therapy in the home based primary care setting

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Purpose: It is well established that benzodiazepines are associated with an increased incidence of falls. However, the extent of this effect in the elderly Home Based Primary Care (HBPC) veteran population at this medical center has not been observed. HBPC provides routine medical care to veterans with multiple chronic disease states at their home residence. This retrospective chart review is intended to closely evaluate the effect of benzodiazepines on the incidence of falls in this institution specific population. Results of this review will be used to promote prescriber awareness of benzodiazepine therapy's effects on fall incidence in HBPC veterans.

Methods: This review will be submitted to the Institutional Review Board for approval. Veterans enrolled in the HBPC program between August 1st, 2012 and August 1st, 2013 will be identified using the electronic medical record system. Veterans aged 65 years and older will be included. Those who are non-ambulatory, as defined by bedbound status, will be excluded. Each veteran's medical record will be reviewed for the following: age, gender, ethnicity, benzodiazepine agent used, and duration of therapy throughout the review period. Veterans who have used benzodiazepine therapy throughout the specified time frame and those who have not received any will be separated into two randomly selected equal sized groups for a comparison of fall rate. Data collected will be stored without patient identifiers, and will maintain veteran confidentiality. The total amount of falls in each group per year will be compared using the Student T Test.

9-239

Title: Evaluation of the incidence of significant QT/QTc prolongation and need for additional medication alerts within the computerized physician order entry and pharmacist verification system.

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Purpose: Many drugs and contributing factors prolong the QT/QTc interval on electrocardiogram (ECG), however most of these drugs and other causes do not have warnings or interactions that alert the physicians writing or pharmacists verifying orders. The purpose of this study is to determine if patients who have clinically significant QT/QTc prolongation are receiving medications that can prolong the QT/QTc interval or have contributing factors that prolong QT, and if more of these drugs or contributing factors need warning and interaction alerts in the computerized physician order entry (CPOE) system and pharmacist verification system to avoid this dangerous cardiac conduction abnormality.

Methods: This study will be submitted to the institutional review board for approval. Adult patients on six units with continuous cardiac telemetry will be included in this study. The following data will be collected: baseline QT/QTc interval, subsequent QT/QTc intervals, age, gender, serum potassium, magnesium, glucose, time of day, cardiac disease state (heart failure, ischemia, hypertension, diabetes) and which drugs patients were on at time of ECGs that could cause QT prolongation. All data will be documented and maintained confidentially. Patients on QT prolonging agents as well as those with prolonged QT/QTc intervals will be included in the study. Significant QT prolongation will be defined as a QT/QTc interval greater than 500 milliseconds or more than a 20 percent increase from baseline. The percentage of patients with significant QT/QTc prolongation will be calculated and all of the contributing factors described above will be reviewed for association. If prolonged QT/QTc intervals are documented and specific medications or other factors such as electrolyte abnormalities are determined to be linked, the reviewers will evaluate the need for additional prescribing and pharmacist verification alerts. Data is currently being collected and the updated study results will be presented at the 2013 ASHP Midyear Clinical Meeting.

9-240

Title: Role of intravenous acetaminophen in the reduction of opioid consumption in a bariatric surgical population

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Purpose: The administration of opioid monotherapy to achieve adequate pain relief following surgery is common medical practice. However, it is not appropriate because opioids are associated with undesirable side effects such as respiratory depression and excessive sedation, which can lead to poor patient outcomes. The administration of intravenous acetaminophen to control postoperative pain has proven to be effective in reducing opioid consumption in various surgical patient populations, but studies have not been conducted specifically in the bariatric surgical population. The objective of this study is to determine if intravenous acetaminophen reduces opioid requirements in patients following bariatric surgery.

Methods: This study was submitted to the Institutional Review Board and gained exempt approval due to it being a retrospective chart review. We will review patient charts in order to find bariatric surgery patients who received intravenous acetaminophen and opioids postoperatively, and match them to cohorts who received only opioids without intravenous acetaminophen therapy. Patients who are under the age of 18 years, or are allergic to acetaminophen or opioids, will be excluded from this study. The primary endpoint will be to observe if there is a statistically significant difference between the two groups in total opioid consumption, expressed in oral morphine equivalents. Secondary endpoints will include reduction in baseline pain score between the two groups, the individual morphine amounts of each subcategory of opioid therapy use after conversion to oral morphine, the frequency of acetaminophen dosages greater than 4 grams/day in patients, the mean hospital length of stay between the two groups, changes in liver function tests from baseline between the two groups, and any other common side effects of intravenous acetaminophen use. These endpoints will help us determine the efficacy of intravenous acetaminophen in reducing opioid consumption in the bariatric surgical population at our institution.

9-241

Title: Exploring the utility of restricting vancomycin to a 72 hour release period in the treatment of empiric hospital and healthcare associated pneumonia

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Purpose: At our institution, vancomycin use is restricted to a 72-hour release in the empiric treatment of hospital and healthcare associated pneumonia (HAP/HCAP). Subsequent use requires approval by the infectious diseases service in order to make a more informed decision about the necessity for continuation of the drug. The aim of this medication use evaluation is to assess the empiric use of vancomycin therapy in patients with suspected HAP and HCAP and determine the necessity for use beyond 72-hours. Collected data will also be utilized to determine the usefulness of vancomycin therapeutic drug monitoring (TDM) within the first 72-hours of therapy.

Methods: A medication use evaluation is being performed at our tertiary care teaching hospital between August 1st and October 31st 2013. Given the quality improvement nature of the project, it is exempt from Institutional Review Board approval. Using a Restricted Antimicrobials Report, patients prescribed vancomycin for HCAP and HAP were identified. Demographic data was collected as well as patient care unit, culture results, 14-day mortality, and whether vancomycin was extended beyond 72 hours. Data are being entered into SPSS statistical software for evaluation. Available culture results are being evaluated for the presence of methicillin resistant Staphylococcus aureus (MRSA) to validate the need for vancomycin therapy.

Results: To date, 49 patients have been evaluated. The mean age is 61.5 years (SD 15.8) and 28 (57.1%) are male. Thirty patients (61%) have been empirically treated for empiric HAP and the remaining 19 (39%) for HCAP. A total of 20(41%) patients have received vancomycin beyond the initial 72 hour release period, with only 4 (20%) of these patients having cultures positive for MRSA. The remaining 16(80%) patients did not have positive MRSA culture results. Two patients died.

Conclusion: Based upon data collected to date, vancomycin therapy is not being continued beyond 72 hours in the majority of patients empirically treated for HAP or HCAP. Of the 20 patients who continued therapy, 16 did not have a positive culture for MRSA and this may be an opportunity for future antibiotic stewardship efforts. Based upon the low rate of therapy continuation, routine vancomycin TDM may have low utility within the first 72 hours of therapy when started empirically for HAP/HCAP, however these results are still pending.

9-242

Title: Impact of new standardized weight based computerized vancomycin orderset on trough concentrations at an inner city hospital

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Purpose: According to the Infectious Diseases Society of America, higher weight based intravenous (IV) doses of vancomycin are needed to achieve a target trough of 10-15 mcg/mL or 15-20 mcg/mL for serious infections. In order to achieve target trough concentrations, new standardized vancomycin weight based dosing guidelines were implemented through a computerized orderset at a large urban New York City hospital. The objective of this study is to assess the impact of the new weight based computerized vancomycin orderset on trough concentrations.

Methods: This study is submitted to the Institutional Review Board for expedited review and approval. The study is a retrospective chart review of adult patients admitted to the intensive care unit that received vancomycin. New vancomycin IV weight based dosing guidelines were used to create a computerized vancomycin orderset which includes an order for a vancomycin trough concentration. The vancomycin trough is a time critical lab that is taken two days after the start of IV vancomycin therapy. The new vancomycin guidelines were implemented in August 2013. Data will be collected retrospectively before and after implementation of the guidelines. The following data will be collected: patient weight, age, creatinine clearance, initial vancomycin dose and interval, indication for therapy, days of therapy, days to vancomycin level, serum trough concentration, and days to second vancomycin level if days of therapy ≥ 7. All data will be de-identified, confidential and patient identifiers will be destroyed at the end of the study. Fischer exact test will be used for categorical data such as whether or not a vancomycin trough level was drawn and whether or not this level was appropriate. A p-value of less than or equal to 0.05 will be considered significant.

9-243

Title: Medication Record Discrepancies Identified During a Pharmacist-Led Medication Reconciliation Pilot in a Patient-Centered Medical Home

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Purpose: There is confirmation that medication discrepancies can affect patient outcomes. Medication reconciliation is a method of comparing the medications a patient is taking to what the patient should be taking, and is meant to identify and resolve discrepancies. In order to improve patient outcomes, it is imperative to identify common areas of medication discrepancy and develop a systematic approach to medication reconciliation. This study describes the frequency and types of medication record discrepancies identified during a pharmacist-led medication reconciliation pilot program in a primary care patient-centered medical home.

Methods: Lifetime Health Medical Group is a primary care physician group and NCQA-accredited level 3 patient centered medical home located in a suburb of Buffalo, NY. Lifetime Health Medical Group exclusively utilizes an electronic health record (EHR) and electronic prescribing. The medication reconciliation pilot program will be run over a period of 2 weeks in January 2014. The protocol for the study will be submitted to The University at Buffalos Health Sciences Institutional Review Board for approval before proceeding with the pilot. During the two-week pilot, the pharmacist will complete medication reconciliation on all patients on the schedule of one physician and one midlevel practitioner provided they take one or more chronic medications. The medication reconciliation will take place when the patients are placed in the exam room just prior to the provider appointment. Patients will be asked during an appointment reminder call to bring all medication bottles to the appointment for review with a pharmacist. Following the medication reconciliation, the pharmacist will update the medication list in the EHR and discuss any medication-related problems identified with the patients provider prior to the provider seeing the patient. Medication record discrepancies will be documented, placed into 13 pre-defined categories, and quantified.

9-244

Title: Assessment of inpatient oseltamivir use during the 2012-2013 seasonal influenza season

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Purpose: The influenza virus has the potential to cause significant morbidity and mortality annually in the United States. Prompt antiviral administration has proven to reduce functional recovery time of patients, viral shedding, inappropriate antibiotic use, and respiratory complications. Oseltamivir is a potent neuraminidase inhibitor that can be utilized as chemoprophylaxis or in the treatment of influenza infections. The primary objective of this study is to determine if the administration and dosing of oseltamivir in patients was appropriate during the 2012 - 2013 seasonal influenza season.

Methods: This study will be submitted to the Institutional Review Board for approval. A retrospective chart review will be performed on patients aged 18 years and greater, who received oseltamivir on their admission between August 2012 and May 2013 at our institution. The data collected will include: patient demographics, past medical history, symptoms including the date of the onset of, the dose and duration of oseltamivir, concomitant antibiotic use, renal function, diagnostic tests performed with results, length of stay, influenza vaccine history, and the outcome of the admission. Treatment will be evaluated for appropriateness according to the Infectious Diseases Society of America (IDSA) Clinical Practice Guidelines for Seasonal Influenza in Adults and Children - Diagnosis, Treatment, Chemoprophylaxis, and Institutional Outbreak Management: 2009 Update and the Centers for Disease Control and Prevention (CDC) treatment recommendations for the 2012 - 2013 influenza season. Secondary endpoints include assessing the correlation between the influenza rapid test and the reverse transcription-polymerase chain reaction (RT-PCR) test. Data will be recorded confidentially without patient identifiers. Appropriate descriptive statistics will be employed for all variables.

9-245

Title: Evaluating the appropriateness of monitoring practices for hypomagnesemia in veterans receiving chronic proton pump inhibitor therapy

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Purpose: Chronic use of Proton Pump Inhibitor (PPI) therapy has been associated with decreased absorption of magnesium. The Food and Drug Administration (FDA) recommends obtaining magnesium levels at baseline and periodically thereafter. The main objective of this review is to determine whether current provider monitoring practices meet FDA recommendations, as the measurement of magnesium levels is not a routine part of the Basic Metabolic Panel. Appropriate monitoring can decrease the potential life threatening adverse effects, such as tetany, arrhythmias, and seizures. The results of this review will be used to increase provider awareness of proper monitoring.

Methods: This review was submitted to the Institutional Review Board for approval prior to data collection. Patients will be identified using the hospitals Electronic Medical Record system. A retrospective chart review will be conducted on patients aged 18 years or older, who have received PPI therapy for more than one year in an ambulatory care setting between August 1, 2012 and August 31, 2013. Patients will be excluded if they are currently located in a long term care facility or inpatient unit, receiving a prescription from providers not affiliated with this institution or receiving them Over the Counter (OTC). Baseline magnesium levels and the subsequent measurements will be recorded and each patient will be classified as meeting or not meeting the monitoring recommendations. The primary endpoint of this review is the availability of magnesium levels at baseline and at least yearly thereafter. The secondary endpoints are to measure the incidence of hypomagnesaemia and to assess for alterations in therapy based on monitoring results.

9-246

Title: Antimicrobial stewardship evaluation of meropenem use at a large academic medical center

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Purpose: Meropenem has the broadest spectrum of activity of beta-lactam antibiotics, including coverage for gram-negative multidrug-resistant organisms (MDRO). Due to meropenem's broad spectrum of activity, it requires prior authorization from antimicrobial stewardship with the exemption of Infectious Disease, Critical Care, and Emergency Department attending physicians. At our institution, there has been increased meropenem use measured in days of therapy per 1000 patient-days observed in the first and second quarter of 2013 as compared to the same quarters of 2012. The objective of this evaluation is to assess meropenem prescribing patterns and investigate potential reasons of increased meropenem use.

Methods: An Institutional Review Board approval was not required as this is a medication use evaluation investigating quality assurance and safety. A retrospective chart review of adult patients who received at least 1 dose of meropenem between April 1, 2013 and June 30, 2013 was conducted. Data collected from electronic medical records included patient demographics, comorbidities, history of prior MDRO colonization or infection, prior antibiotic use within 30 days, prior healthcare exposure within 90 days, duration of intensive care unit, and hospital stay. Other documented details included specific characteristics at meropenem initiation (white blood cell count, pressors, serum creatinine, estimated creatinine clearance, covering service/location), microbiological data (positive culture, site, susceptibility including minimum inhibitory concentration), treatment details (days to meropenem use since admission, initial vs. escalation of therapy, time to escalation, indication, dose, duration of therapy), and pharmacy verification data (correct dosing regimen verified, pharmacy interventions, time to verification). Categorical values will be presented as n (%) and continuous values as median (Interquartile Range). The primary outcome will be to evaluate meropenem approval source. Other outcomes will include presence of positive cultures, whether meropenem was streamlined or discontinued, and in-hospital mortality.

9-247

Title: Probable indigotindisulfonate sodium-induced severe bradycardia and hypotension

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Case Report: Indigo carmine (sodium indigotin disulfonate, American Regent, Shirely, NY) is a blue dye that is commonly used for localizing ureteral orifices during surgery. In general, it is safe and biologically inactive, with the package insert citing only rare idiosyncratic reactions and mild pressor effects in some patients. Dose and administration route per the manufacturer is 5mL IV push. However, rare cases of cardiac adverse events such as bradycardia, hypotension, and cardiac arrest have been published. We describe a case of probable indigo carmine-induced bradycardia. A 42 year-old, 85 kg, 63 inch, black female, American Society of Anesthesiologists physical class II, with a past medical history of uterine leiomyoma and ovarian cysts was admitted for abdominal pain. She was scheduled for a total abdominal hysterectomy. She has a shellfish food allergy and no known drug allergies. Patient denied taking prescription, over-the-counter, or herbal medications at home. She denied tobacco, alcohol, and recreational drug use. She had no previous exposure to indigo carmine. Upon arrival to the operating room, her heart rate was 80 beats/min, blood pressure was 135/75 mm Hg, and oxygen saturation was 98 percent. At 11:30AM, the hospital sedation protocol was initiated using 4 mg of midazolam IVPUSH, 100 mcg of fentanyl IVPUSH, 20 mg of propofol IVPUSH, and inhaled isoflurane 1.5 percent to 3 percent with oxygen. She received 2 g of cefoxitin IVPB for surgical prophylaxis. A second dose of 100 mcg of fentanyl was administered 45 minutes later. The patients vital signs remained stable for the next 2 hours (HR: 60 - 100 beats/min; SBP: 110 - 150 mm Hg; DBP: 60 - 80 mm Hg). At 1:15PM the patient received 5 mL of slow IVPUSH of 0.8 percent indigo carmine injectable solution, at which time her blood pressure was 110/60 mm Hg and heart rate was 75 beats/min. Fifteen minutes later the patient became hypotensive and bradycardic (BP: 70/50 mm Hg; HR: 37 beats/min). The team performed ACLS for 16 minutes, administering epinephrine 1 mg IVPUSH x 4 doses, atropine 1 mg IVPUSH x 2 doses, and sodium bicarbonate 50 mEq IVPUSH x 3 doses. The patient was bradycardic for 10 minutes before successfully being stabilized. Allergic reaction and drug impurities were ruled out as likely causes. The procedure was completed with an estimated blood loss of 300 mL, without other major surgical events, and the patient was then transferred to the ICU. The Naranjo algorithm for causality revealed a probable (score of 7) indigo carmine-induced bradycardia and hypotension. A MEDLINE (1950 - August 2013) search using the following keywords: indigotindisulfonate, indigo carmine, cardiac arrest, bradycardia, hypotension, anaphylaxis, and anaphylactoid revealed a total of 12 case reports. Indigo carmine-induced hypotension and bradycardia are probably due to indigo carmines serotonin like structure. Serotonins direct vasoconstrictive effects can lead to an increase in peripheral resistance, with reflex bradycardia.

Although this is a rare occurrence, it is prudent to consider the possibility of these adverse reactions when a bolus of indigo carmine is administered intravenously.

9-248

Title: Evaluation of inpatient anticoagulant management among patients receiving enoxaparin or heparin bridging with warfarin

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Purpose: Anticoagulation management has important implications on safety and hospital length of stay, particularly among patients undergoing enoxaparin or unfractionated heparin bridging for acute venous thromboembolic treatment. The purpose of this project was to evaluate current warfarin dosing strategies among these patients and correlate such time to therapeutic INR and overall length of stay. These data are imperative to devise a warfarin-dosing protocol for the institution.

Methods: This drug use evaluation was conducted at our tertiary care institution between January 2013 and July 2013. Given the quality improvement nature of the project, it was exempt from IRB approval. Patients were identified for review if they received concomitant therapy with warfarin and treatment doses of enoxaparin or heparin. Patients were included if they were >=18 years of age and received >= 3 days of warfarin therapy while inpatient. Data collection included patient demographics, anticoagulation therapy selection, anticoagulation dosing, anticoagulation laboratory results, and hospital length of stay. The primary outcome of interest was time (measured in days) to therapeutic INR (defined as 2-3). Secondary endpoints includes occurrence of supratherapeutic INR (>3), adverse drug events reported, and thromboembolic events.

Results: To date, data have been collected on 45 patients. The mean age is 52.3 years (SD 17.46) and 19 (42.2%) patients are male. Enoxaparin was used in 24 patients and the remaining 21 patients received unfractionated heparin infusion. The median starting dose of warfarin was 5 mg. No patient received a loading dose of warfarin. The mean time to therapeutic INR was 5.84 (SD 4.31) days. Sixteen patients (35.5%) had a supratherapeutic INR.

Conclusion: Of data collected to date, warfarin loading doses are not being prescribed in patients being bridged with parenteral anticoagulation. We are finding a wide range of time before a therapeutic INR is reached, with an average of nearly 6 days. The use of warfarin loading doses may be beneficial in reducing the length of bridge therapy for specific patients, but further data collection and analysis is necessary.

9-249

Title: Gram negative bacteremia: are shorter courses of therapy feasible?

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Purpose: Up to 30-50% of antimicrobial use in hospitals is considered unnecessary or inappropriate, with the most common culprit being excessive duration of therapy. Prior prospective studies have demonstrated that shorter durations of therapy are equally efficacious compared with longer durations of antimicrobial therapy for various infectious diseases. One infectious disease modality that has not been addressed in such a fashion is gram negative bacteremia. The objective of this study is to determine if short courses of antimicrobial therapy are non-inferior to intermediate and long courses of antimicrobial therapy for the clinical cure of gram negative bacteremia.

Methods: This study will be submitted to the Institutional Review Board for approval. This will be a retrospective, single-center, case-cohort study comparing treatment outcomes among patients receiving short-course, intermediate-course, and long-course antimicrobial therapy. A retrospective chart review will be performed on patients admitted to our institution between January 2009 and January 2013, with a documented gram negative bacteremia. Patients meeting eligibility criteria will be placed in the short-course, intermediate-course, and long-course treatment groups if their total duration of appropriate antimicrobial therapy was less than or equal to 7 days, between 8 to 14 days, or greater than 14 days, respectively. Data collection will include patient age, gender, ethnicity, disposition, blood culture results, source of bacteremia, infecting gram-negative organism, antimicrobial susceptibilities of the organism, white blood cell count, fever, antimicrobial used, total duration of therapy, duration of therapy after resolution of leukocytosis and fever, duration of hospital stay, and total antibiotic days. The primary outcome of this study will be the presence of clinical cure at the end of therapy. Secondary outcomes include the achievement of microbiologic cure at the end of therapy, prevalence of adverse events secondary to antimicrobial therapy, duration of hospital stay, and number of antibiotic days.

9-250

Title: Evaluating adherence to a Pharmacy and Therapeutics Committee's protocol for use of intravenous acyclovir due to medication shortage at a women and childrens hospital

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Purpose: The objective of this study is to evaluate the prescribing appropriateness of intravenous (IV) acyclovir and ganciclovir according to an approved hospital protocol and in conjunction with the American Academy of Pediatrics' recommendations. Due to the national drug shortage, this measure was adopted in an attempt to conserve current supplies of IV acyclovir for patients that meet defined criteria.

Methods: This retrospective chart review was submitted to the Children and Youth Institutional Review Board for approval. The Cerner system will identify patients who received either acyclovir or ganciclovir from December 6, 2012 to August 16, 2013. From the identified patients, use of IV acyclovir and ganciclovir will be evaluated for appropriate drug selection. A laboratory report of all polymerase chain reaction (PCR) tests preformed for herpes simplex virus will be cross referenced to ensure qualified patients are captured. Data from electronic medical records will be collected; patient demographics, diagnosis, indication, time of order, time order verified by pharmacist, time medication administered, and length of drug treatment. Laboratory results such as serum creatinine, platelets and neutrophils will be collected to aid in monitoring for possible adverse drug events. Data will be collected in a manner to ensure patient confidentiality in accordance with the institutional review board policies. The data will be used to calculate the time of admission to first dose, time PCR results reported to the time the medication was discontinued after results, length of drug treatment, adverse drug events and percentage adherence to protocol. The results will assist in determining if current measures to manage medication shortages are adequate.

9-251

Title: Role of pharmacy resident in the optimization of medication therapy in the medical intensive care unit (MICU) of a community hospital

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Purpose: To measure the effect of pharmacy resident presence in the MICU on optimization of medication therapy and length of stay.

Methods: This study will be submitted to the Institutional Review Board for approval. A retrospective review of the interventions database will be conducted to determine the number and type of interventions made by staff pharmacists. Average length of stay data will be included in the retrospective review. Pharmacy resident will prospectively review MICU patient profiles, participate in daily rounds, and identify opportunities to perform proactive interventions. Pharmacy interventions will include, but not be limited to, clarification or correction of orders, provision of drug information, recommendation of alternative therapy, identification of drug-drug interactions, omission of therapy, identification of drug-food interactions, identification of drug allergy, dose adjustment for organ impairment, deescalation of therapy, discontinuation of duplicate orders, conversion of intravenous to oral therapy, and identification of adverse drug events. A comparison between retrospective and prospective phases will be conducted to evaluate the presence of the pharmacy resident in the MICU.

9-252

Title: Impact of pharmacist-led counseling in patients receiving anticoagulants: a pilot program targeted to reduce adverse events and hospitalizations

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Purpose: Within recent years, the FDA has approved several new anticoagulants with novel mechanisms of action. However limited published data exists, creating a possible increased risk for adverse reactions and drug misadventures. This may result in increased bleeding events as well as preventable visits to the ED and readmission to the hospital. One method aimed at reducing these preventable adverse events includes an educational intervention during inpatient prescribing. Therefore the purpose of this study is to determine if a pharmacist-led discharge counseling program can lead to reduced hospital readmissions associated with novel anticoagulants.

Methods: This is a study aimed at evaluating the impact of pharmacist-led education on adverse drug events in patients receiving anticoagulant therapy. Patients are eligible for enrollment if they are > 18 years of age and on at least one anticoagulant. Upon entry into the program the following interventions will be made: medication reconciliation, assessment of knowledge (this will be performed utilizing pre and post intervention exams), appropriate drug related interventions, discharge counseling and follow up. Each patient will receive a discharge toolkit that contains a summary of the hospitalization, information sheet regarding anticoagulant therapy, a satisfaction survey, information for their follow up appointment and contact information for the pharmacy leaders. The primary outcome measured is adverse events at 7 and 30 days. Secondary outcomes measured include patient education, patient satisfaction and readmission within 30 days.

9-253

Title: Utilization of enoxaparin in obese patients with or without severe renal impairment: a medication use evaluation

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Purpose: Optimization of dosing low-molecular-weight heparin, such as enoxaparin, in obese and renally impaired patients is a challenge due to concerns of potential drug accumulation as well as limited efficacy and safety data. Achieving a fine balance between preventing bleeding and thromboembolic events in these populations may be complex. This medication use evaluation was aimed at assessing efficacy and safety in patients with or without severe renal impairment.

Methods: An institutional review board approval was exempt for this study. A retrospective chart review was performed in patients who received enoxaparin from July 2012 through July 2013. We assessed the appropriate use of enoxaparin in obese patients, defined as a body mass index (BMI) greater than 30 kilograms per meter squared, with either creatinine clearance (CrCl) greater than 30 milliliters per minute (normal renal function group) or with CrCl less than 30 milliliters per minute (severe renal impairment group). The primary outcome of the study was to evaluate the efficacy and safety of enoxaparin in obese and severe renal impairment patients.

Results: A total of 113 patients were analyzed. There were 95 patients in the normal renal function group and 18 patients in the severe renal impairment group. Average BMI was 38.6 kilograms per meter squared and 38.0 kilograms per meter squared in normal renal function and severe renal impairment group, respectively. In the severe renal impairment group, 100 percent had appropriate dosing based on indication compared to 90.5 percent in the normal renal function group. Subtle signs and symptoms of bleeding were observed in 22.2 percent of severe renal impairment group and 27.4 percent in normal renal function group. No major bleeding was documented in either groups.

Conclusion: Results from the medication use evaluation revealed that higher number of obese patients with severe renal impairment received appropriate dosing compared to normal renal function patients. Efficacy and safety outcomes analyzed were comparable between the two groups.

9-254

Title: Appropriateness of meropenem use in pediatrics

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Purpose: Meropenem is a broad-spectrum antibiotic (carbapenem) often reserved for more severe and antibiotic-resistant infections. Increased use is associated with increased carbapenem-resistance. Meropenem is often initiated or continued when therapy can be achieved with a narrower spectrum antibiotic. The objective of this study is to evaluate the use of meropenem in pediatrics and identify opportunities for antibiotic stewardship.

Methods: This study has been approved by the Institutional Review Board. It will include children 18 years and younger who received meropenem during their inpatient stay from July 2012 to June 2013. The electronic medical record was used to identify patients who received at least one dose of meropenem in the stated time frame. The following data were collected: patient age, reason for admission, underlying diseases, immunosuppression status, allergies, hospital unit at start of meropenem, site/type of infection, culture and susceptibility data, dose, start and stop dates of meropenem, start and stop dates of antibiotics since admission and concomitant antibiotics, adverse events related to meropenem, reason for meropenem discontinuation, and hospital crude mortality. The primary outcome evaluated was the appropriateness of meropenem therapy. Therapy was considered inappropriate for any of the following reasons: no indication for use of antimicrobials, spectrum of activity too broad based on indication/cultures, duration of use too long, or incorrect dose or frequency.

9-255

Title: Zolpidem use and tolerability for the treatment of insomnia in hospitalized patients

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Purpose: Insomnia is described as difficulty falling asleep, maintaining sleep, or having poor sleep quality resulting in daytime impairment. Up to 55% of hospitalized patients experience insomnia symptoms. Zolpidem has been shown to reduce time to sleep and number of nighttime awakenings. In 2013, the Food and Drug Administration warned the public about the risk for next-morning impairment with zolpidem, which may be more significant in women. As a result, the zolpidem label was updated with lower dose recommendations. The purpose of this study is to assess the use and tolerability of zolpidem for the treatment of insomnia in adult inpatients.

Methods: This retrospective study will be submitted to the Institutional Review Board for approval. Adult patients at Columbia University Medical Center who received at least one dose of zolpidem between January and June 2013 will be included. Data points to be collected include demographics, initial dosing regimen, need for repeat doses, total daily dose, total number of doses received, duration of therapy, time of administration, pertinent concomitant medications, altered mental status, falls, and any other adverse effects leading to discontinuation of scheduled orders. The primary objective of this study is to evaluate prescriber compliance with the NewYork-Presbyterian Hospital Zolpidem Guideline including the initial dose and maximum daily dose recommendations. This will be evaluated until hospital discharge. The secondary objective of this study is to evaluate zolpidem tolerability including altered mental status, falls, and other adverse effects leading to interruption or discontinuation of scheduled orders. This will be evaluated for 24 hours after zolpidem administration.

9-256

Title: Prevalence of patients who present to the emergency department with an acute pulmonary embolism that qualify for outpatient treatment.

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Purpose: Recent data suggests that patients with low-risk pulmonary embolism (PE) may be suitable for outpatient treatment. Outpatient treatment has the potential to reduce healthcare-associated costs and increase patient satisfaction measures while maintaining a similar efficacy and safety profile compared to inpatient treatment. The purpose of this study is to determine the prevalence of acute PE diagnosed in the emergency department (ED) at our institution which qualify for outpatient treatment.

Methods: Approval will be obtained from the University of Rochester Medical Center (URMC) Research Subjects Review Board. This study will be a retrospective review of adult patients that presented to the ED at the URMC between July 1, 2012 and June 30, 2013 who were diagnosed with an acute PE. Patients will be captured from ICD9 codes and the medical chart will be reviewed. Data collected will include patient demographics such as age, sex, weight, history of or active cancer, heart failure, chronic lung disease, bleeding risk or active bleeding, creatinine clearance, and barriers to follow-up. Additionally, the heart rate, systolic blood pressure, temperature, incidence of altered mental status or chest pain, and oxygen saturation at the time of ED presentation as well as patient disposition, anticoagulation type and dose administered, and length of stay will be collected. Based on the data gathered, a pulmonary embolism severity index (PESI) score will be calculated for each patient. The PESI score in addition to published exclusion criteria for outpatient treatment consideration will be evaluated to determine if the patient may have been suitable for outpatient treatment. Descriptive statistics will be utilized to present the data.

9-257

Title: Filgrastim use for febrile neutropenia prophylaxis in patients receiving chemotherapy

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Purpose: This medication use evaluation was designed to analyze filgrastim usage within our institution. Primary objective was to assess compliance with current National Cancer Center Network (NCCN) guidelines and correlate with timing of the filgrastim prescription. Secondary objectives were to evaluate if delay in initiation of prophylaxis resulted in chemotherapy dose reductions or delays; and to determine if patient was admitted for neutropenic sequelae (i.e. fever or infection).

Methods: A retrospective chart review was conducted through the use of the institution's computerized patient record system (CPRS). The study population was generated by a search of all outpatient filgrastim orders from July 1, 2011 to July 18, 2013. Any patient who had filled at least one filgrastim prescription within the specified time interval qualified for inclusion. Patients who lacked an active cancer diagnosis, were prescribed filgrastim for an indication other than primary or secondary febrile neutropenia (FN) prophylaxis, or received chemotherapy from an outside facility were excluded. Data were collected and analyzed regarding patient demographics, diagnosis and stage of cancer, treatment intent, past chemotherapy or radiation exposure, chemotherapy cycle at filgrastim initiation, chemotherapy doses held or reduced due to neutropenia, completion of planned chemotherapy regimen, admissions for infection or fever, white blood cell count and neutrophil percentage, absolute neutrophil count (ANC) prior to filgrastim initiation and ANC at the start of subsequent chemotherapy cycle, temperature on the day filgrastim was prescribed and if there were any recorded temperatures greater than 100.4 degrees Fahrenheit, weight and body surface area, dose and duration of filgrastim, and whether the patient received appropriate instruction as to when and how to inject filgrastim.

Results: There were 120 total chemotherapy cycles administered among 36 patients. A majority of the patients were NCCN intermediate risk (n equals 32, 89 percent). Five patients from the intermediate risk category received planned FN prophylaxis 24 to 48 hours after initial chemotherapy exposure due to prior extensive chemotherapy or radiation, advanced metastasis, and ANCs on the lower range of normal. All patients who were not NCCN high risk (n equals 33, 92 percent) had at least one indication that would make them eligible for FN prophylaxis. Forty-three percent (n equals 52) of chemotherapy doses were delayed and 14 percent (n equals 17) were reduced due to neutropenia. Filgrastim was administered a total of 99 times. There were 11 hospitalizations among 8 patients due to neutropenia. In 91 percent (n equals 10) of the hospitalizations, filgrastim had not been prescribed, nor indicated based on the ANC at expected post-nadir recovery follow-up. Neutropenic sequelae were confirmed in

36 percent (n equals 4) of admitted patients: 18 percent (n equals 2) due to FN without a confirmed source of infection, 9 percent (n equals 1) due to FN with confirmed infection, and 9 percent (n equals 1) due to confirmed infection without fever.

Conclusion: The incidence of chemotherapy dose reductions or delays was low among patients receiving planned filgrastim prophylaxis (5 of 69, 7 percent). Similarly, the incidence of dose reductions or delays was higher among patients who were NCCN high risk, yet did not receive planned filgrastim prophylaxis after initial chemotherapy exposure (16 of 69, 23 percent).

9-258

Title: Shewanella algae bacteremia in a community hospital: a case report

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Case Report: Shewanella algae is a gram negative bacillus that is typically present in seawater and rarely isolated in cases of human infection. Reports of S. algae infections have been primarily identified in Europe, Asia, and Australia, with very few reported cases of bacteremia. S. algae is usually resistant to penicillin and cefazolin, but susceptible to third- and fourth- generation cephalosporins, piperacillin, aminoglycosides, and quinolones. We report a rare case of S. algae bacteremia in a patient at a United States community hospital. He was a 47 year-old male who presented to the Emergency Department (ED) in June 2013 with bilateral bleeding of his foot ulcers. He was found by paramedics sitting on his couch with feces and maggots in the buttock area. He had a past medical history of cerebrovascular accident, diabetes mellitus type 2, hypertension, HIV, hepatitis C, and alcohol abuse. Vitals included a blood pressure of 98/56 mmHg, heart rate of 121 beats/min, respiratory rate of 20 breaths/min, and temperature of 103 degrees Fahrenheit. White blood cell count was 13,700 cells per cubic millimeter, with 94.9 percent neutrophils. Physical exam revealed he was tired and oriented only to name. His skin exam showed multiple ulcerations on bilateral lower extremities. Otherwise, the physical exam was unremarkable. In the ED, a set of blood cultures was obtained, the patient received one dose of normal saline 1 L over 1 hour, piperacillin/tazobactam 3.375 g IV piggyback (IVPB), and vancomycin 1 g IVPB. He was admitted to the Intensive Care Unit for severe sepsis with vancomycin and piperacillin/tazobactam continued. On hospital day 1, the initial blood culture grew gram negative rods in both bottles, which were identified as S. algae on hospital day 3, with reported susceptibility to all tested antibiotics including cefazolin and piperacillin/tazobactam. He denied any recent travel or exposure to seawater. A urine culture that was collected on hospital day 1 grew multi-drug resistant Proteus mirabilis and Klebsiella pneumoniae. As per infectious disease consult, antimicrobial therapy was continued. Blood cultures drawn on hospital days 2, 3 and 5 were negative. By hospital day 5, the patient had clinically improved and was transferred to a general medicine floor. He was discharged home on hospital day 8. A MEDLINE (1950 August 2013) search was conducted using a combination of the following keywords: Shewanella, algae, and bacteremia revealed a total of 6 case reports and 1 case series. S. algae is usually susceptible to most antibiotics in vitro, but there is little in-vivo experience with susceptibility data. One of the published case reports discusses a case of S. algae bacteremia that was initially susceptible to imipenem, but later on became resistant during treatment with imipenem. The case we report is very unique due to several reasons. Based on our MEDLINE search, there are only five reported cases of human-associated bacteremia. Of these cases, most were associated with exposure to seawater or raw

sea food, and our patient claimed no exposure to either. The case reports of bacteremia were all reported in countries other than the Unites States. There is minimal clinical evidence of treating in-vivo S. algae. While rare in the United States, our effective treatment of S. algae using piperacillin/tazobactam and vancomycin can provide insight for patients presenting in a similar manner.

9-259

Title: Evaluation of ertapenem use in hospitalized patients with complicated infections from 2012 to 2013

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Purpose: Ertapenem demonstrates broad spectrum antimicrobial activity against many Gram positive and Gram negative aerobes and anaerobes. In addition, in vitro data shows activity against some ESBL-producing Gram negative organisms. Therefore, it lends itself to be the selected agent for a number of complicated infections caused by these pathogens. Although ertapenem is a valuable antimicrobial agent, overutilization adds unduly selective pressure for antimicrobial resistance development. The objective of this study is to conduct a medication-use evaluation (MUE) to assess the appropriate use of ertapenem in complicated infections.

Methods: This study will be submitted to the Institutional Review Board for approval. Patients who were prescribed ertapenem for more than 1 dose during the time period of August 1, 2012 through July 31, 2013 will be identified via the electronic medical record system. The following information will be collected: demographic data such as age, gender, and creatinine clearance, antimicrobial allergies, medical or surgical team responsible for patients care, indication for use of ertapenem, duration of ertapenem therapy, other antimicrobial agents ordered, concurrent use of valproic acid and derivatives, current microbiologic culture results, microbiologic culture results of multi-drug resistant organisms within the previous 12 months, hospitalization within previous 12 months, and residential status prior to admission. All data will be confidential and all individually identifiable information will be removed. The percentages of the following will be calculated: the number of patients receiving ertapenem with and without positive cultures, patients allergic to other antimicrobial agents warranting the use of ertapenem, and patients with risk factors for multi-drug resistant organisms. The cost of ertapenem in patients who could have received antibiotics of both narrower spectrum and lower cost will also be determined and compared.

9-260

Title: Outcomes with culture-directed antimicrobial prophylaxis for urological procedures

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Purpose: Appropriate utilization of antimicrobial prophylaxis is essential to prevent postoperative infections. Ciprofloxacin is the antibiotic most commonly used for preoperative coverage of urological procedures, however resistance is increasing. Additionally, most published studies on prophylaxis are limited to patients without preexisting microbiologic pathology. Directing antimicrobials to the pathogens in preoperative urine cultures may be of benefit for reducing infectious complications after surgery. The purpose of this study is to compare postoperative infection rates in patients who received culture-directed antimicrobial prophylaxis versus those who were empirically treated.

Methods: This study will be a retrospective cohort chart review of male patients who underwent urological procedures between 2006 and 2013. The protocol has been approved by the Institutional Review Board. Procedures to be included in the study are cystoscopy, transrectal prostate biopsy, transurethral resection of the prostate, transurethral resection of bladder tumor, lithotripsy, and ureterorenoscopy. Patients will be grouped based on preoperative urine cultures and if the perioperative antibiotics targeted the urinary pathogens. Post-procedure, patients will be assessed for urinary tract infection, bacteremia, prostatitis, asymptomatic bacteriuria, fever, surgical site infections, Clostridium difficile infection, hospitalization, and antimicrobial-related adverse effects within 30 days after surgery. Baseline data will be collected including patient demographics, comorbidities, known risk factors for infection, and specific information related to the surgery. A multivariate logistic regression analysis will be performed to determine factors that contribute to infection outcomes. A subgroup analysis will be performed to assess the impact of pharmacist intervention on infection rates. Outcomes will be compared between patients for whom the pharmacist made preoperative antimicrobial prophylaxis recommendations and those with no pharmacist intervention in the electronic chart.

9-261

Title: Evaluation of the incidence of hyperuricemia with thiazide diuretics and of the use of colchicine

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Purpose: Thiazide diuretics are commonly used in patients with hypertension, but they have been associated with hyperuricemia and an increased risk of gout. At this institution, colchicine is prescribed through an order template, which was implemented to improve the management of gout and reflects the recommendations made by the American College of Rheumatology (ACR). The objectives of this evaluation were to evaluate the incidence of hyperuricemia in patients taking thiazide diuretics and to assess for the appropriate use of colchicine.

Methods: This retrospective chart review was determined to be a performance improvement medication use evaluation (MUE). Patients aged greater than or equal to 18 years with active outpatient prescriptions for a thiazide diuretic (hydrochlorothiazide, chlorthalidone, or metolazone) and colchicine from January 1, 2013 to July 25, 2013 were identified. Patients were excluded if they were on concomitant therapy with medications that can cause hyperuricemia (such as chemotherapeutic agents, levodopa, pyrazinamide, and immunosuppressants), if they had a history of alcohol abuse within 1 year of starting the thiazide agent, or if they had a sulfonamide allergy. Data collected included patient characteristics, baseline and follow-up uric acid (UA) and serum creatinine levels, and appropriateness of colchicine use (such as concomitant use with urate-lowering therapy [ULT] agent, colchicine dose, and colchicine duration). Descriptive statistics were used for analysis of patient demographics and study results.

Results: A total of 59 patients had active outpatient prescriptions for a thiazide diuretic and colchicine between the specified dates. Forty-one patients met the inclusion criteria and were included in the analysis. Thirty-one patients were started on a thiazide diuretic prior to starting colchicine. Of these 31 patients, 17 patients (54.8 percent) had hyperuricemia prior to thiazide initiation, 10 (32.3 percent) did not, and 4 (12.9 percent) did not have baseline UA levels. Of the 10 patients who did not have hyperuricemia before a thiazide was started, 4 developed hyperuricemia during therapy. Three patients were continued on the thiazide agent, and 1 patient was switched from one thiazide diuretic to another due to an adverse reaction with the first thiazide. Based on the recommendations made by the ACR, 36 patients (87.8 percent) were prescribed an appropriate colchicine dose, 13 patients (31.7 percent) were taking a concomitant ULT agent, and 3 patients (7.3 percent) took colchicine for an appropriate duration of time.

Conclusion: Many factors can impact the incidence of hyperuricemia with thiazide diuretic use, but the incidence in this study population could not be determined. This evaluation could be performed to include patients that may not have an active prescription for colchicine. The colchicine order template was intended to help manage gout, but improvements could be made in colchicine use through modification of the order template and further education of healthcare providers on recommendations for colchicine use.

9-262

Title: Drug use evaluation of ketamine in the emergency department setting

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Purpose: Ketamine is used in the emergency department for dissociative sedation in brief and painful procedures. The purpose of this drug use evaluation is to assess the appropriate use of ketamine in this setting in compliance to the updated 2011 clinical practice guidelines for emergency department ketamine dissociative sedation.

Methods: This drug use evaluation will be submitted to the Institutional Review Board for approval. The study will be a retrospective chart review of patients that received ketamine over the last twelve months. Pertinent data parameters will include age, gender, weight, chief complaint, indication, procedure type, dose, route, vitals, and comorbidities. An evaluation of the number of patients meeting the indication for ketamine use will first be done. Next, the patient will be assessed to see if they met any absolute contraindications, which are age less than three months, or known schizophrenia. Relative contraindications that can be obtained from the past medical history, vital signs or echocardiogram will be cardiac disease. Lastly, the appropriateness of dosing based on weight and route of administration will be evaluated since the intramuscular route of administration requires a higher initial dose compared to the intravenous route. All data collected will be free of patient identifiers and will be confidential. Based on a calculated percentage of patients that fail to meet the above criteria for appropriateness of use, it will be determined if any follow up actions are necessary to promote the safe and proper use of ketamine in this setting.

9-263

Title: Retrospective review of adherence to erythropoiesis-stimulating agent monitoring parameters

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Purpose: The Kidney Disease: Improving Global Outcomes (KDIGO), National Comprehensive Cancer Network (NCCN), and our institution have established guidelines and protocols to administer erythropoiesis-stimulating agents (ESAs). The objective of this medication utilization evaluation was to assess the adherence to monitoring parameters in patients receiving epoetin alfa or darbepoetin alfa.

Methods: The computerized patient record system was used to identify patients with an active order for epoetin alfa or darbepoetin alfa between April 23, 2013 and August 21, 2013. Data collection included ESA indication, date of most recent active order, hemoglobin, transferrin saturation (TSAT) and serum ferritin levels within specified time frames, and if there was an active order for iron supplement. Adherence to monitoring parameters and appropriateness of iron supplementation were evaluated. Additionally, patients were stratified into non-hemodialysis patients and hemodialysis patients, who were routinely monitored by a clinical pharmacist. Monitoring was considered appropriate if hemoglobin and TSAT/ferritin were measured within 90 days and 180 days, respectively, prior to an ESA order in non-hemodialysis patients and within 30 days in hemodialysis patients. If not already determined by the prescriber, the hemoglobin endpoints in chronic kidney disease patients on hemodialysis and the non-hemodialysis patients were 11.5 g/dL and 12 g/dL, respectively. Iron supplementation was considered beneficial in hemodialysis patients with TSAT less than or equal to 20 percent and ferritin less than or equal to 200 ng/mL and in non-hemodialysis patients with TSAT less than or equal to 20 percent and ferritin less than or equal to 100 ng/mL.

Results: The results of this study were used to determine the adherence to monitoring parameters of ESAs and to confirm the value of routine monitoring by clinical pharmacists. A total of 84 patients had an active order for epoetin alfa or darbepoetin alfa. Seventy-seven percent (n equals 65) of the patients had chronic kidney disease. A clinical pharmacist routinely monitored 18 of these patients in the hemodialysis clinic. The hemodialysis patients were more likely to have their TSAT/ferritin checked within the recommended time frame compared to the non-hemodialysis patients (94.4 percent versus 81.8 percent). Fifty percent (n equals 9) of the hemodialysis patients had low TSAT/ferritin levels, but 55.6 percent (n equals 5) were receiving iron replacement therapy. Thirty-nine percent (n equals 26) of the non-hemodialysis patients met the criteria for iron supplementation, but 65.4 percent (n equals 17) had active orders for iron. None of the hemodialysis patients had their hemoglobin level exceed their goal, whereas 9.1 percent (n equals 6) of the non-hemodialysis patients exceeded their hemoglobin endpoint.

Conclusion: The non-hemodialysis patients may benefit from more frequent monitoring as their hemoglobin levels were more likely to exceed the hemoglobin endpoint. The hemodialysis patients, who were followed by a clinical pharmacist, saw more favorable results in the management of ESAs. However, a longitudinal evaluation with a larger sample size and of longer duration would be necessary to further assess the management of ESAs in our institution as well as to better determine the value of clinical pharmacists being involved in therapeutic management.

9-264

Title: Evaluation of Intravenous to Oral Antibiotic Conversion in Eligible Patients: An Opportunity for Pharmacist Intervention

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Purpose: Patients are often started on intravenous antibiotics when admitted to the hospital with acute infections. Patients may be continued on intravenous antibiotics until their discharge even when oral therapy is warranted. Existing data demonstrate the benefits of conversion to oral (PO) therapy which include, reduced line infection rates, reduced length of hospital stay, and reduced drug costs. The objectives of this drug use evaluation are to (1) identify potential opportunities for IV to PO antibiotic conversions, (2) identify potential for cost-savings, (3) and ascertain the feasibility and benefit of an autonomous IV to PO antibiotic conversion protocol to be conducted.

Methods: A drug use evaluation is being performed at our tertiary care hospital. Given the quality improvement nature of the project, it was exempt from IRB approval. Adult patients prescribed intravenous antibiotics are being identified and evaluated for conversion to PO therapy. Targeted antibiotics include fluoroquinolones, azithromycin, clindamycin, fluconazole, metronidazole, linezolid, and doxycycline. Criteria for PO conversion include those patients taking an oral diet or PO medications who are afebrile for at least 24 hours. Patients would not meet criteria for a switch to oral therapy if they are within an intensive care unit, are strict NPO or unable to swallow, have severe nausea and vomiting or gastrointestinal bleeding, experienced trauma in the past 72 hours, or are neutropenic. Patient with the following infection types are also being excluded: central nervous system infection, endocarditis, osteomyelitis, orbital cellulitis, endophthamitis, or candidemia treated for less than 7 days. Data collection includes patient demographics, culture results, type and length of intravenous antibiotic therapy, and length of stay. The primary outcomes being assessed by this evaluation include reduction in length of intravenous therapy, reduced drug cost, and reduction in length of hospital stay if patients were switched to PO therapy once criteria are met.

Results: To date, 37 patients have been included in this drug use evaluation. The mean age is 55 (SD: 18) years and 16 (51.6%) patient are male. The mean length of antibiotic treatment and length of stay are 6.6 (SD: 7.1) and 8.8 (SD:3.7) days, respectively. Thirty-one patients have met criteria to be converted to PO therapy and only 6 (19.4%) patients were converted during their hospital stay. For those who were converted the mean length of PO treatment was 1.3 days. The average length of potential PO therapy

missed due to non-conversion is 4.4 (SD: 3.3) days. The most common antibiotics eligible for PO conversion are the fluroquinolones, azithromycin, clindamycin, and metronidazole.

Conclusion: Our preliminary results show that a majority of patients who continue to receive IV antibiotic therapy during their hospital stay are eligible for conversion to PO therapy. These missed opportunities are likely to affect patient length of stay and total hospitalization costs. These data support the establishment of a pharmacy directed IV to PO antibiotic protocol at our institution.

9-265

Title: Risk factors for recurrence of depressive symptoms in pregnant women with a history of antidepressant use receiving care in the veterans affairs health care system

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Purpose: Data is conflicting regarding the risks of antidepressant use versus the risks of untreated depression on maternal and fetal/child outcomes during pregnancy. Despite the uncertainty regarding the risks many patients and providers prefer to discontinue these medications. The purpose of this study is to determine risk factors that are associated with a recurrence in depressive symptoms in a pregnant female veteran population. It is our hope that the outcome of this study will help providers screen for patients who may be at a higher risk of relapse to help determine the most appropriate treatment of depression during pregnancy.

Methods: This study will be a retrospective chart review of all women patients who have had a pregnancy/lactation alert flagged on their Computerized Patient Record System (CPRS) chart at some point during their care in the VISN 2 VAHCS. Patients will be included if they were 18-45 years old during pregnancy, had completed/terminated their pregnancy at the time of data collection, and were taking an antidepressant either 3 months prior to conception, at the time of conception, or at any time during pregnancy. Patients will be excluded if they fail to meet all of the inclusion criteria. A recurrence in depressive symptoms will be defined as a documented patient report in worsening of depressive symptoms, the re-initiation of or increasing in dose of antidepressant, and/or the initiation of counseling during pregnancy. Descriptive statistics will be used to summarize baseline demographics and patient characteristics. A univariate analysis will be performed to analyze the objective. Significant factors from the univariate analysis ($p<0.05$) will be built into a multivariate logistic regression analysis for the recurrence of depressive symptoms (yes/no).

9-266

Title: Impact of a pharmacy-led change in smoking cessation intervention in an ambulatory care unit

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Purpose: Tobacco use is the single most preventable cause of disease, disability, and death in the United States. Approximately 20% of the adult American population smoke, and over 70% report that they want to quit completely. However, clinicians often do not screen for and treat tobacco use consistently and effectively. The outpatient medical clinic represents a key venue for delivering evidence-based interventions to large numbers of tobacco users. The primary objective of this study is to assess the impact of a pharmacy-led change in smoking cessation intervention in an ambulatory care unit (ACU).

Methods: Prior to commencement, this randomized, prospective study will be submitted to the Institutional Review Board for approval. Patients in the ACU of a tertiary teaching hospital will be screened and identified during their primary care visit. Patients will be included if they are current smokers. Patients less than 18 years of age or unable to communicate in English (both written and oral) will be excluded. The data collected will include age, gender, ethnicity, smoking history, and readiness to quit within 30 days. All patients will receive standard of care as per clinic protocol for smoking cessation. The intervention arm will receive follow up counseling by a pharmacist after 1 week. Follow up assessment will be obtained for control and intervention arms at 1 month from initial visit. The primary endpoint will include effect on readiness to quit. The secondary endpoint will include placement along the transtheoretical model of change. Appropriate descriptive statistics will be employed for all variables. Data will be recorded confidentially without patient identifiers. Upon analysis of the data, recommendations regarding current practice at our institution will be made.

9-267

Title: Bringing care closer to home: outcomes and pharmacoeconomic analysis of a home intravenous antibiotic infusion program in elderly versus younger veterans

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Purpose: Outpatient parenteral antimicrobial therapy (OPAT) programs have increased due to the benefits of decreased cost and increased quality of life with equivalent clinical outcomes compared to inpatient hospital care. In 2010, a home infusion program was established at our institution in order to facilitate the care of OPAT patient. The purpose of this study is to determine the outcomes (efficacy and adverse effects) of the home antibiotic infusion program. A pharmacoeconomic analysis will be preformed to better define optimal healthcare resource allocation of this program.

Methods: This study will be a retrospective chart review of patients who have received OPAT. This study has been approved by the Institutional Review Board. Baseline characteristics to be collected include age, sex, weight, height, and Charlson Comorbidity Index. Program-specific data will include type of IV access, antibiotic regimen, treatment duration, indication for antibiotic, microbiology, follow-up appointments, and whether the patient has support at home. Laboratory values collected include WBC, serum creatinine, CRP, ESR, and glucose. Adverse drug effects (ADE) will also be recorded. All patients will be followed for a minimum of 90 days after antibiotic discontinuation. Clinical failures will be defined as readmission during therapy, readmission within 3 months after discontinuation, or death. Failure due to ADE will be defined as premature discontinuation, antibiotic switch, and admission to the hospital due to ADE. A statistical analysis will be conducted to compare clinical successes to clinical failures. A subgroup analysis will be performed to compare efficacy in patients 65 years and older to those less than 65 years old. A pharmacoeconomic analysis of this program will include the costs of home care, nursing costs, line placement, travel time, and physician time for appointments versus cost of hospitalization.

9-268

Title: Warfarin verses dabigatran: a retrospective computerized evaluation of adverse event rates in patients with atrial fibrillation within the New York Harbor Veteran Population

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Purpose: To compare the occurrences of bleeding, thromboembolic and/or cardiovascular events in patients diagnosed with atrial fibrillation (AF) taking warfarin verses dabigatran within the New York Harbor VA Healthcare System (VA NYHHS). The results generated from this study can possibly provide a more in-depth insight of adverse events rates that occur with anticoagulation therapy within the NY Harbor VA population and further lead to the development of new anticoagulation protocols for the hospital in terms of drug selection and monitoring parameters.

Methods: A total of 200 subjects will be randomly selected to be involved in the study. Group A will consist of 100 subjects taking warfarin and group B will consist of 100 subjects taking dabigatran for anticoagulation due to AF. Data will be collected from both impatient and outpatient electronic medical records from the Computerized Patient Record System (CPRS). The study will include subjects from within the VA NYHHS ranging from the period of July 15th, 2012-July 15th, 2013. Inclusion criteria are healthcare must be proved by the VA-NYHHS, prescribed warfarin or dabigatran during the time frame of July 15th, 2012- July 15th,2013, diagnosed with AF, a CHADS2 score of 1 or greater, and an INR of 2-3 for subjects on warfarin. The exclusion criteria are hypersensitivity noted in subject charts to current anticoagulation therapy, prescribed anticoagulation for a reason other than AF, and those with an INR goal greater than 2-3. During the chart review, events will be defined based on the diagnosis in the subject charts as bleeding (both major and non-major), thromboembolism, and myocardial infarction. The null hypothesis is that there is no difference in event rates between patients taking warfarin and patients taking dabigatran.

9-269

Title: Efficacy and safety of boceprevir or telaprevir in combination with pegylated interferon alfa and ribavirin for genotype 1 chronic hepatitis C virus infection

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Purpose: Approximately 4.1 million people are chronically infected with hepatitis C virus (HCV) in the United States. In May 2011, boceprevir and telaprevir, novel HCV protease inhibitors, were FDA-approved for use in combination with pegylated interferon alfa and ribavirin for genotype 1 chronic HCV infection. While the addition of boceprevir and telaprevir has been shown to improve virologic cure rates in patients with genotype 1 chronic HCV infection, these medications are costly, have several potential drug-drug interactions, and significant adverse effects.

Methods: This retrospective chart review, determined to be a performance improvement medication use evaluation (MUE), described the efficacy and safety of boceprevir or telaprevir in combination with pegylated interferon alfa and ribavirin for genotype 1 chronic HCV-infected patients at a Veterans Affairs hospital from November 2011 to September 2013. Data was collected utilizing the VAs pharmacy system, VISTA, and computerized personal record system, CPRS. Patients who had an active outpatient prescription for either boceprevir or telaprevir between November 2011 and September 2013 and had at least one documented follow-up visit were included in this study. Of note, telaprevir therapy was reserved for patients with advanced cirrhosis or HIV co-infection at this institution. Those who received an initial prescription of boceprevir or telaprevir, but never started the medication or returned for initial follow-up were excluded. The primary efficacy outcome measure was sustained virologic response (SVR) for both boceprevir and telaprevir. The primary safety outcome measure was treatment discontinuation for any reason.

Results: Sixty-six patients were included in this study: fifty-one received boceprevir and fifteen received telaprevir. Efficacy results for boceprevir showed that fifty-three percent of patients achieved an SVR. Two patients were lost to follow-up and thirteen patients were still undergoing treatment with boceprevir. For telaprevir, ten percent of patients achieved an SVR. Five patients were still undergoing treatment with telaprevir. Thirty-seven percent of patients discontinued boceprevir treatment. Nine of nineteen patients discontinued boceprevir according to treatment futility rules. The most common adverse effect with boceprevir use was anemia. Seventy-three percent of enrollees required ribavirin dose reductions, twenty-five percent required an erythropoietin-stimulating agent (ESA), and five patients discontinued therapy due to intolerable anemia symptoms. Fifty-three percent of patients discontinued telaprevir treatment. Five of eight patients discontinued telaprevir by treatment futility

rules. The most common adverse effect with telaprevir was rectal itching. Eighty percent of enrollees complained of rectal itching, but none discontinued therapy for this reason. The data presented above are preliminary results.

Conclusion: The collected data showed a trend toward increasing virologic response with the addition of boceprevir for genotype 1 HCV treatment. Telaprevir appeared to be associated with higher rates of treatment futility probably due to usage in HIV co-infected patients and those with advanced cirrhosis. Adverse effects were well-managed with appropriate dose reductions or additional symptomatic medication therapy. It is recommended to continue the use of boceprevir in combination with pegylated interferon alfa and ribavirin for the treatment of genotype 1 chronically-infected HCV patients. Telaprevir use does not appear to increase SVR rates among patients with advanced cirrhosis or HIV co-infection.

9-270

Title: Evaluation of a hypertension adherence service in a community pharmacy

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Purpose: The New England Healthcare Institute defines poor medication adherence and suboptimal prescribing as a source of healthcare inefficiency. It leads to preventable worsening of disease and causes unnecessary health risks resulting in $290 billion per year in avoidable medical spending. Approximately one-third of that amount is due to excess hospitalizations. Poor medication adherence is prevalent in patients with hypertension, causing an increased risk for cardiovascular morbidity and mortality. The purpose of this study was to identify baseline characteristics of patients non-adherent to anti-hypertensives and an association of adherence to chronic cardiovascular events to guide strategies to overcome non-adherence.

Methods: The institutional review board approved this retrospective study. Using data collected from electronic medical records, characteristics of patients identified with adherence < 80% to at least one anti-hypertensive medication were assessed. Patients were excluded if the medications were on hold, transferred, no longer listed in the electronic medical record (EMR), or if patients had no data present in the EMR. Age, gender, third party payer, race, number of chronic medications, number of medications with a hypertension indication, average blood pressure at 6 and 12 months, and presence of diagnoses for cardiovascular conditions potentially contributed to by hypertension (e.g., heart failure) were then collected from the electronic medical record. After applying the exclusion criteria, 75 patients were included in the evaluation.

Results: Patients had a mean age of 56 years, 67% were women, 41% were on Medicaid, 76% were African-American, 27% had a CV complication, and mean blood pressure of 145/85. The findings of this study demonstrate that patients with a cardiovascular complication, when compared to patients without a CV complication, were prescribed more chronic medications (9.5 and 5.3, respectively; p = 0.01) and more anti-hypertensive medications (3.1 and 2.0, respectively; p = 0.01). However, they also had an anti-hypertensive medication adherence rate of 68.1%, 12.3% higher than patients without a CV complication (p = 0.02). Additionally, low-adherence is associated with patients taking fewer chronic medications (4.3 and 6.9, respectively; p = 0.02) and possessing a higher systolic blood pressure at 12 months (155.6 and 141.9, respectively; p = 0.02) when compared to moderate adherers.

Conclusion: Patients with low adherence to anti-hypertensive medications showed higher blood pressures. Patients that already experienced cardiovascular complications were more adherent to their anti-hypertensive therapy than those without complications, despite taking more medications. These results indicate that more focus is needed to develop innovative strategies to motivate patients to adhere to blood pressure medications before complications arise.

9-271

Title: Impact of nutrition support service implementation on parenteral nutrition practices in a community hospital

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Purpose: Parenteral nutrition (PN) is an important therapy for patients who cannot meet their nutritional needs via the enteral route, but it does not come without substantial risk. The American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) has published guidelines for the use of PN that are recommended for incorporation by hospitals in order to improve the level of nutrition support provided. Currently, this health system does not have a policy requiring automatic nutrition support service (NSS) consultation for PN management. The objectives of this study are to implement an NSS and assess the impact of service interventions on PN practices.

Methods: This is an observational, non-randomized study that will utilize the electronic medical record (EMR) to conduct chart reviews. The study has been granted expedited review by the Institutional Review Board. The initial retrospective portion of the study will consist of two months of data collection from the EMR to determine which patients received PN and the indication for PN initiation. Additionally, data will be collected regarding total days on PN therapy, time to meet nutrition goals and nutrition status upon PN initiation. All patient information will be de-identified and kept confidential. Patients who are less than 18 years of age, who are admitted on PN therapy or who receive PN for less than 24 hours will be excluded. The second phase will consist of development of the NSS with automatic PN consults. The associated policies will be presented to the Pharmacy and Therapeutics Committee and the Medical Executive Committee for approval. The final segment will consist of data collection in the same manner as phase one to allow assessment of the nutrition support services impact on PN practices.

9-272

Title: Identifying opportunities to improve medication management in transitions of care

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Purpose: Numerous system and patient factors contribute to suboptimal medication management during transition of patient care from hospital discharge to the ambulatory setting. Therefore this research seeks to: (1) describe the type of medication discrepancies between the inpatient discharge summary and the patient's reported medication regimen and quantify the incidence; (2) describe causes and contributing factors related to process breakdowns with respect to medication management during transition from hospital to the ambulatory setting from system and patient perspectives; and (3) identify patient and system factors that are associated with an increased rate of discrepancies.

Methods: This pilot, cross-sectional study will enroll 30-60 adult patients discharged after inpatient admission on randomly-selected days of the week. Patients must have at least three predetermined chronic diseases and a discharge prescription drug regimen containing at least eight medications. Demographic and discharge medication information will be derived from the electronic medical record. A telephone interview after verbal consent will be used to collect a patient-reported list of all prescription medications (i.e., name, dose, route, and frequency) which will be compared to the discharge summary to identify system and patient factors associated with the discharge medication experience. Medication discrepancies between the two lists will be further classified using a modified version of the previously-published Medication Discrepancy Tool based on information derived from the patient interview. Descriptive statistics will be used to profile the study participants, types of medication discrepancies, as well as system and patient factors associated with the discharge experience. Medication discrepancies with respect to name, dose, or frequency will be reported as cumulative incidence. Chi-square tests and multivariate logistic regression models will be used to identify patient and system characteristics associated with medication discrepancies, sample permitting. This study has been submitted to the Institutional Review Board for approval.

9-273

Title: Evaluation of physician and pharmacy vancomycin dosing management in obese and non-obese patients

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Purpose: The pharmacy vancomycin dosing service utilizes actual body weight to initiate dosing and to estimate renal function. The objective of this study is to evaluate the effectiveness of pharmacy and physician vancomycin dosing in a population of obese and non-obese patients with respect to the number of dose modifications required to reach target trough levels. The incidence of nephrotoxicity, the differences in calculated renal function using different measures of body weight, and the success of reaching a target trough upon initial dosing will also be analyzed.

Methods: A randomized retrospective chart review will compare 120 pharmacy- and physician- dosed obese and non-obese patients. Patients with a body mass index (BMI) of 30 or greater at the time of vancomycin initiation will be considered obese. Inclusion criteria are adult patients who have received at least 3 doses of vancomycin between January 1, 2013, and June 30, 2013, with at least 1 trough collected no more than 2 hours before dose administration. Exclusion criteria include: dialysis, pregnancy, or weight less than 45 kilograms. The following data will be collected: age, weight, gender, doses, troughs, serum creatinine, blood urea nitrogen, and co-administration of select nephrotoxic agents, the presence of congestive heart failure or ascites, and critical care status. The primary measure will be the number of dose changes required to reach a target trough level. Secondary measures will include: nephrotoxicity, variations in estimated renal function using different values for patient weight, and success in achieving target trough levels upon initial dose. This study will be submitted to the Institutional Review and Ethics Board for approval. Data will be analyzed using descriptive statistics.

9-274

Title: Impact of an extended day supply of medication on an outpatient pharmacy in a tribal healthcare setting

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Purpose: The objective of this study is to determine the impact on a tribal healthcare facility as a policy is implemented to provide an extended day supply of medication to patients. This study will describe how the policy will affect specified health organization outcome measures. Outcome measures such as appointment and medication adherence, financial implications, clinical safety measures, and overall patient satisfaction will be evaluated to define the effect of this modification in medication dispensing policy.

Methods: Project approval by appropriate health system committees is in process. A retrospective electronic health record (EHR) assessment of 300 randomized patients with established inclusion criteria will be completed before and after implementation of the extended-day prescription medication policy. Inclusion criteria consist of patients who have the diagnosis of both hypertension (HTN) and type 2 diabetes mellitus (type 2 DM) and those who have an established primary care provider (PCP) in the health center. Main outcome measures include medication and appointment adherence, patient satisfaction, financial implications, and clinical safety measures. EHR data for each patient will determine percentage of medication adherence via refill history of medications for HTN and type 2 DM before and after implementation of the extended day supply policy. Adherence to PCP appointments for the same cohort of patients will be evaluated using percentage of adherence to appointments. All data will be recorded without patient identifiers and maintained confidentially throughout the research. Cost-analysis will be performed through evaluation of revenue data. Clinical safety will be assessed through medication error rates and pharmacist interventions. Assessment of patient satisfaction will be determined through anonymous patient surveys completed prior to and approximately one year after the extended-day refill policy is implemented.

9-275

Title: Evaluation of the Effectiveness of a Pharmacy Vancomycin Dosing Service Compared to Physician Managed Dosing in Establishing Therapeutic Vancomycin Concentrations

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Purpose: Vancomycin remains a mainstay in the treatment of serious infections due to Gram positive organisms. Patients at the extremes of weight, advanced age, or with renal dysfunction continue to challenge practitioners in dosing vancomycin. Achievement of therapeutic serum levels and adequate dosing are important initial steps toward optimal use. The objective of this study is to evaluate the effectiveness of pharmacist managed vancomycin therapy compared to physician managed therapy in obtaining goal therapeutic trough levels. Secondary objectives include comparison of rates of clinical cure, length of stay, adverse drug events, and rates of readmissions due to unresolved infectious process.

Methods: This study will be submitted to the Institutional Review Board for approval. Patients receiving vancomycin from July-September 2013 will be identified through pharmacy medication use reports. Data obtained from the electronic medical record will include patient data (age, height, weight, prescribing service, and indication for vancomycin treatment), drug data (initial dose, dosing frequency, start date and time), and laboratory data (serum creatinine, vancomycin troughs and trough draw times). All data will be recorded without patient identifiers and maintained confidentially. Appropriateness of vancomycin trough levels will be determined based on the Infectious Diseases Society of America, American Society of Health-System Pharmacists, and the Society of Infectious Diseases Pharmacists' Vancomycin Therapeutic Monitoring Review and Recommendations (published in 2009).

9-276

Title: Clinical pattern of nocardiosis in a tertiary care hospital

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Purpose: Nocardia species are saprophytic aerobic gram-positive bacteria that are commonly found in soil and water. Although infection is rare, the number of cases has been increasing within our patient population. This is most likely due to the increasing number of immunosuppressed patients. The objective of this study is to investigate differences in clinical characteristics, precipitating factors, treatment options, and outcomes of our patients infected with Nocardia.

Methods: This study was submitted to the Institutional Review Board for approval prior to initiating. All patient data was kept in a secured database without patient identifiers. The electronic medical record system was queried to identify patients whose culture results returned positive for Nocardia between October 1, 2006 and August 31, 2013. The following data was collected using an electronic data collection tool: patient demographics, immunosuppressive state, site of infection, specific Nocardia species, susceptibility reports, home medications, inpatient medications, infection treatment, and patient outcomes. Further information will be gathered to determine any correlation between increased rates of infection including: weather pattern changes, geographic location of primary residence for infected patients, and other trends in demographic characteristics that may be revealed.

9-277

Title: Evaluation of medication-related self-care skills in a Cystic Fibrosis (CF) Care Center

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Purpose: The Cystic Fibrosis Foundation (CFF) mandated CF Care Centers to provide age-appropriate care during transitions to maintain accreditation, especially as the life expectancy of patients with CF increases. A large factor in the readiness for transition from pediatric to adult care is the patients ability to perform self-care skills as they relate to medication management. This quality improvement project aims to assess the current knowledge and self-care skill level of a population of patients with CF. Additionally, it may help identify goals for self-care skills needed for transition.

Methods: The project has been submitted to the Institutional Review Board and approval is pending. A modified questionnaire based on a previously validated Transition Readiness Assessment Questionnaire was developed with the addition of 18 questions to assess medication management. Questionnaires will be administered by a pharmacist during normal office visits to patients starting at age 6 years old. Questions are categorized into four sections; management of medications, access to medications, equipment care and maintenance, and adverse reactions/drug interactions. Examples of questions range from assessment of preparation of nebulizer treatments to the management of maintaining refills. Patient responses will be assessed using a Likert scale, where answers will be assigned a point value ranging from one to five; one point corresponding the least knowledge or skill and five points for the highest level of knowledge or skill. The questionnaires also include a detailed assessment of each patients ability to provide a medication history. A point system will grade the responses of each patient on their ability to identify the drug, dose, route, and frequency. After grading of responses, patients will be categorized into one of three groups: not ready for transition, somewhat ready for transition, and ready for transition.

9-278

Title: Implementation of a pharmacist-managed immunization campaign to increase the rate of immunization compliance in children 19-35 months of age in a Native American rural primary care setting

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Purpose: Evaluate the impact of a pharmacist-managed immunization campaign to increase the rate of immunization compliance with a projected increase of 30%, in children 19-35 months of age in a Native American rural primary care setting utilizing the Indian Health Service GPRA year.

Methods: 1. Evaluate the immunization compliance rate of patients 19-35 months of age by gathering baseline immunization data before and after implementation of a collaborative, pharmacist managed immunization campaign in a rural primary care setting using GPRA data to assess outcomes. 2. Establish a comprehensive educational program with both preemptive and reactive components involving an interdisciplinary education program targeting expecting mothers to be incorporated into current breastfeeding education and a community outreach program aimed at correcting misconceptions while reinforcing the importance of pediatric immunizations. 3. Evaluate current pediatric immunization administration processes at CNMC in order to identify causes for discrepancies and disparities among a rural Native American population and then apply what has been found to create a pharmacist-led monitoring system in two ambulatory care clinics.

9-279

Title: Comparison of Clostridium difficile Treatment Compliance to the 2010 SHEA/IDSA Guidelines Before and After Educational Intervention

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Purpose: Clostridium difficile-associated diarrhea (CDAD) is one of the most commonly recognized causes of infectious diarrhea in the healthcare setting and accounts for 20-30% of antibiotic-associated diarrhea. The Society of Healthcare Epidemiology of America and the Infectious Disease Society of America updated guidelines for the treatment of CDAD in 2010. These guidelines include recommendations for the appropriate treatment of CDAD based on severity of disease. This project was designed to investigate adherence to guidelines for treatment of CDAD before and after an educational intervention.

Methods: This study will be submitted to the Institutional Review Board for approval. ICD-9 codes will be used to retrospectively identify adult inpatients diagnosed with CDAD from March 2013 thru September 2013. The patients demographic data, laboratory values, prior antibiotic use (when available), CDAD treatment regimens and treatment outcomes will be collected and assessed. All data will be recorded without patient identifiers and maintained confidentially. The information gathered on treatment trends, length of stay, reoccurrence rates, and adherence to the current guidelines for the treatment of CDAD will be included in educational presentations for the hospitalists and medical residents. A subsequent retrospective review, using the same search criteria, will be completed approximately 1-2 months after the completion of the educational sessions to assess guideline adherence and treatment outcomes.

9-280

Title: Evaluation and Implementation of a Venous Thromboembolism Surveillance and Quality Assurance Process in an Inpatient Setting at a Comprehensive Health Care Facility.

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Purpose: To review and document the evaluation and implementation of a venous thromboembolism (VTE) surveillance and quality assurance process through the use of patient health records in an inpatient setting at an Indian Health Care Service Facility.

Methods: The period for review will include adult patients admitted to the hospital over a 6 month period. Patients will be admitted to either the internal medicine, surgery or obstetrics services. One day surgery patients or patients admitted and discharged that same day will be excluded from study. During this time frame the VTE surveillance has evolved to include an electronic health record approach that will utilize a template addressing VTE assessment and prophylaxis at the time of admission.

9-281

Title: Impact of a community health care worker (CHCW) on patient outcomes in a diabetes self-management education (DSME) program

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Purpose: African Americans are twice as likely to develop diabetes and have more barriers to self-care; they are more likely to be uninsured, live in poverty, have more chronic disease, and low health literacy than non-Hispanic Caucasians. Community health care workers (CHCW), as part of a diabetes education team, can lower barriers to self-care by serving as liaisons between the community and the medical home, reinforcing education, establishing partnerships with community organizations, and optimizing the use of resources to improve outcomes. The objective of this study is to assess the impact of a CHCW on patient outcomes in a DSME program.

Methods: This is a retrospective cohort study, with patients assigned to a control or intervention group. The intervention group will be composed of patients from one site of a multicenter study (unpublished, IRB approved, concluded in 2012) evaluating the addition of a CHCW to a DSME program. The control group will be patients seen in the same DSME program between October 2009 and March 2010 prior to the inclusion of a CHCW. Controls will be matched for age, race, and gender prior to randomization. The following data will be collected: demographic data, blood pressure, A1c, lipids, current medications, office visits, emergency room visits, hospitalizations and completed standards of care. IRB approval will be obtained and all data will be recorded without patient identifiers and maintained confidentially. Differences in outcomes will be compared between patients who received care and education from a program with a CHCW and those who received care and education from a program without a CHCW.

9-282

Title: Retrospective analysis of dosing and microbiologic outcomes in patients with multidrug-resistant Gram-negative infections treated with colistin

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Purpose: The lack of new antimicrobial agents in development along with the continued increase in drug resistance among pathogenic organisms has resulted in reexamination of previously approved agents with limited utility. Colistin is one such antibiotic generally reserved for the treatment of multidrug-resistant Gram-negative infections. Due to infrequent use, the risk of toxicity, and the lack of sophisticated pharmacokinetic testing methods during its development, optimal dosing regimens have not been fully established. This study attempts to assess the association between colistin dose and microbiologic outcomes for various infections caused by Gram-negative organisms.

Methods: Pharmacy reports will be utilized to identify patients who received at least 72 continuous hours of intravenous colistin therapy at an academic medical center from January 2008 through September 2013. Patients who are under the age of 18 years old, received colistin without positive cultures for Gram-negative bacteria, received less than 72 hours of colistin, or patients with an isolated organism(s) not susceptible to colistin will be excluded. The primary objective of this study is to determine if microbiologic success is associated with daily colistin dose (mg of colistin base activity/kg of ideal body weight/day). Microbiologic success will be defined as eradication of the causative organism(s) from ensuing cultures by day 7 after colistin initiation. In the absence of follow-up cultures, clinical improvement, defined as resolution of pretreatment clinical signs and symptoms without the need for changes (excluding dose) or additions to the antimicrobial regimen directed at Gram-negative organisms, will be used as a surrogate. Secondary objectives will include association between colistin dose and mortality at days 7 and 28, effect of dose on time to microbiologic success, and development of acute kidney injury during colistin therapy. This study will be submitted to the Institutional Review Board for approval.

9-283

Title: Evaluation of a pharmacy-designed protocol for managing Crotalidae envenomation

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Purpose: Since 2008, the Oklahoma Poison Control Center has documented an average of 125 envenomations by crotaline snakes each year. Crotalidae polyvalent immune Fab antivenin (CroFab) may be used to neutralize effects of such envenomations. The objective of this study is to evaluate the impact of a pharmacy-designed protocol for envenomation treatment, adopted in June 2011 at a large community hospital in Tulsa, Oklahoma, which standardized doses and evaluation of symptom control.

Methods: A retrospective chart review will be performed for patients who presented to the hospital with a snakebite from January 2009 to September 2013. Subjects will be identified using quality data for ICD-9 codes e905.0 (venomous snakes and lizards causing poisoning and toxic reactions) or e906.2 (bite of nonvenomous snakes and lizards). Qualifying patients will be divided into two groups based on whether the protocol was used for treatment. Data on vital signs, hematologic laboratory values, subjective symptoms and all administered doses of antivenin will be collected. Results will be evaluated to determine differences in initial dosing, length of stay, total vials administered, compliance with maintenance doses and readmission rates between the two patient groups. Doses for initial control will be considered appropriate if no drug was used in mild envenomation, 4-6 vials were used in moderate envenomation, or 8-12 vials were used in severe envenomation. Control will be considered achieved when platelet, fibrinogen and partial thromboplastin time (PTT) values have normalized and the patient is clinically stable with improvements in neurologic symptoms and no swelling progression. Data will be analyzed using descriptive statistics. This study will be submitted to the Institutional Review and Ethics Board.

9-284

Title: Evaluation of propofol-associated QTc prolongation in the setting of hypoalbuminemia

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Purpose: Propofol is a viable option for sedation in conjunction with mechanical ventilation among patients in the intensive care unit (ICU). In the general population, propofol has not been shown to have an effect on Corrected QT interval (QTc). However, multiple case reports suggest an association between propofol use and QTc prolongation in the setting of confounders. One confounder that has received attention is hypoalbuminemia. The objective of this study is to determine whether a relationship exists between propofol and QTc prolongation in patients with hypoalbuminemia.

Methods: A retrospective, observational study will be conducted to evaluate patients with low albumin who received a propofol infusion in the ICU. Eligibility criteria include patients 18-100 years of age and receipt of a propofol infusion of at least 3 hours duration. Data will be collected using a standardized instrument. Primary outcome data will include baseline and intra-infusion QTc intervals, timing between propofol infusion initiation and intra-infusion ECG, and the change in QTc interval from baseline during propofol use. Additional patient information including demographics, baseline lab data, concurrent medications to identify medications with QTc elongation potential added during propofol infusion, and patient events stemming from QTc prolongation will also be captured. Multivariate generalized linear model regression analyses (e.g., gamma, binomial, Poisson) will be used to assess the outcomes of post-propofol QTc interval and QTc elongation after controlling for pre-infusion QTc, age, gender, weight, serum albumin level, length of propofol infusion, presence of QTc prolonging medications and the Charlson Comorbidity Index for case-mix severity. An alpha level of 0.05 will be used to define significance. This study has been submitted to the Institutional Review Board for approval.

9-285

Title: The implementation of bar-code medication administration (BCMA) in a rural IHS hospital

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Purpose: Improving patient safety is a key element in providing the best care possible in any healthcare setting. Reducing the number of errors related to medication administration and dispensing is one way to enhance patient care and provide a superior level of treatment. Implementing bar-code medication administration (BCMA) has been shown to lower the incidence of medication errors. This project was designed to track the planning and implementation process, obstacles encountered, ways to overcome these obstacles, and errors related to the process.

Methods: Bar-code medication administration (BCMA) was recently implemented in our facility. A timeline and description of the planning and implementation process has been tracked with emphasis on obstacles and how these were overcome. Nursing and pharmacy surveys will be administered to determine where any deficiencies may exist and what changes can be utilized to ensure we continue to progress and sustain the proper foundation needed to support the BCMA process. Errors in the medication use process will also be documented, analyzed, and procedures will be developed to find ways to decrease these errors.

9-286

Title: Evaluation of clinical response in treatment of Staphylococcus aureus osteomyelitis with adjunctive rifampin in pediatric patients

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Purpose: Staphylococcus aureus (S. aureus) is the pathogen most commonly isolated in osteomyelitis. Rifampin is frequently used as adjunctive treatment in S. aureus osteomyelitis. Supporting data are limited and conflicting. Study purpose is to compare the adjunctive use of rifampin in treatment of S. aureus osteomyelitis infections to current monotherapy treatment to determine changes in clinical response. Clinical response is defined as decrease in length of stay, time to laboratory marker normalization, days without fever, and number of surgical interventions. Transition to oral therapy will occur when the C-reactive protein (CRP) is <2mg/dL and erythrocyte sedimentation rate (ESR) is clearly declining.

Methods: The initial phase of this Institutional Research Ethics Board-approved study will consist of retrospective chart review at The Childrens Hospital at Saint Francis with suspected osteomyelitis who meet inclusion and exclusion criteria during a two-year period. Eligible patients must be greater than six months, but no more than eighteen years of age and admitted to the general pediatrics unit for osteomyelitis evaluation with suspected S. aureus. Exclusion criteria include patients who do not meet the inclusion criteria as well as immunodeficiency and treatment with rifampin. During the second phase, fifty patients who meet inclusion and exclusion criteria with suspected osteomyelitis during a five-month period and are admitted to the general pediatric unit will be enrolled in prospective implementation of a standardized osteomyelitis order set. Inclusion and exclusion criteria for the prospective phase are the same as the retrospective with the exception of excluding rifampin treatment and the additional exclusion of treatment for greater than twenty-four hours with antibiotics at an outlying facility. The order set includes a specific dosing regimen as well as standardized monitoring parameters. Data collected will include patient demographics, CRP, ESR, procalcitonin (PCT), temperature, complete blood count, and comprehensive metabolic panel as well as applicable clinical data.

Results: Pending

Conclusion: Pending

9-287

Title: Impact of pharmacist intervention on A1c improvements in a community pharmacy setting

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Purpose: Diabetes affects over 25 million adults in the United States, with the majority of the population diagnosed with type 2 diabetes. Glycemic control has been shown to minimize complications. Patients with low income may pose a greater challenge in maintaining their diabetes control. Since pharmacists are easily accessible healthcare providers, they may be able to impact diabetes care. The purpose of this project is to determine if pharmacist-provided education and coaching in a community pharmacy setting can help low income patients with poorly controlled diabetes improve their A1c.

Methods: Adult patients (18 years and older) presenting to the community pharmacy with type 2 diabetes on more than one oral diabetic medication, or on an oral medication and insulin or other injectable medication, will be contacted to enroll in the study. These patients will be identified through a medication report, as well as upon presentation of prescriptions that meet the study criteria. Study duration will occur during a six-month time period, from November 2013 through May 2014. Exclusion criteria will include patients under the age of 18. Data collection will include A1c and body composition taken at initial visit and at 3- and 6-month intervals. Patient demographic information and income level will also be collected at initial visit. Patients will receive standardized pharmacist counseling about their diabetes medicines and lifestyle changes during these visits. Approximately 45 days after their initial and 3-month A1c measurements, patients will be contacted via telephone to assist with lifestyle changes and medication understanding/adherence, and address any questions or concerns. This study will be approved by the university institutional review board, and informed consent will be obtained for all patients enrolled in the study. To maintain patient confidentiality, all data will be de-identified.

9-288

Title: Incidence of hypokalemia in acute coronary syndromes and acute decompensated heart failure and correlations with patient clinical factors: a pilot study

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Purpose: Hypokalemia during acute coronary syndromes (ACS) or acute decompensated heart failure (ADHF) is a significant contributor to mortality. Evidence describing the incidence of hypokalemia in these settings is limited. Serum potassium in cardiovascular disease may be affected by an accompanying neuroendocrine response, medications, and other comorbid conditions. The purpose of this study is to describe the incidence of hypokalemia, as well as to characterize influences on serum potassium, in patients presenting to the hospital with a principal diagnosis of unstable angina (USA), non-ST-elevation myocardial infarction (NSTEMI), ST-elevation myocardial infarction (STEMI), or ADHF.

Methods: The primary objective of the study is to describe the incidence of hypokalemia upon hospital admission with a principal diagnosis of USA, NSTEMI, STEMI, or ADHF. Patients admitted to the hospital from July 31, 2010 to July 31, 2013 with a principal diagnosis of USA, NSTEMI, STEMI, or ADHF will be identified for study inclusion. Descriptive statistics will be used to measure the incidence of hypokalemia (i.e., serum potassium less than 3.5 mEq/L) by evidence from the first serum potassium measurement upon hospital presentation. Demographic information collected for each patient will include: age, gender, ethnicity, principal admission diagnosis, comorbidities, Charlson Comorbidity Index, renal function (Cockcroft-Gault creatinine clearance), and medications. The specific medication classes included in data collection will be beta-adrenergic antagonists, renin-angiotensin-aldosterone antagonists, diuretics, and insulin. The relationship of the principal admission diagnosis, patient age, renal function, Charlson Comorbidity Index, beta-adrenergic antagonists, renin-angiotensin-aldosterone antagonists, and diuretics to the serum potassium level in hypokalemic patients will be analyzed using multiple linear regression (alpha 0.05). Renin-angiotensin-aldosterone antagonists and diuretics, agents known to increase and decrease serum potassium, will serve as positive and negative controls, respectively. The study protocol will be submitted to the Institutional Review Board for approval.

9-289

Title: Development and implementation of a standardized risk stratification protocol for safe-handling of hazardous drugs according to the National Institute for Occupational Safety and Health

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Purpose: According to the National Institute for Occupational Safety and Health (NIOSH), 8 million healthcare workers are potentially exposed to hazardous chemicals every year in the United States. To minimize risk of exposure in hospital employees, NIOSH recommends that all drugs on the hazardous chemicals list be dispensed, handled, and disposed of with maximum safety measures. Currently, there is no formalized policy at Norman Regional Health Systems (NRHS) to address the handling and disposal of hazardous drugs. The objective of this study is to create a protocol that minimizes exposure to hazardous drugs while maintaining employee safety and health system efficiency.

Methods: This study was considered exempt from review by the Institutional Review Board as there will be no direct contact with patients or patient data. A baseline survey to determine current knowledge of NIOSH standards regarding the handling hazardous drugs will be given to pharmacy employees and nursing staff on the medical/surgical units and in the outpatient infusion clinic. We will then cross-reference the NRHS formulary with the NIOSH hazardous list drug, and categorize the drugs into risk levels. These risk levels will be standardized based on characteristics we gather from Material Data Safety Sheets and FDA approved package inserts. A protocol will be developed and implemented in cooperation with the nursing and pharmacy staff. After approval from the NRHS Pharmacy and Therapeutics Committee and the Medical Executive Committee, appropriate education and training of all nursing and pharmacy staff will be completed. Education will be in the form of in-services and online training modules. Following implementation of the new protocol, direct observation as well as a post-survey will be administered to the pharmacy and nursing staff. Results will be analyzed to determine whether the education and training prove to be beneficial in minimizing exposure to hazardous drugs in compliance with NIOSH.

9-290

Title: Refill claims data as a measurement tool for antiretroviral adherence in HIV-infected patients

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Purpose: Refill claims data are often used in practice as a surrogate marker for medication adherence; however, the role of claims data as a valid and reliable measurement tool to predict virologic outcomes has not been established in the management of HIV infection. It is also uncertain whether antiretroviral adherence derived from claims data is altered by certain patient-specific factors. The objective of this study is to determine the relationship between antiretroviral refill adherence and specific variables and outcomes in patients with HIV infection.

Methods: A retrospective observational study of antiretroviral medication claims will be conducted using Oklahoma Medicaid and HIV Drug Assistance Program (HDAP) claims data. The study population will be comprised of adult HIV-seropositive patients receiving care at the Infectious Diseases Institute, an outpatient clinic that serves over 1,500 HIV-infected patients. Patients at least 18 years of age receiving antiretroviral therapy through the Oklahoma Medicaid or HDAP program between January 2011 and December 2012 for a minimum of six months will be selected. Pregnant patients and those with Medicare dual-eligibility will be excluded. Oklahoma Medicaid patients will be identified by the state Medicaid pharmacy benefits manager. HDAP patients will be identified by the University of Oklahoma Pharmacists Care Center pharmacy. HIV viral load, antiretroviral regimen type, and demographic information (age, gender, race) for eligible patients will be obtained from electronic medical records. Patient data will be de-identified prior to analysis. Descriptive and inferential statistics will be used to analyze refill adherence rates. Regression analyses will be used to identify relationships between refill adherence rates and patient factors or virologic suppression. The a priori level of significance will be set at 0.05. This study will be reviewed by the institutional review board.

9-291

Title: Reducing health-system related intravenous admixture waste and cost

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Purpose: Pharmaceutical waste is a far reaching environmental problem. Organic wastewater contaminants have been detected in streams of 30 states across the US. Antibiotics and endocrine disruptors rank high among the chemicals found. The effect on antibacterial resistance, reproductive ability, childhood development, and human behavior may be substantial. Managing and minimizing pharmaceutical waste is of significant ethical, legal, and financial concern. Significant waste and cost have been associated with intravenous admixtures at our facility. The objective of this study is to reduce waste and cost associated with our facility's utilization of Hospira's ADD-Vantage and Baxter's MINI-BAG Plus intravenous delivery systems (IVDSs).

Methods: This study will be submitted to the Institutional Review Board for exempt approval status. This study involves no human subject data and only uses de-identified intravenous admixture pharmaceutical waste products. An initial 8-week assessment of intravenous admixture pharmaceutical waste generated in the pharmacy will be performed to determine the amount of waste and cost associated with the use of IVDSs. The following data will be collected from all IVDSs in the pharmacy waste bin: 1) drug name; 2) drug strength; 3) bag size; 4) bag brand; and 5) total cost (drug + bag) of the wasted product. The total cost will be annualized. The data will be reviewed to establish a baseline of IVDS associated waste and cost. An attempt will be made to identify root causes for IVDS waste generation. Targeted wasted reduction strategies will be developed. Implementation of interventions will then commence. Post-intervention, a subsequent 4-week follow-up data collection period will be conducted. The data will be reviewed to determine if a reduction in IVDS waste was achieved and if any cost savings occurred.

Moved from 10-218 to 9-292

Title: Economic outcomes of implementing an intravenous immune globulin (IVIG) prescribing and administration policy

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Purpose: A new policy was enacted in 2012 at our tertiary care medical center to guide the prescribing and administration of IVIG and allow pharmacy dose adjustments. This policy provides approved indications for IVIG therapy and indicates when to use ideal body weight versus adjusted body weight for dose calculations. Previous to this policy, institutional data showed that IVIG was dosed most commonly based upon actual body weight. The objectives of this drug use evaluation are to evaluate adherence to the IVIG protocol, estimate cost savings associated with dosing recommendations per policy, and evaluate appropriateness of IVIG use per treatment indication.

Methods: A drug use evaluation is being conducted among a subset of adult patients who received at least one dose of IVIG from January 2013 through June 2013. Given the quality improvement nature of the project, it was exempt from IRB approval. Data collection includes patient demographics, therapy indication, IVIG product utilized, administered dose, length of treatment, and length of stay. For the cost savings evaluation, acquisition drug costs are being compared between dosing based upon actual body weight and dosing based upon ideal/adjusted body weight. Indication for therapy and length of therapy are also being compared against policy recommendations to identify potential outliers.

Results: To date, data from 27 patients have been evaluated and this constitutes 156 IVIG doses. The mean age of patients included is 54.9 years and 16 (59.3%) are male. No administered IVIG doses have been inappropriately based upon actual body weight. Two patients were dosed appropriately based upon adjusted body weight (weight >100kg) and the remaining were dosed appropriately based upon ideal body weight. The most common use of IVIG was in patients with chronic lymphocytic leukemia (CLL). Immune thrombocytopenic purpura (ITP), chronic inflammatory demyelinating polyneuropathy (CDIP), Guillian Barre (GB), and generalized immunodeficiency were the other most common indications. Based upon the 156 doses reviewed, the difference in cost between doses given per protocol and doses that would have been given if based upon actual body weight is $14,520.

Conclusion: Preliminary data show a high rate of adherence to the IVIG dosing policy. Largely through direct pharmacy intervention, IVIG dose changes per the protocol have resulted in a cost avoidance of approximately $15,000 among the 27 patients analyzed. Further data collection is occurring to gain a greater scope for cost avoidance and policy adherence.

10-001

Title: Development of guidelines for selection, initiation and monitoring of Target Specific Oral Anti-Coagulants (TSOACs) within the NUKA System of Care

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Purpose: While warfarin has been the cornerstone of oral anticoagulation therapy for 60 years, some customer-owners have contraindications or have failed traditional anticoagulation treatment and require an alternative anticoagulant. Target Specific Oral Anti-Coagulants (TSOACs) are likely to become more relevant alternative agents as additional research and guidelines are published. Recently the Alaska Native Medical Centers Pharmacy and Therapeutics Committee added three TSOACs to the formulary: dabigatran, apixaban and rivaroxaban. Our prescribers have limited experience with these agents. The objective of this project is to enhance outcomes of orally anticoagulated customer-owners by assisting primary care teams with therapeutic decision-making.

Methods: This quality improvement project involves developing evidence based TSOAC guidelines based on primary literature, package inserts, and reviewed practice recommendations. These guidelines will include: appropriate medication selection by indication and concurrent disease states; dosing parameters for each TSOAC; special instructions for administration, storage, and missed doses; considerations in special populations: oncology, pregnancy, pediatrics, and geriatrics; perioperative management; monitoring parameters for safety, efficacy and adherence; and customer-owner responsibilities. Post TSOAC guideline development, pharmacists trained in anticoagulation will monitor customer-owners for safety, efficacy and adherence. Additionally, these guidelines will continue to be updated by the Anticoagulation Clinic as new information becomes available from the FDA, manufacturer, Institute of Safe Medication Practices and other professional associations through guidelines, statements,and other published materials. The inappropriate selection, initiation and monitoring of TSOACs can lead to major adverse events, such as severe hemorrhage, and thrombosis including stroke. Clear parameters to guide use of TSOACs will improve customer-owner outcomes.

10-002

Title: Retrospective review and assessment of initial vancomycin dosing in obese patients

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Purpose: There are several pharmacokinetic confounders that alter how vancomycin behaves in obese patients. The sum of how these variables affect vancomycin pharmacokinetics has not been quantified into a logical explanation for how dosing should be altered in this population. This retrospective review strives to assess how pharmacists at our institution are initially dosing vancomycin in obese patients and whether this aligns with established institutional guidelines. Assessment will also be conducted on how well the institution's guidelines lead to goal troughs or nephrotoxicity. Overall, this review aims to assess initial vancomycin dosing stratified by weight class by body mass index (BMI).

Methods: Application for exemption by the Western Institutional Review Board has been requested for this project. This review will include patients meeting predefined criteria since January of 2011. Information will be gathered from the electronic health record and vancomycin monitoring forms from thirty of each of the following: non-obese patients defined by BMI <25, overweight patients defined by BMI 25-29.9, Class I obese patients defined by BMI 30-34.9, Class II obese patients defined by BMI 35-39.9 and Class III obese patients defined by BMI 40. Information to be gathered includes age, sex, total body weight, height, BMI, vancomycin indication, absolute neutrophil count, trough goal, creatinine clearance, baseline and daily serum creatinine, vancomycin doses with date and time, trough levels with date and time, additional antibiotics, and days on therapy. Patients will be assessed for whether the institutional initial dosing protocol was followed. Primary outcomes are initial trough level versus goal and incidence of nephrotoxicity defined by an increase in serum creatinine of 0.5 mg/dl or 50% increase from baseline. Secondary outcomes are the difference in number of trough levels at goal and nephrotoxicity between protocol compliant versus non-protocol compliant initial dosing.

10-003

Title: Implementation of a quality improvement project to improve transitions of care in high risk patients

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Purpose: Patients transitioning between outpatient and inpatient treatment and vice versa are at increased risk for medication errors. Reflecting the seriousness of potential errors during transitions of care, the Joint Commission requires hospitals to maintain and communicate accurate patient medication information. The objective of this study is to pilot an enhanced transition of care process by a pharmacy resident for patients identified as high risk by hospitalists. The resident will also evaluate the effect of the pilot program on the number of subsequent emergency department visits and readmissions.

Methods: This project was exempted by the Western Institutional Review Board because it is not considered original research and all patient information will be protected. The pilot program will consist of obtaining an accurate preadmission medication list, reconciling the medication list with the patients active hospital orders, providing discharge counseling and education on newly prescribed medications, and a post-discharge phone call within five to seven days of discharge. The post-discharge phone call is intended to address common medication problems such as if new prescriptions have been filled and taken as prescribed, if side effects are causing concern, and has the patient scheduled or attended an appointment with their primary care provider. The following data will be collected: patient age, gender, number of medical conditions, number of medications on the preadmission list, type of errors identified when collecting and reconciling the preadmission list, any post-discharge problems detected and actions taken for resolution, and time to emergency department visits or readmissions after discharge. This data will be used to assess the impact of the pilot program and determine the feasibility of an enhanced transition of care process.

10-004

Title: Evaluation of dabigatran use: assessment of dosing, criteria for use, and bleeding events

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Purpose: Dabigatran is a newer oral anticoagulant with FDA approval for the prevention of stroke and systemic embolism in patients diagnosed with non-valvular atrial fibrillation. In contrast with other anticoagulants, dabigatran does not require therapeutic monitoring. However, the manufacturer recommends renal function be assessed prior to initiation of therapy. Dosing adjustments are needed if used in renal dysfunction or in combination with certain medications to reduce the risk of bleeding. The objectives of this evaluation are to assess the use of dabigatran through appropriateness of dosing, frequency of bleeding events and appropriateness of criteria for use.

Methods: A retrospective review was conducted on all patients who received and filled an outpatient prescription for dabigatran between October 1, 2011 to July 31, 2013. If multiple fills were identified, only the first fill or earliest fill during the given time frame was included in analysis. Patients were excluded if they received dabigatran exclusively in the inpatient setting. A dabigatran dispense report was generated utilizing the institutions electronic health record (EHR) database for dispense date, dose, instructions for use and concomitant use of interacting medications. The institutions information technology (IT) department collected laboratory data for assessment of renal function and all ICD-9 codes matching descriptions for bleeding. Information not collected or incomplete through EHR or IT data was collected through manual chart review by the principal investigator (PI). The PI calculated renal function and determined appropriateness of dosing and indication. This evaluation was approved by the local area institutional review board.

Results: A total of 164 patients were dispensed dabigatran from October 1, 2011 to July 31, 2013, with only 153 included in analysis due to 11 patients receiving dabigatran exclusively as inpatients. The majority of patients were males (68%; 104/153), over 65 years old (52%; 80/153) and residing in the Anchorage Service Unit (57.5%; 88/153). Appropriate dosing was found in 91.5% (140/153) of patients. The majority of patients (80.4%; 123/153) had a serum creatinine value within 90 days of the initial dabigatran dispense date. Appropriate indication was found in 85% (140/153) of patients. Bleeding events were recorded in 4.6% (7/153) of patients but not as a result of the initial dabigatran dispense. A total of 7.2% (11/153) of patients were on concomitant interacting medications, however, none of these requiring dose adjustments.

Conclusion: Overall, the majority of dabigatran dispenses followed manufacturer prescribing guidelines for appropriate indication and dosing. Most patients had serum creatinine values within 90 days of initial dispense and had no drug associated bleeding events. However, a small percentage of indications and dosing did not meet manufacturer recommendations. In order to improve overall prescribing of dabigatran and patient safety, further staff education should be provided to ensure prescribing guidelines are followed.

10-005

Title: Bacterial isolates and sensitivities in febrile neutropenia

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Purpose: Neutropenia is a known risk for developing infection, and fever may be the first or only response a neutropenic patient has to infection. Neutropenic patients' immunocompromised state increases the risk for uncommon pathogens and the inability to identify primary sites or sources of infection. Additionally, patients regular exposure to healthcare further compounds microbial risk due to resistance found in health-care associated pathogens. The objective of this project is to determine the common infectious isolates of our febrile neutropenic patients and whether they exhibit sensitivity patterns common to our institution and the surrounding community's pathogenic isolates.

Methods: This review project will be submitted to the Institutional Review Board for approval. The electronic medical record (EMR) will be used to retrospectively identify patients who have been treated for febrile neutropenia from 1 April 2011 through 31 October 2013, and the patient population will be further narrowed to identify those patients with a positive culture. Data to be collected includes: patient age, diagnosis, admission status, history of antibiotic prophylactic therapy, and culture isolates, source, and sensitivities. Isolated pathogens and their rate of detection will be compared to published literature. Isolate sensitivity rates will be compared to our institutions antibiogram and to two neighboring facilities' antibiograms independently.

10-006

Title: Opioid requirements in mechanically ventilated trauma patients receiving dexmedetomidine versus propofol

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Purpose: Proponents of dexmedetomidine often cite the agents analgesic properties as one of its main advantages over propofol and benzodiazepines. However, there are very limited studies utilizing endpoints such as analgesic requirements to provide supporting evidence for these claims. The primary purpose of this study is to compare opioid analgesic requirements in trauma patients receiving non-concurrent continuous infusions of dexmedetomidine and propofol for sedation while being weaned from mechanical ventilation.

Methods: The study was performed in an academic medical center with data collection performed from January 1, 2011 to December 1, 2012. The research protocol was approved by the local Institutional Review Board and the medical center Site Review Authority. Patients were excluded for any of the following: age less than 18 years; history of alcohol or illicit drug use; acute hepatitis or severe liver disease; second or third degree heart block; on dialysis; receiving neuromuscular blocking medications; pregnant or lactating; not extubated during study period. Baseline data collection included age, race, sex, height, weight, emergency department Glasgow Coma Score, admission diagnosis, admission vital signs, baseline Acute Physiology And Chronic Health Evaluation score and baseline organ dysfunction. Data collection also included sedative and analgesic doses, pain and RASS scores, respiratory rate, oxygen saturation, heart rate, blood pressure, time to extubation, need for reintubation, ICU length of stay, and medication-related adverse effects. Data were compared using a paired Students t-test. Significance was defined as P less than .05 for all analyses. All data are reported as mean plus or minus standard deviation (SD) unless otherwise stated.

Results: Of the 48 adult trauma ICU patients with an electronic order for dexmedetomidine screened during the study period. A total of 21 adult trauma patients were included in the analysis. The majority of patients (n=19/21, 90%) were initiated on propofol and then transitioned to dexmedetomidine prior to extubation with the remaining 2 patients receiving initial dexmedetomidine followed by propofol. The mean initial sedative dose was 0.38 +/- 0.17 ug/kg/hour for dexmedetomidine and 36 +/- 22.8 µg/kg/minutes for propofol. Mean duration of sedative infusion was 41 +/- 33.8 hours for dexmedetomidine and 73 +/- 78.6 hours for propofol. Mean opioid requirement was similar during the first 24 hours of propofol compared to dexmedetomidine (883.9 +/- 1177.7 mcg/d vs. 769.3 +/- 994.5 mcg/d; p=0.727). At 48 hours mean opioid requirements were higher during propofol use compared to dexmedetomidine use, (969.5+/- 794.1 mcg/d vs. 539.6 +/- 861.0 mcg/d; p=0.08) however this

difference did not achieve statistical significance. Pain scores were similar during propofol and dexmedetomidine infusion at both time points. Mean RASS scores tended to be lower during propofol use compared to dexmedetomidine, but these differences were not statistically significant with both agents producing a similar level of sedation.

Conclusion: At one academic medical center, total analgesic requirements appear to be similar within 48 hours of sedative initiation in adult trauma patients, regardless of whether the patients receive dexmedetomidine or propofol. Further research in the form of randomized controlled trials should be performed to investigate analgesic requirements as a primary end point in trauma patients receiving dexmedetomidine and propofol for sedation.

10-007

Title: Evaluation of tyrosine kinase inhibitor induced hypertension in a Veteran population

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Purpose: Tyrosine kinase inhibitors (TKIs) are small, orally active agents that are effective in the treatment of various malignancies with a more favorable side effect profile compared to standard chemotherapy. Sorafenib and sunitinib are widely prescribed TKIs commonly associated with hypertension (HTN). The objective of this study is to determine if sorafenib and sunitinib induce clinically significant hypertension that requires intervention in a Veteran population with malignancy. This study will provide a better understanding of the overall risk of TKI-induced HTN; therefore, clinicians will be more prepared to identify and develop strategies to effectively manage the toxicity.

Methods: A retrospective chart review is proposed to evaluate Veterans that actively received sorafenib or sunitinib treatment for at least 30 days along with regular follow-up appointments. The primary endpoint is to examine the incidence of clinically significant hypertension requiring intervention due to TKI treatment in a Veteran population. Secondary endpoints of this study will look at the hypertension event rate of sorafenib compared to sunitinib and the grade of hypertension that develops with each agent. Other outcomes will include the health care provider that most often identifies TKI-induced HTN, how the toxicity is managed, why TKI treatment is discontinued in this Veteran population, the utilization of emergency department services, and whether TKI treatment is terminated due to severe HTN. The study was submitted to Institutional Review Board and is pending.

10-008

Title: A retrospective analysis on the use of tranexamic acid (TXA) used intravenously and topically in total knee replacement (TKR) and total hip replacement (THR)

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Purpose: The purpose of this study is to compare patients who received TXA intraoperatively versus those who did not, and evaluate hemoglobin and hemotocrit values, length of hospital stay, blood transfusion requirements, total medication costs, and dose and route of TXA in total knee replacement (TKR) and total hip replacement (THR).

Methods: During this 3 month retrospective cohort review, patients that were on TXA both for TKR and THR will be evaluated. This will be done through collecting electronic data. Data entered includes length of hospital stay, gender of the patient, hemoglobin and hemotocrit values, blood transfusions, dose and route of TXA, and total cost of medications. The patient population will meet the inclusion and exclusion criteria listed below.All patient identifiers: medical record number, account number, name, and date of birth wil be removed for satistical analysis. De-identified data will be provided to the prinicipal investigator for satistical analysis. INCLUSION CRITERIA: 1) Females and males between the age of 18-74 who underwent total hip or total knee replacement who received TXA injection (topical or intravenous) EXCLUSION CRITERIA: 1) Patients with known coagulopathy or bleeding disorders 2) Patients with active intravascular clotting 3) Patients on anticoaugulants -Warfarin (Coumadin)--> 5 days prior to surgery - Apixiban (Eliquis), Rivaroxaban (Xarelto) --> 1 day prior to surgery - Dabigatran (Pradaxa) --> 2 days prior to surgery - Clopidogrel (Plavix), Prasugrel (Effient), and ASA --> 7 days prior to surgery 4) Patients receiving procoagulants concomitantly with TXA 5)Patients on anticoaggulants or antiplatelets with in 24 hours prior to surgery. 6) Patients on aminocaproic acid

10-009

Title: Enhancement and coordination of pharmacy services for outpatient management of a special needs population

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Purpose: Through a collaborative agreement, healthcare providers and the outpatient pharmacy at Tsehootsooi Medical Center, a community hospital serving the Navajo Nation, have cared for locally schooled special needs students of all ages for approximately the last decade. The pharmacys role includes adherence packaging, scheduled filling, therapeutic monitoring, and record-keeping functions. Special processes were in place but were not documented or guided by specific policy, which jeopardized operations at times of leadership and staff transition. With the overall aim to improve patient safety, a variety of approaches were taken to enhance the pharmacy processes and better coordinate pharmacy services.

Methods: Multiple modifications were made to existing processes to create program-wide improvement. A separate medication order queue was added to the pharmacys computerized workflow system to enable NDC matching and some automated filling and labeling which were previously done by hand. A database was implemented to track changes to the students' chronic medication list and to perform some calculations. A dedicated email address was created as a single point of contact for designated pharmacists to answer questions and requests by healthcare providers and school staff. Alerts were enabled in the electronic health record to notify designated pharmacists of new medication and laboratory orders and to aid with regular chart review. Re-sealable, disposable medication trays were acquired and labeling and record-keeping techniques were designed to comply with best practices for dispensing multiple medications in a single package. To avoid interruptions in therapy, a policy was put in place to keep chronic medication orders active as long as the students were receiving follow-up by the providers. The number of refills were limited for students discharged from the program in order to encourage responsible follow-up care.

Results: NDC matching and automated filling have eliminated sources of error during the scheduled filling of medications for participating students and have improved the quality of labeling. However, use of the separate work queue required some increased vigilance by pharmacy staff to ensure that acute medications and new orders were processed in a timely fashion. The email distribution list and system alerts mitigated this issue by allowing the designated pharmacists to proactively recognize medication changes and concerns. The database automated tasks that were previously error-prone and performed

manually, such as the calculation of medications quantities to be packaged separately for administration during school hours from those to be given during non-school hours by other caregivers, accounting for the school calendar and seasonal breaks. These improvements facilitated the expansion of the team, allowing the sharing of expertise and workload. The new medication trays and labeling improved satisfaction from students' caregivers and were sturdier and cleaner than the re-useable trays commissioned in prior years. Finally, codification in written policy allowed the coordinated pharmacy services to stay in operation without interruption during a time of leadership transition.

Conclusion: A variety of approaches were taken to enhance and better coordinate outpatient pharmacy services for a population of special needs students through a collaborative agreement with healthcare providers and school staff. Many of the resources used were already available to the pharmacy and no capital costs were incurred. For the first time, the pharmacy's role was codified in written policy. Taken as a whole, the changes allowed for greater patient safety, better communication between parties, improved client satisfaction, program growth and knowledge transfer, and continued operations during a transition of leadership.

10-010

Title: Effect of testosterone therapy on reducing the risk of fractures in older men with low testosterone

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Purpose: The 2010 Endocrine Society guidelines recommend that men with low testosterone at risk of fractures should receive testosterone therapy to improve symptoms and increase bone mineral density. A majority of randomized, placebo-controlled trials that evaluated the effects of testosterone therapy on bone mineral density yielded inconsistent and imprecise results. Currently, the effects of testosterone therapy on reducing bone fractures remains to be established. The objective of this study is to determine if testosterone therapy has any effect in reducing the risk of fractures in older men with low testosterone.

Methods: This study has been submitted to the Institutional Review Board and is currently under review for approval. In the scope of medication effectiveness, the researchers will perform a retrospective chart review of male Veterans between the age of 50 and 89 years who meet the inclusion criteria of having a clinical diagnosis of low testosterone. The intervention group will consist of Veterans that received testosterone replacement therapy and the control group will consist of Veterans that did not receive testosterone replacement therapy. The primary study end point is to quantify and compare the incidence of vertebral and non-vertebral fractures between the intervention and control groups. The secondary study end point is to determine the number of months before the first fracture. The follow up period will be over a 24-month timespan from the time the intervention group started testosterone therapy and the time the control group was first diagnosed with low testosterone. Medical billing codes will be used to identify the outcomes of interest. Demographic data and primary end points will be analyzed using descriptive statistics and will be presented using the mean and standard deviation. The secondary endpoints will be compared by survival curve analysis.

10-011

Title: Impact of educational interventions on glucose management in non-ICU hospitalized patients

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Purpose: The importance of blood glucose control in the hospital setting has been shown through many studies with episodes of hyper- and hypoglycemia leading to worse outcomes. An insulin medication utilization evaluation (MUE) will be conducted to evaluate the utilization and adherence to the subcutaneous insulin protocol at Banner Boswell Medical Center (BBWMC). The primary intervention will focus around an education piece with an emphasis on current best practices for inpatient glucose management targeting pharmacist, nurses and the hospitalist group. A pharmacist led glucose management service is the long term goal of this project.

Methods: A list of patients admitted to BBWMC from January 2013 to April 2013, who had orders for subcutaneous insulin therapy will be generated as part of the MUE. Based on the findings, a nursing floor will be identified to receive the education based intervention. A second list of patients will be generated after the intervention using the same criteria and the results will be compared. The primary study outcome will be average daily blood glucose (BG) control in patients meeting inclusion criteria before and after an educational intervention. Secondary study outcomes include the use of insulin protocols, use of oral antihyperglycemic agents, rate of hypoglycemia (BG < 70), and corticosteroid use. Statistical testing for the primary outcome will be the paired t-test. For the secondary outcomes, the paired t-test and logistic regression analysis to determine predictive correlation between oral agent use and adverse events, use of insulin protocols and average daily BG, and nurses or providers who participated in the educational intervention and average BG will be utilized. Patient information will be stored on a password-protected computer in a password-protected database.

10-012

Title: The establishment of pain guidelines at a medical center for the management of patients with chronic pain to improve the standard of medical care.

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Purpose: Chronic pain is a common reason among patients seeking medical care at Tséhootsooí Medical Center (TMC). The establishment of pain guidelines will help to manage patients with chronic pain and improve the standard of care at TMC.

Methods: TMC is a 54-bed hospital serves the American Indians of the Navajo Nation in Arizona and New Mexico. Currently, the facility lacks established guidelines regarding chronic pain management, and makes the treatment and management of those patients challenging. Our medical staff changes frequently, with an ever-growing pool of new providers, pain guidelines will help to ensure the continuity of care in this dynamic and ever changing environment. The focus of the pain guidelines will be population specific, and we will look at all the patients with an ICD-9 diagnosis of non-acute pain (chronic pain, generalized pain, central pain syndrome, etc.) in the past two year period. The data will be analyzed and categorized by the origin of pain in order to help to identify the most common types of pain we encounter at TMC. Then, a systemic review of current hospital policies related to pain management will be conducted and areas that can be revised and improved will be identified. Once we identify those areas, we will conduct a literature review of current pain guidelines and construct pain guidelines for TMC with focus on addressing the most common types of pain and improving deficiencies in our current hospital policies.

10-013

Title: Determination of major risk factors for hospitalization for major bleeding in patients prescribed dabigatran or rivaroxaban.

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Purpose: The new oral anticoagulants, dabigatran and rivaroxaban are being used increasingly for the prevention of stroke and systemic embolism in patients with non-valvular atrial fibrillation, deep venous thrombosis prophylaxis after orthopedic surgery, and the treatment of venous thromboembolism. Although these medications have similar efficacy to standard therapies, there is concern with the use of these agents due to their risk of major bleeding and a general lack of evidence-based knowledge surrounding their reversal. The objective of this retrospective chart review is to determine which risk factors are most associated with hospitalization for major bleeding in patients prescribed dabigatran or rivaroxaban.

Methods: This study has been submitted to the Institutional Review Board for approval. A list of patients prescribed dabigatran or rivaroxaban from June 1, 2011 to August 31, 2013, who meet the inclusion criteria, will be generated. A separate report will identify patients hospitalized for major bleeding, as defined by The International Society on Thrombosis and Haemostasis (ISTH), during the same time period. The Electronic Medical Record will be utilized to collect patients age, sex, weight, height, zip code, concurrent medications, notable drug-drug interactions, anticoagulant information (including dose, frequency, duration and indication), bleeding risk variables, renal function and hepatic function. These variables will be compared between the two groups to determine which clinical variables are most associated with hospital admission for major bleeding. Patient information will be maintained in a password-protected database and stored on a password-protected computer. Data collected for the use of determining bleeding risks will be analyzed using a multivariate logistic regression, using appropriate parametric and non-parametric tests.

10-014

Title: Incidence and Severity of Coccidioidomycosis in Subjects Receiving Corticosteroids, DMARDs, or TNF-α Agonists

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Purpose: Coccidioidomycosis is a fungal infection and the propensity to acquire this infection can potentially be increased by patients medication therapy. Medications that may increase the likelihood of acquiring this infection include TNF-α inhibitors, disease modifying anti-rheumatic drugs (DMARDs), and corticosteroids. The goal of this study is to evaluate the incidence and severity of Coccidioides infection in patients on corticosteroid therapy with or without DMARDs and /or TNF-α inhibitors versus those on DMARDs and/or TNF-α inhibitors without the use of corticosteroids.

Methods: Subjects aged 18-89 with a diagnosis of Coccidioidomycosis (using ICD-9 code), positive Coccidioides serology, and/or positive fungus culture for Coccidioides immitis between January 1, 2010 to July 31, 2013 will be analyzed for this study. To be included, patients must also be receiving one or more of the following agents for ≥2 weeks prior to diagnosis: TNF-α inhibitor(s), DMARD(s), or coritcosteroid(s). Subjects with a diagnosis of HIV/AIDS, pregnant women, and subjects with malignancies will be excluded. The goal of this study is to evaluate the incidence and severity of Coccidioides infection in patients on corticosteroid therapy with or without DMARDs and/or TNF-α inhibitors versus those on DMARDs and/or TNF-α inhibitors without the use of corticosteroids. Institutional review board (IRB) approval for this research project is pending.

10-015

Title: Implementation of a pharmacy parenteral nutrition (PN) support service and evaluation of its impact on patient nutritional status, clinical outcome, and PN-related complications

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Purpose: The American Society for Parenteral and Enteral Nutrition guidelines recognize malnutrition as being associated with increased morbidity and mortality. Nutrition support aims to mitigate the metabolic stress response, enhance the immune response, and prevent oxidative cellular injury. The objective of this pilot study is to implement, then evaluate the effect of a pharmacist-run PN support service on patient nutritional status, clinical outcome, and PN-related complications at a large, multicenter, community hospital.

Methods: Prior to initiation, this study will be submitted to the Institutional Review Board for approval. Decentralized pharmacists will complete a recently established PN support training module in November 2013. After course completion, biweekly nutrition rounds will be established to discuss patients on PN therapy. The health system's electronic medical record system will be used to identify patients started on PN between January 2014 and March 2014. Only patients over 18 years of age who are admitted to the telemetry, diagnostic care unit, and oncology/surgical units will be included in the study. The following data will be collected: age, gender, weight, indication for PN, duration of therapy, caloric requirements, protein requirements, caloric and protein content of PN solution, prealbumin, blood glucose, triglycerides, and phosphate. Randomized patient information gathered between September 2012 and August 2013 will serve as the control group for this study. To maintain confidentiality, all data will be recorded without patient identifiers. Nutritional status will be evaluated by changes in body weight, percent of caloric and protein needs being achieved, and prealbumin. Duration of therapy will serve as the primary clinical outcome. PN-related complications will be evaluated by the incidence of hypoglycemia, hyperglycemia, hypertriglyceridemia, and hypophosphatemia.

10-016

Title: Evaluation of extended anticoagulation in oncology patients and description of contributing factors of anticoagulation failure events in an academic health system.

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Purpose: Multiple guidelines have identified standards for anticoagulation therapy in cancer patients for the initial 3-6 months following acute venous thromboembolism (VTE) but not beyond this time frame. Published data assessing practice patterns in this patient population beyond the initial treatment period are unavailable and data comparing outcomes between vitamin K antagonists (VKAs) and low molecular-weight heparins (LMWHs) beyond 3-6 months are lacking. The primary objective of this study is to identify practice patterns associated with chronic anticoagulation in cancer patients and their effects on outcomes. Secondary objectives include comparing outcomes of patients treated with LMWH vs. VKA beyond 3-6 months.

Methods: This study will be submitted to the Institutional Review Board for approval. Review of electronic medical records (EMRs) will identify patients who have been managed in the oncology-based anticoagulation clinic for VTE with active malignancy (defined as patients receiving treatment within 6 months or with detectable disease). The following patient/treatment data will be collected: demographics, anthropometry, comorbid conditions, ECOG performance status, malignancy type/stage/history, and VTE type/severity/timing. The following anticoagulation data will also be collected: type of initial/extended anticoagulation used, dose, patient adherence, timing of change or discontinuation of anticoagulation therapy, provider rationale for extended treatment, presence/timing/severity of recurrent VTE, modifying factors (infection, surgery), overall outcomes (major bleeding, death). Descriptive statistics will be utilized to assess practitioner patterns for timing of therapy modification and type/dose/therapeutic goal of agent chosen. Univariate and multivariate logistic regression analysis will be utilized to identify patient and disease related factors which may contribute to extended therapy decisions or risk of recurrent VTE. A group of patients transitioned to warfarin will be matched to a group receiving extended therapy with LMWHs for certain demographic and risk related characteristics, in order to compare VTE outcomes.

10-017

Title: Gender differences in prescribing practices for Veterans with coronary artery disease

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Purpose: Cardiovascular disease is the leading cause of death in the United States for both men and women. Current treatment guidelines recommend that patients take aspirin, beta blockers, angiotensin converting enzyme (ACE) inhibitors or angiotensin receptor blockers (ARB), and statins after acute coronary syndrome. Previous studies have shown that women are less likely to receive the recommended therapy. This study will look at the treatment of male and female Veterans with coronary artery disease (CAD) to determine if there is a difference in pharmacotherapy or readmission rates after acute coronary syndrome.

Methods: This study has been submitted to the Institutional Review Board for approval. This study will be a retrospective chart review conducted at a Veterans hospital. Chart reviews will be done on male and female subjects hospitalized for CAD. Baseline characteristics such as age, body mass index, past medical history, and prescription information will be collected. All data collected will be de-identified and maintained securely and confidentially. Subjects who do not have a follow-up appointment within 18 months of hospital discharge or who do not have any of their prescriptions filled at the study facility will be excluded. This study will describe prescribing and adherence to therapy for aspirin, beta blockers, ACE inhibitors or ARBs, and statins in subjects with CAD, and will compare the prescribing practices and adherence in male versus female Veterans. The study will also compare the rate of readmission within 18 months of discharge after an admission for an acute coronary event.

10-018

Title: Evaluation of treatment regimen appropriateness for Clostridium difficile infections in adult patients at a 406-bed community hospital

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Purpose: Clostridium difficile infections (CDI) continue to increase in disease prevalence in the United States health care system and are becoming more challenging to treat. The number of deaths associated with CDI per year is estimated to be around 14,000, and costs at least one billion dollars in health care expenses to treat annually. The purpose of this study will be to investigate and determine if the medication regimens for the treatment of CDI in adult patients at the Yuma Regional Medical Center (YRMC) are used appropriately.

Methods: A retrospective analysis of adult patients admitted to YRMC from September 2, 2012 to September 2, 2013 who had an International Classification of Diseases (ICD) Diagnosis Code indicating CDI will be performed using patient records on the Epic electronic medical record system. Patient medical records will be analyzed and data collected will include: patient's age, gender, CDI as a principal or secondary ICD, length of stay, white blood cell count, renal function, signs and symptoms of a severe and complicated CDI, and mortality. The medication regimen (dose, strength, route, frequency) that was ordered during the emergency department visit, while being admitted, and upon discharge will also be noted. If the infection is one that is a recurrent, the following information will be documented: number of recurrence, time between recurrence, and length of stay. Determination of appropriateness of CDI medication regimen for each patient being assessed will be in accordance with Society for Healthcare Epidemiology of America (SHEA) and the Infectious Diseases Society of America (IDSA) clinical guidelines for CDI in adults.

10-019

Title: Medication Usage Evaluation of Epoetin Alfa in Orthopedic Patients

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Purpose: Inappropriate usage of epoetin alfa can lead to additional expense, adverse events, and unnecessary drug exposure. The purpose of this study is to determine if orthopedic patients in a non-profit, 406-bed community inpatient hospital in Yuma, Arizona are being treated appropriately with epoetin alfa.

Methods: This retrospective medication usage evaluation (MUE) will look at approximately 100 orthopedic patients over a period of six months admitted to Yuma Regional Medical Center (YRMC) with electronic documented administration of epoetin alfa during their inpatient stay with the indication of Reduction of Allogeneic Blood Transfusion in Surgery. Specific patient information to be collected during this study will include age, gender, weight, type of orthopedic procedure performed, date of procedure, hemoglobin, red blood cell count, epoetin alfa dose and date of each dose given, and amount of packed red blood cells (PRBC) transfused (if any). This study will assume that epoetin alfa was given prior to orthopedic surgery on an outpatient basis, and therapy was continued at YRMC as an inpatient postoperatively.

10-020

Title: Atypical antipsychotics in veterans for augmentation of major depressive disorder

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Purpose: The objective of this study is to conduct a comprehensive review of the effectiveness and safety profile of antipsychotics as adjunctive therapy in Veterans with major depressive disorder who failed to achieve adequate response to antidepressant therapy.

Methods: This study has been submitted to the Institutional Review Board and approval is pending. This study is a retrospective chart review using electronic medical record database to collect patient information. Subjects will be included in this study if they meet the following criteria: 18 to 89 years old, diagnosed with major depressive disorder (MDD), currently receiving antidepressants for the treatment of MDD, and may concurrently be on a stimulant, lithium, buspirone, benzodiazepines, and/or thyroid supplement. Subjects will be excluded from the study if they meet one of these criteria: diagnosed with either dementia, schizophrenia, bipolar disorder I and II, Alzheimers, or Parkinsons disease, previously treated with an antipsychotic for any reason, and previously or currently using antipsychotic injectables. All information collected will be kept on-site on password-protected computers, and all collection forms will be locked. At completion of data collection, lists of subjects including identifying information will be forwarded to the security officer for disposition and will be deleted from the electronic files. The effectiveness of antipsychotic therapy will be determined by one of the following: the rate of response based on the Patient Health Questionnaire for Depression (PHQ-9), the subject's subjective reports, or healthcare professionals assessments.

10-021

Title: Evaluating the impact of a procalcitonin algorithm on appropriate use and antibiotic exposure in sepsis and lower respiratory tract infections

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Purpose: Biomarkers such as procalcitonin are upregulated during bacterial infections and appear to reflect severity of infections. Procalcitonin levels are used for a variety of diagnostic and clinical applications. An observed benefit in antimicrobial stewardship is appropriate de-escalation or discontinuation of antibiotics. Patients with levels below the validated cutoff range often do not require continued antibacterial therapy and warrant discontinuation. Procalcitonin was implemented within our institution without the guidance of a validated algorithm. The objective of this study is to evaluate the impact of a validated algorithm on appropriate use and antibiotic exposure in sepsis and lower respiratory tract infections.

Methods: The study will be submitted to the Institutional Review Board for approval prior to initiation. The health systems electronic medical record system will be used to identify patients who were admitted between June 2013 and February 2014. Patients who are less than 18 years of age, immunocompromised, who had major trauma or surgery will be excluded from the study. Information gathered between June 2013 and October 2013 will serve as the baseline data prior to the implementation of the algorithm. Medical staff will receive algorithm education in November 2013. Information gathered from December 2013 to February 2014 will be post implementation and compared to the baseline data. The following data will be collected: patient age, gender, admitting hospital unit, diagnosis, serum procalcitonin levels, antibiotics, microbiological data, vital signs, and corresponding clinical outcomes. All data will be recorded without patient identifiers and maintained confidentially.

10-022

Title: Evaluation of the duration of prophylactic antibiotic use in traumatic skin and skin structure injuries.

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Purpose: Prophylactic antibiotics have been shown to improve and prevent infection rates in surgical patients. There has been much speculation that prophylactic antibiotic thearpy may also be beneficial in non-surgical trauma patients to prevent skin and skin structure infections, but currently there is limited data to support this practice. The knowledge of approriate duration of therapy can help decrease infection rates and potentially limit unnecessary antibiotic exposure. The objective of this study is to evaluate and determine the appropriate duration of antibiotic prophylaxis necessary to prevent skin and skin structure injury infections in non-surgical trauma patients.

Methods: In a 12 month retrospective study, patients that are admitted to the trauma service will be monitored for the duration of prophylactic cefazolin therapy received upon admission. Patients included will be between the ages of 18 and 65, admitted under trauma services for skin and skin structure injury, and will have received cefazolin upon admission for a duration. Patients will be divided into two comparator groups: those receiving < 24 hours of cefazolin and those receiving > 72 hours. Patients will be excluded if they have a noted contaminated wound on admission, open fractures, deep penetrating wounds, CNS injury, or injury requiring neurosurgery. The following data will be collected: patient age, gender, immunocompromising risk factors, trauma index and severity score, duration of cefazolin prophylaxis, number of doses received, and rates of injury site infections for up to 14 days post-admission. All data will be recorded without patient identifiers and maintained confidential. Data gathered will be evaluated to assess the appropriate duration of prophylactic cefazolin administration that is necessary to reduce the rate of trauma site infections.

10-023

Title: Effect of Integrating a Home Blood Pressure Telemonitoring Service into an Existing Pharmacist Managed Cardiovascular Risk Reduction Clinic

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Purpose: Heart Disease is the number one cause of death among American Indians/Alaska Natives (AI/AN) and stroke is the sixth leading cause of death. A major treatable risk factor in each of these conditions is hypertension. The objective of this intervention is to determine the effect on blood pressure when home blood pressure telemonitoring systems are utilized in an existing Pharmacist managed Cardiovascular Risk Reduction Clinic (CRRC).

Methods: Prior to commencement, this open-label randomized study will be submitted to the Institutional Review Board for approval. Patients who are referred to the existing Pharmacist managed CRRC will be randomized to receive either usual care or usual care with home blood pressure monitoring. The home blood pressure monitoring group will consist of new CRRC patients using a HealthPal blood pressure monitoring device that will transmit all blood pressure readings recorded at home to a chronic disease management program within the hospital, in addition to receiving hypertension management and medication adjustment per clinic protocol. Usual care will consist of new CRRC patients, who will receive hypertension management and medication adjustment per clinic protocol without mandatory home blood pressure monitoring. All patients involved in the study will provide informed consent and all data will be recorded confidentially without the use of patient identifiers. The primary efficacy outcome will be change in systolic and diastolic blood pressures from baseline. The secondary efficacy outcomes will be time to goal blood pressure and average readings per week from intervention group. Data will be analyzed using appropriate statistical tests to evaluate any statistically significant differences in the primary or secondary outcomes between the study groups.

10-024

Title: Evaluating the use of metoprolol versus carvedilol in Veterans with heart failure in the setting of chronic kidney disease

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Purpose: This study will evaluate the use of metoprolol succinate and carvedilol in Veterans with heart failure (HF) in the setting of chronic kidney disease (CKD) to assess which drug offers more renal protection and may be associated with improved outcomes and mortality rates at one year.

Methods: This study will be performed at a Veteran Affairs hospital. Retrospective chart reviews will be performed on Veterans with HF and CKD who have received a new prescription for either carvedilol or metoprolol succinate during the study period. Baseline characteristics including age, gender, stage of HF, and stage of CKD will be recorded. Subjects who do not have baseline labs and at least one follow-up visit documented within the one-year study period will not be included. The doses of carvedilol and metoprolol succinate will be recorded, and other pertinent HF medications will be noted if the subject is concomitantly taking them during the study period. Estimated glomerular filtration rate (eGFR) will be recorded at baseline and at the end of the one-year period of starting beta-blocker therapy to assess whether there is a change in renal function. At the completion of the study, statistical tests will be performed to assess the effectiveness of carvedilol and metoprolol succinate in this Veteran population. This project has been submitted to the Institutional Review Board, approval pending.

10-025

Title: Evaluating the impact of metformin on mortality in Veteran diabetic patients with prostate cancer

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Purpose: To evaluate whether the use of metformin is associated with a survival benefit in diabetic patients with prostate cancer. Prostate cancer is the most commonly diagnosed malignancy (excluding skin cancer) and the second leading cause of cancer death in men in the United States. Data from numerous retrospective studies have shown that diabetic patients taking metformin have a decreased incidence of cancer compared to those on other diabetic regimens. To date there have been no published prospective trials which validate these outcomes and data is conflicting on whether metformin provides a mortality benefit in diabetic patients with prostate cancer.

Methods: This study is currently pending Institutional Review Board approval. Using a retrospective cohort study design, data will be collected in Southern Arizona Veterans Affairs Health Care System (SAVAHCS) patients with diabetes who have been diagnosed with prostate cancer between July 1st, 2005 - June 30th, 2010. Patients considered for inclusion are those between the ages of 18-89 with ICD-9 codes for both diabetes and prostate cancer who have received all prostate cancer and diabetes care at SAVAHCS. The primary efficacy endpoint is all cause mortality. Secondary endpoints include the time to development of documented androgen resistance, severity of disease at time of diagnosis, progression-free survival and time to first documented bone metastasis. Cox proportional hazard models will be used to evaluate all endpoints.

10-026

Title: Adherence to the Infectious Diseases Society of America Guidelines for the management of febrile neutropenia in hospitalized Veterans

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Purpose: Febrile neutropenia experienced by oncology patients typically requires hospitalization, often results in substantial morbidity, and is also associated with significant mortality. Fortunately, there has been a considerable increase in available knowledge about febrile neutropenia and consensus guidelines, such as those from the Infectious Diseases Society of America (IDSA), have been developed to aid clinicians. This study is designed to evaluate whether the IDSA Guidelines for febrile neutropenia are being adhered to at one Veterans hospital and whether the level of adherence to the guidelines is affecting outcomes.

Methods: A retrospective chart review is proposed to examine the level of adherence to the IDSA Guidelines for the treatment of Veterans with a diagnosis of cancer actively receiving chemotherapy admitted for chemotherapy- induced febrile neutropenia. The most recent 50 Veterans admitted to a Veterans hospital with a cancer diagnosis age 18 to 89 prior to August 19, 2013 with chemotherapy-induced febrile neutropenia will be evaluated. The primary efficacy endpoint will be whether identified Veterans admitted were treated in adherence to the IDSA Guidelines for the management of febrile neutropenia. The secondary efficacy endpoints will assess whether or not identified Veterans that are being treating according to the IDSA Guidelines are experiencing better outcomes. Outcomes will be measured by time to clinical stabilization and length of hospitalization. This study was submitted to the Institutional Review Board and is pending approval.

10-027

Title: Impact of educational interventions on pharmacist satisfaction and confidence while transitioning to advanced clinical roles

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Purpose: A Veterans Health Administration (VHA) directive was released June, 2012 revising the qualification standards of pharmacists under general schedule (GS) 11 to be promoted to a GS 12, resulting in a pay increase and additional clinical responsibility. They were required to expand their knowledge base and increase their clinical involvement in the hospital. Numerous research articles address the effectiveness, or describe the process of implementation, but they disregard the readiness and comfort level of the pharmacist. The purpose of this project was to determine if providing pharmacist education improved the process of incorporating clinical services into current staff-level pharmacists duties.

Methods: An anonymous survey was completed by the pharmacy staff to gauge their comfort level and satisfaction regarding the addition of clinical services to their duties. The comments and criticisms were compiled and reviewed to assess the need interventions. Educational material was developed using current guidelines and included in-serviced, one-on-one education, and topic handouts. Resources were provided and available for all staff. After the education was provided, a survey was distributed to assess any changes in comfort level and satisfaction with the implementation of the new clinical services.

Results: At baseline, none of the pharmacists reported either being highly satisfied or highly dissatisfied with the current process for participating in interdisciplinary team rounding, 3 (27%) were somewhat dissatisfied, 6 (55%) were satisfied, and 2 (18%) chose not to respond. Regarding their comfort level in completing the new clinical activities 5 (46%) stated they were comfortable completing rounds from the beginning of implementation, 4 (36%) stated they were uncomfortable, and 2 (18%) stated they were neutral regarding the topic. The most important interventions requested prior to implementation of the quality improvement project was to clearly define clinical expectations, create checklists and reports, identify resources to increase clinical confidence, and create and implement clinical education. After the project implementation, none of the pharmacists reported being highly dissatisfied with the newly implemented process for participating in interdisciplinary team rounding 2 (25%) were somewhat dissatisfied, 5 (62.5%) were somewhat satisfied, and 1 (12.5%) highly satisfied. When asked where their comfort level was compared to their baseline response 3(37%) stated their comfort level was the same as prior to the quality improvement project and 5(63%) stated their comfort level was improved.

Conclusion: The quality improvement project helped transition staff pharmacists into advanced clinical roles with some improved satisfaction and confidence. Additionally, increased pharmacist knowledge base, utilization of designated templates, and increased clinical confidence resulted in a standardization of care for the inpatient veterans.

10-028

Title: Implementation and impact of a pharmacist-managed diabetes clinic on the health of Native Americans in rural Arizona

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Purpose: Multiple studies have shown the positive impact a pharmacist can have when managing diabetes clinics. The primary objective is to establish a pharmacist-managed diabetes clinic in Tuba City, Arizona to improve the health and well-being of the Native American population through targeted education, improved disease control compared to standard medical care, and alleviation of physician workload. A secondary objective is to lay the groundwork for the addition of pharmacist-managed hypertension and hyperlipidemia.

Methods: Patients will be referred by their primary care physicians to the pharmacist-managed diabetes clinic. Inclusion criteria are patients 18 years old with type II diabetes and either a glycosylated hemoglobin (HbA1c) >9, or newly started on insulin with any HbA1c. Through a collaborative practice with physicians, patients will be seen by pharmacists and managed according to an established protocol. The primary outcome will be change from baseline HbA1c. The study will also look at the percent of patients completing annual eye, foot, and dental exams, and currentness of immunizations. This study is exempt from IRB review, but will be reviewed by the Pharmacy and Therapeutics and Medical Executive Committees prior to implementation.

10-029

Title: Evaluation of glycemic control and outcomes following transition from intravenous insulin infusion to subcutaneous therapy

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Purpose: The few studies that have examined the course of blood glucose after interruption of intravenous insulin have documented inadequate control in the absence of a standardized transition protocol. The institution developed a standardized protocol for the transition from continuous insulin infusions to scheduled subcutaneous insulin. This investigation sought to explore if the transitioning protocol is controlling the blood glucose level in a safe and effective manner.

Methods: A retrospective observational study of 200 patients (18-year-old) admitted to the institution between January (2009) to August (2013) and were on the order set of the transition of intravenous (IV) insulin to subcutaneous (SC) therapy, is going to be conducted. For each patient in the study sample, we are going to evaluate the effectiveness and safety of the protocol by evaluating the mean blood glucose (BG) level 24-hour before and three days after the transition to SC insulin, assessing the number of hypoglycemic events and how they have been treated, intensive care unit (ICU) readmission within 30 days and in-hospital death. A data collection form will be used. Then, it will be entered into Microsoft Excel for analysis. Both descriptive and inferential testing will be utilized. Significance for all testing will be defined as alpha= 0.05.

10-030 this poster will be replaced w/Brian Dekarske

Title: Increased Validity and Provider Satisfaction of Customized Alert Acknowledgement Reasons for Overridden Medication-Related Alerts in a Computerized Provider Order Entry System

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Purpose: This study will examine the outcome of implementing a customized list of alert acknowledgement reasons for several medication-related CDS alerts within the University of Michigans (UM) current inpatient CPOE system UM-CareLink (Allscripts, Chicago, IL) The study will look to compare the appropriateness of provider override reasons for drug-drug interaction, dose range, and patient allergy medication alerts when using a customized override reason list versus a default override reason list, and assess the provider satisfaction of using a customized override reason list instead of a default override list.

Methods: This is a prospective, randomized, crossover study organized into two provider cohorts. Prior to initiation, providers will be asked to complete a pre-study survey evaluating their thoughts on providing a reason for overriding an alert. Twenty physicians and ten mid-level providers (10 physicians, 5 mid-level providers in each cohort) will be randomized into Cohort A: required, customized override reason list, or Cohort B: required, non-customized override reason list. A total of at least 40 medication alerts per provider and at least 400 alerts per cohort will be collected during each phase. Once target number of orders is achieved for Phase 1, a one-month washout period (i.e. returning to the pre-study configuration) will take place. Providers in one cohort will then be crossed over to the other cohort and Phase 2 will begin. Data collection in Phase 2 will continue for required period of time to target number of orders with overridden medication alerts. Providers will then be given the same survey at the completion of the study. The primary outcome is the appropriateness of alert override selection in the required groups. Secondary outcomes include descriptive alert and medication order statistics, and an analysis.

10-031

Title: Evaluation of outcomes based on guideline-endorsed antibiotic treatment in veterans presenting to the emergency department with community-acquired pneumonia

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Purpose: This study is designed to evaluate morbidity and mortality outcomes in elderly veterans diagnosed with community-acquired pneumonia(CAP) in the emergency department(ED) who receive empiric Infectious Diseases Society of America(IDSA)/American Thoracic Society(ATS) guideline-concordant antibiotic therapy as an outpatient compared to those who do not receive antibiotics in accordance with guideline recommendations. The guidelines recommend specific antibiotics for individuals based on comorbidities and drug-resistant Streptococcus pneumoniae(DRSP) risk factors. The question remains as to how many outpatients are receiving appropriate antibiotic therapy based on guideline recommendations.

Methods: This study has been submitted to the Institutional Review Board and approval is currently pending. A historical prospective cohort study is proposed to evaluate morbidity and mortality outcomes in adult veterans who do not receive empiric IDSA/ATS guideline-concordant antibiotic therapy when treated as an outpatient for CAP. Charts of veteran outpatients between the ages of 65 and 89 with a diagnosis of CAP presenting to the ED will be reviewed for documentation of a chest x-ray with suggestion of pneumonia during the study time-frame. Subjects will be separated into two groups: those receiving empiric IDSA/ATS guideline-concordant therapy and those who are not. Primary and secondary outcomes will be assessed by performing chart review 90 days after initial presentation to the ED for CAP. The primary outcome is treatment failure in subjects with comorbidities/DRSP risk factors within 30 days and 90 days of the initial ED visit. Treatment failure is defined as subsequent presentation to the ED or unscheduled provider visits for respiratory symptoms, retreatment or modification of antibiotics, hospital admission or all-cause mortality in the specified time-frame. Secondary outcomes will assess each component of the primary outcome in addition to the incidence of Clostridium difficile.

10-032

Title: Association of pulmonary embolism severity index with short term outcomes within a large community hospital

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Purpose: The Pulmonary Embolism Severity Index (PESI) has been validated extensively as a reproducible tool for assessing mortality risk and for stratification of patients. This score can be used to classify patients into low risk (I-II) and high risk (III-V) for adverse outcomes. When deciding on disposition and avenues of therapy, physicians must consider the risk of clinical deterioration and adverse outcomes. The objective of this study is to assess the correlation of the PESI score and adverse outcomes for patients with acute pulmonary embolism within a hospital setting.

Methods: A single center, retrospective chart review of 150 patients admitted to the emergency department at WellStar Kennestone Hospital with a diagnosis of acute pulmonary embolism from January 2012 to August 2013. Charts will be reviewed for adverse outcomes during hospital stay. Adverse outcomes are defined as cardiac arrest, dysrhythmia, respiratory support, vasopressors, thrombolysis, major bleeding, recurrent PE, and death. Information to calculate PESI score including age, gender, comorbidities (malignancy, heart failure, and/or chronic lung disease), heart rate , systolic blood pressure, respiratory rate, temperature, altered mental status (defined as disorientation, lethargy, stupor, confusion, somnolence, or coma), arterial oxygen saturation will be collected. Brain natriuretic peptide as well as troponin levels will also be collected. Scores will be calculated and patients will be stratified into low and high risk according to scores. Occurrence of predefined adverse outcomes will be recorded.

10-033

Title: Impact of clinical pharmacist involvement and cholesterol class attendance on statin adherence in Medicare beneficiaries

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Purpose: Despite evidence of statins effectiveness at reducing LDL cholesterol and coronary heart disease risk, adherence to lipid-lowering medications in the United States is suboptimal. Approximately one-half of patients prescribed lipid-lowering medications are still taking them six months later. Statin adherence rates contribute to Medicare Star Ratings for Medicare Advantage and Part D plans, ratings which impact reimbursement and eligibility for special enrollment periods. The purpose of this study is to determine whether Medicare beneficiaries prescribed a statin for hyperlipidemia are more adherent if followed by a clinical pharmacist and/or attend a cholesterol class than beneficiaries without either intervention.

Methods: This retrospective cohort study will be submitted to the Institutional Review Board for approval. The electronic medical record system will be used to identify Medicare beneficiaries who filled a statin for hyperlipidemia at least twice between June 1, 2012 and May 31, 2013. Patients who received an intervention by a clinical pharmacist and/or attended a cholesterol class will be identified using patient rosters for these services. Patients will be excluded from the analysis if they received concomitant cholesterol-lowering therapy or were enrolled in hospice, palliative care, or the nurse practitioner outreach program. The adherence rate for each patient will be calculated using the proportion of days covered (PDC) equation, and patients will be considered adherent if their PDC is at least 80%. The overall adherence rate for each intervention group will be calculated, and the rates will be compared using a Chi Squared test to determine if there are significant differences in adherence rates between interventions. The following patient characteristics will be collected: age, sex, race, prescribed statin, days in the study period, and total number of prescribed medications. Logistic regression analysis will be used to analyze the relationship between patient characteristics and adherence.

10-034

Title: Impact of an opioid-sparing pain management regimen on length of stay and total opioid use in orthopedic patients at a tertiary care hospital

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Purpose: Current literature supports an association between increased opioid use in post-operative patients and length of stay. Additionally, evidence has shown decreased patient satisfaction, increased patient opioid-related adverse events, and higher burdens to patients and hospitals related to length of stay-associated costs. The objective of this study is to evaluate the impact of opioid-sparing and scheduled pain management regimens on total opioid use and total pain scores for post-operative orthopedic patients.

Methods: This retrospective study with a comparison to a hospital-specific baseline will involve implementation of a medical staff approved orthopedic post-operative order set and medical staff education on pain management with a focus on narcotic reduction. Education of physicians, nurses, and pharmacists will be led by a pharmacist prior to implementation of the order set. Chart review of seventy-five orthopedic post-operative patients at a tertiary care hospital aged 18 years or older with no documented opioid use on admission who underwent total shoulder arthroplasty or total knee arthroplasty will be completed. Primary endpoints for this study are 1) length of stay, and 2) total opioid use. Secondary endpoints include 1) difference in aggregate pain scores in the 48-hour post-operative period and 2) patient satisfaction score differences. An analysis of hospital costs associated with length of stay will assessed.

10-035

Title: EVALUATING THE UTILITY OF A MEDICATION DELIVERY ROBOT AT CARL VINSON VA MEDICAL CENTER

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Purpose: The purpose of this project is to fully evaluate the use of the recently implemented RoboCourier autonomous mobile robot medication delivery system, its reliability and the effects of the RoboCourier on the medication delivery and administration processes as well as overall pharmacy efficiency. Additionally the fiscal impact of the medication delivery system and nursing/pharmacy staff opinion of the medication delivery robot will be assessed.

Methods: Data will be collected in the following five areas as described below: Use: Records of activation will be collected from the RoboCourier software to evaluate the frequency of Robot activation in the six months following robot implementation. Reliability: A 3 month log will be kept in the pharmacy to record if the robot is not available for delivery for any reason. The date and time, reason, and time of issue resolution will be recorded. Effects: To evaluate the effects of the robot on medication administration times, medication administration variance times will be compared from pre-implementation (5 month period prior) and post-implementation (5 month period after). Pre-existing data regarding total pharmacy technician workload will be compared from pre-implementation and post-implementation periods to determine if the robotic delivery system frees up more technicians to increase pharmacy productivity. Cart-fill errors will be compared pre-implementation and post-implementation to determine if fewer distractions lead to fewer medication errors. Fiscal Impact: The log of pharmacy technician overtime will be reviewed to assess if fewer between-round deliveries results in more efficient technician workflow Staff Perception: Staff perception will be assessed with a 14 question survey administered to pharmacy and nursing staff.

10-036

Title: Evaluation of the Warkentin 4T score and its impact on the cost of diagnosing heparin-induced thrombocytopenia

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Purpose: Heparin-induced thrombocytopenia (HIT) is a serious complication in patients receiving heparin-based therapy. Current guidelines from the American College of Chest Physicians (ACCP) advise using the Warkentin 4T probability score to help identify those at risk for developing HIT and to reduce unnecessary testing in low risk patients. This retrospective study will evaluate the practice of ordering HIT assays in relation to ACCP guidelines and calculate the associated costs.

Methods: In this study, one hundred subjects will be identified using a laboratory generated list of patients with positive HIT IgG antibody enzyme-linked immunosorbent assays (ELISAs). Subjects younger than 18 years and those without sufficient information needed to calculate a 4T score will be excluded. Subjects included in the study will be evaluated for the following data: age, gender, patient care area, optical density value, calculated 4T score and administration of argatroban. Investigators will determine the incidence of HIT ELISAs ordered on patients with a low 4T score and calculate the associated costs for laboratory tests and argatroban use in these patients. This study has been submitted for Institutional Review Board approval.

10-037

Title: Implementation of an Electronic Template to Improve Psychotropic Medication Review and Gradual Dose Reduction Documentation

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Purpose: Centers for Medicare & Medicaid Services (CMS) published guidance that antipsychotics should be prescribed at the lowest possible dose, used for the shortest period of time, and continually undergo gradual dose reduction (GDR) and review. The purpose of this project is to improve the documentation process for GDRs and psychotropic review based on CMS guidelines. By providing physicians with a template to monitor psychotropic drug usage among patients, improvement in documentation and gradual dose reduction attempts is expected.

Methods: The execution process involved education of CLC directors, providers, and pharmacists to the best practices for documentation regarding psychotropic drugs and the importance of GDRs. Templates were implemented to facilitate documentation for providers. Clinical pharmacy specialists were asked to assess for timely completion of GDRs in monthly chart reviews. Additionally data was collected to determine if documentation improved and if gradual dose reductions were being attempted.

10-038

Title: Evaluating safety of patient controlled analgesia use

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Purpose: The purpose of this study is to retrospectively evaluate the safety of patient controlled analgesia (PCA) use in all patients (i.e. post-operative, oncology, sickle cell patients, etc.) who received PCA therapy at Memorial Health University Medical Center (MUMC). The Joint Commission Sentinel Event issued an alert in August 2012 regarding the safe use of opioids in inpatients, as these agents rank among the drugs that are most frequently associated with adverse effects. Adhering to the PCA order set to ensure that safe dosing and frequent monitoring parameters are being addressed has not been evaluated in these patients at MUMC.

Methods: This study is to be conducted as a retrospective chart review through the health system's electronic medical record system to include patients receiving PCA therapy with fentanyl, hydromorphone, or morphine from November 2012 to November 2013. This study has been submitted to the Institutional Review Board and is currently awaiting approval status. Patients younger than 18 years of age, pregnant/lactating women, and patients who are intubated at the initiation of a PCA order will be excluded from the study. All doses will be converted to morphine equivalents. The following primary objectives will be evaluated: total PCA doses including demand, continuous, loading, and bolus doses, indication for use, and prescriber service. In addition, the following secondary objectives will be evaluated: monitoring parameters including respiratory rate, the need for rescue therapy with naloxone, hospital length of stay, sedation scores, pain scores, as well as method of ordering (PCA physician order set versus hand written order). Statistical analysis data will be reported descriptively.

10-039

Title: Retrospective analysis on the rate of vancomycin induced nephrotoxicity with high serum vancomycin levels

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Purpose: The Infectious Diseases Society of America and the American Society of Health System Pharmacists guidelines recommend obtaining trough levels of 15 to 25 mcg/mL depending on the indication to maximize efficacy. However, studies have shown that high trough levels increase vancomycin induced nephrotoxicity. The objective of this study is to evaluate the rate of vancomycin induced nephrotoxicity and compare the association with low (less than 15 mcg/mL) and high (greater than 15 mcg/mL) trough levels.

Methods: This study has been submitted to the Institutional Review Board for approval. A retrospective chart review of one years data will be completed using the electronic health record system to search for adult patients receiving vancomycin for at least 48 hours with at least one serum vancomycin level drawn. Patients with preexisting end stage renal disease and patients with an increase in serum creatinine of 0.5 mg/dL or 50% from baseline before receiving vancomycin will be excluded. Data collected will include age, race, sex, weight, serum creatinine, serum vancomycin levels and patient location (general inpatient vs. ICU). Clinical data collected will include vancomycin dose and interval, total doses of vancomycin, indication and length of treatment, concurrent antibiotic therapy, culture and susceptibility information, and pharmacokinetic consults. The incidence of vancomycin induced nephrotoxicity, defined as an increase in serum creatinine of 0.5 mg/dL or a 50% increase from baseline for two consecutive readings, will be determined. The rate of nephrotoxicity in the low and high trough groups will be compared. Multivariate analysis will be conducted to determine risk factors for vancomycin induced nephrotoxicity including time to nephrotoxicity, cumulative vancomycin dose received, patient age, gender, weight, and baseline renal function.

10-040

Title: Evaluation of the Effect of a New Age-Specific Alternative Message on the Number of Prescriptions Ordered for Non-Benzodiazepine Hypnotics in Older Adults

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Purpose: Non-benzodiazepine hypnotics have recently been targeted as high risk medications in the elderly population. Studies show that non-benzodiazepine hypnotics have similar adverse effects to those of benzodiazepines in older adults (e.g., delirium, cognitive impairment, falls, fractures) without demonstrating any significant improvement in sleep latency and duration. The objective of this study is to assess the difference in the rate of older adults prescribed non-benzodiazepine hypnotics, including zolpidem, zaleplon, and eszopiclone, compared to a preferred alternative medication, trazodone, before and after the implementation of an age-sensitive alternative message.

Methods: This time-series study will assess the rate of older adults (age 64 years of age) who received a new prescription for non-benzodiazepine hypnotics, trazodone, mirtazapine, and melatonin before and after the implementation of this new alternative message from January 2012 through July 2014. The rate will be calculated by the number of prescriptions ordered for older adults divided by the total number of KPGA members > 64 years of age. The rate will be calculated on a monthly basis. Pertinent data collected for study subjects will include demographics (age and sex), name of medication ordered, and date the order was written. All data associated with this study will be password protected and stored in a secured, restricted folder within the Kaiser Permanente Georgia network. The primary and secondary outcomes will be presented graphically. Multiple trend lines will be created to help assess if there is a change in prescribing.

10-041

Title: Implementation of a pneumococcal vaccine order set in a computerized electronic health record system

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Purpose: The Centers for Disease Control and Preventions Advisory Committee on Immunization Practices recently updated their guidelines for pneumococcal vaccine administration to include recommendations for the two pneumococcal vaccines available for adults. The objective of this project is to develop an order set to assist providers in correctly ordering and administering the pneumococcal vaccines according to current guidelines.

Methods: The institutional review board has granted exemption for this project as it does not meet the definition of human subjects research. An order set will be developed and integrated into the computerized electronic health record system using the assistance of information technology personnel. Once implemented, nurses, physicians and other providers who will likely order the pneumococcal vaccine will be provided training to raise awareness of the order template. They will also be educated on proper storage, handling, and administration of the two different vaccines.

10-042

Title: Comparing CHADS2 scores generated from administration data vs. manual CHADS2 and CHA2DS2-VASc chart reviews in patients with atrial fibrillation

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Purpose: .Patients with atrial fibrillation are at a very high risk for developing a thromboembolic or ischemic stroke. CHADS2 and CHA2DS2-VASc are tools developed to help healthcare practitioners determine a patients risk for stroke. The purpose of this study is to determine the validity of a CHADS2 score generated from administrative data vs. manual chart review. This study will also help determine if the manual CHA2DS2-VASc scores stratify stroke risk differently from CHADS2 scores.

Methods: . CHADS2 scoring was collected from a Kaiser Permanente administrative tool. A manual review of electronic medical records will be used to gather patient diagnoses and risk factors to calculate CHADS2 and CHA2DS2-VASc scores. The variables to be measured are: Congestive heart failure, hypertension, age, diabetes mellitus, stroke, vascular disease, and gender Patients of Kaisers outpatient anticoagulation service with a diagnosis of atrial fibrillation and low to intermediate CHADS2 scores receiving warfarin therapy between April 2012 to July 2012 were included in this study. Selected patients had an administrative CHADS2 score ranging from zero (0) to one (1). In addition, a brief survey will be sent to the Kaiser Permanente cardiologists to assess their use of risk scoring tools.

10-043

Title: Evaluation of the Current Alcohol Withdrawal Protocol at Northeast Georgia Medical Center

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Purpose: Patients who have become dependent on alcohol are at risk for developing alcohol withdrawal syndrome. Pharmacologic treatment of symptoms has been shown to reduce the complications associated with alcohol withdrawal. Recent literature supports the use of benzodiazepines, such as lorazepam or diazepam, as first line treatment for withdrawal-related agitation, delirium, and seizure prevention. Current prescribing practices for patients admitted to Northeast Georgia Medical Center (NGMC) are based on an order set with a fixed-schedule tapering dose of lorazepam. This study will evaluate the use of the current protocol and its ability to decrease withdrawal symptoms without over-sedating patients.

Methods: This IRB approved study will include retrospective and concurrent chart reviews of patients prescribed the alcohol withdrawal order set between April 2013 and February 2014. Patients younger than 18 years, pregnant, receiving prescribed alcohol or admitted to NGMCs inpatient psychiatric facility (Laurelwood) will be excluded from the study. Patients included in the study will be evaluated for the following: age; gender; admitting diagnosis; length of stay; route, frequency and cumulative dose of lorazepam given and the use of adjunctive medications, such as haloperidol or clonidine, to manage symptoms. Patients will also be evaluated for severe complications such as seizures, delirium tremens, hallucinations, need for physical restraints, over-sedation, transfer to the intensive care unit from the medical floor or death due to any cause. The data collected will be used to assess the current alcohol withdrawal protocol and help optimize treatment strategies for this patient population.

10-044

Title: Effect of liposomal bupivacaine on postoperative opioid use

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Purpose: The Joint Commission recommends using a multi-modal approach to pain management that combines non-narcotics with opioid analgesics to reduce the amount of opioids needed to manage pain. Bupivacaine liposome (Exparel) is an amide-type local anesthetic that provides for continuous analgesia for up to 72 hours. The purpose of this study is to evaluate the effectiveness of liposomal bupivacaine in reducing opioid use within the first 24 hours after the anesthesia end time.

Methods: This study will be conducted as a retrospective chart review. Patients will be selected using TrendStar Clinical Decision Support System and Horizon Meds Manager. Opioid use will be compared between two groups: 1) a control group of surgical patients for the one year period prior to the addition of liposomal bupivacaine to formulary from December 2011 to November 2012 who did not receive liposome bupivacaine and 2) a treatment group comprised of surgical patients for the one year period after the addition of liposomal bupivacaine to formulary (December 2012 to November 2013) who received bupivacaine liposome. The primary endpoint is opioid usage between the two groups within 24 hours after surgery, quantified using morphine equivalent units. Secondary endpoints are pain intensity scores in the first 24 hours after surgery, hospital postoperative length of stay (hours/days), incidence of adverse drug events such as respiratory depression attributed to opioid analgesics, frequency of adverse drug events between the two groups, and reported adverse drug events associated with liposomal bupivacaine.

10-045

Title: Unit and Source Specific Antibiograms at a Community Hospital

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Purpose: Healthcare institutions routinely utilize hospital-wide antibiograms as a guide for empiric antibiotic therapy. Because of the possible disparity between units and sources, more institutions are implementing unit and source specific antibiograms in addition to standard hospital wide antibiograms. The goal of the research project is to identify the prevalence and susceptibility patterns of isolates across various hospital units and sources in comparison to the hospital as a whole and to evaluate the impact on antibiotic use.

Methods: Culture data from February to July 2013 will be obtained from Theradoc and utilized for antibiogram development. The data will be reviewed and documented in an Excel sheet where it will subsequently be analyzed and compared to the hospital-wide antibiogram. The data will be categorized by source (blood, urine, respiratory, and other) for each hospital unit.

10-046

Title: Evaluation of the Effect of Age Specific Alternative Messaging discouraging temazepam prescribing in Older Adults

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Purpose: As a proactive initiative, KPGA is implementing an age-specific alternative message for all new orders of temazepam in patients 64 years of age. The goal of the alternative message is to decrease the number of new prescription orders for temazepam. As temazepam is primarily prescribed for insomnia, the alternative message will present trazodone, a serotonin reuptake inhibitor; mirtazapine, an alpha-2 antagonist; and melatonin, an OTC natural supplement, as safer alternatives. The rate of new prescriptions for alprazolam, clonazepam, and lorazepam, will also be examined before and after alternative message implementation to observe any effects on prescribing of these benzodiazepines.

Methods: A time series analysis will be conducted to measure changes in benzodiazepines and trazodone prescription patterns as a result of a new alternative message. Prescription patterns will be evaluated between January 2010 and June 2014. Patients will be included in the analysis if they are age 64 years or older at the time either temazepam, alprazolam, clonazepam, lorazepam, mirtazapine, or trazodone were prescribed. Two outcomes will be studied. The first outcome is the rate of prescription orders per patient 64 years of age. A rate will be calculated for temazepam, alprazolam, clonazepam, lorazepam, melatonin, mirtazapine, and trazodone. The rate will be presented graphically by month in a chart. The second outcome focuses on the prescribers response to the alternative message. Prescribers could have accepted the alternative, continued with the original order, or cancelled out of the order. Clarity, a database of our electronic medical record, will be used to identify the number of prescriptions written for temazepam, alprazolam, clonazepam, lorazepam, mirtazapine, melatonin and trazodone. Health Connect, KPGAs electronic medical record, will be used for chart review.

10-047

Title: Impact of malnutrition in patients with targeted disease states on hospital length of stay and readmission rate

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Purpose: Suboptimal nutritional status has been shown to negatively impact patient outcomes, increase hospital length of stay, and potentially increase hospital readmission rate. Acute myocardial infarction (AMI), heart failure (HF), pneumonia (PNA), and stroke are among the most prevalent conditions associated with hospitalization and readmissions. The goal of this study is to utilize institution-specific criteria, developed by an expert, multidisciplinary, nutrition support team, to retrospectively identify malnourished patients with a diagnosis of AMI, HF, PNA, or stroke and evaluate inpatient nutritional management, patient outcomes, and outcomes-associated costs to the hospital.

Methods: This is a retrospective chart review of randomly selected patients with diagnoses of AMI, HF, PNA, or stroke who meet predefined criteria for malnutrition status on admission to a community teaching hospital. Patients will be stratified as either having non-severe malnutrition or severe malnutrition. Primary endpoints include nutritional status at discharge, average length of stay (LOS), and 30-day readmission rate. Secondary endpoints include estimated costs to the hospital associated with average LOS and 30-day readmission rate.

10-048

Title: An evaluation of the inclusion of healthcare students in the medication reconciliation process at an inpatient psychiatric care service

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Purpose: Medication errors upon admission pose a distinct risk to patients in that they may prolong a patients length of stay while also increasing morbidity and mortality. This is especially true in the psychiatric patient population where an accurate medication history is necessary in assessing the appropriateness of previous therapies and planning a patients course of care. The purpose of this study is to evaluate a novel program at a tertiary care teaching hospital in which students of healthcare professions assist the current staff in the obtaining of an accurate medication reconciliation upon admission for patients in an inpatient psychiatric care.

Methods: This study will be performance improvement project evaluating the impact of the addition of healthcare professions students on the completeness and accuracy of information regarding patients medication therapy gathered upon medication reconciliation at admission. As this pilot program has been limited to the adult inpatient psychiatric care unit, this evaluation will limit its focus solely to this patient population. Using the hospitals electronic medical records system, the accuracy of medication reconciliations will be assessed by the identification of errors such as subtherapeutic or supertherapeutic dosages, inadequate length of medication trials, inappropriate drug selection based on admission diagnosis, inappropriate combinations of medications , patient non-compliance with medication therapy, medications incorrectly included as current home medications, and current home medications omitted during the medication reconciliation process. A before and after analysis will compare the impact of this newly instituted pilot program to the previous admission medication reconciliation process used. All patient data will be de-identified and securely stored in order to protect patient confidentiality. Statistical analysis will be performed in order to assess any significant change in accuracy since the implementation of the new medication reconciliation process. This study has been submitted to the Institutional Review Board for approval.

10-049

Title: Association of proton pump inhibitors and occurrence of Clostridium difficile infection

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Purpose: By reducing gastric acid secretion and altering gastrointestinal flora, the use of proton pump inhibitors (PPIs) is considered a possible risk factor for a variety of conditions. The primary objective of this study is to measure the proportion of PPI use in patients with Clostridium difficile infection (CDI). The secondary outcomes will include evaluating other CDI risk factors. The goal of this study is to prevent future infections and increase patient safety.

Methods: This study has been submitted to the Institutional Review Board and is pending approval. This will be a retrospective chart review of patients with CDI. Patients will be evaluated for PPI use and other risk factors. A report will be generated to include all patients with a positive CDI toxin assay over a two year period. Adult inpatients greater than 18 years of age with a documented positive CDI assay, clinical evidence suggestive of CDI, or use of oral vancomycin or fidaxomicin will be included in the study. Patients that do not meet inclusion criteria will be excluded. Data will be collected on use of high risk medications, comorbidities, length of stay, PPI agent used and dose, and first CDI occurrence versus recurrent infection. Measures will be taken to ensure patient confidentiality at all times.

10-050

Title: Development of a medication therapy management service for new and polypharmacy patients at a primary care training clinic

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Purpose: Medication Therapy Management (MTM) programs optimize drug therapy to decrease costs and improve patient outcomes. Core elements of traditional Medicare MTM visits include providing patients with a complete medication review, personal medication record, and medication action plan. The objective of this study is to adapt MTM core elements into a formal pharmacist visit at an integrated health system. This will allow pharmacists to perform medication reviews with new or polypharmacy patients prior to primary care provider visits. The service may benefit patients and providers by saving time during visits, addressing potential medication issues, and increasing interdisciplinary care and patient education.

Methods: The MTM service will be piloted in a primary care training clinic staffed by medical residents, nurse practitioner students, and attending faculty. The service will be managed by pharmacy residents training in the clinic. Potential patients will be identified through formal pharmacist consults from providers and registries of patients taking twelve or more medications. Patients will be provided with the opportunity to participate and then scheduled for an appointment to speak with a pharmacist in person or by telephone. During the visit, the pharmacist will perform a complete medication review with the patient, which will include monitoring for safety and efficacy, assessment of medication adherence, identification of potential therapy issues, monitoring and ordering of laboratory information, and offering recommendations to providers. Details of the visit and recommendations will be documented in the electronic health record. A personal medication record will be provided to each patient, and any formulary issues will be addressed prior to a patient's primary care provider visit. Data collected after implementation of the service will include interventions identified, recommendations implemented, and provider satisfaction with the service.

10-051

Title: Pharmacist impact on pain management in a patient-centered medical home

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Purpose: Disease state management in the ambulatory care setting is a long-standing yet still progressing area for pharmacist involvement and improvement. With growing focus on the patient-centered medical home (PCMH), the question remains as to the place of the pharmacist in this developing model. The objective of this study is to determine the value of a chronic pain refill protocol managed by pharmacists in the PCMH setting.

Methods: This study will be submitted to the Institutional Review Board for approval. Patients at the selected PCMH pilot site will be referred to and managed by clinic pharmacists. Data will be collected over a six month period. Pharmacist protocol will include obtaining a signed patient pain agreement, monthly follow up for pain medication refills, patient pain assessment (using the visual analogue pain scale), and alterations to medication therapy as appropriate. Data collected will include number of early refills, number of providers from whom pain medications were obtained (using the Idaho prescription drug monitoring database), and number of patient emergency room visits made related to pain. Data will be gathered three months prior to and following pharmacist involvement to determine pharmacist impact on pain management. A provider satisfaction survey will be conducted to determine the perceived value of and desire to continue a pharmacist-led chronic pain refill protocol in a PCMH setting.

10-052

Title: Assessment of initial vancomycin monitoring practices in neonates

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Purpose: To compare vancomycin troughs drawn prior to 3rd versus 4th dose with the initiation of vancomycin in neonates. These results will be evaluated to determine which method yields the most troughs within therapeutic range of 15-20 mg/L. Since vancomycin troughs help guide therapy it would be very useful to assess our facilitys current practice and detect which method of monitoring serum levels yields the highest number of therapeutic levels.

Methods: This study has been submitted and approved by the Institutional Review Board. This will be a retrospective chart review analyzing data from 07/01/2012 to 07/01/2013. Inclusion criteria includes: initial use of intravenous vancomycin in NICU patients with a corresponding vancomycin trough. Exclusion criteria include: serum creatinine greater than 1, concurrent indomethacin and/or furosemide use, any renal abnormality, change in dosage before the first trough, and any initial trough drawn before the 2nd or after the 4th dose. The following data will be collected: serum creatinine, post natal age, sex, current dose and frequency, vancomycin troughs, reason for therapy, and culture results. All data will be de-identified and confidentially maintained.

10-053

Title: Pharmacist-led transitional care management services: strategy for reducing hospital readmissions

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Purpose: Rates of hospital readmissions in the United States approach 20% on average and are higher in certain populations. Transitional Care Management codes approved in January 2013 are designed to improve the quality of care provided to patients within the first 30 days after discharge from an acute care setting to home or assisted living. This study aims to evaluate the efficacy and financial sustainability of a pharmacist-led transitional care management service under the supervision of physicians in a non-academic internal medicine clinic.

Methods: As a performance improvement project designed to implement standard practice, approval through the Institutional Review Board was not required. Eligible patients for this study will be identified via a report generated from a hospital-based computer program. Patients who qualify will receive services sufficient to satisfy Transitional Care Management codes 99495 or 99496. This will include, but is not limited to, a phone call from a clinical staff member within two business days of discharge, medication reconciliation, a face-to-face visit with the physician within 7-14 calendar days of discharge, and the coordination of further health care services as deemed necessary. Hospital readmissions will be the primary outcome measured, and will be compared to average readmission rates for the same provider group during the previous year. A financial analysis will also be completed to assess the profitability as well as the sustainability of the program should it be staffed by a full-time pharmacist. An assessment of patient satisfaction with the service will also be reported. This information will be gathered during the discharge follow up visit and will be classified simply as a positive or negative perception of the service provided.

10-055

Title: Pharmacoeconomic analysis of anticoagulation with low molecular weight heparin plus warfarin versus rivaroxaban after deep vein thrombosis or pulmonary embolism in patients with cancer

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Purpose: Low molecular weight heparin (LMWH) followed by warfarin has been used for anticoagulation in patients with a deep vein thrombosis (DVT) or pulmonary embolism (PE). Among such patients, those with cancer pose unique challenges, often requiring closer monitoring, and thus increasing cost. Rivaroxaban is a newer oral anticoagulant that does not require such monitoring. The object of this study is to compare the cost to the patient and the healthcare system between using rivaroxaban or LMWH plus warfarin for anticoagulation treatment after a DVT or PE in cancer patients.

Methods: This study was deemed a performance improvement project and therefore IRB exempt. The electronic medical record system will be used to determine cancer patients started on anticoagulation treatment for a DVT or PE during the past year. The following data will be collected: patient age, gender, weight, creatinine clearance, cancer diagnosis, selection of anticoagulation medication, and incidence of major bleeding. Cost to the patient and the healthcare system will be gathered from the following: anticoagulation medications, blood products, laboratory tests for monitoring anticoagulation therapy, doctor/clinic visits related to anticoagulation, and hospitalizations due to over/under anticoagulation complications such as a new PE, DVT, major bleeding, or other adverse drug reactions. Expense data will be averaged as a monthly cost to patients and the healthcare system for a standard comparison between treatment groups. Safety outcomes, including any new onset DVTs or PEs and major bleeding, will be analyzed for comparison between treatment groups. The analysis to determine the anticoagulation treatment with the pharmacoeconomic advantage will be based on a combination of actual patient and healthcare system costs within the study system and pharmacoeconomic modeling.

10-056

Title: Evaluation and revision of a pharmacy based dosing protocol for vancomycin.

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Purpose: In 2009, the American Society of Health System Pharmacists published a consensus statement on therapeutic monitoring of vancomycin. However, a recent study found that application of these guidelines varies from institution to institution. The objective of this study is to examine current pharmacist dosing of vancomycin under an existing protocol to identify inconsistencies, strengths, and weaknesses. These study results will then be used, in conjunction with guidelines and published literature, for an update and revision of the protocol.

Methods: This study will be submitted to an Institutional Review Board for approval prior to commencing. An electronic medical record review will be conducted on all patients greater than or equal to 18 years old that received vancomycin orders to be dosed by pharmacists for a three month period. Patient data that will be collected include: age, gender, height, weight, serum creatinine, blood urea nitrogen, albumin, presence and changes in acute renal dysfunction, presence of chronic renal dysfunction, liver disease, and chronic heart failure. Additionally, vancomycin dose, measured trough levels, timing of trough levels, indication for therapy, stated goal trough level, and days of vancomycin therapy will be collected. This data will be evaluated for inconsistencies in dosing practices, as well as identifying trends that correlate to specific patient characteristics.

10-057

Title: Development of a pharmacist-managed continuity-of-care service for patients following COPD exacerbation discharge

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Purpose: COPD has a reported 30-day re-hospitalization rate of 22.6 percent. While pharmacotherapy is a crucial component of COPD management, half of COPD patients fail to use any maintenance medications. Increased adherence to maintenance medications appears to be significantly associated with reduced hospitalization rates. The objective of this service is to provide continuity of care for patients admitted for COPD exacerbation and reduce ER visits and readmissions to the inpatient service within 30 days after discharge.

Methods: Patients discharged from the inpatient service for COPD exacerbation will be referred by the discharging provider to a pharmacist-managed continuity of care intervention. A face-to-face one hour appointment will be scheduled within 7 days of discharge. During this meeting, the pharmacist will evaluate appropriateness of therapy and medication adherence. In addition, patients will be instructed on proper inhaler use and technique. At the end of the meeting, the pharmacist will provide a customized COPD action plan. Patients enrolled in this program, will be followed for 30 days post-discharge to assess their ER visits and readmission rates during this time frame. As it is considered a quality improvement project, this new service was exempt from review by the institutional review board and ethics committee.

10-058

Title: Implementation of Admission Medication Reconciliation Technicians at the Boise Veterans Affairs Medical Center

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Purpose: The purpose of implementing admission medication reconciliation technicians is to ensure that every hospitalized patient receives all the medications they have been taking prior to admission in the correct dose, route, and frequency unless specifically held or discontinued by their caregivers.

Methods: Up to 70% of prescribing errors in hospitals are caused by incomplete medication records at the time of admission. The Joint Commission has established National Patient Safety Goals identifying medication reconciliation as an important process in preventing adverse drug events. Currently, at the Boise VA Medical Center, first year medical residents are completing admission medication reconciliation. However, pharmacy technicians knowledge, skills, and abilities, are ideally suited to support the resident physicians with medication reconciliation. This project proposes a process by which the emergency department will notify the selected inpatient pharmacy technician of a patient being admitted to the hospital. If the technician is available, she will print out a medication list from the Computerized Patient Record System and identify who manages the patients medications. The technician will reconcile medications with the patients caregiver, contact outside pharmacies, review chronic disease state notes for medication dosing, and write a note to be cosigned by inpatient clinical pharmacists. The medication reconciliation technician will be required to fulfill designated training and competencies. A pre and post survey will be implemented to measure the impact of implementing medication reconciliation technicians.

10-059

Title: A Medication Reconciliation Simulation: Teaching Best Practices in Care Transitions to PY2 Students

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Purpose: The Joint Commission recognizes medication reconciliation as a National Patient Safety Goal, as medication discrepancies often adversely affect patient outcomes and increase readmission rates. In order to ensure that medications are accurately and completely reconciled across all continuums of care, pharmacists must serve as reliable members of the healthcare team and help to identify medication discrepancies during care transitions. The purpose of this medication reconciliation module is to provide PY2 students with the knowledge and skills necessary to accurately attain a medication history and identify and resolve medication discrepancies during care transitions.

Methods: This study will be submitted to the Institutional Review Board for approval. Students will be provided a one-hour lecture on medication reconciliation, including attaining a medication history and identifying and resolving medication discrepancies such as duplications, omissions, and interactions. The students will then participate in three simulation exercises where they will attain medication histories from (actor) patients, family members, community pharmacy, and nursing home medication administration records; and where they will identify and resolve discrepancies in transfer and discharge orders. Brown bags containing medication bottles and patients' home medication lists will be utilized during during the medication history. Students pre- and post- simulation comfort level and knowledge of medication reconciliation will be assessed through surveys administered via Qualtrics software.

10-060

Title: Assessment of obesity, health behaviors and implementation of a community health advocate training program among Jackson Heart Study Science, Language Arts and Mathematics (SLAM) participants

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Purpose: Alarming trends suggest the need for early interventions to prevent the onset of cardiovascular risk factors. Targeted health assessments and education in school-based programs may have the greatest potential to improve health literacy and influence long-term health among youth and their families. Through Jackson Heart Study and the Tougaloo College Undergraduate Training Program, we provide cardiovascular biomarker assessments and education to high school students participating in the summer-long SLAM program. In 2013, Community Health Advocate (CHA) training was added. Our purpose is to assess the prevalence of obesity and cardiovascular-related health behaviors and impact of CHA training among SLAM participants.

Methods: After Institutional Review Board approval, as part of the Know Your Numbers initiative, SLAM participants (2005-2013) attended an interactive cardiovascular risk factor presentation and certified CHA training program (2013). Participants also completed a validated Do You Know Your Numbers? health awareness survey, the CDC Youth Risk Behavior Survey (YRBS) survey (selected items), CHA pre- and post-training surveys, and biomarker assessments. Data collected for this project included participant demographics (age, race, gender), height, weight, self-reported physical activity, and evaluations of the CHA training component; BMI was calculated. Overweight and obesity were defined as a BMI between the 85th and 95th percentile or above the 95th percentile, respectively, per CDC age and gender growth charts. Physical inactivity as a risk factor was defined as not meeting the current goal of at least 60 minutes per day of physical activity on 5 or more days per week. State and national data matched for age, gender, and race from the KIDS COUNT Data Center and CDC YRBS were reviewed for comparison. Evaluations of the CHA training were categorized based on pre- and post-survey responses. To assess the impact of CHA training and community engagement, a follow-up survey was designed for dissemination in early 2014.

10-061

Title: Assessment of patient, employee, and economic outcomes in an innovative community pharmacy model

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Purpose: A national community pharmacy chain is implementing an out-front pharmacist model in newly built pharmacies. This innovative model offers increased access to high-quality health services in the community setting. The model positions pharmacists at desks near the check-out counter for easy patient access and provides a large confidential counseling room for clinical services. As the new model is adopted, there is limited data comparing it to traditional pharmacies. The objective of this study is to explore differences between the out-front pharmacist model and traditional pharmacy model. This cross-sectional study will evaluate patient, employee, and economic outcomes in these two models.

Methods: This study will be submitted to the University of Mississippi Institutional Review Board for approval. There will be 2 types of pharmacy sites included: (1) out-front model and (2) traditional model. Data on patient, employee, and economic outcomes will be obtained from both of these models and evaluated. Patients will be enrolled by pharmacy employees upon prescription drop-off. Participating patients will be asked to complete the survey prior to check-out and will be eligible to redeem incentive reward points from the pharmacy. Employees (i.e. pharmacy technicians, clerks, pharmacists, pharmacy managers) will be enrolled by the lead investigator either in-person, via telephone, or by electronic mail. Economic data includes immunization rates collected from pharmacy records and MTM visits accessed via a national MTM patient database. Patient outcomes will be evaluated through a survey regarding satisfaction, service awareness, and service utilization. Employee outcomes will be assessed with a survey regarding satisfaction and perception of the out-front pharmacist model. Economic outcomes will be assessed by immunization rates and medication therapy management (MTM) visits. Outcomes from the out-front model and traditional model will be compared descriptively. Log-linear regression will be used to elucidate trends.

10-062

Title: Pharmacist and student pharmacist interest in and awareness of opportunities for pharmacists to provide immunizations to adolescents through the Vaccines For Children program

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Purpose: Vaccines for Children (VFC) program is a federally funded program that provides Advisory Committee on Immunization Practices (ACIP) recommended vaccines to uninsured, underinsured, American Indian, Alaskan Native, or Medicaid-eligible children at no cost to the patient. The CDC supplies vaccine product to State Departments of Health, which in turn provide this inventory to VFC providers at no cost. Currently community pharmacies in Mississippi are not registered VFC sites. The objectives of this study are to increase pharmacist and student pharmacist interest in and awareness of VFC program and to enroll pharmacies throughout the state as VFC registered sites.

Methods: The study will obtain University of Mississippi (UM) Institutional Review Board approval. Primary outcomes evaluated will be pharmacist and student pharmacist interest in and awareness of the VFC program. Secondary outcome evaluated will include number of community pharmacies that enroll as registered VFC sites. Pharmacists will be included in the study if they are community pharmacy preceptors with the University of Mississippi School of Pharmacy (SOP), attend the UM SOP annual preceptor conference, and complete the pre-intervention survey. During the preceptor conference, continuing education (CE) will be provided about the VFC program and pharmacists will complete a post-intervention survey. Pharmacists will also be included who have up-to-date email addresses found within the SOP Division of Professional Pharmacy Development and Mississippi Pharmacist Association databases. Pharmacists will receive an e-mail with a link to complete a pre-intervention survey, CE webinar, and post-intervention survey. Pharmacists who express interest in becoming a VFC registered site, will be contacted about enrollment requirements and site visits. Pharmacy students enrolled in their 1st-3rd professional years will also be included and receive a VFC lecture. Student pharmacists will be surveyed before and after the lecture regarding their awareness and interest in participating in the program after graduation.

10-063

Title: Evaluation of automatic stop date outcomes in patients with community acquired pneumonia, healthcare associated pneumonia, acute uncomplicated cystitis, and pyelonephritis in women

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Purpose: The objective of this study is to determine if changes should be made to antimicrobial stewardship programs by evaluating outcomes of a required indication, duration, and automatic stop date system for the inpatient treatment of community acquired pneumonia, healthcare associated pneumonia, acute uncomplicated cystitis, and pyelonephritis in women.

Methods: This study will be submitted to the Institutional Review Board for approval. The following data will be collected: age, gender, infectious related disease, drug allergies, antibiotics used, therapy duration, isolates and sensitivity related data, cost of antibiotic course, and length of hospitalization. Data will be retrospectively collected from hospitalized patients treated for community acquired pneumonia, healthcare associated pneumonia, acute uncomplicated cystitis, and pyelonephritis in women during the time period of November through December 2012. This data will be compared to data collected during a pilot study to be conducted November through December 2013. The pilot study will require physicians to provide an antibiotic indication and intended duration of therapy upon order entry. Furthermore, the physician will be contacted by a pharmacist to obtain a discontinuation order after the indicated therapy duration has been completed. This will simulate the outcome of implementing an automatic stop date. Each patient will be assigned a random patient identifier and information will be securely maintained.

10-064

Title: Analysis of patient awareness and understanding of injection site reactions: a quality improvement project

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Purpose: Injection site reactions (ISR) are one of the most common side effects of self-injectable biologic agents. The objective of this study is to determine patient's awareness and knowledge of ISRs and develop a standardized patient education guide that will be provided to all patients receiving self-injectable biologic agents.

Methods: Prior to initiation of this study, approval will be obtained through the institution's Quality Assurance Committee and Clinical Oversight Body. The electronic database, CPR+ will be utilized to identify patients that have received self-injectable biologic agents. Patients must be age 18-65, have a working telephone number and have received a self-injectable biologic agent in the previous three months to be included in the study. Patients will be contacted via telephone and asked for verbal consent to participate. A questionnaire will then be administered that will ask which agent they have taken or are currently taking, if any healthcare professional had provided education concerning ISRs prior to initiation of their therapy, if they experienced an ISR, and if they desire additional information about ISR. All data will remain confidential and all patient identifiers will be removed on reported data. Based on results, a standardized patient education guide will be created and implemented into the current prescription dispensing process. Results will be compared using appropriate statistical analyses. In the future, new patients and previously questioned patients will be reassessed with the same questionnaire in an effort to continually improve the quality of care for patients receiving self-injectable biologic agents.

10-065

Title: Evaluation of a pharmacist implemented community-based smoking cessation service: using a train-the-trainer model

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Purpose: The Treating Tobacco Use and Dependence Clinical Practice Guidelines recognize that active methods of tobacco dependence counseling are most effective, especially when combined with social support. As one of the most accessible healthcare providers, pharmacists are in an ideal position to provide tobacco cessation counseling, yet few integrate this into routine practice. The objectives of this study are to evaluate the knowledge, skills, and confidence level of community pharmacists before and after a train-the-trainer session for smoking cessation and to assess the efficacy of pharmacist-managed smoking cessation services in the community.

Methods: The study will be submitted to the Institutional Review Board for approval. Pharmacists will be recruited via electronic flyers distributed through a community pharmacys corporate list-serve. Participating pharmacists will attend a 4-hour training session. Surveys will be administered pretraining, posttraining, and following administration of in services. Perceived knowledge, confidence, and intention to address smoking with patients will be assessed. Patients will be recruited via identification of current smokers by pharmacy employees and advertising at local community pharmacies. All patients will be at least 18 years of age, able to speak English, and smoke one or more cigarettes daily with a stated interest to quit. Participants will attend weekly, 2-hour, face-to-face group sessions over 6 weeks. Pharmacists attending a train-the-trainer session for smoking cessation will facilitate each session. Surveys will be administered to patients before and following the sessions to measure the patients perception of the services, knowledge, and 7-day point prevalence quit rate. All data will be recorded without patient or pharmacist identifiers and maintained confidentially. Pharmacist and patient demographic information will be analyzed through descriptive statistics, and t-tests will compare pre- and post- surveys.

10-066

Title: Reap what you sow? An evaluation of potential impact, benefits, and implications of the Mississippi Kidney Foundation's Renal Evaluation and Assessment Program (REAP)

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Purpose: Health fair-type screenings are one of the most recognizable forms of community-based health promotion in the United States. Though these screenings offer benefits in theory, little evidence supports their value and medical literature often views them with skepticism. Through REAP, Mississippi Kidney Foundation (MKF) routinely provides screenings. Without data reporting systematic evaluation of their quality or efficacy either for detecting disease or ultimately reducing risk factors for chronic disease, the overall value of these programs is unknown. The objective of this study is to evaluate the potential impact, determine benefits, and identify any changes that could improve MKFs REAP.

Methods: At each REAP screening, participants obtain blood pressure, height, weight and laboratory assessments (metabolic/renal blood chemistries, complete blood count, cholesterol, urinalysis) and complete a questionnaire regarding cardiovascular and renal risk factors and disease history. Some results are provided on-site, others are received by mail. At the event, participants also receive consultation with a healthcare provider and written information about values/goals. After Institutional Review Board approval, a retrospective review will assess the prevalence and trends of cardiovascular and renal disease risk factors identified among participants over the previous 5 years (2008-2013, n=6,285). Beginning October 2013, a survey regarding the perceived benefits of REAP and anticipated use of the results will be disseminated to each participant. Approximately 4 to 6 weeks after each screening, a randomized group of participants will receive follow-up via telephone. Using a standardized questionnaire, the caller will gather information regarding utilization and application of the screening results. In addition to demographics (age, gender, race, insurance coverage) responses will be stratified by the presence or absence of risk factors (history/newly identified, normal/abnormal results). Results and responses will be used to evaluate the potential value of this MKF program as well as define ways to improve overall impact and benefits.

10-067

Title: Multicenter patient- and institution-centric cost-efficacy evaluation of epoetin alfa versus darbepoetin alfa therapy in chemotherapy-induced anemia

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Purpose: Epoetin alfa and darbepoetin alfa have been shown to be equally effective in the treatment of chemotherapy-induced anemia; however multiple treatment regimens exist for each agent. The use of differing treatment regimens, combined with other complications and factors incurred during treatment, present challenges in determining optimal treatment regimens with erythropesis-stimulating agents (ESAs). The purpose of this study is to evaluate the economic and clinical outcomes of patients with chemotherapy-induced anemia receiving therapy with erythropoiesis-stimulating agents at three chemotherapy infusion institutions.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify patients who have exclusively received either epoetin alfa or darbepoetin alfa between June 1, 2013 and August 31, 2013. Data collected from charts of the first 100 patients meeting inclusion criteria (50 patients receiving epoetin alfa, 50 patients receiving darbepoetin alfa) will consist of patient age and gender, oncologist prescribing ESA, ESA treatment dose and frequency, changes in hemoglobin (Hb) levels from baseline, frequency of blood transfusions, adverse drug events (ADEs), and overall cumulative treatment costs. Data collected from institution records will include costs, charges, and reimbursements of both ESA options. All information will be managed confidentially and without patient identifiers. Collected medical record information will be reviewed to determine dosing patterns and compliance with FDA-approved indications and practice guidelines. Analysis of patient-care and cost data will offer insight into the cost-efficacy of epoetin alfa and darbopoetin alfa for the treatment of chemotherapy-induced anemia.

10-068

Title: Overall effects of conversion of rosuvastatin to dose-equivalent atorvastatin in veterans

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Purpose: Due to patent expiration of Lipitor and subsequent availability of atorvastatin as a generic formulation, a conversion proposal was approved by the Gulf Coast Veterans Health Care System, Pharmacy & Therapeutics Committee to convert all patients on non-formulary rosuvastatin to dose-equivalent formulary atorvastatin. The objective of this study is to evaluate the overall effects due to the conversion in lipid-lowering therapy from rosuvastatin to atorvastatin including: changes in low-density lipoprotein (LDL), high-density lipoprotein (HDL), triglycerides (TGs), total cholesterol (TC), serum creatinine (SCr), liver function tests (LFTs), creatine phosphokinase (CK), documentation of adverse effects, and appropriate monitoring conducted following the conversion.

Methods: This study is designed as a retrospective, chart review of Veterans in the Gulf Coast Veterans Health Care System on rosuvastatin between January 1, 2012 and August 1, 2013, and converted to atorvastatin following approval by the P&T Committee. Prior to data collection, the study will be submitted to the Institutional Review Board (IRB) and Research & Development (R&D) for approval. Veterans who meet specific inclusion criteria will be identified using the VA health systems computerized patient record system (CPRS). All data and patient information will be recorded and coded to maintain confidentiality. Patients must have been established on rosuvastatin for at least 3 months prior to the conversion and established on atorvastatin for at least 8 weeks after the conversion. The patient must be compliant with therapy as demonstrated by refill history prior to and after the conversion. Additionally, the patient must have labs available at least 4 weeks prior to the conversion and at least 8 weeks after the conversion. The primary endpoint will be overall changes in the lipid profile including: LDL, HDL, TGs, and TC after 8 weeks of atorvastatin therapy. The secondary endpoints will be changes in SCr, LFTs, CK, adverse effects, and appropriate.

Results: Results pending at time of abstract submission.

Conclusion: Conclusion pending at time of abstract submission.

10-069

Title: Tranexamic acid to minimize allogeneic transfusions in total hip and knee arthroplasty: a retrospective analysis

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Purpose: Major orthopedic arthroplasty surgeries have the potential for significant blood loss, which may necessitate allogeneic blood transfusion. Transfusions carry substantial risks, including coagulopathy and immune-related reactions. To reduce the need for allogeneic blood transfusions, this institution has implemented the use of antifibrinolytic agents, including tranexamic acid, to minimize blood loss. The objective of this retrospective study was to determine if there is a difference in the number of patients requiring blood transfusions during total hip replacement and total knee replacement surgeries, when tranexamic acid is used versus no antifibrinolytic agent.

Methods: This retrospective study was submitted to the Institutional Review Board for approval. Patients who underwent total hip or total knee arthroplasty between January 1 and August 31 of 2013 and received tranexamic acid were identified via the electronic medical health record. Patients who underwent the same surgeries without an antifibrinolytic agent between January 1 and August 31 of 2012 were identified as the control group. Data collection included patient age, gender, type of orthopedic procedure performed, dose of antifibrinolytic agent received, volume of intra-operative blood loss, transfusion requirements, units of blood infused, length of hospitalization, hemoglobin and hematocrit levels, and incidence of adverse reactions or complications, including bleeding events, myocardial infarction, stroke, venous thromboembolic event, seizure, or death. The primary endpoint was the number of patients in each group requiring blood transfusions. Secondary endpoints included the total amount of blood loss during surgery, units of blood required during the first 72 hours of the post-operative period, post-operative length of stay, and incidence of complications and adverse reactions attributed to each patient group, as previously outlined. Comparative efficacy and safety of tranexamic acid was evaluated based on these endpoints.

10-070

Title: Assessing adherence and utilization of a pharmacist-mediated warfarin protocol in an inpatient facility

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Purpose: A pharmacist-run warfarin protocol was initiated in Elliot Hospital in January 2011. Pharmacists are in charge of properly maintaining patients on warfarin according to current anticoagulation guidelines while admitted. The purpose of this study is to evaluate how well pharmacists are adhering to this warfarin protocol and how patient outcomes are affected by this adherence.

Methods: This protocol-use evaluation does not need to be submitted to the Institutional Review Board. Patients admitted over a three-month period will be identified and retrospectively analyzed. All patients initiated and/or continued on warfarin during their inpatient admission will be included for analysis. Various therapeutic parameters will be evaluated for each patient, including indication for therapy, goal INR, time to reach goal INR and admission time. The time to reach goal INR will be evaluated by the number of days the patient received warfarin before they reached their goal INR range. Pharmacist adherence to protocol will be assessed by the whether a progress note was written on a daily basis, appropriateness of lab ordering (INR, hemoglobin/ hematocrit) at baseline and throughout therapy and warfarin dose ordering with time given. All of this information and verification of protocol adherence will be evaluated by the same pharmacist to ensure equivalent evaluations of all patients.

10-071

Title: Evaluation of a pharmacist-managed warfarin dosing protocol in post-operative patients who received total hip or knee replacements

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Purpose: Warfarin is commonly used after orthopedic surgery to reduce the risk of venous thromboembolism (VTE). However, little evidence exists pertaining to dosing protocols with warfarin in this population. The objectives of this study are to: (1) evaluate the current pharmacist-managed warfarin dosing protocol at a community hospital by identifying frequency of off protocol dosing (2) identify common reasons for dosing off protocol and (3) revise the current protocol as appropriate.

Methods: Prior to data collection, this study will be submitted to the Institutional Review Board for approval. Pharmacists will continue to utilize the current warfarin protocol, and will complete a data collection sheet. Two months of prospective data will be collected by having the pharmacist record the following information for each orthopedic patient: patient age, gender, indication for therapy, warfarin dosage, INR, whether the protocol was followed, reasons for not following protocol (e.g. increase in INR, significant change in hematocrit/hemoglobin, drug-drug interactions, doctor orders), and any adverse events. Data will be collected without patient identifiers. Only patients who have pharmacist-managed warfarin orders for deep vein thrombosis prophylaxis following total hip or knee replacement will be included. Patients on long-term warfarin therapy due to a pre-existing condition will be excluded. Collected data will be analyzed to evaluate the protocol and any areas where it is not being followed. Subsequent analysis will allow determination of need for protocol revision and areas of improvement.

10-072

Title: Evaluation of the use of intravenous acetaminophen in an adult and pediatric inpatient population

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Purpose: Published literature has not demonstrated a clinical benefit of IV acetaminophen over enteral or rectal acetaminophen. IV acetaminophen should be reserved for use in patients where alternative routes of administration may not be feasible. Large differences in costs of available acetaminophen routes coupled with the lack of superior clinical effectiveness data creates an obligation to assess the economic value of IV acetaminophen. This project was designed to evaluate the use of IV acetaminophen in both pediatric and adult patients that have been admitted to the hospital.

Methods: This study will include pediatric and adult populations classified as 2 years of age and older who have received IV acetaminophen at any point during their admission. Patients that received IV acetaminophen from June of 2012 through May of 2013 at The Elliot Hospital will be included in the evaluation. The evaluation of appropriate use of IV acetaminophen administration in these patients will be determined based on the availability of either enteral or rectal routes of administration during the admission. The following data will be collected: patient age, gender, indication for use of acetaminophen, route of acetaminophen administration and rationale for such route, average treatment course/length of time on acetaminophen (including as needed and scheduled dosing), number of doses administered throughout hospital stay for either pain or antipyretic effect, and the cost associated with the different dosage forms used. The primary researcher will determine the number of patients who were appropriately prescribed IV acetaminophen. The researcher will also identify cost differences if alternative routes of acetaminophen administration were utilized during the study time period. This medication use evaluation will be submitted to the Institutional Review Board for approval.

Results: In progress.

Conclusion: In progress.

10-073

Title: Evaluation of clinical decision support therapy-duplication alerts: analysis and intervention to reduce alert fatigue

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Purpose: Alert fatigue results from the lack of clinical significance of many therapy-related alerts.1 The objective of this study is to characterize therapeutic-duplication alerts to decrease clinically irrelevant alerts at a community teaching hospital. Reference: 1. Kesselheim AS, Cresswell K, Phansalkar S, Bates DW, Sheikh A. Clinical decision support systems could be modified to reduce alert fatigue while still minimizing the risk of litigation. Health Affairs 2011;30(12):2310-2317.

Methods: This study will be submitted to the Institutional Review Board for approval. The hospital utilizes McKesson Horizon Meds Manager, version 10.1.5.2. The primary outcome of this study will be an alert adherence rate (number of times an order is changed based on an alert divided by the total number of alerts). The secondary outcomes of this study will include alert volume (number of alerts per patient admission), override rate (number of overrides divided by the total number of alerts), a pharmacist alert fatigue rating, and characterization of the alerts based on clinical service. Alerts will be randomly selected over a pre-determined study period. Only therapeutic duplication alerts in the pharmacy system will be included for evaluation in this study. Alerts for therapeutic duplication will be sorted by drug class and in descending order of override rate and alert volume. Those alerts that are not in the top five drug classes for override rate or alert volume will be excluded from the intervention. The intervention of this study will be an adjustment in the clinician decision support settings to modify the sensitivity of what the system considers to be therapeutic duplication by drug class.

10-074

Title: Evaluation of risk factors for QTc prolongation in hospitalized patients who receive azithromycin

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Purpose: In a drug safety communication released on March 12, 2013, the Food and Drug Administration (FDA) recommended health care providers consider the risk of torsades de pointes and other arrhythmias when prescribing azithromycin. This warning surfaced after a recent publication reported an increased risk of sudden cardiac death in patients who were treated with a five-day course of this macrolide antibiotic. The primary objective of this study is to evaluate the presence of risk factors for prolonged QTc in hospitalized patients who receive intravenous or oral azithromycin.

Methods: A retrospective chart review will be conducted using the hospital's electronic medical record. Data will be collected for patients admitted between July 2012 and June 2013 who received oral or intravenous azithromycin at any time during their hospitalization. Patients under 18 years of age and those who received azithromycin in the emergency department but were not admitted will be excluded. A standardized randomization process will then be used to select a representative population of patients to assess. The following data will be collected: azithromycin dose and route of administration, duration of therapy, age, sex, baseline QTc, concomitant use of other QT prolonging medications, serum potassium, serum magnesium, serum calcium corrected for albumin, and significant past medical history. These risk factors will be quantified to determine if further safety measures should be implemented when azithromycin is prescribed to hospitalized patients. All data will be recorded without identifiers to maintain confidentially.

10-075

Title: Evaluation of clinical pharmacist anticoagulation discharge counseling on 30 day readmission rates in a community hospital setting

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Purpose: Anticoagulants have been identified as one of the top five drug classes associated with patient safety incidents in the United States. Educating patients about anticoagulation has been shown to improve adherence and reduce bleeding rates. In recent years, CMS has become very stringent with financial reimbursement to hospitals. In 2012, Wentworth-Douglass Hospital initiated an anticoagulation discharge counseling service to decrease 30 day readmissions due to bleeding and supratherapeutic INRs. The primary outcome of this research will look at 30 day readmission rates before and after the initiation of the anticoagulation discharge counseling service.

Methods: This study will be submitted to the hospital's Institutional Review Board for approval prior to initiation. The spreadsheet will contain data from one year before (Dec 2010 to Dec 2011) and after initiation (Dec 2012 to Dec 2013) of the anticoagulation discharge counseling service. The data will be retrospectively reviewed from a combination of electronic databases for 30 day readmissions due to supratherapeutic INRs. Inclusion criteria will be patients between ages 18-90 of all indications and patients admitted with an elevated INR>4. Exclusion criteria will include patients <18 years old, >90, or discharged to a long term care facility. The following de-identified data will be collected to analyze the primary outcome: age, gender, diagnosis, patient ability to complete the teach-back method (only in patient counseling group), risk factors of readmission with INR>4(CHF, alcohol use, renal impairment), and 30 day readmissions due to supratherapeutic INR>4. The secondary outcomes will evaluate the cause of the elevated INR>4 on admission (acute illness, interacting medications, or changes in lifestyle) and will address the financial burdens on the institution, based on 30 day readmissions.

10-076

Title: Effect of tranexamic acid on postoperative bleeding in hip and knee arthroplasty

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Purpose: Postoperative bleeding is a well recognized complication of both hip and knee arthroplasty. Intraoperative tranexamic acid has been shown to reduce the need for blood transfusions without an increased risk of thrombotic events. The primary objective of this study is to determine the mean reduction of postoperative bleeding in hip and knee surgery patients who received tranexamic acid irrigation. The secondary objectives are to determine the incidence of postoperative thrombotic events and the pharmacoeconomic benefits of tranexamic acid, including the number of postoperative blood transfusions and length of stay (LOS).

Methods: This retrospective chart review will be submitted to the Ethics Committee for approval. Surgical inpatients status post hip or knee arthroplasty (total, unicompartmental, or bipolar) who had received intraoperative tranexamic acid from December 1, 2012 to August 31, 2013 will be matched to controls from December 1, 2011 to August 31, 2012. The following baseline demographic information will be collected: age, gender, surgery, surgeon, preoperative hemoglobin and hematocrit, and anticoagulants and iron products prior to admission. The following postoperative information will be collected: hemoglobin and hematocrit trends, number of blood transfusions, bleeding events such as hematomas, presence of thrombotic events, length of stay, and postoperative anticoagulants and iron products administered. Outpatients as well as inpatients with non-primary hip or knee surgeries, hemoglobin and hematocrit greater than 4 weeks prior to surgery, and multiple procedures during the same admission will be excluded from the analysis. All data will be recorded without patient identifiers. Both the difference in the mean reduction of postoperative bleeding and the pharmacoeconomic differences between the tranexamic acid and control groups will be analyzed using the students t-test. The incidence of postoperative thrombotic events will be analyzed using the chi-square test.

10-077

Title: The role of abciximab in an era of new antiplatelet strategies: a single institutions experience in the cardiac catheterization lab

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Purpose: GIIb/IIIa inhibitors are adjunctive antiplatelet agents used in percutaneous coronary intervention (PCI) for acute coronary syndromes (ACS). These agents are generally reserved for patients who have not received pre-treatment with P2Y12 blockers or high risk patients with a high thrombus burden. Abciximab and eptifibatide are our current formulary agents. Specific GIIb/IIIa inhibitor use is often based on physician preference and acquisition costs. The objective of this evaluation is to identify prescribing patterns of abciximab use in the cardiac catherization lab and to determine if alternative antiplatelet strategies would be appropriate based on ACS indication, outcomes, safety, and acquisition costs.

Methods: A retrospective review for adult patients undergoing PCI who received abciximab will be conducted. A computer generated monthly report of medications will be used to identify patients receiving abciximab for PCI during the period of June 2012 to June 2013. Demographic information collected include: age, gender, weight, SCr/CrCl, concurrent medications, TIMI scores, indications for PCI (STEMI, NSTEMI, UA or other), and priority status for procedure (elective, emergent, or urgent) Post-procedure bleeding, revascularization, and length of stay will be assessed as outcomes. Acquisition costs of abciximab during this time period will be calculated. Patient specific information will be de-identified to protect patient privacy. Data will be secured in a password protected computer and document. IRB exemption was obtained due to the retrospective nature of the study.

10-078

Title: A 5-Year Evaluation of the Appropriateness of Rasburicase at a Community Teaching Hospital

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Purpose: The 2008 American Society of Clinical Oncology (ASCO) guidelines for the management of pediatric and adult tumor lysis syndrome (TLS) provide recommendations on the use of rasburicase. Currently there are no restrictions or guidelines on the use of rasburicase at Morristown Medical Center. The purpose of this study is to determine the percent of appropriate doses of rasburicase and develop cost-effective institutional guidelines.

Methods: A retrospective chart review will be conducted on patients who received rasburicase since the publication of the 2008 ASCO guidelines. Patients will be included if they received rasburicase between June 1, 2008 and May 31, 2013. Data to be collected includes rasburicase dose, frequency of administration as well as other concomittant agents for the treatment of tumor lysis syndrome. Adverse events and drug interactions will be reviewed. Based upon evaluation of current usage, institutional guidelines will be developed.

10-079

Title: Identifying opportunities to optimize pharmacy expenditures to improve gainsharing outcomes

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Purpose: CMS has implemented optional provider incentive programs within a hospital setting, commonly referred to as gainsharing. Within this framework, gainsharing attempts to align hospital and physician incentives to reduce overall costs, while improving quality of care. Physicians voluntarily collaborate with hospitals to identify actions aimed at improving quality and/or efficiency, resulting in a cost savings per episode of care. In return, hospitals and physician share a portion of these savings. The pharmacy department has been called upon to identify pharmacotherapeutic areas to improve efficiency and/or quality to decrease the cost of an episode of care.

Methods: A gainsharing committee within one medical center created a sub-committee, consisting of two physicians and two pharmacists, to evaluate medication expenditures and their impact on cost of care. This sub-committee will meet monthly to discuss potential ideas and opportunities for improvement. The objective of this initiative is to identify opportunities within pharmacy expenditures to develop a gainsharing initiative. In order to narrow the focus, the committee will identify specific disease related groups (DRG), where the cost per episode of care is substantially higher than best practice cost amongst comparator hospitals. Reports generated will identify the average hospital drug cost per patient, the best practice cost per patient, and the variance for each DRG. DRGs with a high variance from best practice cost will be selected for further analysis. Within these DRGs, all pharmacy expenditures will be analyzed to identify potential causes for the difference in cost of care. The sub-committee will present these findings to the gainsharing committee to develop initiatives that can be implemented through gainsharing.

10-080

Title: Relationship between organization of antimicrobial stewardship programs and degree of stewardship activities

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Purpose: Controlling antibiotic usage with antimicrobial stewardship programs (ASP) has never seemed more relevant than in the current setting of unabated increases in resistance rates and antibiotic expenses. However, many hospitals still face challenges to developing formal programs. Guidelines advocate for specific stewardship activities that are required to ensure success of ASP. Many of these activities (i.e. oral conversion of intravenous antibiotics) require few resources and can often be accomplished without a formally organized ASP. This study aims to compare the degree of ASP structural organization and the quantity of stewardship activities among institutions within a New Jersey hospital system.

Methods: A survey was distributed to pharmacy department directors of each of the six system hospitals. Survey respondents indicated which of the required components of an antimicrobial stewardship program, as outlined by the Infectious Disease Society of America, are followed in each respective facility. Survey questions were designed to reveal the degree of structural organization of the facility's ASP and the extent of activity related to stewardship that are performed in each institution. The survey respondents indicated the extent to which an electronic clinical decision support system is utilized to perform stewardship activities. The survey also aimed to differentiate between stewardship activities performed by infectious disease (ID) clinical pharmacists and non-specialist pharmacists. The defined daily dose (DDD) for each of the top antibiotics purchased in the system was calculated per 1000 patient days for each facility for 2012. Additionally, stewardship data from an internal documentation program that tracks interventions made by pharmacists weas obtained for each hospital. All data is reported via descriptive statistics.

Results: Six hospitals were included in the data analysis. Bed size ranged between 175 and 673, with an average of 504. Total patient days ranged from 57,027 to 160,962, and annual doses dispensed per patient day ranged from 7.9 to 29.3. In 2012, 51,780 stewardship interventions were performed system-wide. The proportion of stewardship-related interventions compared to total interventions documented by pharmacists ranged from two percent to 16 percent. System wide, the most common stewardship activity documented by pharmacists was consultation, which accounted for 58 percent of all stewardship interventions. The second most common activity was checking labs, which accounted for 20 percent of stewardship activity. Four of the five hospitals that responded to the survey reported utilizing a team of specialists dedicated to evaluating antimicrobial use. Of the four, only one reported utilizing prospective audit to improve antibiotic outcomes, and two reported employing an ID clinical pharmacist.

The average DDD of the top 10 antibiotics in the system was lowest in the facility that utilized prospective audit (33.4). The average DDD for hospitals utilizing ID pharmacists was 40.7, compared to 48.9 for hospitals that did not utilize ID pharmacists.

Conclusion: There is limited published data that highlights antimicrobial stewardship activity performed in hospitals that do not employ a dedicated ASP. This study demonstrates that certain antimicrobial stewardship activities can be performed without the development of an organized ASP, and non-specialist pharmacists can play an integral role in this regard. Limitations of this study include a small number of facilities and an inability to objectively correlate the structure and function of ASP.

10-081

Title: Incidence of adrenal insufficiency with dexmedetomidine compared to other sedation infusion in pediatric septic shock

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Purpose: To determine if dexmedetomidine will increase the use of empiric hydrocortisone in the context of pediatric septic shock at Children's Hospital of Illinois as compared to other sedative infusions. Structurally, dexmedetomidine is an imidazole. Imidazoles, such as etomidate and ketoconazole have been known to induce HPA-axis suppression, mediated by CYP 450C44 and 450SCC.

Methods: This is a retrospective chart review, approved by the Institutional Review Board, conducted at St. Francis Medical Center, for patients admitted between August 1, 2010 and August 1, 2013. The primary outcome variable will be incidence of hydrocortisone infusions or intravenous push doses (50 mg/m2/day).2 Secondary outcomes include: hospital length of stay, ICU length of stay, MAP, length of dexmedetomidine infusion, maximum dose of dexmedetomidine infusion. Inclusion criteria includes the following: admitted to critical care unit of St. Francis Medical Center or Children's Hospital of IL between August 1, 2010 and August 13, 2013; use of dexmedetomidine infusion, midazolam infusion, fentanyl infusion, or propofol infusion along with documented initiation of hydrocortisone for hemodynamic support; and diagnosis of "sepsis," or "septic shock" on ICU history and physical. Exclusion criteria includes the following: documentation infusion's indication is for comfort measures only (conscious sedation); pre-existing adrenal dysfunction; use of etomidate or ketoconazole in the last 7 days prior to the commencement of the hydrocortisone; steroid use within the 7 days prior to initiation of dexmedetomidine; or hydrocortisone use for reasons other than hemodynamic or adrenal support.

Results: In progress

Conclusion: At this time the project data collection is in progress. Final results will be presented at Great Lakes Residency Conference in April, 2013.

10-082

Title: Evaluating the motivation of patients to be vaccinated after a community pharmacist's recommendation

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Purpose: The purpose of this study is to evaluate the motivation of all community patients to receive or not receive ACIP adult vaccinations after being screened by a community pharmacist.

Methods: A community pharmacist will screen patients coming to a community pharmacy to receive ACIP vaccination(s) they are eligible to receive. Patients will be required to complete a Vaccination Administration Record (VAR) form and a comprehensive vaccination-screening sheet (CVS). Based on both forms, the pharmacist will make the recommendation for the necessary vaccination(s). If the patient requires additional vaccination(s), the patient will be asked to participate in the study. If the patient consents, he/she will be asked to fill out Questionnaire #1 (will participate in study, not receive vaccination) or Questionnaire #2 (will participate in study, receive vaccination). After completion of Part 1 of Questionnaire #2, the community pharmacist will counsel the patient on the vaccination(s) that will be given. Once the vaccination is given, patient will be asked to complete Part 2 of Questionnaire #2. Patients will be followed up after 1 month after receiving their vaccination to assess basic vaccination knowledge via a True or False questionnaire created by the researcher. They will either be called or followed at the pharmacy to obtain this information. After 3 attempts of calling the patient and after 2 months of tracking the patient at the pharmacy, patient data will be lost

10-083

Title: Pharmacist involvement in the stroke discharge process to reduce readmission rates.

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Purpose: Stroke is one of the leading causes of death in the United States, costing the nation $38.6 billion for health care services, medications, and lost productivity. The national readmission rate for stroke is 13.8%. Many patients are discharged without necessary medications to reduce their risk of recurrent stroke or cardiovascular complications. Pharmacists can play a critical role in ensuring appropriate medication reconciliation identifying and addressing medication related problems prior to patient discharge reducing medication related hospital readmissions. The objective of this study is to see the effects of pharmacist involvement in the stroke discharge process to reduce hospital readmission rates.

Methods: The Institutional Review Board will be contacted at the appropriate time according to the US Department of Health and Human Services human subjects regulation decision chart. All patient information will be removed and identification will be coded and kept in a password protected, secured file. Pharmacists will conduct medication reconciliation for all stroke patients and address any inconsistencies to the nurse and physician. The stroke discharge protocol, which will go live on October 1, 2013 will assess failure to add appropriate therapy (i.e. anticoagulants, antiplatelets, statins), duplication in therapy, inappropriate dosing, adherence and adverse effects, which will all be documented in the patients chart. Interventions made will be documented and quantified. Stroke readmission rates after the initiation of the pharmacist led medication reconciliation will be compared and contrasted with the 30 days stroke readmission rates three months prior to the initiation of the stroke discharge protocol.

10-084

Title: Comparison of blood glucose control in hospitalized patients receiving sliding-scale insulin versus patients receiving basal insulin with or without sliding scale

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Purpose: The approach to blood glucose control in non-critically ill hospitalized patients varies widely depending on patient factors, practitioner preference, and institution-specific practices. Utilization of sliding-scale insulin has been common practice for many years. Literature suggests that sliding-scale insulin alone is inadequate in maintaining glycemic control. The objective of this study is to compare the blood glucose control in patients receiving sliding-scale insulin alone versus patients being managed with basal insulin as part of their regimen.

Methods: This retrospective study will be submitted to the hospital's Institutional Review Board as an exempt protocol. The health system's electronic medical record system will be used to identify a random sample of non-critically ill inpatients 18 years of age and older who received sliding scale or basal insulin from August 1, 2013 to August 21, 2013. Patients on critical care units will be excluded from the study. The following information will be collected: patient demographics (age, gender, and weight), admission diagnosis, indication for insulin use, insulin regimen used (insulin type, dose, frequency and adjustments to regimen), A1C level (if available), point-of-care blood glucose readings, and adverse medication events. All data will be de-identified and stored on a password-protected computer. The data will be used to compare the glucose control achieved with sliding-scale insulin alone versus basal insulin with or without sliding-scale and to record the occurrence of hypoglycemic events associated with the different regimens.

10-085

Title: Evaluation of empiric antibiotic regimens in a community hospital in patients with hospital-acquired pneumonia (HAP) or healthcare-associated pneumonia (HCAP)

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Purpose: The 2005 Infectious Diseases Society of America (ISDA) guidelines recommend the use of two antipseudomonal antibiotics in conjunction with methicillin-resistant Staphylococcus aureus (MRSA) coverage to empirically treat a patient with HAP or HCAP. It has been noted by the pharmacy and therapeutics committee at this 296-bed community hospital that these guidelines are not being followed by many admitting physicians. This review will evaluate the empiric antibiotic choices for the treatment of HAP or HCAP over an eighteen month period to determine the need for education on the disease states as well as guidelines and possible implementation of an updated protocol.

Methods: A retrospective chart review that will evaluate the use of empiric double antipseudomonal coverage versus single antipseudomonal coverage in patients with an identified HAP or HCAP over an eighteen month period. The institutions Institutional Review Board (IRB) was contacted for approval, but stated it was not needed. The electronic medical record system will identify patients with a primary diagnosis of pneumonia through International Classification of Diseases ninth revision (ICD-9) codes. Provider documentation will be reviewed and only the patients with a mentioned diagnosis of HAP or HCAP will be included. The following data will be collected: patient age, length of stay, culture results, empiric treatment regimen, diagnosis, and location of discharge. All data will remain confidential with no patient identifiers recorded. The data will be reviewed to assess the results within three groups: double antipseudomonal coverage, single antipseudomonal coverage and no antipseudomonal coverage started at the beginning of treatment. Based on the outcomes of this review, revisions to current hospital protocols may be reviewed for updates.

10-086

Title: Medication use evaluation of dexmedetomidine in adult intensive care unit (ICU) patients

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Purpose: The updated Society of Critical Care Medicine (SCCM) guidelines recommended nonbenzodiazepine sedatives over benzodiazepine sedatives because studies have shown nonbenzodiazepines are as safe and effective. Even though dexmedetomidine has been used as a sedative for extended periods and has been endorsed by SCCM, it has not been FDA approved for long term sedation and only a limited number of studies have demonstrated the safety and efficacy of a long term infusion. The purpose of this study was to describe the utilization of dexmedetomidine in an adult ICU population and to see the trends in infusion length, and other patient outcomes.

Methods: The institutional review board approved this retrospective chart review. Patients included in this review were of 18 years of age or older, admitted to the ICU between September 2012 and April 2013, and were ordered a dexmedetomidine infusion. Patients were excluded if the infusion was ordered, but was never given. Baseline characteristics including age, gender, and indication for infusion were collected for each infusion. Other information collected included the dates of dexmedetomidine infusion, indication for sedation, hours of dexmedetomidine infusion, number of vials and amount of dexmedetomidine dispensed, total ICU days, total ICU days post dexmedetomidine infusion, and restraint use. Outcomes of interest included describing the patient population receiving the infusion, the average length of dexmedetomidine infusion in hours, the number of infusions under 24 hours, between 24 and 120 hours, and over 120 hours, the average cost of infusion, the average and median number of ICU days, the average and median number of ICU days post-dexmedetomidine infusion, and the percentage of patients that required restraints while on dexmedetomidine.

Results: A total of 120 records were identified and 114 patients were utilized in the analysis. The baseline characteristics included an average age of 65.1, 54.4% male, 27 patients with sedation only, and 87 patients with sedation and ventilation. The average length of dexmedetomidine infusion was 47.2 hours with 58 infusions under 24 hours, 42 infusions between 24 and 120 hours, and 14 infusions greater than 120 hours (49.1% over 24 hours, 12.3% over 120 hours). The average dexmedetomidine cost per patient was $505.75. The ICU days per infusion was an average of 6.9 days and a median of 5 days and the ICU days post-dexmedetomidine infusion was an average of 3.1 days and a median of 2 days. The percentage of patients requiring restraints while on a dexmedetomidine infusion was 47.4%. Of the total restrained ICU population, 17.1% were on a dexmedetomidine infusion

Conclusion: Nearly half of the patients received dexmedetomidine infusions greater than recommended in the package insert and over 10 percent of the patients received infusions beyond the length studied in previous trials. The median of ICU days was 5 days and the median time after dexmedetomidine discontinuation was 2 days. The number of patients restrained while on a dexmedetomidine infusion was notably high at 47.4%. The results of this medication utilization review illustrate the need for a large trial comparing dexmedetomidine versus non-dexmedetomidine infusions with the outcome measures used in this review including ICU days post infusion and use of restraints.

10-087

Title: Retrospective comparison of neonatal abstinence syndrome protocols used in the neonatal intensive care unit

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Purpose: Drug use is escalating during pregnancy. In turn, the incidence of Neonatal Abstinence Syndrome (NAS) is also rising. Recent studies have shown morphine to be the preferred pharmacologic treatment for NAS. The purpose of this study is to retrospectively review three protocols used for NAS between July 2011 and March 2014. The protocols include: morphine plus phenobarbital dual-therapy, low-dose morphine monotherapy, and high-dose morphine monotherapy. The primary endpoint of this study is to compare these three protocols separately against length of stay (LOS) at Virtua Health.

Methods: This retrospective, multi-centered, observational study will compare predefined protocols to determine their effect on LOS for neonates diagnosed with NAS during their admission to our health system. The first protocol, using oral morphine 0.1mg per dose every 4 hours plus oral phenobarbital with a loading dose of 20mg/kg and a daily maintenance dose of 5mg/kg, will be reviewed from July 2011 through March 2012. The second protocol, using low-dose oral morphine monotherapy 0.04mg/kg/dose every 4 hours, will be reviewed from July 2012 through March 2013. The third protocol, using high-dose oral morphine monotherapy 0.4mg/kg/day divided every 4 hours, will be reviewed from July 2013 to March 2014. Any infants diagnosed with NAS within the study periods who were started on medication therapy will be included in this study upon their discharge. Data collected will include gestational age, birth weight, medications that the baby was exposed to in utero, NAS scores, treatment medications and doses, time to initial symptom control (defined as 24 consecutive hours of scores less than 8), need for rescue doses, LOS, and method of nutrition (breast milk versus formula). Data between groups will be compared to identify trends of each protocol.

10-088

Title: Evaluation of rifaximin therapy for the treatment of hepatic encephalopathy (HE) in hospitalized adult patients

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Purpose: The 2001 American College of Gastroenterology guidelines for HE treatment recommend lactulose as first line therapy. The guidelines do not specify the role of rifaximin. Recent studies comparing rifaximin versus lactulose show similar efficacy. Some studies show decreased side effects and fewer hospitalization days with rifaximin. Newer studies show improved cure rates, decreased mortality and hospitalizations, and decreased breakthrough HE episodes for lactulose plus rifaximin combination therapy over lactulose alone. The objective of this study is to evaluate rifaximin use at our institution to identify areas for optimization of HE treatment. Secondary outcomes include rates of re-hospitalization and adverse events.

Methods: This study was exempt from institutional review board approval due to its retrospective, non-interventional design. A computer generated report of patients who received rifaximin from January 1, 2013 to June 30, 2013 was collected. Chart review will be conducted on these patient cases to assess rifaximin use including indication, dosing, treatment duration, HE grade using West Haven criteria, and utilization of combination therapy. Details regarding re-admissions and adverse drug reactions will also be collected. All data will be recorded without patient identifiers to maintain confidentiality. Information obtained will be used to assess if rifaximin is being used in accordance to recent studies and if treatment approaches can be optimized.

10-089

Title: Evaluation of Rivaroxaban Utilization Practices in a Tertiary Care Teaching Hospital

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Purpose: Rivaroxaban is a new oral anticoagulation agent with multiple approved indications including the following: postoperative thromboprophylaxis in patients who have undergone hip or knee replacement surgery, prevention of stroke and systemic embolism in patients with nonvalvular atrial fibrillation, and treatment of thromboembolism. Since its introduction to market in 2011, rivaroxaban has been readily utilized throughout Saint Barnabas Medical Center. Inappropriate doses and/or frequency in dosing of rivaroxaban can place patients at risk for incomplete thromboprophylaxis, subtherapeutic management of thromboembolism, or major bleeds. The purpose of this study is to evaluate the medication use practices of rivaroxaban in a hospital.

Methods: In order to evaluate the utilization practices of rivaroxaban in a tertiary care teaching hospital, a retrospective chart review will be performed. The study will include 150 adult patients who received rivaroxaban during the period of April 2013 to July 2013. Medical records will be reviewed and the following data will be collected: various patient-specific demographics, creatinine clearance, indication, and rivaroxaban dose. The data will be used to evaluate the appropriateness of rivaroxaban dosing based on indication, the appropriateness of dosing in renal dysfunction, and discontinuation of concomitant anticoagulation therapy with rivaroxaban initiation. In addition, time of administration in respect to meals will be evaluated for the 15mg and 20mg rivaroxaban doses. Patient length of stay will be assessed and adverse drug reactions will be identified.

10-090

Title: Impact of pharmacist intervention on dose optimization of commonly prescribed antibiotics based on renal function

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Purpose: Antibiotic dose optimization is essential in the management of infections. An important consideration in dosing antimicrobials is renal function. Patients presenting with acute renal failure are intitially prescribed lower doses of antibiotics based on creatinine clearance (ClCr). However, as renal function improves, it is suspected that antibiotic doses often remain unchanged. Subtherapeutic antibiotic dosing increases treatment failure, unnecessary escalation to broader-spectrum antibiotics, and selection of resistant pathogens. The goals of this study are to characterize the prevalence of suboptimal antibiotic dosing based on ClCr and to determine whether pharmacist intervention can optimize antibiotic dosing in these patients.

Methods: To determine the baseline prevalence of suboptimal antibiotic dosing, the pharmacy database will be used to retrospectively identify patients receiving subtherapeutic antibiotic doses of piperacillin/tazobactam, meropenem, cefepime, ciprofloxacin, and/or levofloxacin based on ClCr over a 2-week period prior to pharmacist intervention implementation. Electronic clinical alerts will notify the pharmacist of patients receiving a subtherapeutic dose of select antibiotics based on ClCr. Pharmacists will then contact the prescriber to modify the dose according to institutional guidelines. To determine the impact of the intervention, 2-week post-intervention data will be compared to pre-intervention data. Patients who received one-time doses of antibiotics and patients who were receiving renal replacement therapy will be excluded from the analyses. Data collection will include: demographic information, daily ClCr, prescribed antibiotic and initial dose, dose modifications, total days of treatment, and days of subtherapeutic dosing. The primary endpoint is difference in number of subtherapeutic study antibiotic days of therapy per 100 study antibiotic days of therapy during the 2-week period in the pre-intervention vs. post-intervention groups. Secondary endpoints include number of patients receiving subtherapeutic study antibiotic doses per patient on study antibiotics in the pre-intervention vs. post intervention groups. This study is pending Institutional Review Board approval.

Results: In progress

Conclusion: In progress

10-091

Title: Implementation and impact of a multidisciplinary penicillin allergy skin testing service within an antimicrobial stewardship program

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Purpose: The objective of this study is to assess the impact of a multidisciplinary penicillin allergy skin testing (PAST) service in our Medical/Surgical Intensive Care Unit (MSICU). Patients who have penicillin susceptible cultures may be appropriate for beta-lactam therapy but it cannot be given due to their allergy status. Implementation of PAST service within our Antimicrobial Stewardship Program will enable us to select the most appropriate agents for patients with negative test results, thereby minimizing antimicrobial resistance and providing cost-effective therapy.

Methods: Pharmacists reviewed the MSICU patient census list daily to determine those with self-reported penicillin allergy. All applicable patients who were awake and oriented were interviewed by a pharmacist to obtain a medication allergy history which was then used to update their allergy status. Patients who had a documented penicillin allergy and were 18 years old with a beta-lactam susceptible culture met the inclusion criteria for the PAST. They were excluded if they had one of the following: history of Stevens-Johnson syndrome or toxic epidermal necrolysis from a beta-lactam antibiotic, history of anaphylaxis from any medication, antihistamine medications within 24 hours of enrollment, history of immunosuppression, and greater than 5 medication allergies. Informed consent was obtained and the PAST was performed by a medical resident. Any change in antimicrobial therapy following a negative test result was initiated at the physicians discretion. Patients demographics, original antibiotic and changes, cost(s) of antibiotics, cost savings, and PAST results were collected and analyzed to determine the effectiveness of this protocol.

Results: Thirty-one patients with reported penicillin allergies were admitted to our institutions MSICU from April to September 2013. One patient has received the PAST to date. After the negative result, the patients aztreonam was changed to cefepime for the remaining 36 hours of therapy. The patient showed no symptoms of an immunologic response to the beta-lactam antibiotic. Due to this change in antimicrobial management, there was a $90 savings in drug cost. The study population was 20/31 (64.5%) females and average age 69 years (SD 16). Penicillin allergy was reported in 25/31 (81%) while an amoxicillin allergy was reported in 2/31 (6%). The most common penicillin allergy reactions were: unknown 12/31 (39%), rash 6/31 (19%), anaphylaxis 3/31 (10%), pruritus 2/31 (6%), and angioedema 2/31 (6%). Out of the 31 patients, 8 (26%) had penicillin resistant cultures, 4 (13%) had penicillin

susceptible cultures, 9 (29%) had negative cultures, and 7 (23%) had no cultures. Vancomycin 16/31 (52%), aztreonam 11/31 (35%), metronidazole 7/31 (23%), and levofloxacin 7/31 (23%) were the most commonly used antibiotics.

Conclusion: The implementation of PAST has the potential to be a cost saving protocol for patients with a history of penicillin allergy. Furthermore, clarifying patients allergy information can help direct appropriate antibiotic therapy and minimize the development of resistance. Limitations include piloting the study in only one unit and awaiting culture and sensitivity results. Additionally, discomfort administering PAST in hemodynamically unstable patients and the inability to interview intubated or heavily sedated patients presented difficulties and limited our patient population.

10-092

Title: Discharge Medication Reconciliation: Impact of Instituting a Pharmacist-Driven Review Process

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Purpose: To conduct a retrospective review of data collected by a pharmacist discharge medication review service in order to determine the impact on medication discrepancy rates and potential cost savings to the institution.

Methods: During an intervention period from June 24 to July 30, pharmacists notified providers of discharge discrepancies and providers received education on discharge medication reconciliation workflow. A retrospective review was then performed to collect data immediately after intervention and 4 months post intervention to assess the impact of a pharmacist-driven discharge medication review service on medication discrepancy rates. Pharmacists utilized the following sources to identify medication discrepancies: prior to admission (PTA) medication lists, discharge medication lists, inpatient medication lists, provider notes, and the after-visit summary (patient's discharge paperwork). Any discrepancies identified were clarified with the nurse and/or provider prior to patient discharge. Pharmacists will be documenting the completion of a discharge medication review as well as any noted medication discrepancies using the intervention documentation tool (Ivents) within the EMR. Medications discrepancies will be placed into one of the following 5 categories: omissions, monitoring events, duration of therapy, inappropriate dose/route/frequency, and miscellaneous to encompass other identified discrepancies. These categories correspond to the Ivents utilized in our institution's documentation for discrepancies. Discrepancies will also be stratified according to likelihood of causing an adverse drug event in a patient. The stratifications will be critical, high, and medium risk. Individual documentation is only required for discrepancies of critical or high severity. Pharmacists were given guidelines on documentation of discrepancies, including selection of severity of the discrepancy.

Results: Data analyses are pending.

Conclusion: Conclusions are pending.

10-093

Title: Evaluating Antibiotic Utilization in Patients who Developed Healthcare-Associated Infection From Clostridium difficile Infection in a community hospital

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Purpose: Clostridium difficille infection (CDI) is classified as a healthcare-associated infection (HAI) by the Centers for Disease Control and Prevention. When evaluating hospital performance, HAI CDI has become an item of scrutiny. Antimicrobial therapy has been identified as the most modifiable risk factor for development of CDI2. Antibiotics with a history of causing CDI are clindamycin, fluoroquinolones, cephalosporins, and broad spectrum penicillins. Studying past HAI CDI cases can identify opportunities of improvement for future antibiotic interventions. The objective of this study is to determine trends from antimicrobial use that may influence HAI CDI development at Kimball Medical Center.

Methods: A list of hospital-associated infection (HAI) caused by Clostridium difficile infection (CDI) will be obtained from the Kimball Medical Center's Infection Control department. Patient medication profiles will be individually assessed and focus primarily on each individual's antibiotic regimens. Data to be collected includes antibiotic drug, dose, frequency, route of administration, and duration of therapy before C. diff diagnosis. CDI is diagnosed when a patient presents with both diarrhea and positive test for toxigenic C. diff or colonoscopic or histopathologic findings demonstrating pseudomembraeous colitis. An infection is consider HAI when the infection criterion first presents together at day 3 if day 1 is the first day of hospital admission. Patients who were diagnosed with Clostridium difficile infection and have met the requirements for hospital-associated infection from January 2012 to August 2013 will be included in this study. CDI cases not fitting this inclusion criteria will be excluded. Patients who developed HAI CDI but did not receive antibiotics during their length of stay will also be excluded. Patients only treated with either vancomycin, metronidazole, tetracycline, aminoglycoside, and chloramphenicol will also be excluded. These medications rarely cause CDI when used alone. Further data will also be gathered on the total number of patients and total number of doses used for each specific antibiotic. HAI CDI antibiotic patient data and total antibiotic usage data will be used to determine the percentage of doses associated with HAI CDI for each individual antibiotic from January 2012 to August 2013.

10-094

Title: Evaluation of liposomal bupivacaine for pain management after total knee arthroplasty in an academic medical center

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Purpose: Infiltration of local anesthetics into the surgical site is part of a multimodal approach to postoperative pain management. The objective of this study is to assess whether a single injection of liposomal bupivacaine provides superior pain control and patient outcomes compared to the current standard of care after total knee arthroplasty (TKA).

Methods: Prior to initiation, this study will be submitted to the Institutional Review Board for approval. The electronic medical record will be used to identify patients who underwent unilateral TKA from July 2012 through December 2013. The control group will be comprised of patients who received the standard of care. The comparator group will include patients who received liposomal bupivacaine by wound infiltration at the end of surgery. Patients will be excluded if they underwent bilateral TKA. The following data will be collected for 72 hours following the procedure: numeric rating scale pain scores, distance ambulated, time to ambulation, degree of knee flexion, total opioid consumption, and length of stay. Data will be recorded and maintained in a password-protected database without patient identifiers. A comparison between liposomal bupivacaine and the standard of care will be made to analyze differences in postoperative pain scores, distance ambulated, time to ambulation, degree of knee flexion, total opioid consumption, and length of stay.

10-095

Title: The Effect of Computerized Heparin Nomogram Work Flow on Time to Therapeutic aPTT

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Purpose: In 2008 National Patient Safety Goals were updated with the new requirement to "reduce the likelihood of patient harm associated with the use of anticoagulation therapy". One way to meet this NPSG is to ensure strict adherence to heparin nomogram. Following release of this new NPSG, we performed a critical review of adherence to existing paper-driven heparin nomogram and found inconsistencies in timing of the aPTT orders and timely drip rate adjustments that often led to delayed timing to achieve therapeutic aPTT. This study was aimed to determine if newly developed computerized heparin nomogram work flow would allow increasing number of patients with therapeutic aPTT levels at 24 hrs after the initiation of heparin infusion.

Methods: From hospital retrospective chart review, a number of patients > 18 years of age that received heparin according to ACS /standard paper-driven protocol will be randomly assigned to the control group. This control group will be compared for primary outcome with the retrospective cohort of patients that received heparin according to ACS/standard protocol that was driven by computerized work flow. Patients with hepatic disease or blood coagulation disorders will be excluded from the study. All patients' identifiers will be removed from the data analysis.

Results: Collected data will be analyzed to determine if computerized work flow will decrease time to therapeutic aPTT.

Conclusion: It is anticipated that this study will help to show the utility and efficacy of automated computerized work flow in improving patients` care and achieving NPSG requirements.

10-096

Title: Ceftaroline and vancomycin combination therapy for methicillin resistant staphylococcus aureus endocarditis

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Case Report: Infective endocarditis (IE) is a syndrome that can lead to significant morbidity and mortality. The most common pathogen associated with IE is Staphylococcus aureus, of which approximately half may be methicillin resistant. Vancomycin has been the mainstay of therapy for methicillin resistant staphylococcus aureus (MRSA) endocarditis but outcomes are often poor with a delayed clinical response. Ceftaroline has excellent bactericidal activity and high sterilization rates to MRSA. In isolated case reports ceftaroline has been utilized in patients with refractory MRSA endocarditis. This case series shows a possible alternative therapy for MRSA endocarditis. Patient 1 was a 48 year old diabetic male diagnosed with MRSA bacteremia. Multiple blood cultures grew MRSA and the patient spiked a temperature of 102.2 degrees Fahrenheit. The patients white blood count (WBC) was 15.2 cells/mm3 and creatinine clearance (CrCl) was approximately 160 to 170 ml/min. On day 2, vancomycin 1800 mg intravenous (IV) every 12 hours was initiated based upon weight and renal function. Despite 8 days of therapy resulting in therapeutic vancomycin troughs between 15 to 20 mg/L, the patients blood cultures were still persistently positive. On day 10, ceftaroline 600 mg IV every 12 hours was added to vancomycin therapy. On day 11, the patients blood cultures showed no growth and his WBC decreased to 8.1 cells/mm3 from 11.4 cells/mm3. The patient received 9 days of combination therapy while admitted and was then discharged on 2 additional weeks of ceftaroline and 4 weeks of vancomycin. Patient 2 was a 91 year old female on hemodialysis who presented with a temperature of 102.3 degrees Fahrenheit, a WBC of 19.1 cells/mm3 and blood cultures resulting in MRSA. The patient was started on vancomycin and dosed by level resulting in therapeutic troughs. On day 7, the patients WBC remained elevated and serial blood cultures continued to grow MRSA. On day 8, ceftaroline 200 mg IV every 12 hours was added to vancomycin therapy. On day 12, the patients blood cultures had no growth and on day 13 her WBC had declined to 9.2 cells/mm3. The patient received 9 days of combination therapy while admitted and was discharged with 4 more weeks of vancomycin. Patient 3 was a 48 year old male with a history of intravenous drug use. The patients WBC was 17.1 cells/mm3, CrCl 85 to 95 ml/min and blood cultures grew MRSA. On day 2, vancomycin 1100 mg IV every 12 hours was started and adjusted to maintain a trough of 15 to 20 mg/l. On day 3 the patients WBC increased to 23 cells/mm3 and blood cultures continued to grow MRSA, prompting the addition of ceftaroline 600 mg IV every 12 hours. On day 5, the patients blood cultures showed no growth and her WBC was trending down. The patient received 17 days of combination therapy and was discharged on 4 more weeks of vancomycin. Ceftaroline is currently only FDA approved for complicated skin and skin structure

infections and community acquired pneumonia. This case series suggests that ceftaroline may be an attractive adjunct therapy in the treatment of MRSA endocarditis, shortening hospital stay although further studies will be needed.

10-097

Title: Effectiveness of INR Reversal Agents within the Emergency Department for Acute Major Bleeding Events

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Purpose: The overall purpose of the study is to compare the efficacy of Kcentra, Profilnine, and Fresh Frozen Plasma (FFP) with phytonadione, when used to treat patients presenting to the emergency department with active major bleeding due to an elevated INR.

Methods: A retrospective chart review of patients receiving Kcentra, Profilnine, or FFP will be performed utilizing the institution's medical record system. Patients who received Kcentra, Profilnine, or FFP while in the emergency department or admitted to Robert Wood Johnson University Hospital between April 1, 2009 and April 1, 2013 will be included. Patients will be excluded if they were pregnant or lactating. IRB approval was obtained from the institution. Age, gender, height, weight, hospital length of stay, baseline international normalized ratio (INR), partial thromboplastin time (PTT), prothrombin time (PT), INR at 1, 6, 12, and 24 hours after administration, post-study drug PTT, post-study drug PT, dosage, number of doses, rate of infusion, warfarin indication, documentation of thrombosis, time from Kcentra, Profilnine, or FFP administration to initial measurement of INR, PTT, and PT will be analyzed.

10-098

Title: Evaluating the Impact of a Multi-disciplinary Team to Reduce Heart Failure Admissions

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Purpose: To evaluate the impact of the transitional care team along with pharmacy collaboration to reduce heart failure hospital readmission rates.

Methods: The transitional care team identifies patients with a diagnosis of HF to work collaboratively with inpatient and outpatient physicians to screen, educate, and orient the patient to their disease state. The nurses provide educational material, arrange home health care needs, and schedule outpatient appointments. The interventions of the transitional care team were documented prospectively from January 2013 to July 2013. Pharmacist collaboration began February 2013 and consists of inpatient counseling of medications and telephone calls to the patients 72-96 hours post-discharge. Patients who could benefit from medication counseling were identified by the transitional care nurses and referred to the pharmacy services. Rates of readmission due to HF within 30 days of discharge were retrospectively evaluated and analyzed 6 months prior to and 6 months after the program implementation.

Results: The transitional care team has followed 402 patients as of July 2013. Pharmacy was consulted on 19 of these cases. Prior to the program, the 30 day readmission rate for HF patients at Clara Maass Medical Center was 27.01% in December of 2012. The rate of readmission has steadily declined since the initiation of the program to a low of 19.1% for May 2013. Of the patients counseled by pharmacy, only one has been readmitted within 30 days of discharge.

Conclusion: Readmission rates were significantly reduced following the implementation of the transitional care team at Clara Maass Medical Center. The addition of counseling and follow up from pharmacists shows a further decrease in patient readmission rates.

10-099

Title: Evaluating the appropriate use of epoetin alfa in the treatment of anemia in hospitalized adult patients

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Purpose: Anemia is common in several patient populations, including those with chronic kidney disease, cancer, and HIV/AIDs. Management of anemia may require treatment with erythropoetin-stimulating agents (ESA), such as epoetin alfa. A benefit to ESA use is the decreased need for blood transfusions; however, risks include cancer progression, cardiovascular events, thrombovascular events, and increased mortality. Given the safety concerns, a medication-utilization evaluation program of epoetin alfa was conducted. The primary objective was to evaluate appropriate use with regard to indication, dosing, and monitoring. Secondary objectives included evaluation of pre-treatment of iron stores, specialist involvement, and compliance with ESA APPRISE Oncology Program.

Methods: This was a single-center, prospective review including all inpatient recipients of epoetin alfa beginning in August 2013. Patient demographics collected included age, gender, weight, allergies and primary diagnosis. Chart reviews were conducted daily during this time period to review indications for use, weight-based dose, dosing schedule, hemoglobin levels, and prescribing physicians specialty. Data regarding 100 patients were reviewed. It was recommended to discontinue treatment when hemoglobin exceeded 11g/dL. Results of any performed iron studies were noted as well as whether or not supplemental iron was given. Any patient-specific data collected was de-identified and collected on a secure, password-protected computer. The results of this review will be used to optimize the practices associated with the use of erythropoetin-stimulating agents at our institution. This study was approved by the Institutional Review Board.

10-100

Title: Reassessing hydromorphone utilization after policy updates in a community teaching hospital

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Purpose: Hydromorphone is an opioid approved for treating moderate to severe acute or chronic pain either alone or as combination therapy. We had previously conducted a study in our institution to assess the appropriateness of hydromorphone use in geriatric patients which identified issues in pain scale interpretation, analgesia for all levels of pain, and duplication of therapy. We subsequently updated our Pain Management Policy and provided house wide education. The objective of this retrospective chart review is to assess the effect of our initiatives to improve hydromorphone utilization.

Methods: The hospital electronic medication administration record will be utilized to identify patients who have received hydromorphone from July through September 2013, of which 50 patients will randomly be selected for evaluation. Institutional review board approval was obtained, and all data will be maintained confidentially. Patients prescribed at least one dose of hydromorphone, either around the clock or as needed, during their stay will be included; patients in the Emergency Department, Maternity, or Behavioral Health units, along with patients receiving epidural or patient controlled analgesia formulations, will be excluded. Patient demographics, indication, pain score, concomitant pain medication(s), renal and hepatic function, respiratory rate, ordered hydromorphone dose and frequency, total amount of drug administered daily, patient opioid tolerance, and duration of therapy will be collected. The data will then be evaluated for appropriateness to determine if further measures are necessary to rectify previously identified issues.

10-101

Title: A comparison of perceptions of two formulations of supersaturated calcium phosphate mouthwashes for the prevention and treatment of chemotherapy induced oral mucositis

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Purpose: Our institution has recently switched formulations of supersaturated calcium phosphate mouthrinse for chemotherapy induced oral mucositis. The objective of this study is to evaluate the perception of registered nurses, pharmacists, and pharmacy technicians on patient preference, compliance, ease of preparation, efficacy, and timely and effective distribution of the medications to the units.

Methods: Prior to the initiation, the study will be submitted to the Institutional Review Board for review. Surveys will be distributed to registered nurses in the adult and pediatric hematology oncology units. Data points to be collected in the survey will include the indication for which the mouthrinse is ordered (treatment versus prevention), perceived efficacy of the drug in treatment versus prevention of oral mucositis, ability of the drug to decrease the need for pain medications, patient compliance and satisfaction, palatability of the mouthrinse, and ease of preparation. Separate surveys will be distributed to pharmacists and pharmacy technicians focusing on the ease of packaging, verifying, and distributing of the medications to the units. All surveys will be anonymous. After a month of switching to the new formulation, the survey process will be repeated again to elicit feedback on the new product. Results will be summarized to illustrate differences between the two formulations.

10-102

Title: Evaluation of the impact that post-discharge telephone counseling by pharmacy residents and advanced pharmacy practice students has on readmission rates for congestive heart failure patients

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A. Maggie Randazzo

Purpose: Heart failure readmission rates in the United States have been reported as high as fifty percent. Congestive heart failure readmissions cause hospitals to lose millions of dollars annually. Studies have shown that inclusion of a pharmacist on a multidisciplinary heart failure management teams is beneficial because patients have reported medication noncompliance as the highest contributing factor for readmission. This project was designed to assess the effects that telephone counseling provided by pharmacy residents and advanced practice pharmacy students at a community hospital have on the readmission rates of congestive heart failure patients.

Methods: A retrospective chart review of patients with an International Classification of Diseases ninth revision (ICD-9) code corresponding to congestive heart failure will be done to ascertain the readmission rate of all congestive heart failure patients over a six month period. Pharmacy residents and advanced pharmacy practice students will be trained and evaluated for competency on telephone counseling regarding congestive heart failure management. Once a patient has been discharged, a resident or an advanced pharmacy practice student will contact each heart failure patient weekly via telephone for two months. Patients will be asked a standard questionnaire of ten questions to assess for medication compliance as well as adverse reactions, and any patient concerns regarding medications will be addressed. One of the questions will specifically assess for readmission to any hospital within one month of discharge. All data and patient identifiers will be kept confidential. The institutions Institutional Review Board (IRB) was contacted for approval, but stated that it was not needed. The primary endpoint of the project will be the change in readmission rates from the baseline data.

10-103

Title: Cost savings evaluation of utilizing ideal body weight (IBW) versus actual body weight (ABW) in dosing immune globulin, intravenous (human) (IVIG) at a medical center

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Purpose: Immune globulin, intravenous (Human) (IVIG) has numerous indications and various dosing regimens. Due to its little distribution into fat and because IVIG remains mainly in the intravascular space, various institutions have implemented IBW dosing for IVIG. Reducing supply shortages and significant cost savings may exist by using IBW or adjusted body weight (Adj-BW) to dose IVIG. The purpose of this evaluation is to investigate potential cost savings associated with IVIG dosing based on IBW or Adj-BW. Primary endpoints will be the total savings in dollars per year and the total number of gram savings per year.

Methods: This is a retrospective, observational medication use evaluation (MUE) of IVIG use in a 700 bed medical center. This study was exempt from the Institutional Review Board as it is a retrospective study. A hospital-wide report was generated of all patients who received IVIG products between January to December 2012. The following data will be collected for each patient: indication for IVIG, ordering physician, gender, height, ABW, dose of IVIG, and total doses administered. Pediatric patients (less than 18 years old) will be excluded from this evaluation. The following will be calculated for each patient: IBW (using the BJ Devine formula), body mass index (BMI), and Adj-BW for patients with BMI greater than or equal to 30. In the instances where ABW is less than IBW, the patients ABW will be utilized. The difference in grams between ABW-dosing and IBW-dosing or Adj-BW dosing will be calculated for each infusion. Cost savings will be calculated based on cost per gram of IVIG product used at our institution (48-77 dollars/gram) and the sum of the difference in grams between the dosing regimens. All patient data will be de-identified and stored on an encrypted secure password-coded computer.

10-104

Title: Comparison of pain assessment and management for patients receiving intermittent opioid analgesia versus patient controlled opioid analgesia

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Purpose: As per Joint Commission Sentinel Alert number 49, pain assessment and reassessment in hospitalized patients are vital components for safe use of opioid analgesic agents. It is often challenging to assess and reassess a patients pain with frequent administration of intermittent intravenous analgesics. There is limited research comparing intermittent bolus regimens to patient controlled analgesia regarding compliance to pain assessment documentation and any subsequent impact on the provision of safe and effective pain management. The objective of this study is to determine whether patient controlled or intermittent intravenous opioid analgesia result in improved pain assessments and patient-specific regimen adjustments.

Methods: This study will be submitted to the hospitals Institutional Review Board as an exempt protocol. A retrospective chart review will be conducted for all hospitalized patients 18 years or older who received intermittent intravenous boluses of morphine or hydromorphone or patient controlled analgesia during June 2013. Exclusion criteria will be patients who received a one-time dose of morphine or hydromorphone and patients who are in procedural areas of the hospital. Data collection will include patient demographics, pain regimen (patient controlled analgesia or intermittent boluses including the medication, dose and frequency), number of complete or incomplete pain assessments or reassessments, the patients pain score, and adjustments made to the pain regimen. Patient information will be de-identified and kept confidential on a password-protected computer. The data will be used to assess differences between intermittent opioid administration and patient controlled analgesia on pain assessment documentation and subsequent management, in order to determine the most effective way to manage pain in the hospitalized patient.

10-105

Title: Impact of pharmacist intervention in the prevention of medication errors in an acute psychiatric hospital

Primary Author: Rachel L Rivera**,** Barnabas Behavioral Health, 1691 U.S. Highway 9, CN 2025, Toms River, NJ 08754; **Email:** rachelriverapharmd@gmail.com

Purpose: According to the Institute of Medicine, medication errors are common during every aspect of the medication use process in the hospital setting. The most frequent nodes of error are prescribing and administering. Mental health patients are considered a vulnerable population and are at an elevated risk for errors in the inpatient setting. Medication error occurrence and prevention strategies are under-reported in the mental health setting. The objective of this study is to quantify medication errors prevented by pharmacists before and after implementation of a computerized provider order entry (CPOE) system.

Methods: A retrospective analysis of pharmacist interventions documented in an acute psychiatric hospital was performed for the 6-month period following implementation of a new CPOE system (2/17/13-8/17/13). The post-CPOE interventions will be compared with interventions documented by the pharmacists between 2/17/12 and 8/17/12. Intervention data will be collected utilizing the facility's interventions, error and adverse drug reaction reporting system, Quantifi. For the purpose of this study, the following interventions will be classified as a medication error prevented by the pharmacist: Clarification (Administration Time Changed, Allergy Info Clarified, Computer Order Entry, Contraindicated Med, Dosage form changed, Dose incorrect/omitted, Dose verified, Duplication therapy, Frequency adjusted/omitted, Medication incorrect, Medication unavailable, Parameters/indication missing, Patients own med ordered, Route of administration), Coag INR evaluated, Lab (Evaluated CBC, Evaluated drug level, Evaluated lipid profile, Evaluated SMA 12), Medication Reconciliation Completed, Quality (Add omitted order, Alcohol withdrawal prophylaxis initiated, Allergy prevented, Benzodiazepine withdrawal prevented, Case Review, Cerner order resolution, Drug/disease interaction, Drug/drug interaction, Drug/pregnancy interaction, Duration of therapy omitted from order, Geriatric medication inappropriate, Med consult ordered, Med error prevented, Med error reconciliation, Med history outside pharmacy, Medication without indication, Re order medication initiated, Verify order), Renal dose evaluation.

10-106

Title: Involuntary muscle movements associated with new onset diabetes

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Case Report: Purpose: This case examines the treatment of a 76 year old male with involuntary movements associated with new onset type 2 diabetes mellitus. The patient originally presented with a one year history of ambulatory dysfunction complaining of progressive weakness in his lower extremities with new onset head bobbing. The patient had no significant past medical history, had not seen a primary care provider in over eight years, and complained of weight loss, a two to three week history of polydipsia, and polyuria. Despite the initial physical exam being unremarkable, the patient was found to have a blood glucose level of 835 mg/dL, a hemoglobin A1C of 16.9%, sodium of 128 mEq/L (corrected sodium of 140 mEq/L), and a lipid profile significant for a total cholesterol of 189 mg/dL, high density lipoprotein of 31 mg/dL and triglycerides of 444 mg/dL. The patient was in acute renal failure with a BUN of 26 mg/dL, serum creatinine of 1.82 mg/dL and urinalysis showed a urine glucose of greater than 1 gram/dL. Imaging studies showed chronic bilateral thalamic lacunar infarcts on a computed tomography scan. During this first visit, the patient was diagnosed with uncontrolled diabetes mellitus with hyperosmolar non-ketotic state, acute renal failure, and dyslipidemia and was prescribed sitagliptin, pravastatin, sliding scale insulin aspart before meals, metformin, glargine every morning, glimepiride, and aspirin. The etiology of movement disorders in patients with diabetes is unknown but its prevalence as described in the medical literature is increasing. The proposed hypotheses include striatal changes due to petechial hemorrhages, reduced cerebral blood flow from high serum osmolarity which cause basal ganglia dysfunction, and depletion of gamma-aminobutyric acid and acetylcholine neurotransmitters in the putamen. Literature recommends lowering blood glucose levels to control abnormal movement induced by the uncontrolled hyperglycemia1. In this case, the patient was readmitted less than a week later complaining of increased akasthisia. He was unable to sleep, check blood glucose levels or take insulin due to his constant movement. In the hospital, the patients involuntary muscle movements were reduced but uncontrolled despite adequate blood glucose control and the administration of diazepam and diphenhydramine. A change to divalproex and benztropine provided additional control of his dyskinesia. The patient was discharged on a movement regimen consisting of diphenhydramine and divalproex, but returned four weeks later with worsening involuntary movements even though his blood sugars were controlled in the 70 100 mg/dL range. On this third presentation, the patient was flailing and thrashing on the stretcher, dehydrated, and had an elevated serum creatinine of 1.95 mg/dL. The magnetic resonance imaging studies and autoimmune workups were negative. Despite brief trials of diphenhydramine, benztropine, lorazepam, clonazepam, levetiracetam, divalproex and risperidone in the hospital setting, the patient continued to experience varying degrees of dyskinesia. The patient was subsequently transferred to another institution for

evaluation and consideration of tetrabenazine therapy. This patient case highlights treatment challenges of a non-typical presentation of movement disorder associated with new onset diabetes which persisted despite tight glucose control and multiple trials of anticonvulsants, anticholinergics and benzodiazepines with non-diagnostic imaging studies. Reference: Jagota P, Bhidayasiri R, Lang AE. Movement disorders in patients with diabetes mellitus. J Neurol Sci. 2012 Mar 15;314(1-2):5-11.

10-107

Title: Dabigatran induced intracranial hemorrhage

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Case Report: The purpose of this case is to report an occurrence of intracranial hemorrhage induced by dabigatran in an 83 year old female. This event was assessed to be a possible adverse drug reaction based on the Naranjo Nomogram (score of 4). The patient presented to the emergency department with sudden onset of left sided weakness with an associated right sided headache after experiencing a fall. She was brought to the ED via ambulance after her daughter came home and found the patient slumped over on the floor. Upon assessment, the patient revealed that she was on the floor for four hours but was in her usual state of health prior to the fall. Her past medical history is significant for atrial fibrillation treated with dabigatran and metoprolol succinate, hypertension treated with amlodipine, anxiety treated with alprazolam and sertraline, and hyperlipidemia treated with rosuvastatin. Complete blood count indicated hemoglobin 12.6 g/dl, hematocrit 16 g/dl, platelets 249,000/microliter, and activated partial thromboplastin time 25.3 seconds. Basic metabolic panel revealed a serum creatinine of 0.59 mg/dl resulting in creatinine clearance of 67.6 ml/min using the Cockcroft Gault formula. Noncontrast head computerized tomography revealed a large right sided frontoparietal parenchymal hemorrhage, with mass effect and midline shift of 17 millimeters. Complete neurology assessment findings indicated left sided facial droop, left sided facial numbness, unequal hand grasps (right stronger than left), upper extremity strength moderately weak on the left, lower extremity strength weak on the left, and unequal foot press with right greater than left. A diagnosis was made for intracranial hemorrhage possibly related to dabigatran and the patient was transferred to the Intensive Care Unit. On admission, dabigatran was discontinued and the patient was infused with two units of fresh frozen plasma. On day 2 of hospitalization, hemoglobin and hematocrit decreased to 11.4 g/dl and 37.3 g/dl respectively. The patient underwent hemodialysis on day of admission and day 2 in an attempt to reverse the effects of dabigatran. Clinical improvement was noted after hemodialysis, as the patients headache started to subside. By day 3, the patients hemoglobin and hematocrit began improving and was normalized by day 4 to 12.5 g/dl and 36.6 g/dl respectively. This case suggests a potential adverse drug reaction of intracranial hemorrhage with dabigatran in elderly patients. Since numerous post marketing cases of hemorrhage have been reported with the use of dabigatran, a causal relationship to drug exposure is established, particularly in this age group.

10-108

Title: Clostridium innocuum bacteremia in a 104 year old patient

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Case Report: The following case report supports the use of ertapenem for the treatment of Clostridium innocuum bacteremia. Clostridium innocuum is part of the human gastrointestinal flora and displays intrinsic resistance to many antimicrobials, including vancomycin. Clostridium innocuum has been rarely associated with bacteremia, typically occurring in immunocompromised patients. A 104 year old Caucasian male with a past medical history of benign prostate hypertrophy and bladder incontinence presented to the emergency department after experiencing a fall. Upon admission, the patient complained of abdominal pain and a complete blood count revealed leukocytosis. The patient quickly decompensated with hypotensive shock secondary to sepsis and was transferred to the intensive care unit (ICU). Despite being afebrile, vancomycin and ertapenem were started for empiric therapy. Two sets of blood cultures were collected on admission. One set revealed gram positive anaerobic rods and the other set grew yeast on ICU day 1. A bladder ultrasound was performed and found no masses on the kidneys, a normal spleen, and evidence of cholelithiasis. On ICU day 3, Clostridium innocuum was identified in one of the initial blood cultures and the patient was transferred out of ICU to a step down unit. The patient was then started on intravenous metronidazole. On hospital day 4, both sets of initial blood cultures were finalized. The first bottle grew Candida albicans and Clostridium inocuum and the second bottle grew Prevotella loeschii and Clostridium innocuum. The patient continued on ertapenem for 10 days and fluconazole for prophylaxis against a probable fungal infection. Repeat blood cultures were drawn three days after the initial set and both specimens were negative for growth. The metronidazole was discontinued and the patient continued treatment with ertapenem and fluconazole. The source of infection for this patient is still unknown and further inpatient workup and treatment, including a cholecystectomy, was not pursued due to the patient's age. Twenty days later, the patient's clinical status improved and the patient was discharged home. There are only a few published cases of Clostridium innocuum bacteremia, with an unknown optimal treatment regimen. The resolution of this patient's blood cultures and decrease in his white blood cell count illustrate successful treatment of Clostridium innocuum bacteremia with ertapenem.

10-109

Title: Optimization of a methadone protocol for the treatment of neonatal abstinence syndrome

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Purpose: Neonatal abstinence syndrome (NAS) is a constellation of withdrawal symptoms experienced by newborns exposed to opioids prenatally. Limited publications studied the effectiveness of methadone for the treatment of NAS. The neonatal intensive care unit (NICU) at our institution uses oral methadone to treat newborns with NAS. In 2010, the methadone protocol was revised and has been employed with success for the management of NAS. The primary outcome of this study compares the difference in time to medical clearance for discharge in neonates receiving the current methadone protocol versus the former protocol. Secondary outcomes evaluated the difference in deviation between both protocols.

Methods: This is a retrospective chart review performed at a single teaching tertiary care facility. Patient medical records will be collected from the beginning of October 2007 to the end of September 2013. The inclusion criteria include gestational age of 34 to 44 weeks, maternal chronic use of methadone or other opioids during pregnancy, a diagnosis of NAS, and receiving oral methadone for the treatment for NAS. The exclusion criteria are maternal use of substances other than opioids that can precipitate withdrawal symptoms and neurobehavioral dysfunction in the newborns. The primary endpoint is time to medical clearance for discharge. Difference in protocol deviation incidence between the two protocols will also be compared. Information collected include age, birth weight, sex, race, APGARS, mode of delivery, mode of feeding, withdrawal scores based on either the Finnegan or our NICUs Passive Addiction Withdrawal Scoring System, time of methadone initiation, methadone dosing regimen, length of treatment, and number of protocol deviations. Examples of protocol deviations include inappropriate weaning initiation time, suboptimal methadone dosing and frequency, inappropriate weaning rate, use of other medications for weaning that were not specified in the protocol, and failure to increase dose for high withdrawal scores.

10-110

Title: Insulin and heparin therapy for severe hypertriglyceridemia

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Case Report: We report a case of an obese 34 year old male who was admitted for acute pancreatitis secondary to hypertriglyceridemia. The patient was treated with insulin, heparin, and fibrates to reduce his elevated triglyceride levels. There have been several case reports and review articles that attest to insulin therapy and heparin treatment for severe hypertriglyceridemia. The patient presented to the emergency department complaining of nausea and vomiting and severe upper abdominal pain with an amylase and a lipase level of 452 units/L and greater than 30,000 units/L, respectively. Pancreatitis was confirmed after a computed tomography scan revealed inflammation at the head of the pancreas. The patient's past medical history included diabetes, hypertriglyceridemia, nephrolithiasis, and a previous episode of pancreatitis six months prior. Laboratory results showed an elevated glucose level of 297 mg/dL and triglycerides of greater than 4,000 mg/dL. The patient was ordered to receive nothing by mouth except medications and was initiated on intravenous pantoprazole, subcutaneous enoxaparin, intravenous fluids, sliding scale insulin lispro, and fenofibrate. Pain control was managed with morphine and hydromorphone as needed. The patient was found to have uncontrolled diabetes as evident by the glycosylated hemoglobin result of 10.6 percent. After being evaluated by the endocrinologist on day one of admission, the patient had a basal regimen of insulin detemir added to the sliding scale and his enoxaparin was changed to subcutaneous heparin. Following the assessment by the gastroenterologist, the patient's fenofibrate was changed to gemfibrozil. Subsequent evaluations on day two of admission showed improved glycemic control and a decrease in amylase and lipase levels to 17 units/L and 666 units/L, respectively. To further improve serum glucose levels, the patient's basal insulin dose was increased. By day three of admission, the patient's triglyceride levels decreased to 1826 mg/dL. Now stabilized, the patient was consulted by the medical team on his preference of outpatient insulin product to improve compliance. He expressed the desire to use mixed insulin (insulin lispro protamine and insulin lispro) twice daily rather than a basal insulin regimen. A standard diet order was initiated on day four of his admission and the patient was discharged on day five. The patient was given prescriptions for gemfibrozil and the mixed insulin twice daily and instructions to follow up with his primary care physician and endocrinologist two to four weeks after discharge. This case illustrates the successful adjunctive treatment of hypertriglyceridemia with insulin and heparin.

10-111

Title: Risk of Clostridium difficile development in patients receiving broad spectrum antibiotics in combination with stress ulcer prophylaxis

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Purpose: The incidence of C.difficile Associated Diarrhea (CDAD) has increased in the United States over the past decade, along with CDAD associated morbidity & mortality rates. Increasing reports of fluoroquinolone-resistant strains of C.difficile have been reported in the literature. In addition,increased use of gastric acid suppression to prevent stress ulcer development in the ICU has been offered as an alternative explanation for the rising rates of CDAD. The primary purpose of this study is to determine which combination of antibiotics plus gastric acid suppression therapy has the lowest risk for the development of CDAD.

Methods: We will conduct a retrospective study at Virtua Health-System to review all cases of CDAD as a primary occurrence. We will collect and analyze data by reviewing medical records of patients with a diagnosis of CDAD. Primary occurrence of CDAD is defined patients without prior diagnosis of CDAD. CDAD will be defined the development of diarrhea within 2 months of antibiotic usage or 72 hours after hospital admission. Patients must be symptomatic for CDAD with 3 or more unformed stools per day. To confirm diagnosis of CDAD a positive for C. difficile toxin by PCR must be present in the stool, or colonoscopic or histologic evidence consistent with CDAD. We will exclude patients less than 18 years of age, with prior history of CDAD, patients who have not received gastric acid suppression or antibiotics as an inpatient. Patients will be organized into different arms as follows: FQ plus PPI, non-FQ plus PPI, FQ plus H2RA, non-FQ plus H2RA, PPI alone, H2RA alone, non-FQ alone and FQ alone.

10-112

Title: Impact of Alternative Recommendations for Geriatric Alerts Based on the Beer's List

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Purpose: The Beers list is a document that addresses medications that can be potentially harmful to geriatric patients. This list is important because patients over the age of 65 are routinely being prescribed medications which can lead to several adverse reactions. These medications are identified as geriatric contraindications or precautions in the Beer's list. The primary objective of this study is to analyze the overall usage of select Beer's list drugs at baseline vs. post project implementation. Secondary outcomes include mortality, re-admittance, falls reported inpatient, and length of stay.

Methods: Twelve medications on the Beer's list frequently prescribed by Riverside Health System physicians where first identified, and geriatric alerts were attached to these medications. Appropriate alternative medications for each drug were then identified. This experiment was then brought to the System P&T committee in June 2013 and was approved. The project was then turned over to the information technology department for implementation of the alerts and alternatives in the pharmacy software system Soarian.
All team members will be educated on the new alerts either by a physician, nurse, or pharmacist. Education will be completed during the two weeks leading up to the experiment being implemented system wide. Once the experiment is initiated, baseline usage of each of the 12 medication selected in patients 65 or older will be compared to usage post project implementation. Data will also be collected on mortality, re-admittance, falls reported inpatient, and length of stay in patients 65 and older at baseline and post implementation.
Inclusion criteria: Patients aged 65 and older. Patients hospitalized inpatient at a Riverside Health System facility.Patients prescribed one of the select Beer's list medications

Results: Collected data will be analyzed to determine if the addition of alternative recommendations to geriatric alerts decrease overall usage of the select Beer's list medications.

10-113

Title: Evaluation of pretreatment time with dabigatran versus warfarin prior to cardioversion of atrial arrhythmias: a retrospective analysis

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Purpose: The CHEST 2012 guidelines recommend that patients who are deemed appropriate candidates for electrical cardioversion of atrial arrhythmias be appropriately anticoagulated prior to and after the procedure if the duration of atrial fibrillation is >48 hours or unknown. The purpose of the project is to evaluate the pretreatment time of dabigatran versus warfarin prior to planned cardioversion of atrial fibrillation or atrial flutter. The secondary objective is to compare the safety and efficacy of dabigatran to warfarin pretreatment and post-treatment. The tertiary objective is to evaluate the costs associated with pretreatment with dabigatran versus warfarin.

Methods: This project will be submitted to the Research Office for approval as a Quality Improvement/Quality Assurance project. A retrospective chart review of patients undergoing cardioversion from November 2011 to January 2014 will be conducted. Patients who initiated dabigatran or warfarin for the purpose of planned cardioversion of atrial fibrillation or atrial flutter will be included in the study. Exclusion criteria include oral anticoagulant use prior to decision to cardiovert or emergency cardioversion, defined as cardioversion performed within 48 hours of symptom onset. Patients will be assigned to either the dabigatran or warfarin group according to the anticoagulant they received. Time between initiation of dabigatran or warfarin and completion of cardioversion procedure will be evaluated as the primary objective. Additionally, resolution of atrial fibrillation and atrial flutter will be evaluated using 3-month follow-up EKG reports. Hemorrhagic and thrombotic event data will be collected and reviewed during the pretreatment period through 3 months following cardioversion. Using an internal cost analysis for reference, costs of treatment, including drug therapy costs, laboratory costs, and pharmacist monitoring costs, will be evaluated and compared to costs reported in the literature.

10-114

Title: Effect of hepatitis C virus education on patient knowledge and behavior

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Purpose: Hepatitis C virus (HCV) is the leading cause of complications from long-term liver disease and the most common indication for liver transplant among adults. While HCV infection is a concern for the entire nation, the American Indian and Alaskan Native(AI/AN) population is disproportionally affected. The rate of death attributed to HCV infection in 2010 among the AI/AN population was 9.90/100,000 persons, which is nearly twice the national rate. The purpose of this project is to evaluate the effectiveness of a pharmacist-led HCV education campaign for increasing the knowledge level and HCV testing rates in an American Indian community.

Methods: This study has been submitted to the Institutional Review Board for approval. Participants will be invited to attend HCV educational sessions in a variety of settings, including diabetes prevention program events, senior center lunches, and sessions held for inmates in the local jail. At each session, participants will be asked to complete an anonymous pre and post survey assessing demographic information and their knowledge about HCV infection topics including pathology, transmission, risk factors, prevention, and treatment. Surveys will include a series of true/false and multiple choice questions. Pre survey results will be compared to post survey results to assess improvement in knowledge. Additionally, educational material including posters, video slide shows, and radio spots will be distributed throughout the community to encourage HCV testing. Individuals requesting HCV testing at the community clinic will be asked how they learned about HCV, in order to assess the effect of the educational material and presentations on patient behavior. Data from both the surveys and the patient inquiries in clinic will remain complete anonymous at all times. Data for surveys will be compared as percentages, and inquiries will be discussed in terms of the number and percent of patients reporting each source of HCV knowledge.

10-115

Title: Evaluating bisphosphonate initiation rates post fragility fracture at a Veterans community living center and comprehensive rehabilitation unit (CLC/CRU) and the impact on Veteran bone health

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Purpose: Osteoporosis is an undertreated and under recognized health concern. The most frequently prescribed osteoporosis therapy is bisphosphonates. Studies have shown the benefits of bisphosphonates, including improved survival and a rate reduction in new clinical fractures. However, majority of patients with osteoporotic fractures have low rates of bisphosphonate initiation. Veterans in the CLC who were admitted post fragility fracture were evaluated for bisphosphonate initiation, continuation, and outcomes of secondary fractures up to 2 years post discharge. Findings from this study may help improve patient care and be used to develop future recommendations for Veterans at the Portland VA Medical Center (PVAMC).

Methods: The project was exempt from IRB. This retrospective project analyzed all PVAMC patients presenting to the CLC/CRU with a fragility fracture diagnosis in the study period from January 1, 2007 to December 31, 2010. Inclusion criteria consisted of patients who were greater than or equal to 50 years of age. Patients 50 years or less and those who had active bone diseases or cancer, decreased renal function of CrCl <30 mL/min, and corrected calcium <8 mg/dL were excluded from the study. The primary endpoint included the percentage (%) of patients with a fragility fracture that were initiated on a bisphosphonate regimen during their stay at the CLC/CRU. Secondary endpoints included (1) the percentage (%) of patients initiated on a bisphosphonate that continued to receive their prescribed bisphosphonate regimen one year post discharge from the CLC/CRU and (2) the percentage (%) of patients experiencing a secondary fragility fracture two years post discharge.

Results: A total of 192 patients with a fragility fracture were identified at the PVAMC within the dates alotted via the protocol. However, 176 of the patients were excluded after reviewing the exclusion and inclusion criteria. The 16 remaining Veterans were included and analyzed per the project protocol. Five (31.3%) out of 16 patients were initiated on the bisphosphonate, alendronate. Only one patient continued on the bisphosphonate 1 year post discharge. Out of the 11 patients (68.7%) who did not receive a bisphosphonate: 2 patients were prescribed a bisphosphonate within one year post discharge; 1 patient had a recommendation of repleting vitamin D levels prior to initiation; 1 patient was lost to follow-up; 2 patients died prior to discharge; and 5 patients had no osteoporosic recommendations. None of the 16 patients experienced a secondary fracture within 2 years post discharge.

Conclusion: Few Veterans received bisphosphonate therapy post fragility fracture. However, patients did receive first line osteoporotic therapies such as calcium (56.25%) and vitamin D therapy, (81.25%). The strict inclusion/exclusion criteria and limiting of the population to Veterans admitted only to the CLC/CRU may have limited the overall sample size and outcomes. Due to the small sample size, this project was not able to be powered and did not reach statistical significance. These results may not be applicable to the entire PVAMC Veteran population or Veterans who were treated outside the VA system.

10-116

Title: Impact of pharmacists on appropriate and timely antibiotic administration in the pediatric emergency department

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Purpose: Early appropriate empiric antibiotic administration has been shown to improve morbidity and mortality in patients with severe infections. Multiple studies have shown the positive impact of Emergency Department (ED) trained pharmacists in reducing medication errors and medication delays and improving patient outcomes. An ED pharmacist service with 24-hour coverage was implemented in January 2011. The purpose of this study is to assess the impact of the ED pharmacist on appropriate and timely antibiotic administration in pediatric patients receiving empiric antibiotics for suspected pneumonia, febrile neutropenia, sepsis or meningitis.

Methods: This is a single-center, retrospective chart review study of patients less than or equal to 18 years of age who had empiric antibiotics ordered and administered in the pediatric ED for an initial diagnosis of pneumonia, febrile neutropenia, sepsis or meningitis. The following patients will be excluded from the study: cases in which time to antibiotic administration was not recorded in the chart; patients discharged from the ED prior to antibiotic administration against medical advice; and patients transferred emergently to the operating room from the ED. Subjects will be identified using the electronic medical record system. The control group will consist of patients who received care prior to the addition of the 24-hour ED pharmacist. The study group will include patients who received care after the implementation of the 24-hour ED pharmacist. The primary objective of the study is to evaluate the time to antibiotic administration pre and post implementation of the 24-hour ED pharmacist service. The secondary objective is to identify the number of clinical interventions in which the pharmacist altered empiric antibiotic therapy to prevent inappropriate therapy or patient harm.

10-117

Title: Implementation of Patient Education Upon the First Dose of a New Medication

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Purpose: Hospitals and government agencies measure patient satisfaction using Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) surveys. HCAHPS scores reflect patients satisfaction with their hospital stay including educational services provided concerning new medications, as well as possible adverse events that these medications can cause. Tools to encourage patient education are being implemented in many hospitals around the country to increase patient satisfaction and thereby improve satisfaction reported on surveys. The objective of this project is to implement a first-dose educational tool that nursing can utilize to provide patient education regarding the purpose and potential side effects of new medications.

Methods: This study will be submitted for Institutional Review Board approval. Patients admitted to the hospital who are 18 years old or older will be eligible for surveying and education. When patients receive the first dose of a new medication, the nurse will retrieve the First Dose Medication Document. This document contains blank fields in which nurses can note the name of the medication under the appropriate section for the drug class. It also contains pre-filled boxes within each class providing common side effects and special instructions for each of the different classifications of medications. Patients will have access to this document throughout their hospital stay, and will be updated upon the first dose of each new medication administration. Nurses will be surveyed to evaluate the implementation of the project and the documents ease of use. Patients will also be surveyed to predict the change in HCAHPS scores, since these scores are not available for several months after the surveys are conducted. The researcher will use their comments to enhance the project as it is deemed appropriate.

10-118

Title: Clinical and economic impact from donor and recipient cytomegalovirus (CMV) sero-matching prior to renal transplant

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Purpose: Cytomegalovirus (CMV) is a major cause of morbidity and mortality in solid organ transplant (SOT). A strategy to reduce cost and the number of high risk transplants (donor CMV positive/recipient CMV negative) is to factor CMV status into the kidney allocation algorithm in addition to the standard organ matching algorithm. The objectives of this project are to document the change in incidence of high risk transplants, incidence of CMV disease, and costs associated with CMV prophylaxis and treatment after the implementation of a CMV seromatching protocol.

Methods: This project will include kidney-only transplants from September 12, 2011 to September 12, 2013. Deceased donor and living donor kidney transplants will be included in this project. Patients data will be derived from the electronic medical record. Data on donor and recipient CMV serostatus will be obtained as noted at the time of transplantation. Based on the CMV serostatus, patients will be classified into one of four groups; donor seropositive and recipient seronegative, donor seronegative and recipient seropositive, both donor and recipient are seropositive, and both donor and recipient are seronegative. Other recipient characteristics will include race, age, serum creatinine, complete blood count with differential, and CMV PCR data. Primary endpoints include incidence of high risk transplants, incidence of CMV disease, and costs associated with CMV prophylaxis and treatment. Secondary endpoints include the incidence of leukopenia and the use of granulocyte colony-stimulating factors (i.e.filgrastim). All patient data collected will be de-identified and stored in a locked cabinet.

10-119

Title: Evaluation of factors associated with non-therapeutic International Normalized Ratios (INR) in patients who have undergone left ventricular assist device (LVAD) placement (FAST INR)

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Purpose: Oregon Health and Science University (OHSU) practitioners have observed that dosage requirements for warfarin vary in the immediate perioperative period in patients post LVAD placement. The purpose of this study is to describe patient-specific factors and drug-drug interactions that correlate with supratherapeutic INRs. This information may assist providers in selecting appropriate warfarin doses to initiate and maintain therapeutic INR levels post LVAD placement. Decreasing the time a patient spends outside of a therapeutic INR should decrease the risk of negative outcomes associated with non-therapeutic INRs.

Methods: This study will be a retrospective chart review of patients who have undergone LVAD placement at OHSU, a 572 bed academic health center, from March of 2008- December 2013. Criteria for inclusion and exclusion are as follows: Inclusion: ≥ 18 years old Undergone LVAD placement with HeartMate II at OHSU Followed up at OHSU for at least one month post LVAD placement Exclusion: Undergoing LVAD pump exchange Patients will be analyzed within two groups based on their INR within the first seven days after warfarin initiation. Patients with INR levels greater than three, within the first seven days of initiation, will be placed into one group and the patients that have INR levels less than three will be the control group. These two groups will be analyzed individually and compared to detect patient-specific factors and drug-drug interactions that influence INR levels in this population. The primary endpoint of this study will be to determine if there is any relationship between the patient-specific factors and drug-drug interactions among the two different groups that may influence supratherapeutic INRs.

Results: Data and Results in process.

10-120

Title: Evaluation of pharmacy based chronic disease state management at six community based outpatient clinics

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Purpose: Pharmacists' roles in health care teams have become increasingly focused on direct patient care with disease state and medication management. Significant improvements in diabetes, hyperlipidemia, and hypertension have been shown when a pharmacist actively follows and participates in patients' chronic disease management. The objective of this project is to evaluate whether patients achieve goal targets of disease state management after enrollment into the pharmacy consult service at six community based outpatient clinics.

Methods: This quality assurance project will be submitted to the research advisory council for approval. The project will include patients from six community based outpatient clinics who were enrolled in the pharmacy consult service for chronic disease state management in January 2013. For the enrolled patients, the following data will be collected from January 2013 to January 2014: diagnosis of type 2 diabetes mellitus, hypertension, and hyperlipidemia, A1c levels, systolic blood pressure, diastolic blood pressure, lipid levels, target goal levels as defined in provider consult, duration to reach patient specific goals of therapy, and re-enrollment into the pharmacy service. All data will be recorded without patient identifiers and confidentiality will be maintained. Data will be reviewed to determine whether patients achieved target goal levels, time to achievement of goal levels, and time remained at goal levels.

10-121

Title: Development and expansion of pharmacist medication reconciliation service in a multidisciplinary complex care clinic

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Purpose: The Complex Care Program, a new multidisciplinary clinic, provides services tailored to the needs of patients 65 and older at high risk for hospitalization and mortality. One way the program aims to reduce adverse drug events and acute care utilization is through pharmacist medication reconciliation and review. The purpose of this project is to support the expansion of the Complex Care Program to additional clinics by developing an effective, standardized pharmacist role in medication review and reconciliation, including procedures, processes, training, and evaluation.

Methods: This project will be submitted to the Institutional Review Board for approval. The primary objective is to assist program expansion by standardizing pharmacist procedures and training material. Pharmacist workflow will be standardized to include: criteria for patient identification; inclusion/exclusion criteria for medication reconciliation and review; and the procedures for patient outreach, scheduling, medical record procurement, documentation, team member communication, implementation of recommendations, and follow-up. Training materials will include self-study, case-based discussions, didactic sessions, and independent experiential learning. Materials to assess pharmacist competency will include knowledge tests, confidence surveys, and observed experiential hours. Secondary outcomes include 1) the number and percentage of Complex Care patients within the priority population which receive pharmacist medication reconciliation and review, 2) the number and type of pharmacist interventions, 3) the results of a survey addressing patient satisfaction with pharmacy-specific services, and 4) summarization of global outcomes from preliminary data, including the number of emergency room and urgent care visits, hospitalizations, and medication costs.

10-122

Title: Developing, implementing, and evaluating computer-based pharmacist competencies of total parenteral nutrition in significant disease states

Primary Author: Jared L. Hill**,** Asante Rogue Regional Medical Center, 2825 E Barnett Rd, Medford, OR 97504; **Email:** Jared.Hill2@asante.org

Purpose: Management of total parenteral nutrition (TPN) by hospital pharmacists is becoming more common, but no formal assessment has been completed at this institution to evaluate pharmacist competency in patients with disease states that can significantly alter TPN therapy. The objective of this project is to develop, implement, and evaluate a web-based educational and assessment program to assist with the professional development of pharmacists in the management of TPN therapies in patients with diabetes, renal and liver disease in order to enhance pharmacist competency in these areas and ultimately provide more patient-focused and individualized therapy.

Methods: This study will be submitted to the Institutional Review Board for approval. A pre and post-intervention assessment will be created for each disease state to evaluate pharmacist competency at baseline and after completion of each learning module. In addition, a survey will be created for which pharmacists will indicate their confidence level regarding TPN therapy for the specified disease state at baseline and post-intervention. Web-based educational modules will be developed, implemented, and stored on an institutional learning network to which pharmacists have access. Participants will be de-identified, and assessments and surveys will be evaluated to establish whether pharmacists demonstrated statistically significant improvement post-module completion. Paired t-test will compare percentage of correct assessment answers, and a Wilcoxon signed-rank test will compare results from confidence surveys using a Likert scale.

10-123

Title: Inhaled aztreonam versus inhaled tobramycin on exacerbation rates in cystic fibrosis patients

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Purpose: Cystic fibrosis (CF) pulmonary guidelines in 2013 recommend inhaled aztreonam and inhaled tobramycin in patients with CF who are colonized with Pseudomonas aeruginosa (PA). A 2012 study by Assael BM over period of 6 months was conducted to compare safety and efficacy of aztreonam versus tobramycin found that patients on aztreonam had a reduction in acute pulmonary exacerbation compared to tobramycin. The rate of respiratory hospitalization was 29% for aztreonam versus 43% for tobramycin. This project will address whether long-term use of inhaled aztreonam will maintain its superior efficacy versus tobramycin in reducing hospitalizations.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify patients diagnosed with CF who were taking aztreonam and/or inhaled tobramycin between August 2009 and May 2013. All data will be recorded without patient identifiers to maintain confidentiality. Data collected from patient charts from August 2009 to May 2013 will include demographics, use of inhaled colistin and inhaled hypertonic saline, exacerbation rate (as defined by use of IV/PO anti-PA antibiotics) and FEV1 trends. Patients with lung transplant or who were treated at other institutions will be excluded. The study sample size is estimated to be 200 patients, which is anticipated to yield 80 percent power to detect a difference of 6.5 percent between the groups. The primary endpoint is the reduction in exacerbation rate among the patients who were treated with inhaled tobramycin and/or aztreonam. The frequency of exacerbation event will be compared between the patients who were treated with inhaled aztreonam to patients on inhaled tobramycin to meet primary objective.

10-124

Title: Change in pain control Hospital Consumer Assessment of Health Plans Survey (HCAHPS) scores with pharmacist intervention

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Purpose: Healthcare payment structure continues to be impacted by the value-based purchasing equation. Quality health-system outcomes including HCAHPS scores remain vital for maximum reimbursement. Pain control HCAHPS scores are low across the country. The most recent data for Oregon Health and Science University demonstrates sixty-eight percent of patients reporting adequate pain control. The purpose of the first year of this project is to determine factors to aid the pharmacist in prioritization of intervention in patients not receiving adequate pain control. The purpose of the second year is to determine if pharmacist intervention has an impact on pain HCAHPS scores as hypothesized.

Methods: The current study is a two-part project, with the first year consisting of a retrospective observational study evaluating both medication and patient related factors associated with increased pain scores on two surgery units at OHSU. Patients admitted to two of three surgery units will be included. Orthopedic surgery patients will be excluded due to use of pain pumps and order-set driven pain control. The factors indentified in the retrospective data analysis will be utilized during the second year to build an identification tool in the electronic medical record to prompt the pharmacist to intervene and make recommendations specific to the pain control regimen. Outcomes remain under investigation, data collection and evaluation is currently in process.

10-125

Title: Identifying barriers to achieving blood pressure control in the African American population and implementing culturally relevant interventions through a pharmacist-led program

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Purpose: African Americans with hypertension are at an increased risk for heart attack, stroke, and kidney disease compared to non-Hispanic whites. A pharmacist-run program has been improving blood pressure control in African American patients through more aggressive anti-hypertensive treatment. However, the disparity of blood pressure control has remained at 5.7%. The objective of this project is to identify barriers to achieving blood pressure control in the African American population and to implement culturally relevant interventions through a pharmacist-led blood pressure management program.

Methods: A focus group will be conducted to identify differences in the regional African American belief system and barriers to achieving blood pressure control. The focus group will include adult members who identify as African American and 1) have a documented diagnosis of hypertension or 2) have blood pressure readings greater than 140/90 mmHg at 2 of the last 3 clinic visits. Patient health information will be kept confidential. Patient confidentiality will be maintained by limiting the size of the focus group and conducting the group in a closed-door meeting during non-patient care hours. Each member will sign a confidentiality agreement prior to participation. Upon identification of barriers to blood pressure control, a cultural competency training program will be designed for pharmacists who participate in blood pressure management. The training will incorporate motivational interviewing, cultural sensitivity, and considerations in hypertension management in the African American population. The pharmacists will be tested on competency before and after the training. Additionally, improvements will be implemented to the pharmacist-led program, including refining the programs hypertension protocol and procedures. This project will be submitted to the Institutional Review Board for approval.

10-126

Title: Comparison of pharmacist based versus standard care anemia management with erythropoiesis stimulating agents

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Purpose: Erythropoiesis stimulating agents (ESAs) are commonly used for reducing the incidence of blood transfusion and enhancing quality of life in the management of anemia. Though they have been proven effective, ESAs have the potential for serious adverse events. Collaborative practice agreements now allow for pharmacist run ESA clinics to manage anemia. The purpose of this project is to examine differences in outcomes between patients receiving erythropoiesis stimulating agents for treatment of anemia who are managed by pharmacists in an outpatient erythropoietin (EPO) clinic and those receiving standard care managed by other healthcare providers.

Methods: This project will be submitted to the Research Office for approval as a Quality Improvement/Quality Assurance project. A retrospective chart review will be conducted in patients who have initiated therapy with either epoetin alfa or darbepoetin alfa between August 1, 2011 and December 31, 2013. Patients that fit the ESA use criteria whose anemia is managed by a pharmacist in an outpatient EPO clinic and those managed by other healthcare providers will be included. Hemoglobin, iron stores, and quality of life measures will be collected at treatment initiation and at subsequent follow up appointments until hemoglobin goal is attained or until treatment failure. Results from each group will be compared to assess differences in the achievement of anemia related therapy goals. Number of patients that reach target hemoglobin in each group will be the primary outcome measure. Time required to achieve target hemoglobin, frequency of hemoglobin monitoring, frequency of iron store monitoring and average epoetin alfa or darbepoetin alfa dose required to reach target hemoglobin level will be evaluated as secondary outcomes.

10-127

Title: Implementation of a pharmacist provided patient education program in the emergency department

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Purpose: Studies have demonstrated that pharmacists can increase patient satisfaction and reduce repeated emergency department visits and hospital admission through patient education programs. The objective of this study is to implement a pharmacist provided patient education program in the emergency department and thereby improve both patient care and satisfaction.

Methods: This study will be submitted to the Institutional Review Board for approval. Patients that will be included in this study are those being discharged from the emergency department with a new medication and/or a high-risk medication that are over the age of 18 and are non-pregnant. Patients will be identified in one of three ways: the medication reconciliation technician will identify the patients on high-risk medications, nursing will notify the pharmacist when a patient is being discharged on a new medication, and pharmacists will proactively scan patients for high-risk medications. The data that will be collected will be patient age, gender, medical record number, name, phone number, medications counseled on, reason for emergency room visit, survey results, and readmission. Pharmacists will complete patient counseling on new or high-risk medications upon discharge. This service will be offered everyday between 17:30 and 21:30. Patients will receive a phone call 36 to 72 hours after they have been discharged to complete a survey on their education. Survey results will be reviewed to assess patient satisfaction before and after implementation of pharmacist patient education. Thirty days after discharge a follow-up case review will be done to determine if the patient has been readmitted.

10-128

Title: Implementation of a HAP/VAP/HCAP treatment protocol in the ICU: effects on treatment practices, patient outcomes, and antibiotic cost avoidance

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Purpose: On May 15, 2012, the Portland VA Medical Center implemented a new treatment protocol based off of current guideline recommendations for the management of hospital-acquired, ventilator-associated, and healthcare-associated pneumonia (HAP/VAP/HCAP) in the intensive care unit (ICU). The purpose of this review is to determine if implementation of the treatment protocol has affected adherence to guideline-based practice. Secondary endpoints include assessment of the impact of protocol adherence on length of hospitalization, ICU length of stay, duration of mechanical ventilation, and antibiotic costs.

Methods: This is a single center, retrospective chart review. To assess the primary outcome, patients receiving treatment for HAP/VAP/HCAP between the dates of May 15, 2012 and December 31, 2012 (N=35) were compared to patients receiving treatment between October 1, 2011 and May 14, 2012 (N=25). Patients were determined to be adherent to guideline-based recommendations if they received treatment according to the protocol in the following key areas: diagnosis, pre-antibiotic culture collection, empiric antibiotic selection, antibiotic de-escalation and treatment duration. For all secondary outcomes, patients who received treatment in accordance with guideline-based recommendations (N=21) were compared with patients who did not (N=39).

Results: Provider adherence with guideline-based recommendations increased from 28% to 40% (p=0.493) following treatment protocol implementation. Improvements were seen in the following areas of guideline-based treatment: diagnosis, pre-antibiotic culture collection, empiric antibiotic selection, and treatment duration. No differences were detected in length of hospital stay (p=0.332), length of ICU stay (p=0.79), or duration of mechanical ventilation (p=0.657). Antibiotic costs were significantly lower in those treated in accordance with guideline-based recommendations (p=0.018).

Conclusion: Our findings suggest that the implementation of a HAP/VAP/HCAP treatment protocol can improve adherence to guideline-based recommendations in the areas of: diagnosis, pre-antibiotic culture collection, empiric antibiotic selection, and treatment duration without compromising patient outcomes. Furthermore, adherence to protocol-based treatment practices is associated with a significant reduction in antibiotic costs.

10-129

Title: Safety evaluation of methotrexate monitoring in neuro-oncology patients undergoing intraarterial chemotherapy administration with or without blood brain barrier disruption

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Purpose: Neuro-oncology patients at Oregon Health & Science University (OHSU) undergoing intraarterial administration of methotrexate with or without blood brain barrier disruption are hypothesized to be receiving less than optimal methotrexate level monitoring. The objective of this study is to compare the methotrexate monitoring practice in neuro-oncology patients with non-neuro-oncology patients on comparable high-dose methotrexate treatment to determine whether a relationship exists between the frequency of methotrexate monitoring and development of methotrexate-associated toxicities. Results will either support current practice or provide evidence for development of a methotrexate monitoring protocol for neuro-oncology patients.

Methods: This study will be submitted to the Institutional Review Board for approval. A report will be generated by the electronic health records system to identify adult oncology patients (greater than or equal to 18 years) who have undergone cancer treatment with high dose methotrexate (greater than or equal to 5 grams/cycle) via intraarterial or intravenous administration at OHSU between December 2010 to August 2013. The following data will be collected: age, sex, BSA, cancer type, baseline renal function and ANC, methotrexate regimen and monitoring information, supportive care information (including leucovorin rescue, administration of granulocyte colony stimulating factors, and urine pH), reported methotrexate-associated adverse events (nephrotoxicity, mucositis, and neutropenia), and current medications. All data will be recorded without patient identifiers and maintained confidentially. Patient medical records will be reviewed to determine the frequency of methotrexate level monitoring and incidence of methotrexate-associated toxicities per patient. Outcomes will be measured by quantifying the number of methotrexate monitoring and toxicity events per patient. Frequency of monitoring and toxicity events will be compared between the neuro-oncology and non-neuro-oncology patients to meet primary objective.

10-130

Title: Pharmacist-managed diabetes mellitus clinic in the underserved population: improving care through a comprehensive patient-centered approach

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Purpose: Self -management of diabetes mellitus (DM) in the homeless population can be extremely challenging due to barriers such as inability to make dietary choices, coordinating medications with meals, and lack of safe place to store medications. These challenges can be overcome by developing a pharmacist-managed DM program which can help patients to overcome or eliminate barriers to DM management. The objective of the program is to provide comprehensive patient-centered care to enhance self-management of DM in the underserved population.

Methods: The new DM 12-week program includes: group education on DM self-management and individual follow-up visit to assess barriers, knowledge, and optimal therapy. Patients with type 2 diabetes mellitus and glycoslated hemoglobin (A1C) greater than 7.5% will be enrolled in the program; those managed by a specialist, such as endocrinologist, will be excluded. The primary outcome of interest is self-management of DM which will be assessed by measuring effectiveness of educational classes through pre and post surveys. DM control will be assessed by comparing baseline and 12-week follow-up values for A1C. Fasting and post prandial blood glucose levels will be assessed at each visit. It is anticipated that at least 50% of the patients enrolled in the program will have reached their A1C goal and will be able to self manage their DM. Patient satisfaction will be gauged through surveys one month post enrollment. This study will be submitted to the Institutional Review Board for approval.

10-131

Title: Adherence to current gout management guidelines and evaluation of outcomes

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Purpose: The American College of Rheumatology gout guidelines recommend a target uric acid level of less than 6 mg/dl. The primary purpose of this project is to determine the amount of patients being treated according to the current guidelines who achieve a serum uric acid level less than 6 mg/dl. This project will also evaluate patient outcomes and medication costs with regard to renal dosing of gout medications and the discontinuation of acute gout attack medications.

Methods: This project will be submitted to the internal research pharmacy department for approval. A review of the electronic medical record system will identify patients with gout initiated on one of the following medications: allopurinol, febuxostat, colchicine, and probenecid from January 1, 2012 to December 31, 2013. The following data will be collected: patient age, gender, serum creatinine, serum uric acid level, prescription orders and refill history of gout medications, documentation of gout attacks, adverse events while taking a gout medication, time to reach serum uric acid level, and cost of gout medications. All protected health information will be kept confidential. To preserve patient confidentiality a random numerical code will be assigned to each patient and will serve as the patients identification number. Data from patients with a serum uric acid level above 6 mg/dl will be reviewed to identify areas of noncompliance to the American College of Rheumatology gout guidelines.

10-132

Title: Implementation of patient specific pain panels to reduce the likelihood of preventable oversedations in post-operative orthopedic patients

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Purpose: Oversedation results when the level of the patients sedation exceeds the desired therapeutic level. The most serious adverse effect of oversedation is respiratory depression, which is generally preceded by sedation. The risk of oversedation is present in all patients receiving opioids. However, the risk is greater, in particular, in patients who possess certain risk factors such as renal impairment and limited opioid exposure. The purpose of this project is to reduce the likelihood of oversedations due to the prescribing of multiple opioids via physician order sets, improve patient safety, and establish a standardized practice.

Methods: This study will be submitted to the Institutional Review Board for approval. Patients included in this study are those who were admitted to our institution and were administered naloxone for preventable opioid-induced oversedations and prospective post-operative orthopedic patients that will be ordered narcotics post implementation of pain panels. Baseline data will be collected from April to August 2013. Post implementation data will be collected from January to April 2014. Reports will be generated by an electronic medical record system on naloxone use and order set utilization. This information will then be reviewed and analyzed compared to baseline data collected. Patients' age, creatinine clearance, co-morbid conditions, and opioid use will be obtained from the patient's electronic medical record. All data collected will be de-identified and stored confidentially. A survey based on Hospital Consumer Assessment of Healthcare Providers and Systems survey will be administered to patients prior to discharge and reviewed to assess patients' effective pain control during their hospital stay.

10-133

Title: Vancomycin use in outpatient parenteral antimicrobial therapy (OPAT): rates of discontinuation due to antimicrobial toxicity and identification of risk factors contributing to nephrotoxicity

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Purpose: Outpatient parenteral antimicrobial therapy (OPAT) programs have been reported to be a cost-effective, safe, and practical way to treat patients with complicated infections requiring prolonged antibiotic therapy. Currently, there are few studies describing the use of vancomycin in the OPAT setting. In the past few years, our institution has seen an increase in the development of acute kidney injury in OPAT patients treated with vancomycin. The objectives of this study are (1) to describe the incidence of vancomycin toxicity in OPAT patients leading to discontinuation, and (2) to identify potential risk factors that contribute to nephrotoxicity.

Methods: We plan to conduct a retrospective review of patients enrolled in the OPAT program who develop toxicity as a result of treatment with vancomycin or a beta lactam which resulted in discontinuation. We will compare the incidence of antibiotic discontinuation between the vancomycin treated patients and the beta-lactam treated patients. Patient information that will be collected includes development of acute kidney injury (increase in SCr ≥ 50% or ≥ 0.5 mg/dL from baseline); neutropenia (WBC≤ 4x103/L); thrombocytopenia (platelets ≤ than 50 x 109/L); or drug rash. Furthermore, we plan to look specifically at patients that develop nephrotoxicity on concomitant vancomycin therapy to see if we can identify specific risk factors that may pre-dispose these patients to develop AKI. We will collect the following information on both inpatient and outpatient encounters: patient age; presence of obesity (BMI > 40); trough level at discharge; presence of any trough level ≥ 20 mg/L; cumulative daily dose; concurrent nephrotoxic medications; co-morbid disease states; microbiology cultures; goal trough level per treatment team; and critical illness requiring ICU stay during hospital encounter.

10-134

Title: Antiretroviral medication safety in a large teaching hospital

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Purpose: This study will complete the second phase of a two-part study. Phase I of our study analyzed data regarding the administration of antiretroviral (ARV) medications in the inpatient setting at Oregon Health and Science University. Phase II of our study is designed to implement system-wide changes and then collect and analyze post-interventional data to assess the impact of the interventions on the rate and type of antiretroviral errors that are addressed with the implementations. These system-wide changes are expected to decrease the error rate of ARV medication administration at OHSU.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify candidates for inclusion into the project. The data pull will be for all ARV drug orders between the dates of 9/1/2013 and 12/1/2013 (pre-intervention data) and 12/1/13 and 3/1/14 (post-intervention data). The patients associated with these orders will then be evaluated for study inclusion. Patients not diagnosed with HIV, not admitted into the hospital, <18 years old, receiving post/pre-exposure prophylaxis, or in labor and delivery will be excluded. Charts of patients included in the study will be reviewed retrospectively for antiretroviral medication error events. Only errors that reached the patient will be assessed. Types of errors that will be assessed will specifically focus on administration errors. Antiretroviral error rates (percent of patients with at least one error, errors per patient, and/or errors per patient-days) will be described and the types of errors will be quantified. Given a sample size of 50-100 patients, the study will have 80% power to detect a 21-24% difference in medication error rates.

10-135

Title: Evaluating the adherence to intravenous acetaminophen criteria for use following implementation of a new order set menu

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Purpose: The majority of surgical patients experience moderate to severe post operative pain, which if left undertreated can develop into chronic pain. Acetaminophen injection is a new and costly medication compared to other acetaminophen formulations and alternative pain medications. Intravenous (IV) acetaminophen is limited to patients in the surgical setting and within 24 to 48 hours post operatively at this practice site. The objective of this project is to determine whether implementation of a new order set menu will increase local adherence to the criteria for use of IV acetaminophen.

Methods: This quality assurance project will be submitted to a Research Advisory Council for approval. Chart reviews using an electronic medical record system will identify patients who received any dose of IV acetaminophen 6 months prior and 6 months after the addition of the new order set, which was launched on September 3, 2013. The primary endpoint measured will be the difference in adherence to criteria for use after implementation of the new menu. The number of inappropriate doses of acetaminophen injection given prior to the order menu implementation will be compared the number of inappropriate doses given after the change. The primary investigator will evaluate each patients record to determine whether criteria of acetaminophen injection were met. Secondary endpoints that will be measured include the total number of patients who received acetaminophen injection, the service or provider ordering the medication, any additional doses of acetaminophen (injection, capsules, tablets, suspensions, suppositories) given within 4 hours of patients receiving their IV dose, and total doses of acetaminophen given in a day. All data will be recorded without patient identifiers and maintained confidentially.

10-136

Title: Evaluation of Clonidine and Prazosin for the Treatment of Nighttime Posttraumatic Stress Disorder Symptoms in a Veteran Population

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Purpose: This study will evaluate the effectiveness and tolerability of the alpha-adrenergic agents clonidine and prazosin for the treatment of night-time post-traumatic stress disorder (PTSD) symptoms. This may help to improve patient care by providing information about medication use and the risks and benefits of clonidine and prazosin when used for this purpose. Findings from this study may assist clinicians in selecting appropriate pharmacologic therapy for patients with PTSD.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will be used to identify male and female veterans at least 18 years old with a diagnosis of post-traumatic stress disorder (PTSD) who received an initial prescription for clonidine or prazosin for nighttime PTSD symptoms during the study period from July 1st, 2008 to June 30th, 2011. Information collected will include baseline patient characteristics, psychiatric comorbidities prior to treatment, concurrent use of other psychiatric medications, dosing history for clonidine and/or prazosin, and clinical outcomes including effectiveness of therapy, reported adverse effects and reasons for discontinuation. All subjects included in the study will be followed for a period of two years after the initial prescription of clonidine or prazosin. Short-term effectiveness will be defined as documentation of symptom improvement in the patient's medical record within six months of initiation of clonidine or prazosin. Continuation of clonidine or prazosin through the end of the two-year time period will be interpreted as long-term continuation. Tolerability will be assessed by evaluating the incidence of documented adverse effects leading to discontinuation for each drug.

10-137

Title: Clinical implications of tapering chronic opioids in a veteran population

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Purpose: Chronic use of opioids, high doses in particular, has been associated with more atypical adverse effects, such as arrhythmias, thyroid disease, and an increased risk of overdose and death. The primary objective of this study is to determine if patients receiving chronic opioid therapy can be tapered to lower opioid doses to minimize patient risks.

Methods: The Institutional Review Board approved this retrospective and prospective chart review of patient medical records. Patient charts will be included in the review if opioids had been taken chronically for at least 90 consecutive days and a plan to taper opioid doses was agreed upon. These patients were identified by primary care providers. Patients 89 years of age and older, patients with cancer, and patients exhibiting aberrant behavior will be excluded. The primary endpoint is to determine the percent reduction of morphine equivalents over a 12 month period. Secondary endpoints include percent reduction of morphine equivalents at 3 and 6 months, change in pain perception at 3, 6, and 12 months, and change in the number of adjuvant medications prescribed at 3, 6, and 12 months. The information found will be coded and placed into an electronic spreadsheet without identifiers to maintain confidentiality. Data will be analyzed utilizing comparative and descriptive statistics.

10-138

Title: Treatment of Nocardia nova abscess in an orthotopic heart transplant patient

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Case Report: A Gram-positive aerobic actinomycetes known as Nocardia is a member of the family Mycobacteriaceae. Nocardial infections typically occur through inhalation in immunocompromised patients and are not believed to be transmitted between patients. Pulmonary manifestations are reported in the majority of cases, and it may disseminate to cause bacteremia, empyema, brain abscess, pericarditis, synovitis, or soft tissue infection. This case report illustrates the potential complications associated with treatment of a Nocardia abscess in an orthotopic heart transplant (OHT) patient. A 53 year-old male presented to the emergency room with a one week history of headache and altered mental status. Past medical history was significant for OHT on immunosuppression, gout, chronic kidney disease, seizures, and pancytopenia from CMV viremia treated with valgancyclovir. Upon head and chest computed tomography imaging, masses were found in the frontal lobe and in the left upper lobe of the lung. The only pertinent lab abnormality prior to the initiation of therapy was an elevated serum creatinine (SCr) at 3.1 mg/dl. Appropriate cultures were obtained and brain lesion aspirate grew Nocardia nova. Based on literature, Nocardia treatment includes high dose sulfamethoxazole/trimethoprim and a second agent for double coverage. Empiric triple antibiotic therapy included sulfamethoxazole/trimethoprim 15 mg/kg/day IV every 6 hours, meropenem 2g IV every 12 hours, and linezolid 600 mg IV/PO every 12 hours. The course of therapy was complicated by renal insufficiency, thrombocytopenia, and hyperkalemia. After two weeks of therapy, his SCr bumped to 4 mg/dl, leading to a dose reduction of sulfamethoxazole/trimethoprim to 7.5 mg/kg/day IV every 12 hours. Platelets dropped steadily over two weeks from 241 B/L to a nadir of 70 B/L; subsequently, linezolid was discontinued. In addition, the patient was consistently hyperkalemic and sulfamethoxazole/trimethoprim was further decreased to 5 mg/kg/day IV every 12 hours. At this current regimen, the patient began to improve clinically as labs stabilized, resulting in the transition to oral medications. Following the six week course of IV antibiotics, a literature search was conducted to determine appropriate oral antibiotic treatment and duration in accordance with available susceptibilities. The patients oral medications included sulfamethoxazole/trimethoprim double strength two tablets twice daily and minocycline 100 mg twice daily for a duration of six months.

10-139

Title: Survey of clinicians knowledge and perceptions of antimicrobial resistance and prescribing

Primary Author: Jenny T. Au**,** Temple University Hospital, 3401 North Broad Street, Philadelphia, PA 19140; **Email:** jenny.au@tuhs.temple.edu

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Purpose: Antimicrobial Stewardship Programs are implemented to optimize antimicrobial therapy through different interventions proven to improve patient care and be cost-effective. Generally, changes in antimicrobial prescribing patterns likely occur when physicians knowledge, beliefs, and attitudes coincide with the ends desired to be met. Therefore, it is important to understand what physicians know about antimicrobials, how they acquire and maintain that knowledge, and what factors influence antimicrobial prescribing. The objectives of this study are to: 1) assess physicians attitudes, perceptions, and understand their knowledge regarding antimicrobial use and resistance, 2) develop effective strategies to enhance antimicrobial stewardship practices at this institution.

Methods: This study has been submitted to the Institutional Review Board and has received expedited approval. This study will be a voluntary and anonymous survey conducted at a 728-bed teaching hospital. An electronic mail with a link to the web-based survey will be sent to approximately 600 faculty attending and resident physicians in various specialties at our institution. The survey instrument being used is a previously validated 69-item survey, which includes demographic information, 5-point Likert scale questions regarding attitudes and perceptions of antimicrobial use and resistance, and multiple-choice knowledge questions. The Likert scale response options ranges from strongly agree to strongly disagree or ranges from always to never. Permission for use of this survey instrument was granted from the corresponding author. Descriptive statistics will be used to analyze means for continuous data and percentages for categorical data. A chi-square test will be performed to test for differences among the various specialty and years of training.

10-140

Title: Assessing patient preferences for influenza vaccine dosage forms

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Purpose: Influenza vaccination is recommended for all persons who are 6 months of age and older. There are a number of different delivery systems and dosage formulations of Influenza vaccine currently available in the United States: intramuscular, intranasal, intradermal, and needle-free IM injection (PharmaJet). Although various dosage formulations are available to patients, the patient is not often given the option to choose their preferred dosage form. Through the better understanding of patient preferences for vaccine dosage form selection, pharmacists can make more informed decisions concerning product availability, improve influenza vaccination rates, and meet the related goals set by Healthy People 2020.

Methods: The study is a non-experimental descriptive exploratory study that seeks to survey patient preferences with an anticipated sample size of 500 participants. This study will survey patients scheduled to receive the seasonal influenza vaccine through the Center for Pharmacy Services, the Center for Pharmacy Care, Spirit of Health mobile unit, and related vaccination community events throughout the Pittsburgh area that are coordinated through these organizations. Participants will include adults ages 18 to 80 in accordance with the collaborative agreement who are eligible to receive the seasonal influenza vaccine (per CDC guidelines). The questionnaires developed include a written pre-vaccination patient preferences survey and a follow-up survey assessing post-vaccination satisfaction given orally via a telephone interview one week after vaccination. Completed questionnaire data and type of vaccine delivery used will be collected and collated by category. Coded data will be entered into SPSS version 18.0. Both descriptive and inferential statistical analysis will be conducted. A report will be generated detailing pre and post-vaccine patient preferences for the dosage form received while analyzing patterns associated with predefined subsets of the overall patient population based on demographic information collected. The results obtained will be presented and submitted for publication.

10-141

Title: Evaluation of the use of intravenous acetaminophen in a community hospital

Primary Author: Jennifer Ballman**,** UPMC Hamot, 201 State Street, Erie, PA 16550;
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Purpose: Intravenous acetaminophen received FDA approval in November 2010 for the following indications: management of mild to moderate pain, management of moderate to severe pain with adjunctive opioid analgesics, and reduction of fever. As with any acetaminophen dosage form, there is a risk of exceeding the recommended daily limit (4 grams) of acetaminophen, especially when patients are prescribed adjunct opioid products that also contain acetaminophen. Due to the known risk of serious adverse reactions associated with acetaminophen consumption greater than 4 grams, the use and duration of intravenous acetaminophen will be monitored for appropriateness.

Methods: The following criteria will be used to evaluate the appropriate use of intravenous acetaminophen: total duration of therapy for a maximum of 24 hours for the management of mild to moderate pain, moderate to severe pain with adjunct opioid use, and/or reduction of fever in patients who cannot tolerate oral administration, where oral administration of medications is not feasible, or where gastric function is compromised. Inappropriate use will include the following: duration of therapy greater than 24 hours, total daily acetaminophen dose greater than 4 grams, use in patients who can tolerate oral medications, orders written for frequencies shorter than every 4 hours, use in patients with clinical evidence of hepatic dysfunction (elevation of ALT/AST greater than three times the upper limit of normal), as needed for mild to moderate pain, and/or failure to adjust dose for patients weighing less than 50 kilograms. Patient information will be retrieved using data from an electronic medical record report. Data collection will take place during August and September of 2013.

10-142

Title: Pharmacist role in reducing severe hypoglycemic events in hospitalized patients with diabetes mellitus

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Purpose: Hypoglycemia among hospitalized patients with diabetes is common and is associated with many adverse events. Current approaches to glycemic control in hospitalized patients may place patients with diabetes at higher risk of having a hypoglycemic event. Additionally, many health systems and health insurance carriers are starting to introduce pay-for-performance initiatives in an effort to improve the quality of care of patients with diabetes by reducing the rate of severe hypoglycemic events. The purpose of this study is to investigate the impact pharmacists have as part of a multidisciplinary team in reducing hypoglycemic events in hospitalized patients.

Methods: This study will be submitted to the Institutional Review Board for approval. A literature search was conducted to determine common etiologies of severe hypoglycemia, which include: renal failure, unexpected interruptions in nutritional care or carbohydrate intake, inappropriate prescribing, failure to adjust regimens after previous hypoglycemic events, poor coordination of insulin delivery, monitoring, and nutrition delivery, basal-bolus insulin errors, over-reliance on "sliding scale" insulin, and not following a hypoglycemia protocol. An evaluation of severe hypoglycemic events in our hospital was performed, and changes were made to the existing hyperglycemia protocol. Changes include allowing for pharmacist consultation for glucose management, discouraging the use of NPH or mixed insulins, increasing the blood glucose concentration threshold for holding prandial insulin, and eliminating the option for regular insulin for prandial coverage. The number of severe hypoglycemic events will be prospectively tracked after implementation of the completed protocol and audited for blood glucose concentrations less than 40 milligrams per deciliter. Additionally, the number of pharmacist consults will be tracked and compared to the number of consults to other providers, and the use of NPH insulin or insulin mixes will also be tracked and measured.

10-143

Title: Forced diuresis with mannitol vs. normal saline hydration alone for nephroprotection with cisplatin-containing regimens

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Purpose: Conflicting data has been reported regarding the benefit of mannitol for renal protection in patients receiving high-dose cisplatin chemotherapy regimens. The objectives of this study are to evaluate the efficacy of saline hydration alone for prevention of nephrotoxicity in patients receiving high-dose cisplatin (>75mg/m2) and to evaluate the necessity of mannitol for forced diuresis for nephroprotection in this population.

Methods: This prospective study will be submitted to the Institutional Review Board for approval. This protocol will be used at four different outpatient clinics throughout a large health system. Patients will be included in this study if they are 18 years or older and are receiving doses of cisplatin 75mg/m2 or greater. Oncologists will identify these patients, review the consent form, and patients will be randomized into one of the two treatment arms. They will either receive a regimen of saline, cisplatin, and mannitol or strictly saline and cisplatin. Twenty-four hour urine collections will be completed the day before the patient is scheduled to receive chemotherapy as well as on day 10 of the cycle for two cycles. Glomerular filtration rate will be calculated based on the urine collections. Vital signs, complete blood count, and basic metabolic panel will also be completed. Patient data will be collected and followed for two cycles of chemotherapy. All laboratory values will be reviewed by a team of clinicians to determine if there is any benefit with using mannitol in addition to saline hydration for renal protection. All data will be appropriately stored on a password-protected computer to maintain confidentiality of patient medication information.

Case Report: This case report reviews the incident of a rare anaphylactic reaction to intravenous ondansetron in a patient who had tolerated prior use of the medication on several occasions. In this case, a 57-year-old female patient admitted for a COPD exacerbation with acute on chronic heart failure experienced an anaphylactic reaction to a 4 mg IV dose of ondansetron two days into her admission. Upon receiving the dose, the patient immediately became hypotensive with a blood pressure falling to 98/28, bradycardic with a heart rate dropping below 60 bpm, and apneic requiring intubation. She was treated with epinephrine, methylprednisolone, and diphenhydramine in conjunction with a 1 mg IV dose of lorazepam for a suspected seizure at the time of the incident. The patient began to clinically improve

shortly after the administration of the treatment medications, but still required intubation for two days to provide pressure support. According to the package insert, hypersensitivity reactions have been reported in those who have exhibited hypersensitivity to other 5-hydroxytryptamine3 (5-HT3) receptor antagonists, but it does not specifically address patients who had tolerated the use of ondansetron in the past. Although ondansetron is widely considered a safe medication to administer for the management and prevention of nausea and emesis, this case cautions prescribers and pharmacists to be aware of the potential for a rare anaphylactic reaction to ondansetron even after there is established tolerance.

10-144

Title: Epidemiology of methicillin-susceptible Staphylococcus aureus (MSSA) bacteremias

Primary Author: Deanna Buehrle**,** University of Pittsburgh Medical Center (UPMC) Mercy, 1400 Locust Street, , Pittsburgh, PA 15213, United States; **Email:** buehrledj2@upmc.edu

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Purpose: Among clinical isolates from inpatients in the United States, Staphylococcus aureus is the most frequently occurring bacterial pathogen in the blood. Complications due to Staphylococcus aureus infection such as infective endocarditis, vertebral osteomyelitis, and recurrent infections contribute to high treatment costs and significant burden to the healthcare system. I am proposing a retrospective study to evaluate the epidemiology of Staphylococcus aureus bacteremia, specifically methicillin-susceptible isolates, at our institution. The purpose of this study is to evaluate how empiric antibiotic selection affects outcomes in patients with MSSA bacteremia.

Methods: This IRB approved single-center retrospective cohort analysis will review electronic medical records of 299 patients admitted to our institution between January 1, 2010 and August 8, 2013. A database was established with general demographic information, co-morbidities, clinical laboratory values, and treatment and clinical outcomes. Specifically, the following data has been recorded: time from symptom onset to initiation of antibiotic therapy, empiric choice of antibiotic, empiric antibiotic duration, definitive choice of antibiotic, definitive antibiotic duration, oral antibiotics received, length of hospital stay, length of intensive care unit (ICU) stay, and death at 30 and 90 days. The primary objective of this study is to determine the effects of empiric antibiotic selection on mortality in patients with MSSA bacteremia. The primary endpoints of this study are death at 30 days and death at 90 days. The secondary endpoints include length of hospital stay, length of ICU stay, selection and duration of empiric therapy, selection and duration of definitive therapy, and oral antibiotics.

10-145

Title: Hypersensitivity reaction to intravenous ondansetron: a case report

Primary Author: Jessica Butala**,** UPMC McKeesport, 1500 Fifth Avenue, McKeesport, PA 15132; **Email:** butalajn@upmc.edu

Case Report: This case report reviews the incident of a rare anaphylactic reaction to intravenous ondansetron in a patient who had tolerated prior use of the medication on several occasions. In this case, a 57-year-old female patient admitted for a COPD exacerbation with acute on chronic heart failure experienced an anaphylactic reaction to a 4 mg IV dose of ondansetron two days into her admission. Upon receiving the dose, the patient immediately became hypotensive with a blood pressure falling to 98/28, bradycardic with a heart rate dropping below 60 bpm, and apneic requiring intubation. She was treated with epinephrine, methylprednisolone, and diphenhydramine in conjunction with a 1 mg IV dose of lorazepam for a suspected seizure at the time of the incident. The patient began to clinically improve shortly after the administration of the treatment medications, but still required intubation for two days to provide pressure support. According to the package insert, hypersensitivity reactions have been reported in those who have exhibited hypersensitivity to other 5-hydroxytryptamine3 (5-HT3) receptor antagonists, but it does not specifically address patients who had tolerated the use of ondansetron in the past. Although ondansetron is widely considered a safe medication to administer for the management and prevention of nausea and emesis, this case cautions prescribers and pharmacists to be aware of the potential for a rare anaphylactic reaction to ondansetron even after there is established tolerance.

10-146

Title: Minimization of medication stock-outs using the McKesson right-stock functionality.

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Purpose: UPMC Presbyterian hospital pharmacy has a fully automated medication dispensing workflow using McKesson Robots and Medcarousels. Anecdotal reports indicate that a variety of medications stock-out within the Medcarousels on a daily basis. Medcaurosels have a right-stock function that uses previous use data to extrapolate what the appropriate inventory maximums and pars should be to ensure that the pharmacy is never completely out of inventory. This study will compare the number of stock-outs of non-shortage medications after the incorporation of the right-stock function versus without the function.

Methods: Each individual Medcarouselwill be reviewed retrospectively between the months of January 2013 August 2013. All medications that stocked out between this time period that were not on the ISMP or ASHP medication shortage list will be considered preventable stock-outs. The number of medication stockouts will be tallied on a per month/per carousel basis, and recorded. After the utilization of the Medcarousel right-stock functionality, stock-out data will be prospectively collected for each carousel and compared to the number of stock-outs prior to the implementation of the stock-out functionality.

10-147

Title: Improving cost savings and patient outcomes with hepatitis C triple therapy treatment in the Medicaid population

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Purpose: A few years ago, one of our largest affiliated health plans experienced an increase in healthcare costs in our hepatitis C patient population. In order to find a solution to contain the costs, we had to explore the reasons behind this increase. We discovered several causes, including the rise in specialty drug costs, especially with a third drug being added into the regimen, among others. As total healthcare costs skyrocketed and patients potentially suffered from less than ideal outcomes, we had to act fast.

Methods: We decided to take several simple approaches to contain these costs and provide better care for our hepatitis C patients. For example, we implemented more restrictive parameters on our prior authorization criteria to reflect the changes in the recommended treatment regimen. In addition, we are monitoring our current hepatitis C patients throughout their entire duration of treatment starting from March 2013 until the end of treatment by obtaining their refill history, laboratory values, and prior authorization data for any hepatitis C triple therapy request. We would contact providers and patients if interventions are necessary. Furthermore, we plan to use tablet computers to give more insight into and improve adherence. These tablets would mainly push questions and reminders to members to take their medications and have necessary lab work drawn on time. Through an online portal, we can then review the answers to the questions to analyze attitudes and adherence rates and determine necessary interventions. Throughout the entire process, we are comparing costs and member outcomes to the baseline before these initiatives took effect. Overall, we hope to see cost savings and improved member outcomes.

10-148

Title: Evaluation of fidaxomicin use for Clostridium difficile infection in a community hospital

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Purpose: .Current guidelines (updated in 2010) recommend metronidazole and vancomycin as standard treatment options for Clostridium difficile infection with usual duration of 10 to 14 days. In May 2011, fidaxomicin was approved for the treatment of Clostridium difficile associated diarrhea in adults greater or equal to 18 years of age. As of now, fidaxomicin is not included in the guidelines. The objective of this study is to evaluate appropriate use and place in therapy of fidaxomicin for the treatment of Clostridium difficile in a community hospital.

Methods: .This study will be submitted to the Institutional Review Board for approval. Data will be requested through the hospitals Information Technology department. All data will be recorded confidentially. The following data will be collected from inpatients who were ordered fidaxomicin from September 2012 to August 2013: patients name, identification number, age, dose, frequency, start date, stop date, and ordering physician. Review of the electronic medical record will identify new or recurrent Clostridium difficile infection, previous treatment regimens, and treatment medications ordered at discharge. This data will be used to corroborate the study objectives. A secondary analysis will investigate treatment regimens utilized to compare with the standard treatment options from the published guidelines.

10-149

Title: Evaluation of medication errors associated with inpatient injectable medications pre and post implementation of smart pumps

Primary Author: Jessica Cprek**,** Temple University Hospital, Inpatient Pharmacy, 3401 N. Broad St., Philadelphia, PA 19140; **Email:** Jessica.Cprek@tuhs.temple.edu

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Purpose: Recent studies quantified the frequency of preventable adverse events due to medication use. Injectable medications are associated with the most significant number of preventable adverse events. In lieu of these findings it is important to identify potential strategies to prevent medication errors due to injectable medication administration. As one of the patient safety initiatives at our institution, smart pump technology (Hospira Symbiq infusion pumps) was purchased and implemented at the end of September 2012. The primary objective is to evaluate the number of actual and near miss medication errors involving injectable medications pre and post implementation of smart pump technology.

Methods: This retrospective, observational study received exemption from the institutional review board as it was determined to be a quality improvement study. Data will be obtained by retrospective review of medication events reported in Midas involving injectable medications pre implementation and a review of Hospira override variance detail reports following implementation of smart pumps. The study will include patients receiving intravenous (IV) infusions and will exclude patients receiving blood products, albumin, morphine and hydromorphone patient controlled analgesia, and IV fluids without additives. The documented events will be de identified prior to collecting data. Data that will be collected pre implementation includes the medication, if it's a high alert medication, nursing unit, infusion rate, whether it was a miss, type of alert that would be violated had smart pump technology been available, and what the rate limit would have been if smart pump technology was available. Post implementation will include all of the aforementioned data plus the type of alert implemented by the smart pump after the original infusion rate was entered, infusion limit violated, original infusion rate, adjusted infusion rate if applicable, and whether it was a miss or near miss medication error.

10-150

Title: Transition of care: from inpatient to outpatient setting for patients on anticoagulation therapy

Primary Author: Drusty Dave**,** Coatesville VA Medical Center, 1400 Blackhorse Hill Road, Coatesville, PA 19320; **Email:** d.dave88@gmail.com

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Purpose: As per the Joint Commission National Patient Safety Goals (NPSG.03.05.01), the use of standardized practices for anticoagulation therapy can reduce risk of adverse drug events associated with anticoagulants. Through five months of retrospective analysis of in-patients discharged on anticoagulants, we found a lack of documentation regarding anticoagulation counseling at discharge and that majority of patients did not adhere to their follow-up appointment post-discharge. The purpose of this project is to develop, implement and standardized transition of care for in-patients discharged on anticoagulants [warfarin (Coumadin), enoxaparin (Lovenox), dabigatran (Pradaxa), rivaroxaban (Xarelto)], to minimize risks, adverse drug reactions and improve patient care.

Methods: This open-label, prospective, single center research study has been approved by the Medical Center institutional review board. Informed consent will be obtained for all subjects. Unit medical team will refer in-patients discharging on warfarin, enoxaparin, dabigatran and rivaroxaban. The subjects excluded are non-English speakers or discharged from the long-term nursing home. Once subjects are identified, and discharged date is set, investigators will review indication, pertinent labs, dose/tablet strength changes from pre-admission, current dosing and scheduled follow-up with provider. If follow-up appointment is missing, investigator will alert provider to schedule one. Prior to discharge, investigator will meet with subjects to provide the following education with written material: anticoagulant name, indication, dose, dose/tablet changes from pre-admission, administration, handling missed/double doses, importance of compliance, potential adverse effects, precautions, dietary concerns, drug interactions and logistics for follow-up. This will be documented in patients medical record. Data collection will consist of number of subjects to follow-up with providers versus missed follow-up. Adherence to follow-up will be confirmed via phone-call/review of records after scheduled appointment. All data will be recorded without patient identifiers and maintained confidentially. Researcher will evaluate data to show benefits of implementing standard transition of care process for patients discharged on anticoagulantion therapy.

10-151

Title: Characterization of prophylactic antiemetic regimens in pediatric patients receiving moderately and highly emetogenic chemotherapy

Primary Author: Jessica Degiacomo**,** Lehigh Valley Health Network, Cedar Crest & 1-78, Allentown, PA; **Email:** Jessica.Degiacomo@lvhn.org

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Purpose: Recommendations for prophylactic antiemetics differ between adults and pediatrics and pediatric-specific recommendations for new antiemetics are limited to single center reports. Following breakthrough nausea and/or vomiting, modifications should be made to subsequent prophylactic antiemetic regimens though no studies have shown one agent or strategy to be superior. The purpose of this retrospective study is to evaluate the prophylactic antiemetic regimens used in pediatric oncology patients receiving moderately and highly emetogenic chemotherapy and to describe the modifications to their antiemetic regimens with subsequent courses of chemotherapy.

Methods: This study will be submitted to the Institutional Review Board for approval. Pediatric oncology admission records will be used to identify patients under the age of 18 years who have received their first moderately or highly emetogenic chemotherapy course for an oncologic diagnosis during an inpatient admission. Patient data to be collected: age, gender, body weight, body surface area, diagnosis, chemotherapy regimen (drug, dose, route, protocol name), emetogenicity of chemotherapy regimen, antiemetic regimens (initial, modified and breakthrough; drug, dose, route, frequency, days of administration, and number of doses), emetic events, and antiemetic adverse drug reaction history. The percentage of pediatric oncology patients receiving moderately or highly emetogenic chemotherapy regimens that experience breakthrough nausea and/or vomiting will be calculated. Out of these patients, the percentage that had their antiemetic regimen modified for subsequent courses of chemotherapy will be identified.

10-152

Title: Utilizing the Institute for Safe Medication Practices (ISMP) Guidelines for Safe Preparation of Sterile Compounds to improve the quality of preparing compounded sterile products in a community teaching hospital

Primary Author: Michael Claro Dejos**,** St. Joseph Medical Center, 2500 Bernville Road, Reading, PA 19603; **Email:** michaeldejos@gmail.com

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Purpose: To improve the quality of preparing compounded sterile products that optimizes inpatient pharmacy procedures and minimizes the risk for intravenous admixture errors

Methods: Population: This is a quality and process improvement study for CSPs in a community teaching hospital. Phase I: The current process for CSP preparation at a community teaching hospital will be evaluated using ISMPs Guidelines for Safe Preparation of Sterile Compounds. An observational analysis of the preparation of sterile compounds shall be conducted, whereby pharmacists and other pharmacy personnel will be observed throughout the process. Phase II: The subsequent list of gaps identified by Phase I will be prioritized based on concerns. Policies and procedures in accordance with ISMPs Guidelines for Safe Preparation of Sterile Compounds will be implemented to address and close the gaps. Structure, process, and/or outcomes metrics related to the gaps will be measured to assess the impact. Data Source: Direct observation of IV room procedures Data Collection: 1) Current process flow of IV admixture preparation. 2)Prevalent gaps in the IV admixture preparation process. 3)Post-guideline process flow of IV admixture preparation Primary endpoint: Prevalent gaps (Phase I); Structure-process and/or outcomes metrics related to identified gaps (Phase II) Secondary endpoints: Identification of current process flow (Phase I); Identification of process flow post-implementation of guidelines (Phase II)

10-153

Title: Evaluation of employee health plan utilization of rosuvastatin

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Purpose: Of the seven HMG-CoA reductase inhibitors (statins) currently available, only rosuvastatin and pitavastatin remain branded. In February 2013, the health plan formulary changed from open to closed, causing rosuvastatin to require prior authorization. The objectives of this evaluation are to, describe employee and dependent use of rosuvastatin from 2009 to 2013, compare utilization of rosuvastatin pre- and post-plan change, identify prior use of at least one generic statin, describe any transition from rosuvastatin to another agent after the plan change, and estimate potential cost savings by changing all rosuvastatin users to a generic statin.

Methods: This study will be submitted to the Institutional Review Board for approval. Records of prescriptions claims data from January 1, 2009 through June 30, 2013 will be used to identify health system employees and dependents that obtained prescriptions for rosuvastatin and other statins that utilized the employee health plan. Contracted employees and patients less than 18 years of age at the time of claim processing will be excluded. Data that will be collected includes: sex, statin name and dose filled during specified time period, date of fill, initial fill or refill number, quantity and day supply, ingredient cost, copay, and claim amount. Descriptive statistics will be used to report results.

10-154

Title: Evaluation of aztreonam use in a community hospital

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Purpose: Aztreonam is a monobactam antibiotic approved to treat a variety of infections caused by susceptible gram-negative aerobic bacteria. The primary clinical utility of aztreonam is in the treatment of penicillin-allergic patients. Although the potential for cross-reactivity between penicillins and aztreonam exist in-vitro, studies have demonstrated that patients with a positive penicillin allergy skin test tolerate aztreonam without evidence of an allergic reaction. Per institutional policy aztreonam is limited to use in patients with documentation of a severe allergy to penicillin and empiric or culture-documented gram negative infection. This evaluation was conducted to evaluate appropriate aztreonam use in adult inpatients.

Methods: All orders for aztreonam were assessed as appropriate or inappropriate according to the following criteria. Appropriate use included empiric antibiotic coverage for gram negative organisms in patients with severe beta-lactam allergy, culture documented infection with susceptible organism in patients with severe beta-lactam allergy and documentation of severe reaction associated with penicillin allergy (anaphylaxis, urticaria, angioedema). Inappropriate indications for use included use of aztreonam without documentation of severe penicillin allergy, use of aztreonam with a penicillin allergy listed as reaction unknown, use of aztreonam with a penicillin allergy listed as mild or moderate (i.e. rash, nausea/vomiting, diarrhea), use of aztreonam in combination with another beta-lactam antibiotic and treatment for suspected or documented gram positive or anaerobic organisms. All adult inpatients older than 18 years of age with an order for aztreonam during the study period were included in the study.

10-155

Title: Evaluation of albumin use in the medical intensive care unit at a community teaching hospital

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Purpose: Human albumin is widely used in the intensive care unit (ICU), but appropriate clinical indications for use are controversial. Crystalloid solutions have been shown to be equally efficacious compared to albumin for many indications. Safety concerns, supply shortages, as well as the relatively high cost of albumin make it important to establish guidelines for appropriate use. The objective of this study is to determine if albumin use in the medical ICU at a community teaching hospital is appropriate according to evidence-based literature.

Methods: This retrospective chart review is a quality improvement project and is exempt from institutional review board approval. Adult patients who received albumin while in the medical ICU from January 1 through June 30, 2013 will be identified using a drug utilization report. The following indications for albumin use will be considered appropriate: paracentesis, plasmapheresis, spontaneous bacterial peritonitis (SBP), acute respiratory distress syndrome, and diagnosis and treatment of hepatorenal syndrome. The following indications will be considered inappropriate: acute kidney injury, hypotension and volume resuscitation, non-hemorrhagic shock, hemorrhagic shock, enhanced diuresis with diuretics, and dialysis associated hypotension. Data collected from the electronic medical record will include: patient weight, concentration and dose of albumin, number of doses received, and indication per chart documentation. If the indication is paracentesis, the volume of peritoneal fluid removed will be collected. If the indication is SBP, serum creatinine, blood urea nitrogen, and total bilirubin will be collected. All data will be recorded without patient identifiers and maintained confidentially.

10-156

Title: Rituximab Treatment for Antibody-Mediated Rejection (AMR) Following Heart and Kidney Transplant

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Case Report: Data on the management of AMR in heart transplant patients is limited, with a number of therapies aimed at reducing donor-specific antibodies currently being utilized. Here, we report the case of a patient with acute AMR following a heart and kidney transplant that was treated with rituximab. MZ is a 27 year old female with a past medical history of chronic kidney disease, dilated cardiomyopathy, and embryonal vaginal rhabdomyosarcoma with bladder wall involvement, which was treated with cisplatin and an anthracycline-based chemotherapy at age 3. In November 2012, she began experiencing symptoms of shortness of breath and dyspnea on exertion. At this time, she was diagnosed with severe, dilated cardiomyopathy (EF 12%), that eventually required a dual heart and kidney transplant. Intra-operatively the patient received basiliximab and methylprednisolone; overall the intra-operative course was uncomplicated. On post-operative day 1, however, the patient had a witnessed cardiac arrest. She was quickly resuscitated, but a subsequent transthoracic echocardiogram (TTE) revealed moderate to severe biventricular dysfunction (EF 30-35%), and she underwent a right heart catheterization (RHC) and endomyocardial biopsy. The RHC findings were consistent with acute heart failure, and the biopsy revealed grade 2R (3A) cellular rejection and grade 2 AMR (C4d and CD68 strongly positive). Plasmapheresis and thymoglobulin were initiated for the AMR and cellular rejection with improvement in cardiac output. The patients repeat biopsy showed grade 1R (1A) cellular rejection and staining for C4d and CD68 remained positive. Afterwards, the patient received rituximab IV 490 mg (375mg/m2) along with intravenous immunoglobulin (IVIG) for four days. The patient continued to improve hemodynamically and was discharged without inotropic support. The endomyocardial biopsy following rituximab showed grade 1R (1A) cellular rejection, however staining for C4d and CD68 were weakly positive. The patient received an additional dose of rituximab IV 490 mg (375mg/m2) approximately four weeks later. As of August 2013, the patient is still doing well. This case report offers more experience with rituximab for the treatment of AMR in heart and kidney transplant patients. The combination of plasmapheresis, thymoglobulin, IVIG, and rituximab proved to be effective in this patient case.

10-157

Title: Development and validation of an International Classification of Diseases, Ninth Revision (ICD-9) based algorithm to identify nosocomial onset bleeding

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Purpose: Without thromboprophylaxis, trauma patients are at an extremely high risk of developing thrombosis. These patients are also at a high risk of bleeding from thromboprophylaxis regimens. ICD-9 codes are assigned to every patient at discharge and have been shown to correlate with adverse drug events such as bleeding. The objective of this study is to determine how well an ICD-9 based algorithm can identify nosocomial onset bleeding in post-surgical trauma patients receiving low molecular weight heparin.

Methods: This study will be submitted to the Institutional Review Board for approval. Patients will be queried from the institutions trauma registry between January 1, 2004 and August 31, 2013. Patient ICD-9 codes will be obtained from the institutions data store. The ICD-9 codes selected are those that previous studies have found to be most correlated with bleeding. Chart review will then be conducted in the electronic medical record for 100 patients who received LMWH for at least 24 hours and had a LMWH discontinuation order prior to discharge. The following data will be collected: documentation of bleeding by a physician, imaging consistent with bleeding, hemoglobin levels, hematocrit levels, systolic blood pressures, and any clinical history consistent with bleeding. This data will be collected to assess whether or not the patient meets the studys definition of bleeding. The definition must be met from the time of LMWH initiation to 48 hours after its discontinuation. Results will be reported using a positive predictive value to assess the performance of the algorithm.

10-158

Title: Evaluation of a severe sepsis protocol

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Purpose: Sepsis is an inflammatory response to infection which can lead to severe sepsis and septic shock. These conditions are a major healthcare issue affecting millions of people and killing often more than one in four. The Surviving Sepsis Campaign was originally published in 2004 for the management of severe sepsis and septic shock and was recently updated in 2012. Studies that support these guidelines have shown improved survival when sepsis is identified and early evidence based therapies are implemented. The purpose of this evaluation was to assess the use of a severe sepsis protocol and its effects on patient outcomes.

Methods: A severe sepsis protocol was recently developed and implemented. A total of 40 patients were identified for the months of May and June 2013 according to their discharge diagnosis code for sepsis or severe sepsis. Medical records were reviewed to assess the appropriate use of the order set and its impact on patient length of stay and mortality, location of sepsis identification and choice of empiric antibiotic(s).

Results: A total of 39 patients were included in the result analysis. One patient was transferred to another hospital and information reviewed in medical record chart could not be used to properly evaluate the severe sepsis protocol. Of the 39 patients identified based on discharge diagnosis, 38(97%) met the defined criteria for systemic inflammatory response syndrome (SIRS) and/or severe sepsis and of these, only 18(47%) of these patients were properly initiated on the severe sepsis protocol. Average length of stay of patients initiated on the protocol was 12 days versus 9 days for those patients not initiated on the protocol. A total of 9(23%) patients analyzed expired during their hospital course and of these, 7(77%) patients were initiated on the protocol. Sepsis or severe sepsis was most commonly identified in the emergency department (64%). Final culture sensitivity results were covered by empiric antibiotic(s) choice in 81% of patients initiated on the protocol compared to 62% of patients that were not initiated on the protocol. The protocol was initiated the same day sepsis was first identified in 13(72%) patients.

Conclusion: The severe sepsis protocol was not initiated appropriately in all of the identified patients with sepsis and/or severe sepsis. More than two-thirds of the patients started on the protocol were initiated on the same day sepsis was first identified. Length of stay appears to be longer for patients who were initiated on the protocol, but final culture sensitivities was covered by empiric antibiotic(s) choice for a higher percentage of patients who were initiated on the protocol.

10-159

Title: Use of a multidisciplinary sepsis team to optimize time to antimicrobial administration in adult septic patients within an academic institution

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Purpose: Surviving Sepsis guidelines recommend the administration of broad-spectrum antimicrobials within one hour of recognition of severe sepsis and/or septic shock. The authors acknowledge that challenges exist with early identification of septic patients and that operational barriers may limit the rapid administration of antimicrobials. To date, few studies have evaluated the feasibility of early antimicrobial administration. This project aims to determine if the use of a multidisciplinary sepsis team results in faster antimicrobial administration in patients with severe sepsis and/or septic shock as compared to standard of care defined as intensive care unit (ICU) transfers or rapid response team activations.

Methods: This project is pending Institutional Review Board for approval. The project will be a retrospective cohort analysis of adult patients admitted to a 520-bed tertiary hospital between September 2012 and December 2013 who screen positive for severe sepsis and/or septic shock. Patients will be identified through analysis of data on sepsis team activations and standard of care. Patients admitted through the emergency department with sepsis will be excluded. The electronic medical record will be used to collect the following data: baseline patient demographics, process time points (time from positive screen to sepsis team activation or rapid response team activation/ICU transfer, order entry, order verification, antimicrobial administration), appropriateness of antimicrobial(s), ICU length of stay, and all-cause in-hospital and 28 day mortality. Data will be compared between sepsis team activations and standard of care.

10-160

Title: Improved transitions of care with a pharmacist-managed anticoagulation discharge program

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Purpose: Inadequate transitions of care put patients at increased risk of suboptimal medication use, medication errors, confusion about the care plan, unintended lapses in treatment, and increased cost. Discharge instructions often lack crucial information, such as a complete medication list or instructions for outpatient follow-up, and may be difficult for patients to understand. Studies of the impact of pharmacist intervention at discharge report reduced preventable adverse drug events, hospital readmissions, and return visits to the emergency department. The objective of this study is to assess the impact on transitions of care with a pharmacist-managed anticoagulation discharge program.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify patients who have been discharged from the hospital on warfarin, enoxaparin, and/or fondaparinux. Data will be collected on whether or not the following occurred prior to discharge: an outpatient prescription was correctly filled out for the medication and the patient discharge instructions included the name of the anticoagulant, the proper dose and dosing frequency, and the instructions for follow-up. In instances when warfarin was prescribed, data will also be collected on whether or not an outpatient PT/INR was ordered and a referral was placed to the hospitals Anticoagulation Clinic. Then a new hospital procedure will be implemented in which the pharmacist prepares the patient's anticoagulation discharge instructions and plans for follow-up. A second sample of the above data will be collected after implementation of this procedure. The before and after data will be compared and evaluated for improvement in the discharge process with pharmacist involvement. All data will be recorded without patient identifiers and will maintain confidentially.

10-161

Title: Utilizing lean methodology to improve the efficiency of the medication dispensing process for an outpatient community hospital oncology setting

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Purpose: The primary objective of the study is to eliminate potential sources of waste by first identifying and evaluating the current medication dispensing process for the oncology ambulatory service. The focus will be from the time an order for an antineoplastic agent or pre-medication is entered into the pharmacy computer system up to the point where the administering nurse receives the final preparation. During phase two of the study, the goal is to implement and sustain any identified improvements to the workflow that will streamline the dispensing process for the outpatient oncology service.

Methods: Phase I is a prospective analysis of current practices involving the dispensing of antineoplastic admixtures and day 1 pre-medications for the outpatient oncology services. Non-value added activities for the pharmacists and technicians involved in this dispensing process will be defined. The pharmacy staff, oncology nursing staff, and the oncologists will be informed and educated about the nature of the project as well as the principles of LEAN methodology. The time it takes from order entry to the point of delivery of the final preparation to the infusion center will be documented for at least 50 individual, randomly selected prescriptions. Only time involved in the dispensing of the first medication (pre-medication or antineoplastic agent) will be documented and analyzed. Furthermore, the time it takes to perform each activity per prescription will be recorded. Based on the observations from phase I, an action plan will be utilized to assist with implementing potential changes. Time to dispense at least 50 randomly selected prescriptions will be recorded post-implementation and differences in time between the pre-implementation phase (Phase I) and post-implementation phase will be analyzed using appropriate statistical tests.

10-162

Title: Optimizing Outcomes with a Pharmacist Managed Anemia Clinic

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Purpose: Erythropoietin stimulating agents (ESA) are useful in treating various types of anemia but are not without risk; their use requires frequent laboratory monitoring and maintenance of hemoglobin values within narrow range to prevent serious adverse effects and blood transfusions. The objective of this study is to determine the impact of a collaborative program which includes pharmacists in the management of anemia patients requiring ESA therapy, due to chronic kidney disease, myelodysplastic syndrome, or chemotherapy.

Methods: All consecutive patients who qualify for pharmacists-managed ESA care will be evaluated after Institutional Review Board approval is obtained. Anemia diagnosis, hemoglobin values, iron study orders, iron study results including serum iron, total iron binding capacity, and ferritin values will be collected. Thrombotic adverse effects, counseling received, and blood transfusions received will also be evaluated. Patients will serve as their own comparator with usual care defined as care received prior to pharmacists-managed interventions per protocol. The reviewers will evaluate optimal dosing of ESAs as measured by in-range hemoglobin values, lower potential for adverse medication effects, and reduced need for transfusion.

10-163

Title: Perceptions of care among high risk patients, families or caregivers in the Senior Care Institute's patient-centered medical home (PCMH)

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Purpose: The Senior Care Institute is a level 3 accredited PCMH, comprised of an interdisciplinary team of physicians, pharmacists, nurse practitioners, medical assistants and clinic staff collaboratively managing the health of geriatric patients. The purpose of our project is to identify potential areas for improvement in our delivery of patient care by conducting a survey in all the non-institutionalized high risk patients, families or caregivers in our medical home. The feedback will be analyzed to determine changes to be considered. This also satisfies the 6C must-pass element of the medical home renewal process which focuses on implementing continuous quality improvement.

Methods: After receiving approval from our institutions quality improvement review board, all non-institutionalized high-risk patients will be included. Our predefined criteria for high risk patients include those having two or more of the following diagnoses: congestive heart failure severe enough to require at least one hospitalization in the past 12 months, moderate to severe dementia, gait ataxia/falls, recurrent hospitalizations defined as 2 or more in a 12 month period or any readmit within 30 days and/or significant psycho-social issues. A comprehensive survey collection tool was devised by the research team to meet criteria for the medical home renewal. The categories of the survey include medication decisions, communications between providers and goals of care. The survey will be conducted face to face during a 30 to 60 minute scheduled office visit. For patients who are incapable or unwilling to be physically present, the survey will be conducted via telephone. The survey responses will be transcribed and scanned into each patients electronic medical record. After all survey assessments are completed, qualitative analysis procedures will be utilized to determine common themes in responses. The pharmacists and the medical director will identify appropriate actions for improvement and these will be discussed with the inter-professional team.

10-164

Title: Effectiveness of pharmacist-based tobacco cessation counseling in the family medicine setting

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Purpose: The purpose of the study is to evaluate the effectiveness of a pharmacist-based, comprehensive, tobacco cessation program in an outpatient family medicine clinic. The primary aim is to assess tobacco quit rates among smokers who participated in the pharmacist-based program and identify the predictors of quitting at the end of a four-month program. The primary objective will be to determine the effectiveness of a pharmacist-led smoking cessation program through self-reported time since last cigarette via surveys completed at follow-up visits.

Methods: This study will be submitted to the institutional review board for approval. The tobacco cessation service will include an initial 15 minute counseling session proctored by a pharmacist in which patients current tobacco usage is reviewed and the readiness to change are evaluated. Based upon the patients readiness to change, pharmacological methods to aid the patient will be used in his/her attempt to quit the use of tobacco. During the initial session, a quit date will be discussed and agreed upon between the pharmacist and the patient and a reliable phone number will be obtained in case the patient does not follow up. Follow-up sessions will be used to assess the patients progress and make changes to recommendations if necessary. A total of three follow-up visits at one month, two months, and four months, should be scheduled per patient to properly track progress or regression. All participants will be instructed to call the pharmacist if they have questions or to receive additional support. Data will be collected through patient surveys provided at the patient encounters. The primary endpoint will be self-reported quit rate and smoking status at one, two, and four months.

10-165

Title: What's your line? Defining pharmacists' role in jejunostomy tube medication administration

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Purpose: Enteral nutrition is preferred over parenteral nutrition in patients with inadequate oral intake for an extended period of time. Enteral feeding helps preserve the functioning of the gastrointestinal (GI) tract. Feeding tubes provide access to the GI tract allowing administration of medication while unable to swallow. Administration via this route may complicate drug therapy depending on drug formulation, absorption site, first-pass elimination, as well as the size and placement of the tube. Medication errors revolving around administration via enteral feeding tubes represent a need for education and implementation of hospital guidelines.

Methods: A 56 year old male, was admitted to Thomas Jefferson University Hospital (TJUH) for an orthotopic heart transplant. His postoperative course was complicated by cytomegalovirus (CMV) viremia requiring a prolonged duration of antiviral therapy. The patient required enteral tube feeds necessitating the placement of a jejunostomy tube (j-tube). All oral medications were administered via the j-tube, which resulted in malabsorption of valganciclovir and increased CMV replication. Gaps in the medication-use system and staff education will be identified and evaluated through the review of the patient case. From these observations, changes can be made to reduce the occurrence of enteral tube medication administration errors in the hospital setting.

Results: Factors in enteral tube medication errors included (1) inadequate visibility of the correct route of administration in the medication profile, (2) discrepancies in documentation and communication of route of administration, (3) undefined accountability of medication administration route, and (4) lack of knowledge about enteral tubes and potential complications with medication therapy. Remediation of these deficiencies include changes to the electronic medical record to increase visibility of potential routes of administration, development of competencies for pharmacists and nurses, defining the roles of the multidisciplinary team, and creation of a enteral medication administration hospital guideline.

Conclusion: A guideline for medication administration via enteral feeding tube will be implemented. Education as well as references and resources will be provided for nurses, pharmacists, and medical staff. Changes to the electronic medical record will allow for visibility of potential routes of administration and improved interdisciplinary communication. These institutional changes will allow the pharmacists to define their role in ensuring safe and efficacious medication administration for patients with enteral feeds.

10-166

Title: Assessment of adherence and outcomes related to the use of post-tissue plasminogen activator (tPA) monitoring protocols for acute ischemic stroke at a Primary Stroke Center

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Purpose: Intravenous tissue plasminogen activator (tPA) is employed in the setting of acute ischemic stroke in the attempt to restore cerebral blood flow and neurological function. Three protocols detailing specific criteria for monitoring after tPA infusion have been in place at our Primary Stroke Center for several years. The objective of this study is to assess adherence to our institution's post-tPA monitoring protocols to determine if non-compliance affects rates of in-hospital mortality, bleeding events, length of stay, ambulatory status at discharge, and discharge destination.

Methods: This study will be submitted to the institutional Director of Quality. The electronic medical record will be used to identify patients at our institution that have been treated with tPA for acute ischemic stroke from September 1, 2012 to September 30, 2013. The following data will be collected: patient age, gender, weight, past medical conditions that may contribute to acute ischemic stroke, adherence to measurement of protocol-specific monitoring parameters in the first 24 hours post-tPA infusion (vital signs, NIHSS scores, blood pressure measurements, laboratory coagulation measurements, avoidance of use of anticoagulant and antiplatelet agents, avoidance of invasive procedures, complete blood count with differential), and patient outcomes (in-hospital mortality, adverse bleeding events, length of stay, ambulatory status at discharge, discharge destination). All data will be recorded without patient identifiers and maintained confidentially. Occurrence of non-compliance to the post-tPA monitoring protocol will be assessed to determine if there is an association with poor patient outcomes. Rates of adherence and related patient outcomes for the individual post-tPA monitoring protocols will also be compared.

10-167

Title: Monitoring drug-induced QTc prolongation in a veteran population

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Purpose: A prolonged QTc interval is an established surrogate marker for torsade de pointes (TdP), a cardiac arrhythmia that can ultimately lead to sudden cardiac death. Many medications are known causes and possible risk factors for inducing QTc prolongation and have been associated with patient morbidity and mortality. The purpose of this quality improvement study is to determine if veterans taking medications known to prolong QTc are properly managed.

Methods: This project was reviewed and approved in accordance with local policy and procedures for quality assurance/quality improvement projects. A list of medications was identified by cross-referencing drugs with known or possible QTc prolongation risk against the local VA formulary. The results included: amiodarone, sotalol, citalopram (>40mg), macrolide antibiotics (chronic use), methadone, moxifloxacin (chronic use), ondansetron, haloperidol and pimozide. A list of patients taking the aforementioned medications will be generated. Utilizing the computerized patient record system (CPRS), patients will be evaluated for additional risk factors for QTc prolongation (i.e. family history, advanced age, female gender, electrolyte disturbances, structural heart disease, bradycardia, and/or concomitant use of multiple QTc prolonging medications). Additional data, including but not limited to: baseline QTc, subsequent QTc, and elevated QTc (based on ACC/AHA recommendations) will be acquired. The data recorded will be used to assess whether veterans administered medications that cause QTc prolongation are being monitored and if appropriate action is being taken when indicated. If it is found that monitoring is not being performed and veterans are at an increased risk, possible solutions to the problem will be investigated.

10-168

Title: An evaluation of adverse drug reactions associated with antipsychotic use in a MICU for the treatment of delirium

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Purpose: The primary purpose of our project is to evaluate the incidence and severity of adverse drug reactions associated with antipsychotic drugs when used for the treatment of delirium in the medical intensive care unit (MICU). Also, we will aim to identify which antipsychotic agents are more commonly associated with adverse drug reactions in this patient population.

Methods: This quality improvement project will be conducted over six months. Upon admission to the MICU, patients will be screened for delirium by nurses using the intensive care delirium screening checklist (ICDSC). A score of four or greater will be considered positive for delirium. Patients treated for delirium will be identified by the clinical pharmacist: 1) during daily patient care rounds and 2) using and alert generated by TheraDoc, when antipsychotic drugs are prescribed. Patients receiving and antipsychotic for delirium will be monitored for suspected adverse drug reactions (ADRs). If the clinical pharmacist identifies a suspected ADR, the drug-event relationship will be assessed using three objective causality assessment tools, Kramer, Naranjo, and Jones to assess for the likelihood of an ADR. An event will be considered an ADR when 2 of the 3 instruments have an agreement rating of possible or greater. The severity of the ADR will be classified based upon the National Cancer Institutes Common Terminology Criteria for Adverse Events (CTCAE) grading scale, and through a modified version of the MEDMARX form. The resulting action by the medical team to manage the ADR will then be evaluated. Quality improvement approval has been obtained and data collection is underway.

Results: Pending. The incidence, type and severity of ADRs associated with antipsychotics will be reported.

10-169

Title: Continuing antimicrobial stewardship: development and implementation of a vancomycin dosing and monitoring protocol

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Purpose: With updates to the therapeutic monitoring model for vancomycin in the treatment of moderate to severe infections came an increased emphasis on protocol-driven administration, appropriate dosage calculation and acceptable serum trough monitoring to ensure efficacious and safe use. At this site, a protocol outlining proper usage of vancomycin has not been developed.

Methods: This project was reviewed and approved in accordance with local policy and procedures for quality assurance/quality improvement projects. A retrospective chart review will be performed on patients that received vancomycin therapy prior to protocol initiation. Data collected will be from providers initiating a vancomycin order during the time frame of March 2013 to August 2013. Computerized Patient Record System (CPRS) will be used to evaluate reported laboratory troughs and vancomycin dosing for clinical indication of therapy. The data collected will be evaluated as: appropriate dosing based off of clinical indication, troughs drawn within appropriate time range, and target troughs reached. A database will be developed and used to organize the data collected for the purpose of protocol development. After the protocol is validated and approved, therapeutic metrics will be compared to pre-protocol data to validate the protocol.

10-170

Title: Assessing educational impact on utilization of basal-bolus versus sliding scale insulin regimens

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Purpose: National guidelines support optimal inpatient blood glucose control to decrease complications and mortality. Studies have demonstrated that monotherapy with sliding scale insulin provides ineffective glucose control and contributes to morbidity and mortality in hospitalized patients as compared to basal bolus administration. Sliding scale insulin monotherapy regimens continue to be over-utilized in our institution, despite national guideline recommendations. Strategies must be identified to improve utilization of basal-bolus insulin regimens. The objective of this study is to evaluate the impact of educating medical residents on the appropriate prescribing of insulin regimens at an academic institution.

Methods: This study will be submitted for Institutional Review Board approval. Education on the benefit of the basal-bolus approach of blood glucose control, compared to use of sliding scale insulin regimens, will be presented to Internal Medicine medical residents. The primary outcome will be the difference in resident prescribing patterns before and after the educational sessions. Data on diabetic patients treated with an insulin regimen will be collected pre- and post-intervention. The percentage of patients prescribed basal-bolus regimens post-education will be compared to the baseline data to assess the benefit of the educational initiative. The secondary outcomes will look at the difference in blood glucose control and insulin usage between patients prescribed sliding scale insulin regimens and basal-bolus insulin regimens.

10-171

Title: Non-medication ordering activities of pharmacists within Annual Wellness Visits in an outpatient family medicine residency practice

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Purpose: In January 2011, The Affordable Care Act added a free Annual Wellness Visit (AWV) benefit for Medicare beneficiaries. The AWV may be delegated to office-based pharmacists. Required AWV health maintenance activities include reconciling medications, performing screenings, and ordering diagnostic testing and referrals. We aim to describe the non-medication ordering activities of a pharmacist within the context of a pharmacist-run AWV in an urban hospital-based family medicine residency practice.

Methods: Pharmacist-run AWVs will be implemented January 2014. Visit notes and test results will be provided to the primary care provider (PCP) via the electronic medical record. Acute patient complaints outside the scope of the AWV will be addressed and billed in a separate visit. Patients will be recruited based upon Medicare status, and the presence of either 5 or more medications or high risk medications. Patients will be excluded for PCP preference or low practice contact defined as less than one office visit in the past 6 months. We will conduct a retrospective chart review of visits between January and March. Data extracted will include demographics, diagnoses, chronic medications, physician visits within the past 6 months, and all non-medication pharmacist orders including radiology, laboratory, and referrals. Descriptive statistics will be reported. The outcome of interest is the percentage of AWVs in which any non-medication order was placed by a pharmacist, as well as details by order type. Orders placed by other care team members will also be identified and reported. Clinic notes and billing information will be reviewed to report the frequency of acute complaints presented during the AWV, including how frequently an additional billable physician visit was required.

10-172

Title: Evaluation of delirium-precipitating medications in intensive care unit patients at a community hospital

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Purpose: Delirium is a common issue in the intensive care unit (ICU) population but is widely unrecognized. It is associated with increased hospital length of stay, future cognitive impairment, and mortality. Known factors contributing to delirious episodes include severity of illness, hypertension, pre-existing dementia, alcoholism, and the use of deliriogenic medications. The purpose of this study was to analyze patients for trends in potential medication-related etiologies of delirium in a community hospitals ICUs in order to identify opportunities for improvement.

Methods: An observational quality improvement project was completed between August 20th and September 20th 2013. Adult patients admitted to an intensive care unit were evaluated beginning the day after ICU admission through discharge or transfer from the ICU. Data collection included patient age, gender, underlying medical conditions (depression, dementia, anxiety, schizophrenia, bipolar) substance abuse problems (opioids, benzodiazepines, tobacco, alcohol, or illicit drugs), daily CAM-ICU (Confusion Assessment Method for the ICU) status, and administration and discontinuation times of targeted medications. The medications targeted in this evaluation (benzodiazepines, opioids, antihistamines, steroids, propofol, dexmetatomidine, antidepressants, and antipsychotics) are those believed to cause or prolong delirious states. Patients were included in the analysis if they had at least one positive score during ICU stay as determined by the CAM-ICU tool.

Results: A total of 26 patients met criteria for analysis. Of these, 12 patients had at least one relevant underlying medical condition and 11 patients had at least one substance abuse problem prior to admission. The most common medications discontinued upon admission were antidepressants. Benzodiazepines were the most common targeted medications given to patients before or during episodes of delirium, accounting for 18 out of 26 patients (69%) with a positive CAM-ICU status. Half of the patients received opioids (13 out of 26). Thirty-five percent of patients received two targeted medications and 23% of patients received three or more prior to or on the day of the first documented episode of delirium. The most common combination of targeted medications included benzodiazepines and opioids (10 out of 26 patients, 38%). The second most common combination (steroids and opioids) occurred in six patients (23%). Of 121 patient days assessed, only 86 (71%) had at least one completed CAM-ICU sheet, which is a potential limiting factor.

Conclusion: The multifactorial etiology of ICU delirium in this community hospital setting is consistent with current data. More than half the patients with ICU delirium received two or more deliriogenic medications, with the majority including benzodiazepines and opioids used alone or in combination. Consistent completion of CAM-ICU tools and evaluations of medication use are important to identify possible causes of delirium and prevent delirium and its associated morbidity and mortality in the ICU.

10-173

Title: Fondaparinux during the peri-procedural period: a retrospective review

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Purpose: The 2012 CHEST perioperative management of antithrombotic therapy guidelines recommend patients on chronic warfarin with a high risk of thrombosis receive bridge therapy when warfarin is temporarily discontinued for a procedure. Compared to heparin and low-molecular-weight heparins, fondaparinux has a longer half-life and no reversal agent; however, fondaparinux has a less complicated dosing regimen and a reduced incidence of heparin induced thrombocytopenia. The objective of this review is to evaluate the efficacy and safety of fondaparinux during the peri-procedural period with regards to the incidence of thrombosis and bleed.

Methods: This retrospective chart review is exempt from Institutional Review Board review because it is a quality improvement project approved by the institution's drug utilization evaluation subcommittee. The electronic medical record system will be used to identify patients with a prescription for fondaparinux for peri-procedural bridge therapy. The following patient specific data will be collected: age; race; gender; weight; creatinine clearance; procedure performed; whether spinal or epidural anesthesia was used; whether concomitant anticoagulants/antiplatelets were held appropriately; baseline, pre- and post-procedure hemoglobin, hematocrit, INR, and platelet count; bleed risk score; indication for warfarin therapy; goal INR; and number of days warfarin was held before and after the procedure. Fondaparinux data collected will include: dose, number of doses received pre- and post-procedure, INR result when fondaparinux was discontinued, and time elapse from last fondaparinux dose prior to procedure and to first dose after procedure. Outcome data collected will include: minor or major bleeding (decrease in hemoglobin of 2g/dl or more over 24 hours, transfusion of two or more units of packed red blood cells, critical site bleeding, fatal bleed, and bleed requiring re-operation) and any suspected or diagnosed thrombosis. All data will be recorded without patient identifiers and confidentiality will be maintained.

10-174

Title: Impact of liposomal bupivacaine on post-surgical length of stay and opioid use

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Purpose: Uncontrolled post-surgical pain can result in a greater hospital length of stay for patients. The standard course of treatment at our facility for reduction of post-surgical pain would be to treat with opioid-based analgesia to control patients pain. Our health system recently added liposomal bupivacaine to our formulary, and the purpose of this study is to assess whether this unique method of pain control given to post-surgical patients would decrease overall opioid usage and length of stay.

Methods: This study will be submitted to the Institutional Review Board for approval. In this single center, retrospective study, patients who underwent knee or hip replacement surgery received either postsurgical pain therapy via multimodal analgesia which included a single intraoperative administration of liposomal bupivacaine or opioid-based analgesia. Primary outcome measures studied include hospital length of stay, post-operative opioid use and pain scores. Incidence of opioid-related respiratory depression was also assessed by rapid response calls. The data was then assessed against patients who had not received liposomal bupivacaine to distinguish if there was a difference regarding the primary outcome measures.

10-175

Title: Evaluation of serum procalcitonin on antibiotic utilization in septic patients in the ICU

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Purpose: Procalcitonin (PCT) is a precursor of the hormone calcitonin, and is produced endogenously after proinflammatory stimulation. Slight elevations in PCT levels are observed in response to bacterial infections with minor systemic inflammatory response, while very high values have been observed in cases of severe sepsis or septic shock. One major advantage of PCT compared to other biomarkers is an early and highly specific increase in response to severe bacterial infections and sepsis. PCT has mainly been investigated in patients with lower respiratory tract infections and critically ill patients in the ICU. The aim of this study is to determine if the use of procalcitonin as a biomarker reduced total days of antibiotic therapy, and length of stay in the ICU for septic patients in the ICU compared to individuals without a procalcitonin level.

Methods: A retrospective chart review was performed comparing a baseline group of septic patients against a group of septic patients who had a procalcitonin level ordered during hospitalization. The baseline group consisted of patients with an 871 DRG (sepsis without mechanical ventilation 96+ hours with MCC) who were admitted to either the MICU or SICU from August 15,2013 to October 1, 2013. Individuals in the ICU with documentation of possible sepsis and a procalcitonin level ordered were monitored while in the hospital. Upon discharge those patients coded with an 871 DRG were used to compare against the baseline population. Duration of antibiotic therapy, length of stay in the ICU, mortality, and hospital readmission within 28 days were all assessed.

Results: Collected data will be analyzed to determine if duration of antibiotic therapy, ICU length of stay, mortality, and hospital readmission rates differed between the baseline population and PCT patients.

Conclusion: It is anticipated that this study may help identify if using a procalcitonin level reduced antibiotic exposure and ICU length of stay in septic patients.

10-176

Title: Using simulation-based training to establish pharmacist competency in rapid response conditions

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Purpose: Pharmacists' unique set of drug information training provides very useful information to a rapid response team. The role of pharmacist participation in these teams often varies between institutions. Simulation-based training has proven effective in educating various health care professionals about medication use. This study aimed at using simulation-based training to develop standard competencies for a pharmacist's role in these situations.

Methods: Thirty pharmacists at a large academic medical center will be introduced to a simulated patient experience involving a rapid response medical emergency. Baseline information on the pharmacist's competency level will be collected, included drug information, proper drug administration, and appropriate indication. After baseline information is collected, pharmacists will participate in an two-part, one-hour educational session using the simulated patients. Follow-up information will be collected to determine change in competency in the three focused areas.

10-177

Title: Analgesic treatment of oral mucositis involving ketamine

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Purpose: Mucositis is a painful complication of cancer therapies, affecting 30%40% of patients receiving chemotherapy and more in stem cell transplant patients. Although opioids remain primary analgesic for patients with severe cancer pain, the side effects may their limit dose and frequency of use. Alternatively, ketamine may have opioid sparing effects. Usually used in low doses as a mouthwash anesthetic, ketamine can be beneficial in the treatment and palliation of mucositis. Unfortunately, there is limited evidence supporting ketamines use in this setting. This study hopes to expand the evidence base and explore better methods for improving mucositis management.

Methods: This prospective, two-arm cohort study will be offered to all inpatients admitted during the study period with a diagnosis of severe or refractory mucositis on the inpatient hematology or oncology service. This will be open to patients with hematologic malignancies and head and neck malignancies. This study will be submitted to the Institutional Review Board for approval and informed consent will be obtained for all subjects. All patients who give informed consent will receive standard of care, and they will have their pain and total opioid usage assessed and recorded during their hospital admission. Study patients will also be offered ketamine mouthwash in addition to standard of care, but it is expected that some patients may decline. Patients who choose to use ketamine mouthwash will be considered as the Ketamine arm, and patients who do not will be in the No Ketamine arm. Data will be entered by study team members into a password protected spreadsheet on a secure health system server. Anticipated data points to collect include: MRN, age, sex, diagnosis, pain scores with timestamps, mouthwash use with timestamps, total opioid use by day, and total number of days on study.

10-178

Title: Osteoporosis medication regimen review by pharmacists in a geriatric clinic

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Purpose: Pharmacists in the ambulatory care setting are in a unique position to assist physicians in the identification of patients eligible for treatment of osteoporosis. The objective of this study is to increase the quantity of patients in a geriatric clinic who are being treated appropriately for osteoporosis, according to evidence based medicine guidelines developed by the National Osteoporosis Foundation.

Methods: Prior to initiation, this study will be submitted to the Institutional Review Board for approval. All patients in a geriatric ambulatory care clinic who have osteoporosis listed on their electronic medical record (EMR) will be screened for inclusion. The following information will be reviewed: current medications, DEXA scan imaging history, serum creatinine, age, gender, height and weight. The pharmacist will determine if each patient is being treated appropriately according to a treatment algorithm developed in accordance with current treatment guidelines, and approved by the physicians who are participating in the study. For all patients not treated according to the algorithm at the time of study initiation, an individualized recommendation for each patient will be made by the pharmacist to the appropriate physician. Both physicians whose patients will be included in this study have agreed to review all recommendations submitted by the pharmacist. All data will be maintained confidentially; no personal identifiers will be retained. The number of pharmacist recommendations that are accepted at the conclusion of the study will be compared to: the quantity of patients who were being treated appropriately at the initiation of this study, and the total quantity of patients included in the study.

10-179

Title: Medication reconciliation upon the transition of care from the intensive care unit (ICU) to the general floor

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Purpose: A Joint Commission National Patient Safety Goal is to establish a medication reconciliation process across patients continuum of care. It is expected that when patients transfer care within the hospital, from an ICU to floor, the current provider completes medication reconciliations. Medication reconciliation during patients transition of care can decrease medication discrepancies and reduce the potential for adverse drug events. Multiple sources support that a pharmacist performing medication reconciliation improves patient outcomes while reducing cost of care. The objective of this study is to evaluate patients medication reconciliation after transition out of the ICU and identify inappropriate therapies requiring intervention.

Methods: This is a prospective research study that was exempt from IRB approval as it was deemed a quality improvement project. The electronic medical record system will identify patients who were transferred out of the ICU to a general medical/surgical floor within the past 24 hours. This will occur for all patients transferred out of the ICU from November 1, 2013 February 28, 2014. Each patient will be assessed 24 48 hours after transfer from the ICU and at hospital discharge. The transfer note, ICU medication list, assessment and plan will be reviewed. A medical records program will be assessed to review discharge medications. An intervention will be made by the primary investigator to adjust any inappropriate therapies. The primary outcome will measure the number of inappropriate therapies requiring intervention. The secondary outcomes are to quantify the number of dosing errors, appropriate home medications not restarted, medications prescribed with no indication, IV medications that can appropriately be administered via oral route, medications that have an inappropriate route of administration, number of patients with incorrect anticoagulation bridging, number of antibiotics with an extended duration beyond the original ICU plan, and the number of duplicate therapies.

10-180

Title: Recombinant activated factor seven (rFVIIa): a medication use evaluation in a tertiary care academic medical center

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Purpose: rFVIIa is approved by the FDA for the treatment and prevention of bleeding episodes in patients with hemophilia who have antibodies to factor VIII or factor IX. It is also used off-label in patients without hemophilia for the control of refractory bleeding in various clinical situations, including surgery, trauma, and advanced liver disease. rFVIIa is associated with an increased risk of thromboembolic events and significant cost. The objective of this study is to evaluate the appropriateness of usage and dosing of rFVIIa based on our current hospital policy.

Methods: This study will be submitted to the Institutional Review Board for approval. Patients who received at least one dose of rFVIIa from January 2009 to September 2013 will be identified using our electronic medical record system. A retrospective chart review will be performed to collect the following data: age, gender, weight, date of admission and discharge, status at discharge, ordering physician service, indication, rFVIIa dose, amount of blood product used 24 hours before and after administration, other hemostatic agents used 24 hours prior to administration, and lab parameters prior to administration. The appropriateness of usage at our institution will be evaluated based on our current hospital policy, including FDA-approved and non-approved indications, dosing, and management prior to administration. All data will be recorded without patient identifiers and maintained confidentially.

10-181

Title: Creating a medication order menu in a computerized provider order entry (CPOE) system

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Purpose: Computerized provider order entry (CPOE) systems have been shown to improve the quality and efficiency of patient care, reduce errors, and increase adherence to evidence-based guidelines. CPOE systems allow the user to create preconfigured orders and order sets that guide providers in selecting formulary medications recommended by the guidelines. The objective of this project is to create a medication order menu that will assist providers with medication order entry.

Methods: This is a quality improvement project. This project has been reviewed and approved in accordance with local policy and procedures for quality improvement projects. Prior to creating the medication order menu, physicians and pharmacists will be surveyed to determine what aspects of the order menu would be preferred. This will encompass disease states, medications, and medical disciplines. The order menus from other facilities will be reviewed to determine if they will be beneficial for this facility according to the requests. The order menus will be created by the information systems team. The order menus will then be tested by a select group of physicians and pharmacists who will be from different disciplines.

10-182

Title: Student verbal presentation experiences across pharmacy curriculums and use of video capture technology for communication assessment: a descriptive evaluation

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Purpose: The 2013 Center for the Advancement of Pharmacy Education outcome report recommends that student pharmacists should be able to communicate both verbally and non-verbally within their practice setting. To develop this, schools of pharmacy may require informal and formal presentations throughout the curriculum. Live video capture is a technological tool that may be used to promote student self-reflection and growth with verbal presentation skills. This project will assess student verbal presentation format across a sample of schools of pharmacy, and describe student perceptions of the usefulness of video capture as a communication skill assessment tool at our school of pharmacy.

Methods: This project was approved by the Curriculum Committee and the Curriculum Assessment Committee of our School of Pharmacy as a quality improvement project. To describe national practices related to curricular requirements for student formal verbal presentations, a 13 question survey will be distributed to a convenience sample of schools of pharmacy, to represent a cross-section of schools. Survey answers will be validated by comparing responses to curricular syllabi from the corresponding academic institution, where available. Our school of pharmacy currently requires a 30 minute, verbal presentation as the students PharmD Seminar, presented to fellow students and faculty during the Fall Term of the fourth professional year. Students are evaluated by their peers and by a faculty facilitator in-class. Video-capture was integrated in two different Fall semesters to provide student opportunity for self-review of their individual seminar, and to evaluate their performance. Open-ended, reflective questions were distributed to each student post-presentation, and student responses will be coded and aggregated by common response themes. Survey responses will be collected from September 2010 to November 2013 and will include approximately 100 student pharmacists. Results will determine the continuation use of this technology to assess formal verbal communication skills within the school of pharmacy.

10-183

Title: Low-tech gamification interventions for medication adherence in human immunodeficiency virus (HIV) patients

Primary Author: Victoria Denice Lippert**,** Conemaugh Memorial Medical Center, 1086 Franklin Street, Johnstown, PA 15905; **Email:** vlippert@conemaugh.org

Purpose: Gamification is the process of utilizing gaming elements to motivate people in nongame contexts. A no or low tech game is more manageable and affordable than a customized game application and allows for participants to engage with one another. Adherence to medication regimens is important among HIV patients to prevent medication resistance and treatment failure. The objective of this study is to evaluate the utility of low tech gamification measures towards improved medication adherence among HIV patients.

Methods: This study will be submitted to the institutional review board for approval. Potentially non-adherent adult HIV patients will be identified from the current participants of the institutions Ryan White Clinic. These patients will be contacted by letter to explain the study and survey willingness to participate as well as gather baseline characteristics. Information that will be utilized includes patients name, date of birth, sex, current medications, length of regimen, pharmacy fill history, and history of missed appointments. Those that elect to participate in the study will be asked to consent for access to fill histories with their pharmacies. Then participants will be followed for an initial one month to assess baseline adherence level. Patients will be instructed on methods to monitor adherence. The gamification intervention will provide an interactive medium for the patients to become better educated on their medications as well as discuss barriers to adherence and ways to overcome them. Patients adherence will be followed up one month and three months post intervention.

10-184

Title: Evaluating the Impact of a Clinical Pharmacist on Adult Immunization Rates in a Federally Qualified Health Center

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Purpose: Adult vaccination rates have remained stagnant for the past decade. This has contributed to approximately 45,000 adults dying annually due to the complications of vaccine preventable diseases, the majority of which are caused by influenza and pneumococcal disease. This investigation will attempt to show that continual education of patients and providers, as well as direct patient interventions by a clinical pharmacist can effectively improve adult vaccination rates in a primary care setting.

Methods: Prior to initiation, this study was submitted for approval to the Institutional Review Board at The University of Findlay. Patients eligible for participation in this study will be recruited from Health Partners of Western Ohio, an integrated care, Patient-Centered Medical Home (Level 3) and Federally Qualified Health Center serving financially disadvantaged and medically underserved patients. Patients with an active diagnosis of Diabetes Mellitus type 2, Asthma, COPD or a combination of those disease states will be eligible for participation in this study as the prevailing guidelines suggest that patients be immunized against influenza (Yearly) and Pneumonia (at diagnosis and after the age of 65). Patients will be selected for 2 study groups, a Prospective Intervention group and a Retrospective Standard of Care Group. With this model, we will attempt to capture the direct interventions of a clinical pharmacist on adult vaccination rates. The retrospective group will allow us to see the impact of pharmacist-led provider and support staff education on adult vaccination rates in comparison to the previous year in which none of these measures were completed.

Results: Currently Pending

Conclusion: Currently Pending

10-185

Title: Stress ulcer prophylaxis Usage: Evaluating the impact of a screening protocol and an automatic discontinuation policy in a community teaching hospital

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Purpose: Many physicians initiate stress ulcer prophylaxis (SUP), particularly proton pump inhibitors (PPIs) in patients upon hospital admission regardless of an appropriate indication. There are recommended indications for SUP; however, literature and previous internal reviews at MedStar Union Memorial Hospital (MUMH) have found that SUP is often over prescribed. Several studies have shown that SUP, particularly PPIs can increase the risk of Clostridium difficile diarrhea, bone fractures, and pneumonia (community and hospital acquired). At MedStar Union Memorial Hospital, PPI use is screened for appropriateness of therapy as part of a pharmacy pharmacokinetics service.

Methods: The purpose of this study is to evaluate whether our screening process and protocols have been effective in minimizing inappropriate SUP with a focus on PPIs. This study will be initiated upon receiving IRB approval from the MedStar Research Institute. The hospital's electronic medical record will be used to identify patients with SUP and the records will be reviewed for appropriateness of therapy. The study will review SUP usage for fiscal years 2011 – 2013. The primary outcome will be determining the frequency of SUP usage and appropriateness of therapy via a retrospective chart review for the following periods: 9/1/2011 – 12/31/2012 compared to data from 1/1/2013 – 3/30/2014. Secondary outcomes will include an evaluation of pharmacist interventions for the data from 9/01/2013 – 2/28/2014. This additional analysis will help determine the number of patients in whom SUPs were discontinued due to an intervention by the pharmacist (via protocol or via recommendation). Additional analysis will also include hospital cost savings due to the pharmacy intervention.
At the end of this study, we may be able to determine the effectiveness of a screening protocol and the automatic discontinuation policy in reducing the use of SUPs when it is not indicated

10-186

Title: Analysis of heart failure readmission risk factors and the impact of pharmacy interventions on all-cause 30-day readmission rate

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Purpose: Heart failure (HF) hospitalization costs more Medicare dollars than MI or all cancers hospitalizations. About one fifth of Medicare HF patients are readmitted within 30 days after discharge. CMS will decrease the reimbursement to hospitals with excessive readmission rates of HF patients. Therefore, interventions to prevent or delay readmissions of HF patients not only benefit patients, but also hospitals financially and may contribute to lowering overall health care cost. Pharmacists have been shown to contribute to positive outcomes in HF patients. This study will attempt to evaluate patient risk factors for readmission and the impact of pharmacy interventions.

Methods: This study will be a retrospective chart review of patients who were admitted to Pennsylvania Hospital (PAH) with a primary diagnosis of heart failure. Patients will be identified by electronic medical records. Exclusion criteria will include pregnancy and age younger than 18 years. All-cause readmission rate within 30 days after discharge will be measured in patients receiving pharmacy interventions, including pharmacy counseling, group class, follow-up phone call. The clinical and demographic characteristics of HF patients will also be collected, summarize and analyzed for trends. The primary efficacy outcome will be all-cause readmission rate within 30-days after initial discharge. Study methods will be submitted to PAH Institution Review Board for approval prior to data collection.

10-187

Title: Assessment of compliance with a time-critical medication policy

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Purpose: In 2011, the Centers for Medicare and Medicaid Services (CMS) released updated guidance on medication administration. This guidance charged hospitals with establishing medication administration policies to include identification of time-critical medications. Patients should receive these medications 30 minutes before or after their scheduled administration time, as medications given outside of this time window could negatively impact patients well-being, with significant health consequences. A medication administration policy enacted at this institution in December 2012 intended to meet the challenge set forth by CMS. The purpose of this review is to assess compliance with this policy.

Methods: A 10-day retrospective review of time-critical medications will be used. Anti-infectives will be used, as this class of medications comprises a large portion of time-critical doses. Data will be obtained from the medication order entry system. Information collected will include all administered scheduled anti-infective medications, scheduled administration times, actual administration times, and units where the medications were administered. Based on the collected data, analysis will be performed to determine the percentage of medications administered within 30 minutes before or after the scheduled time. Trends in subgroups with higher or lower compliance will also be examined such as medication, nursing unit, and shift.

10-188

Title: Pain assessment improvement initiative at a nursing facility (PAIIN)

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Purpose: Pain is prevalent in up to 80% of nursing home residents, 25% of which who have daily pain are not being treated.1 This due to an array of challenges such as ability of resident to effectively communicate pain, prescribing reluctance due to side effect profile and beliefs and attitudes associated with pain medication administration and use.1 Untreated or under-treated pain has many negative effects including depression, anxiety and decreased quality of life.2 The purpose of this study is to improve current pain management practices as well as develop a sustainable system for which adequate pain management can be achieved.

Methods: Prior to commencement, this study will be submitted to the Institutional Review Board. Patients will include any resident that is currently in the nursing home who is receiving scheduled or an as needed pain medication. Patients will be excluded from this study if they are admitted after implementation date, discontinue pain medication before implementation date, discharged, or cease-to-breath during the study period. The first phase of the study will include a retrospective data collection to establish a pain baseline for all patients within the nursing home. Then a preliminary data analysis will be obtained to identify gaps in pain assessment. The next phase will use these identified gaps to conduct a series of focus groups with the staff at the nursing home to develop an intervention that will be effective, integrated into workflow, and sustainable. Once an intervention is created and approved by the staff an implementation date will be chosen. Data will be collected every month for 3 months after the implementation date and will be compared to baseline data collected in the first phase. The data will be compared using a single-case design, where qualitative and quantitative statistics will be employed.

10-189

Title: Weight based dosing of enoxaparin for venous thromboembolism prophylaxis in obese patients

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Purpose: The ACCP practice guidelines suggest increasing the dose of enoxaparin for the prevention of VTE in obese patients; however, an adequate dose for this subpopulation has not been established. The objective of this study is to determine if the anti-Xa levels of patients who weigh greater than or equal to 120 kg receiving enoxaparin 0.5 mg/kg daily for VTE prophylaxis are within the target range of 0.2-0.4 U/L. Secondary outcomes include the incidence of bleeding and the prevalence of venous thromboembolic events.

Methods: This study will be submitted to the Institutional Review Board for approval. The retrospective chart review will include medical and surgical patients receiving VTE prophylaxis with enoxaparin 0.5 mg/kg daily and at least one anti-Xa level obtained. The following information will be collected: patient age, gender, bodyweight, height, CBC, BMP, baseline INR and aPTT levels, length of enoxaparin therapy, length of hospital stay, and results of VTE diagnostic tests (VQ scan, duplex, D-Dimer, CT). The anti-Xa levels will be analyzed to identify the number of patients whose levels were within the target range. Adverse events including the incidence of minor/major bleeding as defined using the TIMI classification and the prevalence of VTE events will be identified. All data will be appropriately stored electronically on a password-protected computer to maintain patient confidentiality.

10-190

Title: Utilization of bovine-thrombin preparations: a medication use evaluation

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Purpose: A variety of bovine-thrombin preparations to control intra-operative bleeding are stocked by the pharmacy department; however, the rationale for maintaining multiple preparations remains unclear. The pharmacy department also routinely prepares and distributes two bovine-thrombin kits containing hemostatic sponges for use in the operating room facilities. The objective of this medication use is to evaluate and describe our dispensing practice for various bovine-thrombin products, to assess the cost of pharmacy-produced thrombin kits, and to adjust thrombin availability in automated dispensing cabinets based on our findings.

Methods: This study has been submitted to the Institutional Review Board for approval. Automated dispensing cabinet reports for all bovine-thrombin activity from September 1, 2012, through August 31, 2013 will be analyzed for each location where it is stocked. Product selection, quantity removed, and staff type performing the action will be assessed. Purchasing reports from the same year, and a cost estimate of pharmacist and technician time will be used in combination with the activity reports to determine the overall cost for each preparation to decide which products to maintain on the hospital formulary.

10-191

Title: Assessment of intravenous heparin calculation errors pre- and post- implementation of the NOCLOT (Heparin NOmogram CalcuLator for Overseeing Therapy) dosing calculator program

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Purpose: The Institute for Safe Medication Practices classifies heparin as a high-alert medication due to the potential for patient harm. The NOCLOT (Heparin NOmogram CalcuLator for Overseeing Therapy) program was created to decrease calculation errors associated with intravenous (IV) heparin. This calculator (contained in a Microsoft Excel file) computes bolus doses and infusion rates of IV heparin based on weight, PTT, and ordered nomogram. NOCLOT will be piloted in the medical, surgical, and cardiac intensive care units (ICUs). The objective is to evaluate IV heparin dosing pre- and post-implementation of NOCLOT to determine whether or not this program reduces calculation errors.

Methods: This project is exempt from Institutional Review Board review because NOCLOT is a Quality Improvement project approved through the institutions Drug Utilization Evaluation Subcommittee. A retrospective evaluation will be conducted on 50 patients who have received IV heparin prior to NOCLOT implementation. After nursing staff members have been educated about the program, NOCLOT will be used for all patients receiving IV heparin in the ICUs. During the pilot phase, 50 consecutive patients will be evaluated. The following data will be collected: patient demographics; actual, ideal, and dosing body weight; indication for heparin and nomogram ordered; baseline, goal, and time to first therapeutic partial thromboplastin time (PTT); percentage of time in therapeutic range (TTR) after achieving goal PTT; initial and maximum heparin infusion rate; duration of therapy; number of rate changes; nomogram deviations; calculation errors; appropriateness of laboratory testing according to the nomogram; adverse events and medication errors while on heparin; and reason(s) for holding the infusion. In addition, bolus and infusion rate calculations done by hand will be compared with those generated by NOCLOT to ensure that it is encoded correctly. The calculation errors associated with IV heparin dosing will be compared pre- and post-implementation of the NOCLOT program.

10-192

Title: Colistin medication use evaluation: focus on dosing

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Purpose: Colistin is an antibiotic used to treat multi-drug resistant gram-negative infections. Limited pharmacokinetic and pharmacodynamic data has made dosing colistin challenging. Colistin is administered as a prodrug, colistimethate, which is renally cleared, necessitating renal dose adjustment. Although actual body weight is primarily used to calculate the dose, the product information of colistimethate suggests to dose colistin based on ideal body weight if the patient is obese. The primary objective of our medication use evaluation is to evaluate the adherence of colistin dosing to institutional dosing guidelines. The secondary objective is to determine 30 day all-cause mortality following initiation of colistin.

Methods: This is a retrospective chart review that received expedited approval by the Institutional Review Board. All patients who received intravenous colistin from July 1, 2007 to June 30, 2013 will be included for retrospective medical record review. The patients initial colistin dose will be evaluated for appropriateness. Appropriate colistin dosing will be defined as the total daily dose within 80 percent of the dose approved in our institutions antimicrobial guide. All dosing will be calculated using actual body weight, unless obese (BMI greater than 30), then the dose will be calculated on ideal body weight. Creatinine clearance will be calculated using the Cockcroft-Gault equation. Patients will be excluded if the first colistin dose was ordered as a one-time order, if only one dose of colistin was administered, age less than 18 years, pregnant patients, or patients with a colistin allergy.

10-193

Title: Review of proton pump inhibitor overutilization in the Veteran population

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Purpose: While proton pump inhibitors (PPIs) are effective treatments for acid-related disorders, they are overutilized in the general population, which is a public health concern as PPIs have potentially serious adverse effects. Based on pilot data at a VA Medical Center, there is widespread use of PPIs in the Veteran population (n = 10,614 PPI users in FY12) that may be wasting our financial resources and exposing veterans to unnecessary risks. The purpose of this project is to assess the prevalence of PPI overutilization in the Veteran population and to test the efficacy of targeted interventions to improve PPI prescribing.

Methods: The project has been approved by the Institutional Review Board at our VA Medical Center. In this first phase of the project, we are performing a systematic review of the literature to describe the risks and costs associated with PPI overutilization and interventions to decrease overuse. Literature searches were conducted using the MEDLINE database between 1980 to present. Search terms used included proton pump inhibitors AND either overuse, misuse, adverse events, or veterans. Articles were screened for potential inclusion if they were clinical studies or reviews addressing at least one of the following PPI-related topics: adverse effects, drug interactions, overutilization, step-down therapy, interventions to decrease overuse, and veteran population. Additionally, the bibliographies of these articles were screened to identify other articles for potential inclusion that did not show up in the initial search results. Articles were excluded if they were in-vitro molecular studies that did not focus on humans. A Microsoft Excel database was created to log information about articles screened for potential inclusion. This information included: author(s), journal, year of publication, type of article (e.g., clinical study, review), patient population, and healthcare setting (e.g., outpatient, inpatient). Thus far 208 articles have been screened out of 781 in search results.

10-194

Title: Incidence and risk factors for intravenous acyclovir associated acute kidney injury

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Purpose: Acyclovir is associated with acute kidney injury (AKI) when administered intravenously due to crystal formation within the renal tubules. However, the incidence of AKI during treatment is unknown and risk factors are poorly described. This study aims to determine the incidence and risk factors of nephrotoxicity associated with intravenous acyclovir.

Methods: This retrospective cohort study will be submitted to the Institutional Review Board for approval. Adult patients, at least 18 years old, who received intravenous acyclovir for at least 24 hours from January 2009 to August 2013 will be included. Patients receiving hemodialysis prior to acyclovir exposure will be excluded. Study variables include patient age, gender, height, weight, comorbidities, pertinent laboratory information, concomitant nephrotoxins, admission diagnosis, intensive care unit status at time of initiation, vasopressor exposure, mechanical ventilation exposure, and acyclovir dose and duration. Patients will be considered exposed to intravenous acyclovir beginning 24 hours after the first dose and until 48 hours after the last dose. For patients with multiple exposures, only the first exposure will be assessed. Modified Acute Kidney Injury Network criteria will be used to define development of nephrotoxicity. AKI vs. non AKI patients will be compared to identify risk factors. Ideal, lean, and adjusted body weight will be calculated to examine the relationship between dose and body size. Statistical analysis will include univariate and multivariate logistic regression.

10-195

Title: Utilization of Serum C-Peptide as a Surrogate for Endogenous Insulin Production to Help Guide Medication Selection for the Treatment of Type 2 Diabetes Mellitus

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Purpose: The purpose of this assessment is to try to establish if serum C-peptide determinations aid in the treatment of type 2 diabetes mellitus in our veteran population.

Methods: This project was reviewed and approved in accordance with local policy and procedures for quality assurance/quality improvement projects. The computerized patient record system will identify patients who have had serum c-peptide determinations done over the course of 1 year. The following data will be collected: patient age, gender, ethnicity, duration of diabetes, hypoglycemic medications used, number of insulin injections per day, hemoglobin A1c, self-reported blood glucoses, laboratory serum glucoses, serum c-peptide, body weight, documented symptoms of hypoglycemia. All data will be recorded without patient identifiers and maintained confidentially. Data from patients with detectable serum c-peptide determinations will be reviewed to determine if there was a change from baseline in hemoglobin A1c and, for patients using insulin at the time of c-peptide determination, to determine if there was a decrease in insulin dose or injection frequency requirement.

10-196

Title: Evaluation of Inpatient Rituximab Use in a Teaching Hospital

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Purpose: Rituximab is a CD20-directed cytolytic antibody approved for treatment of several hematologic malignancies and rheumatoid arthritis. Off-label use also spans a wide variety of disease states. Monoclonal antibodies are costly and represent a substantial portion of the total inpatient medication budget at our institution. Rituximab can be administered safely and effectively in an outpatient setting, but is often administered to inpatients due to disease-specific or patient-specific factors. The purpose of this evaluation is to assess if inpatients at Allegheny General Hospital who received rituximab were eligible to receive the medication in an outpatient setting.

Methods: Institutional Review Board exemption has been requested. A report was generated for all patients who received rituximab during hospital admission from July 1, 2012 to June 30, 2013. A retrospective chart review will be performed utilizing the electronic medical record and patient charts to evaluate rituximab use during the study period. The following data will be collected: age, sex, length of hospital stay, indication for rituximab, and days from rituximab use to hospital discharge. The patients indication for rituximab use will be assessed to see if it was appropriate as defined by the Medicare compendia. Clinical necessity to administer the medication as an inpatient will be evaluated based on patient-related factors and disease-related factors. Appropriate scenarios include patients receiving first rituximab treatment, have experienced a previous reaction to rituximab or have admission-related disease states unrelated to the rituximab indication. Additionally, risk for tumor lysis syndrome will be assessed by evaluating for documented history of underlying renal disease, and also utilizing pre-treatment laboratory values including serum creatinine, potassium, phosphate, calcium, white blood cell count, LDH, and uric acid. Descriptive statistics will be utilized to evaluate collected data.

10-197

Title: Amiodarone therapy continued at hospital discharge for new onset atrial fibrillation in the medical intensive care unit

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Purpose: New onset atrial fibrillation (AF) in the medical intensive care unit (MICU) is common ranging from 6-26%. In hemodynamically unstable patients acute therapy is necessary and anti-arrhythmics, such as amiodarone, are preferred. Amiodarone infrequently causes short-term adverse events, but is associated with multiple toxicities when used long-term. A recent study assessed discharge medications after ICU stay and found 75% of patients started on amiodarone in the ICU were continued at hospital discharge. The purpose of this study is to determine the incidence of amiodarone continuation at discharge when newly initiated in the MICU.

Methods: A retrospective chart review of patients who received amiodarone during a MICU stay will be evaluated. Exclusion criteria will be a previous history of AF, use of amiodarone as a home medication, supraventricular tachycardia not classified as AF or atrial flutter, pregnancy, incarceration, or age less than 18 years old. Variables collected will include age, sex, past medical history, primary ICU diagnosis, presence of sepsis, vasopressor agent and dose, presence and type of renal replacement therapy, ventilator status, APACHE II score, ICU and hospital length of stay, discharge disposition, and number of medications at discharge. Submission to the institutional review board approval will be completed. The primary objective is to determine the incidence of amiodarone continuation at hospital discharge when initiated in the MICU. Secondary endpoints include assessment of risk factors for amiodarone continuation at hospital discharge, treatment duration, and incidence of baseline monitoring. Descriptive statistics will be used to analyze all variables except multivariate logistic regression will be used for risk factor analysis.

10-198

Title: Vancomycin concentrations in wound volume assisted closure (VAC) fluid as a predictor of wound healing in patients with diabetic foot infections

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Purpose: There are many studies in the literature documenting vancomycin's sometimes poor penetration into peripheral tissues, especially in the setting of decreased blood flow in diabetic patients. The objective of this study is to evaluate the relationship between serum vancomycin concentrations and corresponding concentrations in the patients wound VAC fluid as a predictor of the likelihood of long term wound healing.

Methods: The patients for this study will be accessed through the hospital's ID consult service to maintain certainty of accurate vancomycin dosing as well as provide a framework for follow up. The protocol will be submitted to the Institutional Review Board for approval. The ID consult service will identify patients with diabetic foot infections that are currently receiving wound volume assisted closure (VAC)as well as vancomycin therapy. These patients will undergo routine management by the ID consult team with the exception of sending a wound VAC fluid vancomycin level timed within two hours of a normally scheduled serum trough level. This fluid is normally discarded as waste. Using these values, a vancomycin index will be calculated by dividing the wound VAC concentration by the serum concentration. This value will be correlated with a number of clinical outcomes assessed after a 4 to 6 week follow up period at the hospital's wound care clinic. These will include wound size (length, width, diameter), fluid drainage, granulation tissue, erythrocyte sedimentation rate, and C-reactive protein. All data will be obtained from the wound clinic's records without any patient identifiers and compared to the corresponding vancomycin index.

10-199

Title: Predictors of hemoglobin a1c (HgA1c) goal attainment in insulin-treated patients referred to a pharmacist-managed insulin clinic in a VA medical center

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Purpose: The purpose of the study is to identify factors that are associated with glycemic goal attainment in insulin-treated diabetic patients referred to a pharmacist-managed disease state management clinic at a VA Medical Center. The investigators hypothesize that patients are more likely to meet their glycemic goals if they are more adherent to treatment plans, regularly attend clinic visits, and appropriately monitor their glucose levels. This hypothesis and the outcome measure were determined a priori.

Methods: The institutional review board approved this retrospective chart review. A list of insulin-treated diabetic patients referred to a pharmacist-managed disease state management clinic from January 1, 2011 to December 31, 2012 will be compiled. Patients who have attended at least 3 consecutive visits and are on insulin at the time of referral will be eligible for inclusion. The primary outcome is a hemoglobin A1c (HgA1c) goal attainment. Patients will be placed into a met goal or did not met goal arm. Charts will be reviewed in chronological order by referral date until there are 100 patients within each study arm. Secondary outcomes include the patient factors associated with glycemic goal attainment, including frequency of self-monitoring of glucose levels, adherence, and attendance to clinic appointments. Descriptive analysis techniques such as means, standard deviations, medians, frequencies and percentiles will be utilized as appropriate. Univariate comparisons will be performed comparing patient characteristics between the two study groups. For continuous data, the unpaired t-test and the Wilcoxon rank sum test will be utilized. For nominal data, the chi-square test will be utilized. A logistic regression model will be developed to identify patient factors and characteristics associated with A1c goal attainment

10-200

Title: Argatroban use after implementation of a standardized protocol

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Purpose: The diagnosis of heparin-induced thrombocytopenia (HIT) leads to the use of non-heparin anticoagulants, which can be complex. The purpose of this study is to evaluate adherence to a standardized argatroban protocol, and to evaluate its effectiveness in attaining therapeutic endpoints.

Methods: We will conduct a retrospective medical record review of patients who received argatroban between October 1, 2012 and August 31, 2013. Patients will be excluded if they do not have sufficient monitoring data. The following data will be collected: patient demographics, days on argatroban, and reported bleeding. Data will be assessed for adherence to the protocol with respect to timing of drawn aPTTs and response to non-therapeutic aPTTs. The time to attain a first aPTT within therapeutic range, and the rate of aPTTs within, above, and below the therapeutic range will be determined. This research has been submitted to the IRB for review. All patient data and information will be maintained without identifiers to maintain privacy.

10-201

Title: Evaluating pharmacist impact on chronic disease management (EPIC DM)

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Purpose: It is estimated that by the year 2025, the shortage of primary care physicians will total more than 50,000, while the need for primary care services continue to increase. This will provide an extraordinary opportunity for the pharmacy profession to offer solutions. Pharmacists have demonstrated their abilities to improve outcomes and reduce costs when provided the opportunity to offer their clinical expertise. The purpose of this study is to evaluate the impact of pharmacists, working collaboratively with physicians, to improve the control of type 2 diabetes (DM-2) and hypertension (HTN) under collaborative practice agreements.

Methods: Patients charts will be reviewed from 1/1/2011 to 7/31/2013 and patients who are ≥18 years, referred by their primary care physician (PCP) for the first time, have ≥2 clinical pharmacy visits with diagnosis of DM-2 with baseline Hemoglobin A1c (HbA1c) ≥7% and/or HTN with blood pressure (BP) ≥140/90 or ≥130/80 if diabetic will be included in the study. Patients will be excluded if there are ≤2 HbA1c or BP per year. The primary outcomes are average reduction and percentage of patients at goal HbA1c <7%, LDL <100 mg/dL, and BP <140/90 or <130/80 if diabetic, from baseline (defined as the most recent value within 6 months prior of physician referral) to study end. Secondary outcomes include the effect of clinical pharmacy interventions on PCP visits, DM-2 or HTN-related emergency room and hospital visits and frequency of adherence (for DM-2 patients) to ACE-I or ARB use, daily aspirin use, statin use, receipt of pneumonia and annual influenza vaccination. Data will be collected for ≥72 patients to have 88% power to detect an effect size of 0.5 SD in HbA1c, LDL and BP using paired t-test with a 0.01 two-sided significance level. This study will be submitted for institutional review board approval.

10-202

Title: Expansion of pharmacy services to include chronic obstructive pulmonary disease (COPD) education and medication management

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Purpose: Current disease states managed under clinical pharmacy services include diabetes, hypertension, hyperlipidemia, anemia, hepatitis C, and nicotine dependence. There is an unmet need to provide pharmacy services for additional disease states, including COPD. Clinical pharmacy specialists (CPS) can improve outcomes for COPD patients by helping providers titrate medications, managing adverse effects, and providing additional education to patients about self-management of COPD. The purpose of this project is to expand existing clinical pharmacy services via design and implementation of a pharmacy-run COPD education and medication management service.

Methods: A proposal for expansion of the Pharmacotherapy Clinic, which currently manages diabetes, hypertension, and hyperlipidemia, to include COPD management will be created for approval by the assistant chief of pharmacy, chief of pharmacy, and chief of staff. The document will outline the purpose, background, clinic structure, required resources, and potential implications of the new service. Input from key stakeholders (CPS, pulmonologists, primary care physicians, assistant chief of pharmacy, and chief of pharmacy) will be considered for design of the clinic. Details regarding the consultation process and enrollment criteria are to be determined. Patients may be referred for pharmacotherapy optimization, medication titration, management of adverse effects, frequent medication monitoring, or additional education. Medication changes will be done in accordance with the providers scope of practice. New consults will be scheduled for sixty minutes and follow-up visits for thirty minutes. Appointments will be documented in the electronic medical record. The responsibilities of the CPS will fall under existing policies and procedures for the clinic. A standard operating procedure will be drafted for specifics regarding COPD management within the scope of the clinic. This project was reviewed and approved in accordance with local policy and procedures for quality assurance/quality improvement projects.

10-203

Title: Evaluation of time to administration of antibiotics in patients with severe sepsis or septic shock

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Purpose: Current Surviving Sepsis guidelines recommend initiation of effective antimicrobial therapy within the first hour of recognition of severe sepsis or septic shock. In the presence of septic shock, each hour delay in achieving administration of effective antibiotics is associated with a measurable increase in mortality in a number of studies. However, only 50 percent of septic shock patients receive effective antimicrobial therapy within six hours of documented hypotension. The objective of this study is to describe the time to administration of antibiotics in patients with severe sepsis or septic shock.

Methods: This is a retrospective chart review approved by the Institutional Review Board. Electronic medical records will be used to identify patients. Patients who meet inclusion criteria will be assigned patient identifiers for data collection purposes and to maintain patient confidentiality. Patients in the emergency department will be included if they meet the following criteria: infectious diagnosis, serum lactate greater than 4 mmol/L and presence of hypotension defined as systolic blood pressure (SBP) less than 90 mmHg or mean arterial pressure less than 70 mmHg. Inpatients will be identified based on the International Statistical Classification of Diseases (ICD) billing codes for severe sepsis or septic shock. The following data will be collected: demographics, Acute Physiology and Chronic Health Evaluation II (APACHE II) score, Charleston Comorbidity Index, culture data, antibiotics ordered and time of administration. Patients will be excluded if antibiotics are administered prior to 24 hours of symptom onset or if they are transferred from outside hospitals. Primary outcome is to describe the time to administration of antibiotics in severe sepsis or septic shock. Secondary outcomes include in-hospital mortality, type of infection, appropriateness of empiric regimen based on culture results, type of antibiotics prescribed and de-escalation of antibiotics.

10-204

Title: Evaluation of medication adherence in a superutilizer population

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Purpose: Medication non-adherence is highly prevalent in patients on multiple medications with multiple chronic disease states. Medication adherence and non-adherence can be very difficult to measure and currently there is no gold standard for measurement. There are numerous self assessment scales available, including the Morisky Medication Adherence Scale - 8 (MMAS-8). The objective of this study is to demonstrate an improvement in medication adherence scores using the MMAS-8in a superutilizer population.

Methods: This study has been submitted to the Institutional Review Board for approval and informed consent will be obtained for all patients enrolled in the study. The MMAS-8 scale is administered by patient care navigators or pharmacists with assistance of a Spanish interpreter when applicable. The MMAS-8 scale is administered at enrollment into the clinic (considered baseline), and repeated after 30, 60, and 90 days or upon discharge from clinic if sooner than 90 days. Patients being included are 18 years of age or older and have been enrolled in the clinic for at least 90 days. Patients will be excluded if there is no baseline MMAS-8 score available in the electronic medical record. The following data will be collected: MMAS-8 scale score results, demographic data, medication information, active disease states, and medical cost data. If available the following will also be collected: pharmacy fill data, reasons for medication non-adherence, and barriers to receiving medical care. All protected health information and collected data will be handled by trained personnel and maintained confidentially. The estimated sample size is 60 patients. Data to be collected.

10-205

Title: Evaluation of empiric vancomycin dosing in hospitalized patients

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Purpose: Vancomycin is a widely used antibiotic to treat a variety of presumed or confirmed resistant Gram positive infections in hospitalized patients. The most appropriate way to dose vancomycin in order to attain therapeutic troughs is to utilize a weight-based dosing, with the goal trough being 10-15 or 15-20 mcg/mL, depending on the severity and site of infection. However, many patients receive a standard one gram dose, regardless of weight. The objective of this study is to review the empiric prescribing patterns for vancomycin and the likelihood of attaining target serum concentrations.

Methods: This is a retrospective evaluation assessing the utilization of vancomycin for patients admitted to St. Lukes University Hospital, Bethlehem campus that has been submitted for review by the Institutional Review Board. Data will be examined from the electronic health record. Patients prescribed vancomycin between April 1 and June 30, 2013 will be identified. To be included, patients must have received at least one dose of vancomycin and have at least one trough value reported. Data gathered will be used to determine if target troughs are reached and if doses are adjusted appropriately. A sub-group analysis will be performed based on age, body weight, and renal function which will be stratified by trough and indication based on cultures. Recommendations will be made to change prescribing practices, depending on the medication use evaluation results.

10-206

Title: A Multidisciplinary Hepatitis C Team Treatment Approach

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Purpose: Hepatitis C virus (HCV) triple therapy has many potential side effects associated with it and requires close monitoring for treatment safety and efficacy. Completing the full course of HCV therapy increases the chance of achieving a sustained virologic response (SVR). Appropriate side effect management may contribute to patients ability to complete the full therapy course. The Philadelphia Veteran Affairs Medical Center has a multidisciplinary HCV treatment team composed of physicians, nurse practitioners (NP), a nurse and pharmacist. The multidisciplinary team allows for a comprehensive approach to medication education and treatment follow up.

Methods: For our treatment model patients are evaluated for appropriateness of HCV therapy by the physician or NP and then the chart is reviewed by the multidisciplinary team to confirm treatment candidacy. There is a weekly multidisciplinary team meeting to review all of the patients who are on therapy for efficacy endpoints and side effect management as well as to review potential new candidates for therapy. If deemed appropriate for therapy, the patient is referred to the NP or pharmacist to initiate HCV therapy. All patients receive thorough initial medication counseling by the pharmacist. Follow up appointments are conducted by the NP or pharmacist every 2 weeks for the first 12 weeks then monthly until the end of treatment unless the side effects require closer management. Patients finish up therapy with an end of treatment visit and labs. Subsequently labs are checked 4, 12 and 24 weeks post therapy completion to assess for SVR. A final treatment appointment after the 24 week post treatment completion lab results are back to review the HCV RNA results with the patient and to determine the appropriate liver related follow up plan.

10-207

Title: Effectiveness of electrocardiogram monitoring in high-risk veterans initiated on medications with risk of QTc prolongation

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Purpose: Drug-induced QTc prolongation is associated with risk of Torsades de pointes (TdP) and sudden cardiac death. This adverse effect is one of the most common reasons drugs are restricted or removed from the market. Many drugs currently on the market hold a black-box warning for risk of QT prolongation. No clear guidelines currently exist for monitoring drug-induced QTc prolongation, making it difficult for providers to determine who and when to monitor. The objective of this study is to evaluate the outcomes of high-risk patients initiated on medications with risk of TdP who had QTc monitoring versus those who did not.

Methods: This study will be submitted to the appropriate Institutional Review Board for approval. The electronic medical record system will be used to identify high-risk patients who were initiated on the following oral medications with known risk of QTc prolongation and TdP: citalopram, haloperidol, ziprasidone, risperidone, olanzapine, or quetiapine. High-risk will be defined as having any of the following risk factors: older age, female sex, significant cardiovascular history (i.e. low left ventricular ejection fraction, left ventricular hypertrophy, coronary artery disease/ischemic heart disease, bradycardia), electrolyte abnormalities (specifically hypokalemia and hypomagnesemia), renal or liver dysfunction, previous or current substance abuse, history of diabetes mellitus, obesity and/or family history of significant cardiovascular disease or QT prolongation. If available, results of laboratory panels and electrocardiograms will be collected. All data will be recorded without patient identifiers and maintained confidentially. Patient data will be reviewed to analyze morbidity and mortality outcomes and to determine if a monitoring protocol should be developed for future prescribing of these medications in high-risk patients.

10-209

Title: Pharmacist Driven Confusion Assessment Method for the Intensive Care Unit (CAM-ICU)

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Purpose: ICU delirium is associated with an increased length of stay, duration of mechanical ventilation, and mortality. The prevalence of ICU delirium varies from 20-80%. Despite this high prevalence, ICU delirium is often under-diagnosed. In 2013, the Society of Critical Care Medicine raised awareness by releasing new guidelines for the management of ICU delirium. The current guidelines recommend routine monitoring, including CAM-ICU as a validated screening tool. The objective of this study is to determine whether a pharmacist-driven CAM-ICU will be advantageous to the identification and subsequent treatment of delirium compared to standard of care.

Methods: Following IRB approval, retrospective chart reviews will be conducted evaluating patients admitted to the ICU over a four-month period and will act as the control, illustrating the current standard of care practice in the intensive care units. Delirium will be identified by utilizing ICD9 diagnosis codes and newly initiated antipsychotic use. Upon completion of retrospective data collection, the pharmacist will prospectively conduct delirium assessments utilizing the CAM-ICU, in conjunction with the Richmond Agitation Sedation Scale (RASS) for sedated patients for a period of 4 months. In the event of an ICU-associated delirium diagnosis per positive CAM-ICU, the pharmacist will make recommendations to the medical team based on patient specific parameters for the treatment of delirium. Inclusion criteria will comprise of all adult patients admitted to the intensive care unit for >24 hours. Exclusion criteria will consist of age <18 years, pregnancy, and pre-existing neurological disease. The primary outcome measure of the study will be the prevalence of delirium observed by the pharmacist in the intensive care units. Secondary outcomes will be overall length of stay, adverse drug reactions, and the medical team acceptance rate of clinical recommendations made by the pharmacist.

10-210

Title: Evaluating renal dosing of anticoagulants

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Purpose: UPMC Hamot's Automatic Renal Dosing Policy includes all of the anticoagulants that require a dosage adjustment in renal impairment: apixaban, dabigatran, enoxaparin, fondaparinux, and rivaroxaban. The overall purpose will be to evaluate the appropriate renal dosing of these anticoagulants. The appropriateness of the originally prescribed doses will be evaluated, as well as the adherence to the renal dosing policy by pharmacists for adjusting first time doses that are outside of the recommended range. Finally, the appropriate follow up on patients after the initial 24 hour period and throughout their hospital stay will be evaluated.

Methods: This evaluation will be conducted during the four week period starting August 12, 2013 and ending September 8, 2013. Theradoc will be used to run a daily report for each of the anticoagulants in the study. All patients with an active order for enoxaparin started during this time period with an initial CrCl that is less than 30 mL/min or that drops below 30 mL/min during this time period will be included in the evaluation. All patients with an active order for rivaroxaban started during this time period with an initial CrCl less than 50 mL/min or that drops below 50 ml/min during this time period will be included in the evaluation. All patients with an active order for dabigatran started during this time period with an initial CrCl less than 30 mL/min or that drops below 30 mL/min during this time period will be included in the evaluation. All patients with an active order for apixaban or fondaparinux started during this time will be included in the study and will be evaluated for proper dosing based on all the specified criteria for dose adjustment. All patients included in the review will be monitored until discontinuation of the medication.

10-211

Title: Use of intravenous tissue plasminogen activator (IV-TPA) in a community teaching hospital

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Purpose: Fibrinolytic therapy with IV-TPA is a standard of care in ischemic stroke treatment. Current American Stroke Association/American Heart Association (ASA/AHA) guidelines recommend IV-TPA use within 3 hours of stoke onset for patients not meeting published contraindications and within 3 - 4.5 hours of stroke onset for patients not meeting additional contraindications. Guidelines recommend a 60-minute door-to-needle time for administration of IV-TPA. A drug utilization evaluation of IV-TPA use at a community teaching hospital will be performed to assess patient selection, time to medication administration, and optimization of pharmacy services to ensure appropriate therapy.

Methods: Drug utilization evaluation of IV-TPA is a quality improvement project exempt from information review board approval. The stroke protocol at the community teaching hospital was last updated on July 15, 2013. To minimize confounding variables, a drug utilization report will identify all patients receiving IV-TPA for ischemic stroke from July 15 to October 31, 2013. Patients will be assessed for appropriate utilization of IV-TPA according to absolute and relative contraindication criteria as defined by the 2013 ASA/AHA guidelines. Patients will also be assessed for door-to-needle time defined as time from patient arrival to IV-TPA bolus administration, order type, time from order receipt in the pharmacy to order verification, time from order verification to IV-TPA administration, and appropriateness of weight-based dosing for bolus and continuous infusions. Monitoring of IV-TPA therapy will include presence of systolic blood pressure greater than 185 mmHg or diastolic blood pressure greater than 110 mmHg for 24 hours after IV-TPA infusion, systemic bleeding as assessed by Thrombolysis In Myocardial Infarction criteria, intracranial bleeding as assessed by neurologist or radiologist interpretation of computed tomography and magnetic resonance imaging, and number of hours after IV-TPA administration before anticoagulant and aniplatelet medications are reinitiated.

10-213

Title: Evaluation of turnaround time with medication delivery tracking system implementation

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Purpose: A unique system for tracking medication delivery was created at a pediatric tertiary care center. Implementation of medication delivery tracking systems have provided insight into current delivery practices and have helped to improve delivery methods. Our primary goal of a medication tracking system was to prioritize workflow and identify orders that fall outside this institutions intended turnaround times for stat and routine orders. The primary purpose was to demonstrate system improvement in turnaround time with implementation of a medication tracking system as well as investigate potential sources of delay in medication preparation that could result in exceeding intended turnaround times.

Methods: Assessment of medication turnaround times before and after implementation of a medication delivery system was conducted. A random sampling of hand recorded stat medication delivery times were previously documented for departmental quality improvement. After transition to the new system, retrospective data was collected for 48 hours on medications prepared and delivered by the pharmacy department. New stat data collected was compared to pre-delivery system stat data to assess improvement of medication delivery. A secondary analysis was conducted with new data to assess the percentage of medications, both stat and routine, that fall into our institutional criteria and expectation. Further analysis was conducted to classify types of medications or areas of pharmacy processing and delivery that can contribute to lengthened time outside this window. Missing dose data was also compared pre and post implementation to assess improvement in this area with a medication tracking system. This project was approved by the Institutional Quality Improvement committee.

10-214

Title: An evaluation of predisposing risk factors for the development of ICU delirium

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Purpose: The 2013 Pain, Agitation, and Delirium guidelines recognize that the development of delirium in the intensive care unit (ICU) is associated with increased mortality, prolonged ICU and hospital length of stay, and development of post-ICU cognitive impairment. The following have been identified as possible predisposing risk factors: age, alcohol abuse, history of hypertension, respiratory disease, history of dementia, severity of illness upon admission, history of depression, and home use of anticholinergic medications. The objective of this study is to evaluate the predisposing risk factors as a positive predictor of delirium.

Methods: This evaluation has been submitted and approved by the institutions Quality Improvement Committee. All patients are being prospectively enrolled for a period of four months into the Medical ICU (MICU). Exclusion criteria consist of: age < 18 years, transfer from another ICU, delirious at time of admission, ICU length of stay ≤ 24 hours, and cognitive impairment at baseline. Patients are to be screened for delirium using the Intensive Care Delirium Screening Checklist (ICDSC) by the bedside nurse every four hours, with a single recorded score of ≥ 4 marking delirium. The ICDSC scores are entered into the electronic medical record system by the bedside nurse and will be evaluated for each patient admitted to the unit. The predisposing risk factors will be evaluated from the patients history and physical assessment at the day of admission, and the severity of illness will be calculated using the APACHE II score.

10-215

Title: Assessment of guideline adherence for infantile gastroesophageal reflux (GER) management in the hospital setting: a national survey of pediatric pharmacists

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Purpose: Recent guidelines defined and differentiated the management of gastroesophageal reflux (GER) and gastroesophageal reflux disease (GERD). The guidelines strongly recommend against using acid suppression therapy for infantile GER. In 2013, a pediatric hospitalists workgroup from the Society of Hospital Medicine supported this recommendation as one of its top 5 quality improvement initiatives. The primary objective of this study is to assess guideline adherence regarding management of infantile GER through the perspective of pharmacists. Secondary objectives include observing current trends in practice relating to this topic and raising awareness of such trends in order to guide future discussion and practice.

Methods: A nationwide online survey of pharmacists with inpatient pediatric experience will be conducted. The Pediatric Pharmacy Advocacy Group (PPAG) and American College of Clinical Pharmacy (ACCP) Pediatric Practice and Research Network membership directories will be utilized to create the study specific listserv of eligible pharmacists. Exclusion criteria will include directory members who are students, pharmacists without prior inpatient pediatric experience, and pharmacists who do not practice within the United States. An email will be sent to eligible pharmacists explaining the background and objectives of the study with a link to the online survey. The 2009 NASPGHAN/ESPGHAN Pediatric Gastroesophageal Reflux Clinical Practice Guideline will be used to develop the survey and to define both GER and GERD. Infants will be defined as the age range of 1 - 12 months old. Demographic data will also be collected regarding the pediatric setting and pharmacists responding. The results of the IRB-approved survey will be recorded and organized into presentable data.

10-217

Title: Impact of methylnaltrexone education and order set revision on appropriateness of therapy in a tertiary care academic medical center

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Purpose: Opioid-induced constipation is a common side effect that may reduce quality of life in patients with chronic pain. Methylnaltrexone, a peripheral mu-opioid receptor antagonist, is Food and Drug Administration (FDA) approved for the treatment of opioid-induced constipation in a limited patient population. A recent chart review at Hahnemann University Hospital (HUH) revealed that over half of methylnaltrexone orders were inappropriate. Sources of inappropriateness included lack of bowel regimen trial, mechanical obstruction, and patients who had not received opioids. This study will evaluate the impact of pharmacist-led intervention on appropriateness of methylnaltrexone use through an education module and order set revision.

Methods: This study will be submitted to the Institutional Review Board for approval. Electronic medical records will be used to identify patients who received at least one dose of methylnaltrexone at HUH. The pre-intervention group includes patients who received methylnaltrexone between September 15, 2012 and July 1, 2013. The post-intervention group includes patients receiving at least one dose of methylnaltrexone between August 26, 2013 and November 1, 2013. Education was provided to pharmacists, nurses, and physicians through information sheets, a newsletter, electronic mailings, and in-services. Data collected will include patient age, gender, height, actual body weight, serum creatinine, recommending service, number of doses received, timing of bowel movements, opioids received prior to methylnaltrexone administration, prior laxative use, home medications, adverse effects, timing of all medication administration, and presence of contraindications (known or suspected mechanical bowel obstruction, lack of prior opioid therapy, and patients without advanced illness for which they are receiving palliative care). The chi-squared test will be used to analyze the difference in the frequency of inappropriate methylnaltrexone orders between the two data sets. All orders will be evaluated for appropriateness using recommendations from the manufacturer and the FDA.

10-219

Title: Outcomes in diabetic patients receiving basal insulin, metformin, and a sulfonylurea who are started on a third non-insulin agent versus those started on prandial insulin

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Purpose: Diabetes is a progressive disease state that requires continuous titration of anti-glycemic medications. Consensus recommendations for initiating treatment of type II diabetes consist of metformin and lifestyle modifications, but disagreement arises when considering the most appropriate method for intensifying patients diabetic therapy. When to initiate intensive insulin therapy is of particular concern due to the potentially deleterious effects of chronic insulin therapy on lifestyle and weight. This review hopes to gain insight into the risks and benefits of starting prandial insulin versus adding further non-insulin therapies in patients uncontrolled with their diabetes on basal insulin, metformin, and a sulfonylurea.

Methods: This will be a quality improvement study, approved by the Pharmacy Ethics Committee, utilizing the Computerized Patient Record System (CPRS) to identify patients meeting the inclusion criteria from the beginning of January 2012 to the end of December 2012. Patients meeting the inclusion criteria for any point within the study review period will be evaluated from the time at which they are eligible for inclusion in the study until the end of the review period or until they no longer meet the study requirements. The primary endpoint for this review will be change in hemoglobin A1C at 6 months post-intervention. An excel spreadsheet will then be used to collect the following data for all patients included in the study: class of medication added to baseline therapy, change in hemoglobin A1C from the time of intervention to 6 months post-intervention, documented blood glucose readings < 70 mg/dl in patient progress notes, change in weight from the time of intervention to 6 months post-intervention, time until progression to prandial insulin and reason for the switch, patient age at the time of intervention, and patient gender.

10-220

Title: Medication use evaluation of atropine at a community teaching hospital

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Purpose: Recent national drug shortages of atropine sulfate 1 mg/10 ml injection prompted an examination of floor stock at a community teaching hospital. In an effort to conserve atropine inventory and reduce waste, the pharmacy department removed atropine from 31 automated dispensing units (ADU) and restricted product to emergency crash carts. The study objective was to assess the clinical and financial impact of atropine stock restriction.

Methods: A retrospective medication use evaluation (MUE) of atropine sulfate 1 mg/10 ml injection was performed at a community teaching hospital and was exempt from institutional review board (IRB) approval. A charging report generated through pharmacy software identified all atropine orders over the preceding 12 months. All adult patients with a pulse who received atropine on a general medical-surgical floor were included. Medical records were reviewed to determine the indication, time of order placement, dispensing, and administration. Age, gender, heart rate, presence of qualifying symptoms, total doses charged, doses administered, order set inclusion, location and date of dispensing were also obtained. Atropine use was deemed appropriate in patients with a heart rate less than 60 beats per minute and qualifying symptoms including systolic blood pressure less than 90 mmHg, altered mental status, chest discomfort and acute heart failure. Inappropriate use was defined as an unapproved indication, lack of qualifying symptoms or doses exceeding 3 mg. The mean difference in time to administration before and after the stock restriction was determined. Financial impact was assessed by comparing the total cost of atropine used and wasted before and after restriction.

10-221

Title: Impact of the pharmacist in optimizing medication safety and adherence in patients taking dual antiplatelet therapy following coronary artery stent implantation

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Purpose: Dual antiplatelet therapy consisting of a P2Y12 receptor antagonist and aspirin is imperative to the prevention of stent thrombosis following coronary artery stent implantation; however, nearly 1 in 7 patients discontinue treatment within 30 days. In individuals that continue therapy, gastrointestinal bleeding is the most commonly encountered serious bleeding complication. Prophylactic use of a proton pump inhibitor has been shown to reduce the rate of upper gastrointestinal bleeding and is recommended in patients at high risk. The objective of this study is to assess the impact of pharmacist interventions involving dual antiplatelet therapy adherence and safety following coronary artery stenting.

Methods: This study will be submitted to the Institutional Review Board for approval. Inpatients undergoing emergent coronary artery stent implantation will be referred from the Cardiac Catheterization Lab at Conemaugh Memorial Medical Center. Prior to discharge, a direct interview will be conducted with each patient to assess for risk factors associated with early discontinuation of P2Y12 receptor antagonists. The risk for gastrointestinal bleeding will also be assessed at this time. Based on current practice guidelines, prophylaxis with a proton pump inhibitor will be recommended for patients with a history of gastrointestinal bleeding or those at high risk for this serious adverse event. Within one to two weeks following discharge, a phone interview will be conducted with each patient to ensure that they are taking their dual antiplatelet therapy as prescribed. If treatment has been discontinued, an investigation as to the rationale for this decision and a clinically appropriate solution will be sought. Patient informed consent will be obtained prior to inclusion in this study. All outcomes will be recorded as clinical interventions made and appropriate statistical analyses will be conducted. Patient confidentiality will be maintained throughout the duration of the study.

10-222

Title: Evaluation of Glucose Control in Type 2 Diabetes Mellitus Patients Managed in an Outpatient Pharmacist-Run Diabetes Clinic

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Purpose: Glucose control is essential for preventing morbidity and mortality caused by type 2 diabetes mellitus, and diabetes management clinics have been shown to improve glucose control in patients. The objective of this study is to assess the degree of glucose control achieved in patients who are newly enrolled in a Veterans Affairs pharmacist-managed diabetes clinic.

Methods: This study will be submitted to the Institutional Review Board for approval. This is a prospective study following all newly enrolled type 2 diabetes patients who are followed by the Veterans Affairs pharmacist-managed diabetes clinic. Patients who self-monitor their blood glucose will be followed for three to six months. By the end of the study, changes in average hemoglobin A1c and average fasting blood glucose will be determined, along with the number of patients with hemoglobin A1c at goal. Per the American Diabetes Association guidelines, goal A1c is defined as less than 7% to 9% depending on patient variables, and goal fasting blood glucose is defined as less than 130 mg/dL. Data will be compared to that published in the literature for similar clinics to assess the relative degree of glucose control and any potential patient needs unique to the clinic.

10-223

Title: The effect of a pharmacy-driven medication collection program in the Emergency Department on length of stay and 30 day readmission rates

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Purpose: Unintended medication discrepancies between physician admission medication orders and patient medication histories have been documented in approximately two-thirds of patients upon admission to an acute care setting. These discrepancies have the potential to cause adverse drug events (ADEs) and may cause the patient discomfort and/or harm during hospital admission or after discharge. These events have been associated with prolonged hospital admissions, unexpected readmissions and frequent visits to the emergency department (ED). The goal of this study is to assess the effects of a pharmacy-driven medication collection process on average length of hospital stay and 30-day readmission rates.

Methods: This study is a quality improvement chart review of in-patients admitted through the ED to assess the effect of a pharmacy technician medication collection process on length of stay and 30-day readmission rates. The current medication collection process involves pharmacy technicians reviewing patient reported medication lists and conducting a comprehensive medication history through patient interviews, contacting family members, retail pharmacies, insurance companies and primary care physicians. In the hospitals electronic medical record, the pharmacy technician documents dose clarifications, frequency clarifications, medication name clarification, addition of medications, and flag medications for removal. This process is completed prior to physician medication reconciliation. Education to nurses and physicians will be given on the process and how this will help in the admission process. All patients age 18 and older admitted through the ED from November 1st 2013 to March 1st 2014 will be included in this chart review, patients who did not receive pharmacy medication collection will be the comparator group for length of stay and 30-day readmission rates. The primary endpoints are average length of hospital stay and percentage of patients who were readmitted within 30 days of hospital discharge. The type of changes made during medication collection will be analyzed.

10-224

Title: Use of liposomal bupivacaine for the prolongation of postoperative time to opioid rescue

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Purpose: Liposomal bupivacaine has been studied in the treatment of postoperative pain in hemorrhoidectomy and bunionectomy. It has been shown to delay the time to opioids rescue and decrease overall use. The objective of this study is to determine the effectiveness of liposomal bupivacaine at decreasing postoperative opioid use in orthopedic surgical patients. It will also evaluate the safety of use in this patient population.

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 orthopedic surgery at the Reading Hospital. The following data will be collected: patient demographics, type of surgery, current medications, patient reported pain, time until postoperative opioid use, amount of opioid used, and reported adverse effects. Patient reported visual pain scales will be used to determine postoperative pain levels throughout treatment with liposomal bupivacaine. Other data collected will include any errors made in administration of the drug. All data will be recorded without patient identifiers and maintained confidentiality.

10-225

Title: Vancomycin induced thrombocytopenia: a case report

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Case Report: Thrombocytopenia can result in a significant drop in platelets and if severe, be fatal. It is important to not only treat patients with severe thrombocytopenia, but to determine the underlying etiology of the condition. If it is suspected to be drug induced, it is important to distinguish the offending agent, which can be challenging. Many critically ill patients are often treated with heparin or may be septic, which are often attributed as the cause of thrombocytopenia. Vancomycin is a glycopeptide antibiotic that is widely used to treat resistant gram positive bacterial infections. Red man syndrome and nephrotoxicity are well documented side effects of vancomycin. However, it is rarely recognized as the etiology of thrombocytopenia in critically ill patients. A 59 year old male with past medical history of asthma and recent hospitalization for respiratory tract infection was transferred to Thomas Jefferson University Hospital from an outside hospital for worsening respiratory function after being admitted for right-sided chest pain, shortness of breath and cough. The baseline platelet count on admission was 239 x 103/mm3. He was diagnosed with methicillin resistant Staphylococcus Aureus (MRSA) pneumonia and MRSA bacteremia and treated with vancomycin. Radiology revealed a necrotizing pulmonary cavitation and empyema. Infectious diseases was consulted and recommended a prolonged course of vancomycin and rifampin. After twenty-one days of antibiotic therapy, the patient developed acute thrombocytopenia. The platelet count fell to a nadir of 4x103/mm3on day twenty-two of therapy. HIT and DIC were ruled out as part of the differential diagnosis while other causes of thrombocytopenia, including antibiotics, were considered. All antibiotics were discontinued and the patient continued to improve clinically. Platelets steadily trended upward and returned to baseline. The patient soon recovered and was transferred to a rehab facility. Blood samples sent to the Blood Center of Wisconsin confirmed the presence of vancomycin induced platelet reactive antibodies. Thrombocytopenia can be life threatening. Vancomycin is often overlooked as a potential cause in critically ill patients due to concurrent diseases and the frequent use of heparin products. There are several case reports confirming that vancomycin can cause thrombocytopenia. Our patient case of vancomycin-induced thrombocytopenia was confirmed by the presence of vancomycin-induced platelet reactive antibodies. It is imperative to consider vancomycin as an etiology to prevent significant harm to already debilitated patients. If necessary, healthcare providers may need to perform earlier laboratory tests to confirm vancomycin induced thrombocytopenia.

10-226

Title: Impact of pharmacist discharge medication reconciliation review on the rate of medication-related readmissions and adverse drug events

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Purpose: Medication errors contribute to approximately 1.5 million preventable adverse drug events (ADEs) annually, with an estimated 60% of all medication errors occurring during transitions of care. The goal of medication reconciliation is to improve patient safety during transitions of care by helping to identify discrepancies between a patient's previous and existing medication regimens. Discrepancies can lead to ADEs, which account for 6.7% of emergency department visits leading to hospitalization. This study aims to evaluate the effect of pharmacist discharge medication reconciliation review on the clinical outcomes of potential ADEs prevented and rate of 30-day drug-related readmission.

Methods: The hospital electronic medical record system will be used to identify patients whose discharge medication reconciliation was reviewed by a pharmacist. The study will include patients who were discharged when a pharmacist was available to perform medication reconciliation. Patients will be excluded from the study if they expired during hospitalization or left against medical advice. A retrospective chart review will be performed to collect patient demographics, total number of discharged patients whose medications were reconciled by a pharmacist, number of patients with at least one discrepancy, number of discrepancies per patient, number of patients receiving pharmacy education, length of stay, and whether they were discharged home or to a facility. Patients with at least one discrepancy on their discharge medication list will be assessed for the type of discrepancies found and the outcome of pharmacist interventions to correct any discrepancies. The rate of all-cause readmission within 30 days of discharge and the proportion of medication-related readmissions will be compared between patients receiving medication reconciliation review by a pharmacist and a group of patients who did not receive medication reconciliation review. Methods will be submitted to the institutional review board for approval prior to data collection.

10-227

Title: Impact of pharmacist-conducted medication reconciliation in a community hospital

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Purpose: Medication reconciliation is a requirement for hospital accreditation, set forth by the Joint Commission in 2005. At Jeanes Hospital, pharmacists use the nurse-generated home medication list to perform medication reconciliation with patients. This study will be a retrospective chart review evaluating the impact of pharmacist-conducted medication reconciliation throughout the transition of care. The objective of this study is to determine the frequency of medication errors resolved by pharmacist-conducted medication reconciliation and the amount of interventions that were accepted by physicians at admission and discharge. This study also will analyze the clinical significance of these interventions.

Methods: This retrospective chart review will be submitted to the institutional review board for approval. This study will utilize the hospitals electronic medical record system to identify medication reconciliations performed by the pharmacist in the emergency department. Patients charts will be included if the patient is at least 18 years old, presented to the emergency department between April 4, 2013- June 13, 2013, had a medication reconciliation performed by a nurse and pharmacist in the emergency department, and was admitted as an inpatient for a duration of more than 24 hours. Data to be collected will include the patients age, gender, communication barriers, residential situation, source of the medication reconciliation, home drug regimens, and medications ordered on admission and discharge from the hospital. Identifiable patient information will be excluded from data collection. The frequency of medication errors resolved by pharmacist-conducted medication reconciliation and the amount of interventions from the pharmacist that were accepted will be reported. This study will also analyze the clinical significance of these interventions using a blinded panel of pharmacists, who are independent from the study.

10-228

Title: Evaluation of hospitalized patients receiving QTc-prolonging medications with high risk for torsades de pointes (TdP)

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Purpose: This clinical investigation seeks to identify the combination(s) of medications which pose the most significant risk of absolute QTc-prolongation based on established clinical parameters, as well as relative increases above patients respective baseline values, where applicable. Retrospective analyses will be conducted to ensure that these at risk patients are appropriately managed within the inpatient setting.

Methods: This study will be submitted to the IRB for approval. An extensive literature evaluation will be conducted to identify the most prominent medicinal causes of QTc-prolongation within the inpatient setting. This literature analysis will be reconciled with medication availability from this institution's formulary to generate a patient list from the past two years (September 2011-September 2013) of those who received two or more of the implicated medications. This retrospective medical chart review will examine patient baseline demographic information in addition to age, gender, ethnicity, co-morbidities (e.g. electrolyte abnormalities, bradycardia, and coronary heart disease), baseline and subsequent QTc values, concomitant therapy with medications with known risk for QTc-prolongation, and development of TdP. Outcomes will include the change in QTc-interval relative to baseline following initiation of medicinal therapy, rise in QTc relative to patients baseline, and development of TdP. Outcome evaluation will be reconciled with currently accepted, evidence-based guidelines to assess appropriateness of care.

10-229

Title: Impact of implementation of computerized physician order entry (CPOE) on medication errors in the neonatal intensive care unit (NICU).

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Purpose: The American Academy of Pediatrics has recognized that within the hospital, computerized physician order entry (CPOE) can prevent medication errors in neonatal intensive care unit (NICU) patients. Despite the overwhelming support for the use of CPOE to decrease errors in this patient population the evidence of error reduction in NICUs using computerized systems is not yet robust. The objective of this project is to determine the impact of CPOE implementation on the incidence and characteristics of medications errors that occur in the NICU.

Methods: In order to collect data for this research, retrospective chart reviews will be performed. This research is a retrospective quality assurance project, so it is exempted from Institutional Review Board approval. It will be reviewed by the hospitals Director of Quality. The hospitals electronic medical record and medication error reporting system will be used to identify medication errors that have occurred in patients admitted to the NICU prior to and subsequent to the implementation of CPOE.

10-230

Title: Overview of the management of intractable hiccups

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Case Report: A hiccup (singultus) is an involuntary, intermittent spasmodic contraction of the diaphragm followed by sudden closure of the glottis. Although typically transient, hiccups can become persistent or intractable causing significant morbidity and decreased quality of life. Development of intractable hiccups has been associated with vascular and central nervous system disease, advanced cancer, postoperative states, and reflux esophagitis. Other causes include overeating, aerophagia, smoking, excessive alcohol consumption, emotional stress and medications. Although benign hiccup bouts do not require extensive medication evaluation and treatment, persistent or intractable hiccups necessitate identifying the underlying cause to guide treatment. Treatment is primarily based on case reports and small observational studies and includes both non-pharmacologic and pharmacologic interventions. First line therapy typically involves physical maneuvers, such as interruption of normal respiratory function and vagal stimulation. Pharmacologic therapy should be reserved for patients who are refractory to physical maneuvers. Besides chlorpromazine, various drug classes including anticonvulsants, antipsychotics, muscle relaxants, CNS stimulants, antiarrhythmics, and tricyclic antidepressants have been used for treatment. Surgery and alternative therapies such as acupuncture and hypnosis have also been used when pharmacologic therapy has failed. The following report presents a case of intractable hiccups in a patient status post cervicothoracic spinal fusion, with a subsequent review of the management of intractable hiccups.

10-231

Title: Evaluating rasburicase use for tumor lysis syndrome in adult oncology patients

Primary Author: Brenda Zagar**,** St. Luke's University Health Network, 801 Ostrum St., Bethlehem, PA 18015; **Email:** brenda.zagar@sluhn.org

Purpose: Rasburicase is approved for the initial management of plasma uric acid levels in patients receiving anti-cancer therapy expected to result in tumor lysis syndrome. The objective of this project is to analyze the usage patterns of rasburicase in adult oncology patients and to evaluate appropriate use based upon current guidelines.

Methods: This research project will be submitted to the Institutional Review Board for exemption. A report will identify all patients 18 years of age and older, who received rasburicase from July 2012 to June 2013. Patient demographics, cancer diagnoses, rasburicase prescribing, and pertinent laboratory values will be collected. Stratification using data including, but not limited to, dosage, indication, and prescribing will be performed. Appropriateness, as well as various dosing strategies, will be evaluated based upon the presence of high-risk and emergent factors indicating use in the prevention of tumor lysis syndrome.

10-232

Title: Evaluation of vancomycin dosing and corresponding drug concentrations in neonatal intensive care unit (NICU) patients

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Purpose: There is a lack of consensus for optimal vancomycin dosing regimens in the neonatal population. There is a paucity of data regarding vancomycin dose and level attainment in the preterm and full term neonate. The primary objective of this study is to retrospectively review the relationship between vancomycin dosing strategy, age and attained vancomycin trough levels in neonatal intensive care unit (NICU) patients.

Methods: This study will be submitted to the Institutional Review Board for approval. All neonatal patients [age up to 46 weeks post-menstrual age (PMA)] in the NICU who received IV vancomycin and had at least one trough concentration that was obtained 0-90 minutes before a dose at steady state, will be included in the review. Data collected from an electronic medical record system will be used to assess the relationship between vancomycin dosing strategy, age and attained vancomycin trough levels. Patient-specific information to be collected will include age [PMA and post-natal age (PNA)], weight, vancomycin dose and frequency, days of vancomycin therapy, measured vancomycin trough concentrations, timing of vancomycin trough concentrations, location and organism of infection, documentation of organism eradication via cultures or clinical determination by the neonatologist, daily serum creatinine from drug initiation to discontinuation, daily fluid intake and urine output if available, and the presence of any co-administered nephrotoxic drugs (etc. aminoglycoside, NSAIDs). All data will be recorded without patient identifier and maintained confidentially.

10-233

Title: Intravenous dextrose restriction and hypoglycemia treatment protocol adherence at a community teaching hospital

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Purpose: In April 2013, a nationwide critical shortage of intravenous (IV) dextrose 50% prompted changes to product distribution. Removal from automated dispensing units on general medical/surgical floors restricted access to IV dextrose. Dextrose remained in emergency crash carts, the Emergency Department, and Intensive Care Units. The Diabetes Clinical Effectiveness Team and pharmacy department requested the restriction of IV dextrose for unconscious patients with IV access. The purpose of this medication use evaluation is to compare the adherence to the hypoglycemia protocol before and after dextrose restriction.

Methods: This study is exempt from institutional review board approval since it is a quality improvement project. A retrospective chart review will be performed based on laboratory reports of hospitalized adult patients on general medical/surgical floors who experienced hypoglycemia, defined as a blood glucose (BG) value < 60 mg/dL, between January 1 and August 31, 2013. Patients will be evaluated for inclusion if they have an order for the hypoglycemia treatment protocol. Data collection will include demographic characteristics, diabetes mellitus history, beta blocker use, level of consciousness, presence of symptoms, nothing by mouth (NPO) status, IV access, BG value that prompted treatment, treatment and amount given, time to first BG check, recheck BG value, repeat treatment and amount given, and time to BG > 60 mg/dL. Treatment appropriateness will be determined based on adherence to the hypoglycemia protocol, which defines hypoglycemia treatment by level of consciousness, presence of symptoms, NPO status, IV access, and BG value. In addition, the percentage of patients with the first recheck BG > 60 mg/dL will be determined.

10-234

Title: Improving medication adherence to rheumatoid arthritis therapy in a Medicaid population

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Purpose: The objective of this study is to disseminate best practices for medication adherence to prescribers of Medicaid patients diagnosed with rheumatoid arthritis (RA) in an effort to improve adherence to RA medications as measured by Proportion of Days Covered (PDC), a surrogate marker for both clinical outcomes and medical costs. Medication adherence is an important element in improving overall patient health. Poor adherence has been shown to unfavorably affect clinical and economic outcomes. For managed care organizations, improving medication adherence is an opportunity to positively affect the quality of health care and for medical cost-containment.

Methods: We have identified members diagnosed with RA from two health plans using approved prior authorization claims for biologic agents used to treat RA. We will target prescriber offices common to these members. We will outreach to these prescriber offices to gauge interest in participating in our program and visit those offices on a quarterly basis. We will distribute adherence tools, tips, and materials to be shared with patients. The materials will vary from quarter to quarter. Pre-adherence rates will be compared to post-adherence rates. Adherence will be measured using PDC (defined as total covered days divided by total calendar days) which is determined from pharmacy claims. . Baseline PDC values have been calculated, but will require recalculation for patients belonging only to participating prescriber groups. PDC changes for patients belonging to non-participating provider groups will be used as the control. Changes to PDC in intervention versus control groups will be evaluated for statistical significance.

10-235

Title: United States survey to characterize the pharmacologic management in patients undergoing post cardiac arrest therapeutic hypothermia (TH) treatment.

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Purpose: Approximately 250,000-300,000 cases of cardiac arrest occur annually in the US, with survival ranging from 6% to 12%. The American Heart Association recommends the use of TH as an integral component of post cardiac arrest care to improve neurological outcomes and survival. There is limited data regarding the ideal pharmacologic management of sedation, analgesia, paralysis, and shivering control in TH-treated patients. The purpose of this survey is to characterize the utilization patterns of sedatives, analgesics, neuromuscular blocking agents (NMBAs), and agents for shivering control in cardiac arrest patients undergoing TH treatment.

Methods: This study will be submitted to the Institutional Review Board for approval. The target survey respondents will include emergency department, critical care, and cardiology pharmacists identified by the American College of Clinical Pharmacy and Society of Critical Care Medicine membership rosters. The questionnaire will be formatted using branching logic to guide respondents in completing applicable sections based on specific practice patterns. The survey will consist of three domains assessing institutional characteristics, respondent characteristics and pharmacologic management. Questions regarding pharmacologic management will examine drug selection, dose initiation and maintenance, route of administration, duration, baseline assessment and monitoring of sedatives, analgesics, NMBAs and agents used for shivering as well as any deviations from standard institutional practice. The survey will be developed and administered using Research Electronic Data Capture (REDcap). A pilot survey will be conducted in Philadelphia through a critical care collaborative to validate survey questions. Respondents answers will be compared to their institutional TH protocol. In institutions without a TH protocol, individuals will be interviewed by phone. Following survey validation, national distribution will occur. Descriptive statistics will be used for survey analysis. The survey findings will seek to identify current trends and future directions to optimize pharmacologic management in these patients.

10-236

Title: Impact of venous thromboembolism (VTE) quality measures on post-surgical mortality and morbidity in an integrated healthcare system

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Purpose: In an era of value-based purchasing, meeting or exceeding national quality standards is important not only for improving patient outcomes but also has increasing financial and public relations impact. These standards however, may not accurately reflect the professional judgment that is exercised in challenging clinical dilemmas. The question becomes, does exceeding national quality goals equate to decreased morbidity and mortality? The objective of this project is to evaluate compliance to the venous thromboembolism core measures and its impact on post-surgical mortality and morbidity.

Methods: The institutional review board approval for this retrospective, multicenter, cohort study is pending. To be eligible for the study, patients have to be 18 years of age or older and undergoing total knee or hip replacement surgeries in any of the five identified facilities from July 1st 2011 to June 30th 2013. Data elements will be extracted from the health systems enterprise data warehouse (EDW) and electronic medical record. Computer generated random numbers will be used in place of patient identifiers to ensure confidentiality. The primary outcome is to compare incidence of venous thromboembolism, bleeding and death between patients in the appropriate and inappropriate prophylaxis groups. Secondary outcomes are to compare the mortality and morbidity outcomes of patients in the appropriate prophylaxis group to that of patients in the anticoagulation monitoring service (AMS) group and to compare outcomes across the different treatment options including use of new oral anticoagulants and bridging with parenteral anticoagulants. Incidence of primary and secondary outcomes will be analyzed using the chi-squared test. Multivariate regression analysis will be used to adjust for patient specific factors that may contribute to the primary outcomes.

10-237

Title: Evaluation of skin and soft tissue clinical pathway in reducing ertapenem use in the emergency department at a 325 bed community hospital

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Purpose: Skin and soft tissue infections (SSTI) are a common presentation of patients seen in the emergency department. The increasing resistance to the organisms that cause SSTI creates a problem when choosing antimicrobial treatment. In order to maintain the effectiveness of antibiotics and reduce the development of resistant bacterial pathogens it is important that empiric therapy is appropriate. Recently, an algorithm for the treatment of SSTI in the emergency department was implemented. The goal of this protocol was to standardize the approach to treating SSTI in the emergency department by providing recommendations on the correct antibiotic and dose to use.

Methods: Using ICD9 codes for SSTI treatment information for 130 patients diagnosed with a SSTI in the emergency department at McKay-Dee prior to and after the implementation of the new clinical pathway will be collected. After evaluating what medication the patient received for the treatment of their infection the overall percentage use of ertapenem will be evaluated to determine if the protocol has been effective at standardizing care and reducing ertapenem use in patients receiving treatment for SSTI in the emergency department. All clinical research represented in this abstract will be approved by the appropriate ethics committee or institutional review board.

10-238

Title: Evaluation of low-dose quetiapine and olanzapine prescribed for insomnia in an outpatient setting

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Purpose: Use of low-dose quetiapine and olanzapine has been recognized as last-line therapy for treatment of insomnia. The objective of this medication utilization evaluation is to review the prescribing of low-dose quetiapine and olanzapine in the outpatient setting to identify use for insomnia.

Methods: Because this is a medication utilization evaluation, it does not require approval by the Institutional Review Board per facility policy. All data will be recorded without patient identifiers and maintained confidentially. A query including prescriptions for oral quetiapine and olanzapine will be prepared and reviewed to reflect active orders. Because low-dose regimens are typically used off-label for insomnia, daily doses of quetiapine greater than 200mg or olanzapine greater than 15mg will be excluded. Calculations and tabulation of the data sets will be organized in Microsoft Excel 2010; all patients will be randomized using functions within this program. A representative sample of each medication regimen will be randomly selected and reviewed. The following data will be reviewed to assess the use of quetiapine and olanzapine for treatment of insomnia: documented diagnosis of insomnia, prescription indication, medication dosing regimen, previously prescribed medications for sleep, risk factors for insomnia, and documented comorbid mental health diagnoses. Cost associated with the use of quetiapine and olanzapine will also be reviewed.

10-239

Title: Laparoscopic donor nephrectomy and primary post-operative pain control therapy

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Purpose: Laparoscopic donor nephrectomy (LDN) is a common procedure used for living kidney donors. It is currently unknown what the optimal pain control regimen is post LDN in order to adequately relieve pain while avoiding unwanted side effects of therapy. Commonly used regimens at our institution include opioid analgesics alone or in combination with ketorolac and/or subcutaneous bupivacaine. To date, there's limited published data on the use of ketorolac following LDN. The primary objective of this study is to determine the effect of ketorolac with or without subcutaneous bupivacaine on opioid analgesic requirements following LDN procedures.

Methods: This study has been submitted to the Institutional Review Board for approval. This is a single center, retrospective cohort analysis utilizing chart review. Subjects will be identified using our institution's kidney donor list and the electronic medical record system. Subjects who are 18 years and older who underwent an LDN between November 1, 2007 and July 31, 2012 at our institution, received at least one dose of opioid analgesics, ketorolac, or subcutaneous bupivacaine post-operatively, and have sufficient electronic records of patient-controlled analgesia (PCA) data available will be stratified into the following cohorts based on their primary pain control therapy post LDN: opioids alone, opioids plus bupivacaine, opioids plus ketorolac, or opioids plus ketorolac plus bupivacaine. Data will be collected utilizing paper and electronic medical records and the United Network for Organ Sharing database. All data will be maintained confidentially. The primary endpoint will be opioid analgesic requirements per day while on PCA following LDN reported in intravenous morphine equivalents. Secondary endpoints will include time to first stool, time to diet initiation during hospitalization, time to discharge, average daily pain scores, change in estimated creatinine clearance, bleeding events, naloxone usage, readmission rates, and mortality within the first year following procedure.

10-240

Title: Incidence of venous thromboembolism (VTE) in medical and critically ill obese patients receiving VTE chemoprophylaxis

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Purpose: The incidence of VTE in medical and critically ill obese patients is not well documented. Standard VTE chemoprophylaxis in obese patients may be suboptimal, potentially leading to increased prevalence of VTE. The objective of this study is to compare the rate of VTE in obese (BMI >30 kg/m2) medical and critically ill patients receiving VTE chemoprophylaxis with rates in non-obese patients (BMI 17-29.9 kg/m2) of similar illness severity. We hypothesize obese patients may benefit from increased doses of VTE chemoprophylaxis.

Methods: Approval from the Intermountain Healthcare Institutional Review Board will be obtained before study commencement. All patients admitted to Intermountain Medical Centers Shock Trauma ICU, Respiratory ICU, and medicine units between November 1, 2007 and September 13, 2013 will be evaluated for study eligibility. Patients receiving VTE chemoprophylaxis are eligible for enrollment into this retrospective, chart review study if they received an initial dose of VTE chemoprophylaxis within 48 hours of admission. Exclusion criteria include age less than 18 years, hypercoagulable states, therapeutic anticoagulation, trauma, and surgical patients. Data will be extracted from Intermountain Healthcares Enterprise Data Warehouse using Natural Language Processing and ICD-9 coding. The following data will be collected: patient age, height, weight, gender, serum creatinine, creatinine clearance, admit diagnosis, Charlson Comorbidity Index, and APACHE II scores. The primary outcome is incidence of clinically overt VTE defined as deep vein thrombosis or pulmonary embolism at 90 days. The rate of VTE will be calculated for each group (medically ill obese and non-obese, critically ill obese and non-obese) and compared within illness severity and between BMI ranges >30 kg/m2. Secondary outcomes include duration of ICU and hospital stay, in-hospital and 90 day mortality, major bleeding events and heparin-induced thrombocytopenia.

10-241

Title: Metabolic monitoring and body mass index changes in pediatric patients treated with second generation antipsychotics

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Purpose: Second generation antipsychotic (SGA) use in youth is increasing. Although SGAs offer clinical benefit for psychiatric illnesses, metabolic adverse effects are concerning. These include weight gain, dyslipidemia, and impaired fasting glucose, which may progress to obesity and diabetes. Studies suggest the 2004 recommended monitoring for SGA-treated patients is too infrequent, yet literature also reveals inconsistent monitoring practices. Thus, among SGA-treated youth, objectives are to ascertain monitoring frequency and evaluate body mass index (BMI), lipid, and glucose changes. These are important steps in identifying opportunities to refine monitoring and potentially evaluate strategies to decrease risk in the future.

Methods: This is a retrospective review of children and adolescents treated with SGAs. Patients who received outpatient, partial hospitalization, residential, and/or inpatient psychiatry treatment at a large urban childrens hospital between 2010 and 2013 will be eligible. Data will be obtained via electronic medical record query and manual chart review. Data collection will comprise demographics, diagnoses, medications, body mass index, glucose, and lipids. Patients with conditions or medications that may influence outcome measures may be excluded. Matched controls will be utilized for comparisons of monitoring frequencies and BMI changes. Monitoring frequencies for SGA-treated patients will be summarized with descriptive statistics and compared with controls using Chi-Square or Fisher Exact Tests. Changes in BMI will be analyzed with a two-sample test of proportions to compare SGA-treated patients and controls. Two-sample t-tests or tests of proportions will also be completed to investigate changes in glucose and lipid measurements. Additional logistic regression and mixed effects models will be fit to further explore any differences in BMI, glucose, and lipids while adjusting for other variables of interest.

10-242

Title: Implementation and evaluation of informational technology to assess potentially inappropriate prescriptions in elderly patients

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Purpose: The objectives of this project are to evaluate the implementation of a computerized decision making tool using the 2012 Beers' criteria to identify potentially inappropriate medications in elderly patients. The accuracy of the tool and a comparison of the time a pharmacist spends performing chart review for inappropriate medications with and without utilization of the tool will be assessed.

Methods: A computerized reporting tool will be developed using the 2012 Beers' criteria and Computerized Patient Record System (CPRS). The tool will automate chart review and identify potentially inappropriate medications. The tool will be verified and evaluated using retrospective chart review (N=25) to compare the review obtained using the tool to chart review done by a pharmacist. Descriptive statistics, time for chart review and measures of accuracy will be provided. The review will serve to identify necessary changes prior to implementation of the tool by clinical pharmacists. A description of implementation strategies will be provided. All methods and procedures received prior approval by IRB.

10-243

Title: Management of hyperglycemia in a non-ICU setting: pharmacist-driven blood glucose management in comparison to other methods of glycemic control for patients with acute coronary syndrome

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Purpose: While pharmacists have demonstrated expertise improving outcomes among diabetic patients managed in the outpatient setting, there is a paucity of information regarding their impact improving glycemic control in the inpatient setting. Higher morbidity and mortality are associated with dysglycemia in hospitalized patients with acute coronary syndrome (ACS). Pharmacists managing insulin therapy for admitted ACS patients is a potential method to prevent hyperglycemia as well as avoid hypoglycemia. The purpose of this study is to evaluate the impact of blood glucose (BG) control when pharmacists manage insulin administration among patients with ACS hospitalized in a non-ICU setting.

Methods: This study has been submitted to an Institutional Review Board and is pending approval. The study will compare different methods of inpatient BG management among three study hospitals within the Intermountain Healthcare system. The treatment arm consists of subjects from one hospital which utilizes pharmacists to manage insulin therapy for hyperglycemic patients. Subjects from the other two hospitals, those where treatment of hyperglycemia is managed by physicians and mid-level practitioners, will form the comparator arm of the study. Primary endpoints will be evaluated by calculating patient-day weighted BG means and other metrics indicating inpatient glycemic control. Clinical and financial outcomes data will be obtained and correlations between glycemic control and improved outcomes will be assessed. Subject data will be collected from Intermountain Healthcare's electronic data warehouse. The study population will consist of all ACS admissions to an acute cardiovascular care unit from September 2012 to September 2013. The following de-identified subject data will be collected: laboratory BG values, point-of-care BG values (including date and time obtained), hemoglobin A1c, hospital ICD-9 codes indicating diabetes and ACS, gender, subject age, body mass index, use of corticosteroids during hospitalization, use of oral antihyperglycemic agents, in-hospital and 30-day mortality, and length of stay.

10-244

Title: Characterizing the indications, prescribing patterns and cost of aripiprazole and ziprasidone

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Purpose: Aripiprazole and ziprasidone are relatively expensive antipsychotics in our facility. They are also unrestricted in their use. There are less costly alternatives available for all the same indications for which aripiprazole and ziprasidone are commonly used. Currently there is only guidance on their use for schizophrenia and schizoaffective disorders; this algorithm reserves these antipsychotics as third tier. The objective of this medication use evaluation is to characterize current use, prescriber patterns and cost of use of aripiprazole and ziprasidone to help guide future decisions about potential formulary restrictions.

Methods: This abstract is a medication utilization evaluation and does not require IRB application or approval per facility policies. The Computerized Patient Record System (CPRS), will be queried to obtain two lists of prescriptions (as of August 2, 2013) of aripiprazole and ziprasidone , respectively, with additional information including patients age, gender, dosage, quantity dispensed, and day supply. The costs (as of August 1, 2013) for individual dosage strengths will also be obtained. Both drug lists will be randomized and 20 percent of patients from each will be selected as subjects for two sample lists. The first issue date of a subjects aripiprazole or ziprasidone will be determined by retrospective chart review. This date will be used to identify the original issuing prescriber, the facility where prescribed, primary and all other potential indications for use, and any other antipsychotics given concurrently or prior to issue date for duration of 6 weeks or more. The medication indication will be identified first from the prescribers dated note, followed by the original prescription and or diagnostic problem list prior to the issue date. Information to be calculated will include total daily dose and the total daily, yearly and monthly costs to the facility.

10-245

Title: Retrospective analysis of intravenous versus oral antivirals for cytomegalovirus prophylaxis in pediatric hematopoietic stem cell transplant recipients

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Purpose: CMV prophylaxis following hematopoietic stem cell transplant involves the use of antiviral agents. While ganciclovir is the most effective for delaying onset of CMV infection, its use is limited due to bone marrow toxicity and nephrotoxicity. Intravenous acyclovir has demonstrated efficacy in preventing CMV infection with fewer side effects; thus it is used first line for CMV prophylaxis. Recent shortages of intravenous acyclovir necessitated the use of oral acyclovir and valacyclovir. However, there is limited published information on the efficacy of these oral agents. Our study aims to determine the efficacy of intravenous versus oral antiviral agents for CMV prophylaxis.

Methods: Hematopoietic stem cell transplant recipients admitted between January 1, 2003 and July 31, 2013 to Primary Children's Hospital and given antiviral prophylaxis for CMV infection are identified to be part of our retrospective study. Inclusion criteria are subjects from birth to 24 years of age; receipt of intravenous acyclovir, oral acyclovir, or valacyclovir; and available report of CMV quantification. Exclusion criteria are subjects with existing CMV disease or receipt of ≥ 25% intravenous acyclovir while in an oral arm and vice versa. Failure of prophylactic therapy is defined as detectable CMV DNA on quantitative PCR prior to day 60 post-transplant. The null hypothesis of our study is that there is no difference among intravenous acyclovir, oral acyclovir, and valacyclovir for preventing CMV infection in pediatric hematopoietic stem cell recipients. The intravenous acyclovir arm serves as the active control to be compared with the oral acyclovir arm and valacyclovir arm. Rate of CMV infection as the primary outcome will be measured using a logistic regression model. Descriptive statistics will be used for reporting baseline characteristics and secondary outcomes. The a priori alpha is set at p-value ≤ 0.05. Approval from the Institutional Review Board is pending.

10-246

Title: Evaluating clinical outcomes based on pharmacologic variability of oral antiplatelet agents in the setting of acute coronary syndrome (ACS)

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Purpose: For patients with acute coronary syndromes (ACS) undergoing percutaneous coronary intervention (PCI), the American College of Cardiology guidelines recognize multiple antithrombotic regimens as reasonable options. Historically, the standard of care has consisted of a glycoprotein IIb/IIIa inhibitor (GPI) with heparin (unfractionated heparin or low molecular weight heparin), but bivalirudin alone has become more common in practice. Onset of action and potency of thienopyridines may allow variability with prescribing behaviors, such as shortened infusions of GPIs and increased usage of bivalirudin. This variability may impact both efficacy and safety outcomes.

Methods: Approval from the Intermountain Healthcare (IHC) Institutional Review Board will be obtained before study commencement. Subjects 18 years of age with a diagnosis of ACS undergoing PCI between April 1994 and August 2013 will be included in this retrospective study. Exclusion criteria will include pregnancy, allergy to any of the study drugs or iodinated contrast dye, thrombocytopenia, and a history of heparin induced thrombocytopenia. The primary objective of the study is a composite endpoint of death, nonfatal myocardial infarction, and urgent target revascularization at 30 days comparing bivalirudin versus heparin or LMWH paired with a GPI, of both short (<6 hours) and prolonged (>6 hours) infusions. Groups will be stratified based on thienopyridine chosen and timing of administration of thienopyridine loading dose (before catheterization, within 1 hour after PCI, and more than 1 hour after PCI). A secondary endpoint will be thrombolysis in myocardial infarction (TIMI) major bleed defined as one of the following occurrences within 30 days after intervention: intracranial bleed, signs of hemorrhage with a drop in hemoglobin of 5g/dL, fatal bleed, or transfusion of blood products. Endpoints measured in large, multi-centered trials including similar endpoints will be compared to rates within IHC.

10-247

Title: Retrospective evaluation of prothrombin complex concentrate (PCC) safety and efficacy outcomes for emergent warfarin reversal according to corporate protocol

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Purpose: Vitamin K antagonist, warfarin, is the most commonly prescribed anticoagulant in the United States. Patients who take warfarin are at an increased risk of minor and major bleeding. The objective of this study is to evaluate the safety and efficacy of a corporate protocol that addresses the need for emergent reversal of warfarin using prothrombin complex concentrate (PCC) in situations where there is a threat to life, limb or permanent function.

Methods: This study has been submitted to the Institutional Review Board and is pending their approval. It is a multi-center, retrospective, observational analysis. The electronic medical record will identify patients that received PCC according to the corporate protocol. The collected data will include: age, gender, weight, height, warfarin indication, admission and discharge date, hCG, co-administration of recombinant factor VIIa (rFVIIa), Acute Physiology and Chronic Health Evaluation score, occurrence of serious adverse events, initial international normalized ratio (INR), time to INR reversal, quantity of transfused red blood cells, platelet count, fibrinogen, hemoglobin, hematocrit, dose and administration times of PCC, Vitamin K and Fresh Frozen Plasma. This data will be entered into a secured spreadsheet. Patients will be excluded if they are less than 18 years old, pregnant, or received rFVIIa. The primary safety endpoint will be analyzed by monitoring for a serious adverse event defined as an ischemic stroke, myocardial infarction, arterial thromboembolism, deep venous thrombosis, pulmonary embolism, and death within 7 days of treatment. Primary efficacy endpoints will include: time to INR reversal defined as time to achieve an INR less than 1.5, hospital length of stay, units of transfused red blood cells, platelets, fibrinogen, hemoglobin, and hematocrit.

10-248

Title: Pharmacist-driven scoring and alert system identifying hypoglycemia risk among rehab patients

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Purpose: Hypoglycemia is associated with devastating health consequences including tremors, palpitations, sweating, cognitive impairment, seizures, and coma. Appropriate identification of risk factors for hypoglycemia is key in preventing adverse events. Pharmacists can play an essential role in patient assessment and prevention of hypoglycemia. Complex alert algorithms have recently been developed to help recognize patients at risk and prevent future events. This quality improvement project will evaluate the percentage of hypoglycemic events in the rehab unit before and after implementation of a user-friendly, pharmacist-driven hypoglycemia daily scoring and alert system.

Methods: This project has been submitted to the Institutional Review Board for approval. The following data will be collected using a daily report and review by the pharmacist: patient age, blood glucose readings less than or equal to 80mg/dL, weight less than or equal to 60kg, serum creatinine greater than or equal to 1.5mg/dL or creatinine clearance less than or equal to 60mL/min, insulin use, sulfonylurea use, meglitinide use, steroid use, and hemoglobin A1C less than or equal to seven percent. Patients who have blood glucose values less than or equal to 80mg/dL and two or more additional risk factors will be flagged as high risk for hypoglycemia and the charge nurse and physician will be notified. The percentage of hypoglycemia events will be evaluated before and after implementation of this pharmacist-driven daily tracking tool and alert system. There will also be an educational component for nursing and pharmacy staff. All data will be maintained confidentially and recorded without patient identifiers. This is a quality improvement project with no treatment interventions or risk to patients.

10-249

Title: Impact of pharmacist culture follow-up on antimicrobial therapy for emergency department patients

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Purpose: Emergency department (ED) pharmacist culture follow-up provides an opportunity to improve antimicrobial stewardship. The aim of this study is to investigate whether pharmacist involvement in ED culture follow-up leads to appropriate antimicrobial selection compared to follow-up by the usual process, which involves only nurses and physicians.

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 been treated in the emergency department (ED), are discharged home from the ED, and have positive cultures. A chart review will follow. The following data will be evaluated: culture data, indication for antimicrobial treatment, antimicrobial prescribed initially, antimicrobial prescribed at follow-up, allergies, home medications, basic metabolic panel, height, weight, age, gender, date of ED visit, and past medical history. Patient health information (PHI) will be protected through de-identification and limited access to protected information. The primary objective is to determine if appropriate therapy is selected for positive cultures that indicate a change from empiric therapy is warranted. Appropriate is contingent on all the following criteria: no interactions with home medications; not a documented allergy; appropriate dose for renal function; appropriate antimicrobial based on indication, culture results, and medical history; and complete culture follow-up documentation in the medical record. Each case will be independently reviewed by at least two pharmacists to determine whether antimicrobial selection fits the indication, culture results, and the subjects medical history.

10-250

Title: Impact of healthcare reform on contraceptive utilization patterns and adherence

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Purpose: The Patient Protection and Affordable Care Act of 2010 mandated contraceptive coverage and applied to all new health insurance plans effective August 1, 2012. The implementation of The Affordable Care Act thus allowed further access to contraceptive medications by removing previous financial barriers; changes in member contraceptive utilization are expected following the removal of financial barriers. This study is designed to examine the impact of The Affordable Care Acts provision of contraceptive methods without cost sharing on contraception costs, utilization patterns, and adherence the first year after implementation of the reform.

Methods: This protocol has been submitted to the Institutional Review Board for approval. This will be a retrospective, observational analysis of pharmacy and medical claims pre and post-implementation of The Affordable Care Act. Pharmacy and medical claims from members in a 550,000-member integrated health system in Salt Lake City, Utah will be analyzed for the time period August 1, 2011 to December 31, 2013. Females of childbearing age between 18-45 years with pharmacy or medical benefit and at least one contraceptive prescription in the pre or post-implementation period will be included to assess utilization. Adherence will be measured using two or more claims in the pre and post-implementation period for oral contraceptives, vaginal rings, or patches. Males will be excluded along with females with claims for progestin only oral contraceptives. The primary outcome measure will be determining the total cost per member per month to the health plan assessed by claims following hypothesized changes in utilization. Secondary outcomes include switch rates and adherence for different forms of contraceptives. Switch rates will be calculated between contraceptives using odds ratios and adherence will be assessed using proportion of days covered (PDC).

10-251

Title: Effects of rounding serum creatinine on estimated creatinine clearance in elderly patients with a serum creatinine less than 1 mg/dL

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Purpose: Creatinine clearance (CrCl) is a common tool used to asses renal function of patients in clinical practice and is highly utilized to calculate medication dosing. Serum creatinine (SCr) is the laboratory value most often used to estimate CrCl, yet clinicians may find it difficult to estimate a CrCl in elderly patients with a SCr concentration below 1 mg/dL. Pharmacists are educated to round SCr concentrations to 1mg/dL when dosing medication in elderly patients that have SCr values less than 1mg/dL to account for low muscle mass. Unfortunately, there is very little clinical data to support this practice.

Methods: Patients hospitalized at McKay-Dee Hospital between 2013 and 2014 (date to be determined) who are over the age of 65 with stable renal function will be included in this study. Patient consent will be obtained and nursing staff will be educated on the importance of a full 24 hour urine collection. 24 hour urine collections will be gathered and sent to the McKay-Dee Lab. We will obtain measured SCr lab values and compare them with SCr rounded to 1mg/dL and SCr increased by 50%. We will use actual body weight, ideal body weight [IBW = 50kg + (2.3*(height in inches 60inches)) use 45.5kg for female], and adjusted body weight [AjBW = IBW + 0.4(ABW-IBW), for patients >130% of IBW] in the Cockcroft-Gault equation for renal function [GFR = ((140 age)(IBW))/(72*SCr) multiply by 0.85 for female] to obtain our CrCl values. Patients will be excluded from the study for SCr >1mg/dL, inappropriate 24 hour urine collection, unable to give informed consent, taking concomitant nephrotoxic medications (i.e. vancomycin, aminoglycosides, furosemide, amphotericin B, cisplatin, tacrolimus, contrast agents, and all other known concomitant nephrotoxins), and taking medications that can interfere with the SCr assay (cefoxitin, flucytosine). IRB approval pending.

10-252

Title: Assessing the adequacy of standardized multi-vitamin supplementation in short-bowel syndrome patients

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Purpose: Patients with short-bowel syndrome (SBS) who require total parenteral nutrition as the sole means of nutrition are given empiric amounts of pediatric multi-vitamins. Weight based dosing is recommended in infants and children up to 11 years of age receiving parenteral nutrition. Previous research has proposed this standardized dose contains insufficient amounts of vitamin B12, A, and D for patients with SBS to maintain serum concentrations within the normal range. The primary objective is to assess the adequacy of current dosing of pediatric multi-vitamins in SBS patients through the analysis of serum vitamin concentrations.

Methods: This study has been submitted to the Institutional Review Board for approval. A goal of 100 SBS patients between the ages of 0 to 11 will be identified using the electronic data warehouse from January 1, 2008 through December 31, 2012. Subject data points to be extracted include: patient age, sex, weight, enteral feeding status, days on total parenteral nutrition (TPN), length of intestine resectioned, multi-vitamin dose received, serum vitamin B12, A, and D concentrations, and methylmalonic acid (MMA) to creatinine ratio. Once collected, patient identifiers will be separated from data and destroyed to preserve confidentiality. Evaluation of current multi-vitamin dosing appropriateness to maintain normal serum vitamin concentrations will be assessed using descriptive statistics. Based on the institution's recommended vitamin ranges for determining sufficiency, each case will be coded as being sufficient or deficient. Patients categorized as sufficient will be sufficient on all measures, while those categorized as deficient will be deficient on at least one or more measures. Secondarily, binary linear regression will be used to identify factors that may influence serum multi-vitamin concentrations, such as surgical details and multi-vitamin dosing.

10-253

Title: Comparison of clinical and financial outcomes with extended infusion versus standard infusion piperacillin-tazobactam in patients with severe sepsis

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Purpose: Extended-infusion administration of piperacillin-tazobactam is purported to have more effective bactericidal activity and improved clinical outcomes, due to the antibiotics time-dependent bactericidal action. This administration method also requires less daily antibiotic use, potentially resulting in both direct and indirect cost benefits. An in-house study was conducted to analyze outcomes following the implementation of a substitution protocol for extended infusion piperacillin-tazobactam. The objective of this study is to determine the extent of the clinical and financial benefits seen with extended-infusion administration as compared to the standard infusion method.

Methods: This retrospective study has received approval from the Institutional Review Board. The electronic medical record will identify patients with a diagnosis of severe sepsis/septicemia and receipt of piperacillin-tazobactam for more than 48 hours. Data will be collected from two separate six-month periods for the extended infusion and standard infusion study groups. The following data will be collected: age, duration of piperacillin-tazobactam use, concurrent antibiotics, length of hospital stay, length of ICU stay, 30-day mortality, and overall hospital costs. All data will be recorded without patient identifiers in order to maintain confidentially. Clinical outcomes will be determined by comparison of mortality rates, whereas financial outcomes will be determined by overall hospital costs.

10-254

Title: Evaluation of protocol-driven dexmedetomidine utilization and outcomes in the intensive care unit at a 445-bed community hospital

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Purpose: Current guidelines prefer the use of a nonbenzodiazepine such as dexmedetomidine for sedation of mechanically ventilated adult patients in the intensive care unit (ICU). At this hospital, a protocol-driven order set is used for the prescribing of dexmedetomidine, yet it is possible for drug use or management to fall outside the suggested criteria, contraindications, dosing, or monitoring parameters. The maximum recommended maintenance dose of dexmedetomidine in this protocol is 1.4 mcg/kg/hour. The objective of this study is to evaluate the efficacy and safety of protocol-driven dexmedetomidine versus off-protocol use for adult ICU patients at this hospital.

Methods: Institutional Review Board approval will be obtained prior to data collection. Research will involve the study of existing data, documents, and records, and data will be recorded without patient identifiers. A retrospective chart review will be performed on patients who received dexmedetomidine during the past 18 months. Patients will be included who were at least 18 years of age and received dexmedetomidine for sedation in the ICU. Data collection will include patient age, weight, gender, ethnicity, blood pressure, heart rate, and medication use. Patients will be divided into two groups for the comparison of outcomes based on whether or not protocol-driven prescribing was followed. Patient histories will be evaluated for appropriate criteria for use or contraindications as well the following outcomes. Efficacy outcomes will include time on mechanical ventilation, length of ICU or hospital stay, presence of delirium, and use of opiates or benzodiazepines. Safety outcomes will include bradycardia, hypotension, and hypoperfusion. Data will be analyzed using SPSS statistical software.

10-255

Title: Influence of patient comorbidity on clinical outcomes in Staphylococcus aureus bacteremia

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Purpose: Vancomycin is the first-line antibiotic for empiric treatment of Staphylococcus aureus bacteremia (SAB). Previous studies have shown increased mortality and treatment failure in S. aureus infections with vancomycin minimum inhibitory concentration (MIC) greater than 1. The reasons for these associated negative outcomes have not been clearly established. We hypothesize that patients with high vancomycin MICs are at inherently higher risk for treatment failure due to comorbidity. The objective of this retrospective, multicenter study is to explore the relationship between clinical outcome and comorbidity in patients with SAB that have vancomycin MIC greater than 1.

Methods: This project has been submitted for IRB approval. The health system's electronic medical record will be used to generate a list of hospitalized patients with positive S. aureus blood culture between January 2009 and August 2013. Patients who are 18 years of age or older with SAB that started on antibiotics within 48 hours of infection onset will be included. Patients will be excluded if deceased within 48 hours of starting antibiotics, insufficient medical records to allow assessment of primary endpoint, or a prior episode of bacteremia was included in the study. Data will be collected on patient age, gender, race, renal function, hospital versus community onset of bacteremia, associated infections, comorbidities based on the Charlson Comorbidity Index (CCI), antibiotics used, initial vancomycin trough if vancomycin was used, whether methicillin-resistant or methicillin-sensitive S. aureus was isolated, and vancomycin MIC. No patient identifier will be recorded in the study. Patients will be divided into two groups, high CCI (equal to or greater than 2) versus low CCI (less than 2), to determine if baseline patient characteristics influence outcomes. Primary outcome will be clinical cure rate. Secondary outcomes will include 30-day mortality, time to negative culture, length of stay, and 60-day recurrence.

10-256

Title: Impact of a HIV clinical pharmacist on HIV care

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Purpose: Antiretroviral therapy adherence for a human immunodeficiency virus (HIV) positive patient can be decreased due to many factors such as financial burden, forgetfulness or tolerability issues. Kaiser Permanente Mid-Atlantic States (KPMAS) initiated a clinical pharmacy service in January 2013 for HIV-infected patients with adherence issues. For this service, the HIV clinical pharmacist provides education on HIV and related therapy, addresses potential barriers to adherence, implements a plan to overcome barriers and periodically assesses the effectiveness of the plan. The goal of proposed study is to look at the impact the HIV clinical pharmacist has on the care of these patients.

Methods: This observational, retrospective study has been submitted to the Institutional Review Board for approval. Patients, who were nonadherent to their antiretroviral therapy (ART), were identified by the pharmacist or referred by a KPMAS Infectious Diseases (ID) physician. For the primary objective, we will investigate proportion of patients who achieved undetectable HIV viral load before and after HIV pharmacist intervention. Secondary endpoints will compare the change in CD4 count, adherence to ID office visits, and the proportion of days covered (PDC) with 90 percent or greater antiretroviral medication adherence with at least two fills in the three to six months leading up to intervention and in the three to six month period after intervention. Patients with HIV on ART, greater than 18 years old, referred to the program by HIV pharmacist or Mid-Atlantic Permanente Medical Group (MAPMG) providers in the Infectious Diseases department and documented or suspected nonadherence are the selected population. The following data will be collected via KPMAS electronic health records: pharmacy encounters, age, race, gender, refill data (claims data), labs (including HIV viral load, CD4 count), ID physician encounters, primary ID physician, ID medical office building (MOB), and ART. All patient-specific information will be de-identified after data collection.

10-257

Title: Medication use evaluation for intravenous acetaminophen in a community hospital setting

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Purpose: Intravenous (IV) acetaminophen (APAP) provides effective pain relief and fever reduction, but in certain situations provides little to no benefit over other routes of APAP administration. As a result, St. Mary's Hospital established criteria for use of IV APAP. The primary objective of this investigation is to describe the indications for use of IV APAP at St. Mary's Hospital. Secondary objectives are to identify the service lines and physicians utilizing IV APAP, characterize the use of oral medications before and concomitantly with the IV APAP infusion, and determine the percentage of doses that followed Pharmacy & Therapeutics Committee

Methods: This investigation will be a single-center, retrospective, observational review of patients who received IV APAP between June 1, 2013 and June 30, 2013 at Bon Secours St. Mary's Hospital in Richmond, Virginia. The project is classified as quality improvement. Consequently, the project does not require approval by the Bon Secours Richmond Institutional Review Board. Demographic data to be collected will include age, and gender. Hospital course information will include the indication for IV APAP, the prescriber of IV APAP, the prescribers' service line, whether or not the patient was post-surgery, surgery type, the total number of doses of IV APAP the patient received as an inpatient, the number of IV APAP doses that did not meet the restrictions for use established by the Pharmacy and Therapeutics Committee, and whether or not the patient received any oral medications within six hours of an IV APAP dose.

10-258

Title: Effect of IV acetaminophen in general surgery patients on opioid use and adverse effects

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Purpose: Clinical trials in various surgical procedures have demonstrated IV acetaminophen significantly reduces pain intensity. Our institution added IV acetaminophen to the formulary with the aim of decreasing postoperative opioid use and opioid-associated adverse effects in bariatric and general surgery patients. Use was restricted to adjunct pain management for up to 48 hours after general and bariatric surgical procedures in adults. The primary purpose of this study is to compare opioid use and rates of adverse effects in general surgery patients pre- and post-implementation of IV acetaminophen. Secondary purposes are to compare length of stay and nursing acuity level.

Methods: Prior to data collection, this retrospective study will be submitted for IRB approval. Using the hospitals electronic medical record system, patients with orders entered via the general surgery order set between March 1, 2013 and April 29, 2013 will be reviewed as the pre-implementation group and between May 1, 2013 and July 31, 2013 will be reviewed as the post-implementation group. Patients who are under the age of 18, undergoing bariatric surgery, and those in the post-implementation group who have not received at least one dose of IV acetaminophen will excluded. Data collected will include age, gender, height, weight, serum creatinine on day of surgery, physician-documented history of renal and hepatic disease and diagnoses, type of surgical procedure, surgeon performing the procedure, date and time of surgery, IV acetaminophen dose and time of first dose, total number of IV acetaminophen doses, and preoperative pain management strategies used. Additional collected data will include other pain medications administered, including acetaminophen administered via other routes, and total dose administered; patient-controlled analgesia (PCA) use; length of stay; pain scores upon unit arrival and at 4, 8, 12, 18, and 24 hours after arrival; nursing acuity level; and potential medication-related side effects.

10-259

Title: Effectiveness of fixed dose rasburicase for the prevention and treatment of hyperuricemia in cancer patients

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Purpose: Tumor lysis syndrome (TLS) is an oncologic emergency caused by rapid lysis of malignant cells, characterized by metabolic abnormalities, including hyperuricemia. Rasburicase is a recombinant urate oxidase enzyme indicated for the management of elevated uric acid levels in patients at risk for developing TLS. The approved dosing for rasburicase is 0.2 mg/kg once daily for up to 5 days. Limited data has shown activity at lower doses and shorter durations, offering possible cost-savings. The goal of this study is to determine if fixed-dose rasburicase 6 mg is effective in the prevention and treatment of hyperuricemia associated with TLS.

Methods: This study will be submitted to the Institutional Review Board for approval. A single-center, retrospective chart review from January 1, 2008 to August 31, 2013 will be performed evaluating hospitalized cancer patients aged 18 years or older who have received a dose of rasburicase and have documented pre- and post-treatment uric acid levels. Patients who received weight-based rasburicase dosing and patients with incomplete medical records will be excluded. Baseline demographics, past medical history, cancer diagnosis, WBC, LDH, potassium, phosphate, calcium, uric acid, serum creatinine, number of rasburicase doses administered within seven days after initiation, renal events requiring dialysis, incidence of hypersensitivity reactions, and other treatments for TLS will be collected. Patient data will be recorded without identifiers and maintained confidentially. Data will be analyzed using descriptive and inferential statistics. The primary objective of this study is to determine uric acid response rate, defined as normalization or maintenance of uric acid levels within normal limits, at 24 hours post-treatment. Secondary endpoints include uric acid response rate at 48 and 72 hours, mean reduction in uric acid levels at 24 hours, adherence to institution specific criteria for use, and requirement for renal replacement therapy post-treatment.

10-260

Title: Analysis of antibiotic prescribing practices for bacterial urinary tract infections in adult patients in a community hospital emergency department

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Purpose: Bacterial urinary tract infections (UTIs) are one of the most common infections emergency department (ED) practitioners encounter. Rates of antibiotic resistance among uropathogens have continued to increase over the past decades resulting in decreased effectiveness of many of the most frequently used antimicrobial agents. This resistance is driven by unnecessary antibiotic treatment and selection of inadequate antibiotics for the causative bacteria. This study aims to assess the adequacy of the ED prescribing practices for antibiotic treatment of bacterial UTIs with regard to the Infectious Diseases Society of America (IDSA) practice guidelines and the CJW Medical Center urinary antibiograms.

Methods: This study was approved by the Institutional Review Board prior to its initiation. Nonprocedural representation (NPR) reports will be used to identify patients who, over a six-month time frame, were admitted through or discharged from the ED with International Classification of Diseases-9 (ICD-9) or diagnosis-related group (DRG) billing codes assigned to UTIs. Chart reviews will then establish a study population of 100 subjects who meet the inclusion criteria. Patients younger than 18 years old, those in which no urine culture was obtained, and those concurrently treated with antibiotics for another infection will be excluded. The following data will be collected: patient age, sex, height, weight, serum creatinine, allergies, pregnancy status, comorbidities, risk factors for multidrug-resistant bacteria, presence of UTI symptoms, diagnosis, urinalysis results, urine culture results, and initial antibiotic(s) prescribed in the ED. No protected health information will be recorded to maintain patient confidentiality. This data will be reviewed by a team of three pharmacists to determine the appropriateness of treatment initiation and adequacy of the selected empiric antibiotic regimens in relation to the IDSA guidelines and the institution's urinary antibiograms. Results of the study will be used to improve ED prescribing practices and minimize development of bacterial resistance.

10-261

Title: Is there a benefit for adding cytomegalovirus immune globulin for cytomegalovirus disease or infection

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Purpose: Cytomegalovirus (CMV) infects the majority of humans. In an immunocompetent person the initial exposure to CMV is usually self-limiting. Patients who receive a solid organ transplant (SOT) and immunosuppressed are at an increased risk of developing CMV disease or infections. Current 2013 cytomegalovirus treatment guidelines published in the American Journal of Transplantation recommends intravenous ganciclovir or oral valganciclovir for treatment of CMV disease. They state that cytomegalovirus immune globulin may be used in life threatening CMV disease. We are evaluating cytomegalovirus immune globulin and its benefit as add-on therapy for CMV disease or infection.

Methods: The study will be submitted to the Institutional Review Board for approval. We are performing a single-center retrospective cohort study. The patients who are included in the study were hospitalized over a 33 month (January 2010 - September 2013) period at 833 bed teaching hospital located in the Washington DC metro area. The experimental population was over 18 years of age, had an organ transplant, and received at least one dose of cytomegalovirus immune globulin for CMV disease or infection. The control population was over 18 years of age, had an organ transplant, and did not receive any cytomegalovirus immune globulin for CMV disease or infection. The statistical tools we are using for our evaluation are the Students T-test, Chi Square, and descriptive statistics for dichotomous variables. The primary end point is overall CMV virologic response. This response will be defined as percent reduction from initial positive CMV PCR viral load through two to four weeks after the final dose of cytomegalovirus immune globulin therapy. Secondary outcomes include all cause mortality at hospital discharge, resolution of CMV disease, and incidence of organ loss.

10-262

Title: Effect of intravenous acetaminophen on reduction of postoperative opioid use in patients after cesarean delivery

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Purpose: There has been an increasing use of multimodal analgesia in effort to adequately control pain in post-surgical patients. The FDA recently approved intravenous acetaminophen for moderate to severe pain in combination with opioids. Limited studies are available in the United States to evaluate the place in therapy of intravenous acetaminophen in post-surgical patients. The objective of this study was to determine the opioid-sparing effect of intravenous acetaminophen on postoperative opioid use in patients after cesarean delivery.

Methods: This retrospective chart review received Institutional Review Board approval. Diagnostic-related group codes identified female patients ages 18 to 40 years old who underwent cesarean delivery between January 1, 2013 and September 30, 2013. Patients were excluded if they had a history of chronic pain medication use prior to delivery, renal impairment (serum creatinine greater than or equal to 2 mg/dL), any contraindication to spinal anesthesia, prenatally diagnosed fetal abnormalities, or intra-uterine fetal death. Patients were randomized into two groups for comparison to include patients who received intravenous acetaminophen and those who did not. Total morphine equivalents of opioids administered as well as non-opioid analgesics administered within 48 hours after delivery were collected using electronic medical records. Analgesics evaluated included intravenous and oral acetaminophen, intravenous and oral morphine, intravenous and oral hydromorphone, oral acetaminophen/oxycodone, oral acetaminophen/hydrocodone, and non-steroidal anti-inflammatory agents.

10-263

Title: Analysis of human albumin prescribing patterns and utilization at a community teaching hospital

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Purpose: Albumin is the most abundant plasma protein. When administered intravenously, albumin creates colloid osmotic pressure and helps maintain intravascular fluid volume. Albumin is a natural protein colloid, manufactured from pooled human plasma, and is more expensive than crystalloid fluid replacement options. The role of colloids in fluid resuscitation is controversial and albumin is often used inappropriately. The objective of this medication use evaluation is to analyze the prescribing patterns and utilization of human albumin to ensure patients are being treated appropriately and identify any areas for cost savings.

Methods: This medication use evaluation will assess the use of human albumin in 100 patients over a four-month period (April 2013 to August 2013) through retrospective chart review. Patients will be identified in the electronic medical record system using electronic prescription numbers for albumin 5% and 25% solutions. Of the 100 total patients that will be evaluated, 50 patients who received 5% albumin and 50 patients who received 25% albumin will be assessed. In addition to strength of albumin and dose administered, patient baseline demographics, indication for use, ordering prescriber type and service, number of administrations, prior administration of crystalloids, adverse effects, existing contraindications to use, and death prior to discharge will be collected and evaluated. This study will be submitted to the Institutional Review Board for approval. All data will be recorded without patient identifiers and maintained confidentially. Appropriate use will be determined using both FDA-approved indications and other criteria from the literature. Prescribing patterns will also be evaluated to direct future interventions in the event that utilization review reveals areas for practice improvement and cost savings. Adverse events and mortality will be examined for safety monitoring.

10-264

Title: Implementing an action plan to decrease healthcare acquired healthcare onset Clostridium difficile incidence rates

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Purpose: Rates of Clostridium difficile (C. diff) infection nearly doubled between 2011 and 2012 at our community based hospital from 3.1 to 5 cases per 10,000 patient days. Several initiatives have been enacted to decrease infection rates. These include education for hospital staff, implementation of an infection prevention and control policy, initiatives to improve appropriate use of proton pumps inhibitors (PPIs) for adult stress ulcer prophylaxis, and a specific C. diff treatment order set for prescribers. Retrospective chart review is being undertaken to determine the outcome of these measures and what further interventions may assist in decreasing C. diff rates.

Methods: This project does not require review by the hospital ethics committee because it is purely retrospective and patient information will not be disclosed other than in aggregate form. Electronic medical record charts of all patients determined to have Healthcare Acquired Healthcare Onset C. diff in 2013 will be analyzed and evaluated for the following data: age, patient location by hospital unit, length of stay prior to diagnosis, antibiotics received prior to diagnosis, PPI use and whether therapy was discontinued or changed after diagnosis, disease severity, treatment regimen, presence of an infectious disease specialist consultation, rate of C. diff treatment order set utilization, whether anti-motility agents or toxin (cholesterol) binding agents were ordered and whether a colectomy or other surgical intervention was required. Based on analysis of these factors an action plan will be devised to improve implementation of existing measures and develop additional measures to decrease C. diff rates and ensure appropriate treatment in patients with C. diff infection. At the time of action plan implementation further education will be provided to correct any items identified as opportunities for improvement through this process.

10-265

Title: Integration of a Pharmacy Resident in a Geriatric Special Care Unit (GSCU) at a Veterans Affairs Medical Center

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Purpose: Geriatric Special Care Unit (GSCU) was opened in October 2007 as a subsection of the Veterans Affairs Community Living Center (CLC) with the intent to enhance the capacity to provide care for veterans with behavioral complications from either dementia or severe and persistent mental illness. Target behaviors include wandering, disturbing inappropriate verbalizations, physical resistance of care for Activity of Daily Livings (ADLs), unpremeditated aggression or assaultive behavior, sexually inappropriate behavior, and hyperactivity due to delirium. The objective of the study is to determine the value of a pharmacy resident as an integral member of the multidisciplinary treatment team in GSCU.

Methods: This study is scheduled for an Institutional Review Board (IRB) approval. The pharmacy resident (PR) will be rounding with the team every other Wednesday, December 11s to discuss treatment plan and interventions of current seven GSCU residents. PR will do weekly chart reviews using CPRS/VISTA for potential pharmacy interventions such as identification and evaluation of inappropriate antipsychotic usage in treating behaviors, recommendations for minimizing utilization of drugs listed in Beers Criteria, suggestions for managing possible side effects from antipsychotics such as metabolic syndrome and tardive dyskinesia, monitoring for adequate pain control, guidance on decreasing use of drugs that can potentially cause falls, and optimizing drug-therapy regimen. The treatment team includes Medicine, Nursing, Mental Health, Social Work, Recreation Therapy, and Pharmacy. Data will be collected 2 months prior to initiation of the PR integration to the unit and compare to the data collected every 2 months thereafter for a total of 6 months.

10-266

Title: Medication Use Evaluation of tPA in Acute Ischemic Stroke Patients

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Purpose: Alteplase (tPA) is an established treatment used for the restoration of blood flow and rescue of brain tissue after an ischemic stroke. Best practice strategies have been developed to reduce the administration time of tPA. One proven strategy, particularly relating to the dispensing and administration of tPA, involves rapid access to intravenous tPA facilitated by storing the agent in the emergency department. The objective of this study is to conduct a Medication Use Evaluation (MUE), examining time elapsed between tPA order entry to administration in the emergency department in order to assess and subsequently optimize institution practices.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will be utilized to identify eligible patients that have received tPA for treatment of acute ischemic stroke. The study will focus on the dispensing steps of the process, including duration of time needed to verify the order for tPA, prepare the proper dose, and deliver the medication for administration. Data collection will include: the time of order entry, time of processing by inpatient pharmacist and the time of administration. The time elapsed between order entry and drug administration will be calculated for each patient. All data will be placed in a secured file without the use of patient identifiers. This MUE will include evaluation of cases in which tPA is dispensed from the IV pharmacy as well as cases in which tPA is dispensed via best practice guidelines as the emergency department begins to integrate tPA within a stroke response kit.

10-267

Title: Medication use evaluation of metformin in the inpatient setting

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Purpose: Metformin is being continued in an inpatient setting inappropriately for patients presenting with or developing contraindications or precautions to the drug that would warrant its discontinuation or reevaluation. This can put patients at a much higher risk of developing lactic acidosis, which can have a mortality rate of 40 to 50 percent. The purpose of this study is to determine if metformin is being used appropriately in a community hospital setting in patients without contraindications or precautions.

Methods: This project is a retrospective chart review of patients admitted to a community hospital from February 1, 2013 to July 31, 2013 who were ordered metformin. No identifiable information will be used. Patients will be included who were 18 years of age or older, have Type II Diabetes Mellitus, and received orders for metformin during hospitalization. Patients will be excluded if they were pregnant, or metformin was not administered. Data will be collected after IRB approval using a standardized data collection form that includes age, pregnancy status, gender, diagnosis of diabetes mellitus type II, home medications, duration or discontinuation of metformin during hospital stay, admission diagnosis, and contraindications or precautions for metformin (Contraindications: Radiologic studies using contrast dyes within 48 hours, serum creatinine greater than 1.5 in males or greater than 1.4 in females, septic shock, metabolic acidosis, ketoacidosis; Precautions: Heart failure exacerbation, acute myocardial infarction, hepatic impairment, trauma, surgery). Presence or absence of contraindications and precautions will be used to rank patients into three categories based on whether they had contraindications, precautions, or none. Data will be analyzed using SPSS software.

10-268

Title: Citalopram prescribing before and after the FDA drug safety warning

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Purpose: In August 2011, an FDA Drug Safety Communication warned that citalopram should no longer be used at doses greater than 40mg/day (20mg/day for those over 60 years) due to risk of abnormal changes in the electrical activity of the heart and there was no evidence of increased efficacy with higher doses. Objectives of this study are to determine how prescribing patterns changed after the warning, compare changes by prescriber and risk factor, determine change in QTc interval for patients prescribed citalopram outside the recommended dosing range and to determine if monitoring of QTc interval was conducted appropriately.

Methods: This study was submitted to the Institutional Review Board including request for waiver of informed consent. Data from the computerized patient record system (CPRS) will be utilized to conduct a retrospective review of patients prescribed citalopram during the periods of May-Aug 2011, May-Aug 2012, and May-Aug 2013. For those veterans prescribed citalopram outside of the recommended dosing range, additional data collected includes last 4 digits of SSN, citalopram dose, quantity and prescription dates, age, gender, prescription prescriber and class, presence of a concurrent cimetidine prescription, magnesium level and date collected, potassium level and date collected, heart rate and date measured if <60bpm, presence of diagnosis (ICD-9) codes 426 (conduction disorders), 428 (heart failure), and 570-579 (hepatic disease), and mortality status. For the QTc interval objectives, a percent of the larger sample will be randomly selected from veterans with a citalopram prescription in the initial timeframe (before dose limitations) and in either or both of the latter time frames. Patients with high QTc interval prior to initiation of citalopram will be excluded from this part of the study. Statistical analysis of de-identified data will consist of t-test, Chi-square or other comparison statistics as appropriate.

10-269

Title: Health outcomes associated with a community pharmacy-based transition of care program in rural Central Appalachia

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Purpose: The national average readmission rate at thirty days after hospital discharge is approximately 19% and hospitals will soon face financial penalties for high re-administration rates. Pharmacists may help prevent re-hospitalizations by providing disease state, medication, and adherence education; performing medication reconciliation; and being an accessible health information resource. Although many transition of care (TOC) programs have been implemented and studied in hospitals, little is known about the outcomes associated with community pharmacist-based TOC programs, especially among a rural population. This study will determine the health effects of a community pharmacist-based TOC program.

Methods: This study is currently pending Institutional Review Board approval. Within five days of hospital discharge at an independent pharmacy in Central Appalachia, patients will receive a medication review to detect potential errors and an initial counseling session. In this in-person or over-the-phone counseling session, a pharmacist will educate the patient on his or her primary admitting disease state, monitoring parameters, medications, adherence techniques, and other applicable information. A personal medication list will be provided or mailed to the patient and questions answered before he or she departs. After thirty days, a pharmacist will contact the participant via phone to complete a survey to identify re-hospitalization, assess knowledge, and evaluate the program. Data will be collected on patient demographics, reasons for most recent hospitalization, number and type of medication errors detected, readmission rates thirty days after the counseling session, changes in patient knowledge regarding their primary admitting disease state and medications, and patient satisfaction with the program. Descriptive statistics (e.g. means, frequency distributions) will be computed for all study variables. Readmission rates will then be compared to rates published by CMS. A repeated measures t-test will be used to compare patient knowledge before and after the counseling sessions.

10-270

Title: Review of Antibiotics Utilized for the treatment of Sepsis in the ED

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Purpose: Antibiotic therapy should be administered as soon as possible in the treatment of severe sepsis or septic shock. Along with time to administration, the selection of appropriate and effective antibiotic therapy is vital to reducing morbidity and mortality. Following implementation of a sepsis protocol, an evaluation is warranted to determine if initial antibiotic recommendations remain appropriate as pertaining to scope of antimicrobial coverage. The purpose of this study is to conduct a Medication Use Evaluation (MUE), examining the implementation of sepsis protocols in the emergency department (ED) with a focus on the appropriateness of antibiotics selected for empiric therapy.

Methods: This retrospective review will assess data from the past year, specifically evaluating blood culture results in order to determine if the antibiotic recommendations associated with sepsis protocol implementation remain valid or require adjustment to better treat patients presenting with severe sepsis and septic shock. This study will be submitted to the Institutional Review Board for approval and all data will be maintained confidential. Patients treated for sepsis with empiric antibiotic therapy will be identified utilizing data from the antimicrobial stewardship program. Extensive chart review will be performed to collect data including specific antibiotic selection, culture results, and required changes to antibiotic therapy. Results of bacterial sensitivity reports of positive blood cultures and bacterial minimum inhibitory concentrations (MICs) will be compared to the institutions sepsis antibiotic guidelines so-as to evaluate appropriateness and predicted efficacy of empiric antibiotics.

10-271

Title: Evaluation of the treatment of vancomycin-resistant enterococcal urinary tract infections at a community hospital

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Purpose: Vancomycin-resistant enterococcal (VRE) urinary tract infections (UTI) are becoming increasingly common in the hospital setting. Patients with a positive VRE urine culture and no symptoms may be inappropriately treated with antibiotics. In the present study, we aim to describe the appropriateness of definitive antibiotic treatment of VRE-positive UTIs at a community hospital.

Methods: This medication-use evaluation is a single-center, retrospective, chart review of patients ≥ 18 years old admitted to a community hospital, between July 2012 to July 2013, who had a positive urine culture for VRE. Patients with incomplete medical charts, other positive VRE cultures, and follow-up urine cultures will be excluded. Demographic information to be collected includes the patients gender, age, weight, and allergies. Other patient-specific information includes: symptoms of a urinary tract infection, presence of pyuria, presence of a catheter, number of VRE colonies, antibiotic sensitivities, antibiotic selection, duration of therapy, and culture data from other sources. Patients will be classified as one of four categories based on collected information and previously established definitions: asymptomatic abacteriuria, asymptomatic urinary colonization, asymptomatic bacteriuria, and urinary tract infection. Appropriate therapy will be defined as no antibiotic treatment for asymptomatic abacteriuria, asymptomatic urinary colonization, and asymptomatic bacteriuria. Therapy will be deemed appropriate for VRE UTIs based on antibiotic sensitivities and compliance with a pre-specified treatment algorithm. The primary endpoint of the study will be the percentage of patients who received appropriate definitive antibiotic therapy for VRE-positive UTIs. Since this is a retrospective, quality-improvement project, IRB approval and informed consent are not necessary.

10-272

Title: Factors affecting community pharmacy service utilization, patronage motives, and patient satisfaction in Central Appalachia

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Purpose: This study will investigate patients' utilization of community pharmacy services, the motives that ultimately bring them into the pharmacy, and their satisfaction with the community pharmacy services offered in Central Appalachia. The objectives are to determine; a) the patients' knowledge and awareness of the pharmacy services offered; b) the patients' satisfaction with pharmacy services offered; c) the patients' patronage motives for the community pharmacy; and d) the relationships between population characteristics and patients' pharmacy service utilization, patronage motives, and satisfaction.

Methods: This study will be submitted to the Appalachian College of Pharmacy Institutional Review Board for approval. Data will be collected from pharmacy customers visiting multiple independent pharmacies in Central Appalachia in the fall of 2013. Patients will be invited to complete a survey when they come to the pharmacy to pick up their medications. The survey is divided into four sections: patient utilization of pharmacy services, patient satisfaction, patronage motives, and demographical data (e.g. gender, age, chronic disease states). Patients will rate their agreement with selected statements using a 5-point Likert-type scale (1 equals strongly disagree; 5 equals strongly agree). Independent t-tests, Pearson correlation, and analysis of variance will be used to explore the relationships among all study variables.

10-273

Title: Evaluation of intensive care unit sedation practices: before and after publication of the new pain, agitation, and delirium guidelines

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Purpose: The new pain agitation and delirium guidelines recommend mechanically ventilated patients receive analgesia first prior to alternative sedative agents and to use non-benzodiazepines when patients are not at RASS goal. Benzodiazepines are no longer preferred for sedation because of increased length of mechanical ventilation, length of stay, and delirium when compared to non-benzodiazepines such as propofol and dexmedetomidine. The objective of this study is to retrospectively evaluate whether sedation practices are compliant with the new guideline recommendations.

Methods: This study will be approved by the Institutional Review Board. Patients will be included if they are over the age of 18 years old, mechanically ventilated, and admitted to the medical surgical ICU. Current sedation practices from May 2013 to August 2013 will be compared to January 2013 to February 2013. The total number of days that patients are on either opioid analgesic monotherapy, opioid and propofol or opioid and dexmedetomidine and at an average RASS goal of 0 to -2 will be recorded as appropriate therapy. Secondary outcomes include presence of delirium, adverse effects of sedatives, duration of mechanical ventilation, ICU and hospital length of stay, mortality, daily cumulative doses of analgesics and sedation agents, and percentage of patients receiving benzodiazepines. The following data will be collected: patient age, gender, APACHE II score, requirement of vasopressors, documented end stage renal or hepatic disease, reason for admittance to medical surgical ICU, average critical care pain observation tool (CPOT) and total daily sedation cost. Data will be analyzed using inferential and descriptive statistics. Provider documentation and medication administration records will be used to determine appropriate therapy. Data will be recorded without patient identifiers to maintain confidentially.

10-274

Title: Medication use evaluation of intravenous immunoglobulin (IVIg)

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Purpose: Intravenous Immunoglobulin (IVIg) is a blood product used to treat various conditions by providing Immunoglobulin G antibodies (IgG). The FDA approved dosing is based on weight and currently there are no concrete recommendations for overweight or obese patients as the initial studies did not include obese subjects. Based on adverse effects with overdosing of IVIg and the pharmacokinetic properties of the drug, dosing based on adjusted or ideal body weight may protect patients from potential harm and provide cost savings. Therefore, the purpose of this study is to evaluate current dosing patterns of IVIg at a community-based hospital.

Methods: This is a quality improvement investigation and is exempt from review from the institutional review board. This study will be a single-center, retrospective review of patients who received IVIg between October 2010 and August 2013. The electronic medical record will be used to identify patients aged 18 years and over who received at least one dose as an inpatient or in the outpatient infusion clinic. The data to be collected includes: gender, age, weight, height, pertinent past medical history, indication for use, prescribing physician, patient location, number of doses and total dose received, dosing weight utilized, baseline and most recent serum creatinine, and IgG serum levels. The dosing weight and indication for use will be compared to the dosing and indications supported by current literature. The results will be used to determine if establishing a dosing protocol for IVIg based on adjusted body weight would be beneficial to the institution.

10-275

Title: Retrospective evaluation to determine effectiveness of dipeptidyl peptidase-4 (DPP-4) inhibitors relative to timing of therapy

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Purpose: Dipeptidyl peptidase-4 (DPP-4) inhibitors are diabetic agents that specifically block an enzyme responsible for the degradation of endogenous glucagon-like peptide-1 (GLP-1). Patients with type 2 diabetes have been shown to have reduced levels of GLP-1 which may be related to disease severity. Thus, DPP-4 inhibitors may be most effective when used earlier versus later in treatment or disease duration when glycemic response could be minimal due to diminished endogenous GLP-1.The objectives of this study are to determine when DPP-4 inhibitors are being prescribed during the course of therapy and determine initial glycemic response to DPP-4 inhibitor treatment

Methods: This study has been submitted to the Institutional Review Board for approval. A retrospective chart review will take place at a primary care physician practice. A list will be generated from the electronic medical record of all patients taking DPP-4 inhibitors and DPP-4 inhibitor combinations from 06/01/2012 to 06/01/2013. Patients will be selected randomly until 100 patients meet the following criteria: DPP-4 inhibitor therapy was initiated within the searched time frame, a hemoglobin A1c was measured at time of initiation and patient had a follow-up hemoglobin A1c measured within 3 months of initiation or at next provider visit. Patients will be excluded if they are less than 18 years old, pregnant or lactating, or if lost to follow-up. Eligible patient charts will be reviewed for demographic information, renal function, duration of diabetes, diabetic medication use prior to DPP-4 inhibitor in order of initiation, type and dose of DPP-4 inhibitor, hemoglobin A1c and fasting blood glucose at time of DPP-4 inhibitor initiation and at follow-up, and any changes to diabetic regimen following DPP-4 inhibitor initiation. All information will be kept confidential and no identifying patient data will be included in the data abstraction forms.

10-276

Title: Assessment of a mental health residential rehabilitation treatment program as needed medication list in a VA medical center

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Purpose: A Mental Health Residential Rehabilitation Treatment Program (MH RRTP) at a VA Medical Center implemented an as needed (PRN) medication list to aid in the treatment of patients with common ailments. The intent is to reduce unnecessary emergent care services and provide more efficient, cost effective care. The primary objective of this study is to assess the utilization of the PRN medication list. Secondary objectives include evaluating the use of emergency services by patients admitted to the MH RRTP pre- and post-implementation of the PRN medication list, and nurse and patient satisfaction with the PRN medication list.

Methods: This retrospective cohort study will be submitted to the Institutional Review Board for approval and informed consent will be obtained for all surveyed subjects. The computerized patient record system will identify patients who were admitted to the VA Medical Center MH RRTP prior to implementation of the PRN medication list as well as patients admitted post-implementation. The following data will be collected: age, MH RRTP admit date, MH RRTP discharge date, all emergent care visits with respective chief complaint, medications administered and subsequent hospital admission. Also, the administration totals of each medication used on the PRN medication list will be recorded for each patient as applicable. The average number of times the PRN medication list was utilized per patient will be calculated along with the number of emergent care visits that occurred pre- and post-implementation. In order to assess user satisfaction, a questionnaire will be distributed to MH RRTP staff and residents.

10-277

Title: The Effect of Metformin on Incidence of Lactic Acidosis: A Single Center Retrospective Review

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Purpose: The purpose of this study is to evaluate the use of metformin in diabetic patients at a single site and to develop recommendations based on patients' renal function. Although the FDA continues to recommend the use of serum creatinine as a contraindication to metformin therapy, the drug has been shown to be safe in patients with serum creatinines above the recommended threshold for discontinuation of therapy. As the benefits of metformin have been well described, it should be continued in patients if the risk of lactic acidosis is negligible.

Methods: Retrospective chart review of type 2 diabetic patients. A cohort of these patients taking metformin will be matched with a similar set of diabetic patients not taking metformin, and the incidence of lactic acidosis in these groups will be compared. Additionally, type 2 diabetic patients taking metformin will be stratified based on their serum creatinine, using the FDA recommended thresholds for therapy discontinuation (≥1.5 for males compared to <1.5 and ≥1.4 for females compared to <1.4). The incidence of lactic acidosis in these groups will be compared. Patient data to be collected will include: serum creatinine, history of metformin use, age, sex, weight, BMI, serum lactate, serum pH, anion gap, and A1c. Inclusion criteria are type 2 diabetic patients searchable through the study site's electronic medical record. Exclusion criteria are patients with a history of type 1 diabetes, active malignancy, or HIV and patients who present with lactic acidosis as well as either of the following in the same admission: grand mal seizure or shock.

10-278

Title: Micafungin pediatric weight based dosing for prophylaxis and treatment of invasive fungal infections

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Purpose: Micafungin, an echinocandin, has been shown to be a safe and effective alternative for systemic fungal infections in the pediatric population that are refractory to first line antifungal agents. The objectives of this study are to determine weight based doses of micafungin used for both prophylaxis and treatment of invasive fungal infections at a pediatric institution and to evaluate the efficacy of such dosing in comparison to the published literature.

Methods: This study will be submitted to the Institutional Review Board for approval. An electronic medical record will identify pediatric patients with at least one administered dose of micafungin for either prophylaxis or treatment of an invasive fungal infection. The following data may be collected: patient age, ordered dose, number of doses administered, length of treatment, nursing unit, and adverse drug reactions. If available, fungal culture and susceptibilities, diagnostic imaging, documented fungal infections, dose changes, other antifungal drugs administered, and patient comorbidities may be recorded. Provider documentation may be utilized to determine rationale for use and immune status of the patient. Basic descriptive statistics of weight based doses will be utilized. A literature review will be performed. Retrospective evaluation of data and prospective monitoring of pediatric patients receiving micafungin will be used to perform a drug use evaluation, to determine the weight based dosing relative to indication for use and patient age, and to assess the efficacy of such dosing practices at a pediatric institution.

10-279

Title: Is there a correlation between angiotensin converting enzyme inhibitor and angiotensin receptor blocker adherence in patients with type 2 diabetes and decreased healthcare utilization

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Purpose: Patients with type 2 diabetes and pre-diabetes often present with hypertension. Current guidelines recommend patients with diabetes and hypertension be treated with an angiotensin converting enzyme (ACE) inhibitor or an angiotensin receptor blocker (ARB). Use of these medications has been shown to reduce macrovascular and microvascular complications in this population. Increased patient adherence to medications has been shown to decrease patient hospitalization rates. There is less evidence that increased patient adherence results in lower overall healthcare utilization. This study examines if increased adherence to ACE inhibitors and/or ARBs in patients with type 2 diabetes results in decreased healthcare utilization.

Methods: This is a retrospective cohort study of adult patients with type 2 diabetes. Patients with a diagnosis of diabetes in the previous 12 months and membership in the clinic's affiliated health plan throughout the study period will be included. We will examine patients from January 2004 to January 2014. More than 3,500 patients meet the inclusion criteria. Patients' healthcare utilization rates will be compared with adherence rates to ACE inhibitors or ARBs. Baseline demographics, concomitant medications, duration of diabetes, and comorbidities will be extracted from the electronic health record. Healthcare utilization rates will be extracted from the health plan's database. Medication adherence rates will be calculated from pharmacy claims data using a proportion of days covered (PDC) calculation. Proportion of days covered will be reported continuously (0%-100% PDC.) We will then assess if a correlation exists between increased adherence and lower healthcare utilization. Sub-analyses will be performed based on baseline characteristics of age, duration of diabetes, Charlson comorbidity index, and concomitant medication usage. This study will be submitted to the Institutional Review Board for approval.

10-280

Title: Sustained virologic responses and safety of triple antiviral therapies for the treatment of hepatitis C in a veteran population

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Purpose: The addition of direct-acting antivirals (boceprevir or telaprevir) to pegylated interferon and ribavirin for the treatment of chronic hepatitis C genotype 1 has been proven to improve sustained virologic responses. These agents have also led to tolerability issues and increased rates of hematologic adverse effects. These complications can lead to required antiviral dose reductions and/or supportive care. The objective of this study is to evaluate efficacy and safety parameters of triple antiviral therapy in veterans treated in routine practice.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify patients who have been treated for hepatitis C with triple antiviral therapy after September 1st, 2011. Patients will be included in the study if they have a documented diagnosis of HCV genotype 1, and were initiated with pegylated interferon/ribavirin and boceprevir or telaprevir treatment. The following data will be collected: patient age, weight, viral load, complete blood count with differential, reported adverse drug events, documented antiviral dose reductions, and prescribed supportive care medications. All data will be recorded without patient identifiers to maintain confidentiality. The primary outcome of this study will be the rate of achieving sustained viral response, defined as aviremia 24 weeks after completion of antiviral therapy.

10-281

Title: Culture of change: implementation of pharmacist culture review and follow-up for patients discharged from trauma and emergency center and urgent care departments

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Purpose: Pharmacists play valuable roles in antimicrobial stewardship programs because of their unique clinical knowledge of medications. American Society of Health-System Pharmacists published guidelines listing essential direct patient care roles for emergency medicine pharmacists (EMPs); including involvement in medication selection and prescribing. The purpose of this study is to develop and implement a pharmacist standard operating procedure for review and follow-up of culture results for patients discharged from the Trauma and Emergency (TEC) and Urgent Care (UC) departments and to examine the outcomes of EMP involvement in antimicrobial stewardship activities in these patients.

Methods: Prior to data collection, approval will be obtained from the Institutional Review Board for retrospective chart review and prospective data collection. Eligible patients include all patients discharged from TEC/UC with positive cultures. Patients admitted to the hospital from TEC/UC will be excluded from statistical analysis. A standard operating procedure will be implemented to establish pharmacist review of all cultures collected from this population and enable pharmacists to change therapy (per protocol) for two sample types; urine and throat swabs. This study will examine differences in clinical outcomes and quality measures between patients before and after pharmacist culture review. Retrospective analysis of patients will be matched to the same time frame as prospective data collection. The data to be collected includes the following: age, sex, antibiotic allergies, culture source, time from positive culture to change in therapy if indicated, number of changes made from empiric therapy, number of patients readmitted to TEC/UC within 96 hours for infection related concerns and appropriateness of antibiotic selection (based on renal/hepatic function, pregnancy status, medication allergies). Time from positive culture result to change in therapy will be defined as the time a prescription for alternate therapy was called in to the patients preferred pharmacy.

10-282

Title: Impact of pharmacist provided discharge medication reconciliation and counseling on medication related patient satisfaction scores and prescription capture rate: a single center review

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Purpose: Legislative changes in healthcare have emphasized the quality of care provided to patients and highlighted the importance of improved transitions in care. Research suggests that approximately 20 percent of patients do not fill discharge prescriptions, and post discharge non adherence places patients at greater risk of negative outcomes. The primary objective is to improve the percentage of patients who obtain prescriptions prior to discharge from a tertiary care hospital. Secondary objectives include describing the impact of pharmacist provided discharge medication counseling on medication related Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) scores and describing the financial impact.

Methods: This project has been identified as a quality improvement initiative and thus exempt from review by the Institutional Review Board. Patients discharged from the general internal medicine unit of a tertiary care hospital will be the pilot population for this project. The initial phase will focus on obtaining outpatient pharmacy baseline prescription capture rate data and medication related HCAHPS scores for patients discharged from the intervention unit. The next phase will involve a ten week pilot of discharge medication reconciliation and education performed by pharmacy associates. Prior to discharge, a pharmacy associate will assess medication therapy, provide recommendations to prescribers as necessary, perform patient education, and determine if patients would prefer to have their discharge prescriptions filled with the outpatient pharmacy. Pharmacy associates will serve as the liaison between patients, the outpatient pharmacy, and providers to optimize communication and pharmacy discharge services. Measures of success include improvement in prescription capture rate and improvement in medication related HCAHPS scores. Resource utilization will also be measured to assess financial impact.

10-283

Title: Investigation of pharmacist evaluation and intervention to optimize the appropriateness of dual antiplatelet therapy in patients with acute coronary syndrome or non-cardioembolic ischemic stroke

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Purpose: Dual antiplatelet therapy (DAPT) is accepted by all major cardiology societies as the preferred pharmacological approach for the prevention of stent thrombosis after stent implantation for the treatment of acute coronary syndrome (ACS). The recommended DAPT treatment duration is 12 months, with evidence lacking to support longer-term use. Additionally, DAPT is sometimes initiated for secondary prevention of non-cardioembolic ischemic stroke. However, CHEST guidelines recommend single antiplatelet therapy over a DAPT approach. The objective of this study is to develop and implement a process to evaluate and optimize the therapeutic appropriateness of DAPT.

Methods: Prior to commencement, this study will be submitted to the institutional review board for approval. The computerized record system will be used to identify patients with a documented diagnosis of non-cardioembolic ischemic stroke or coronary artery disease and active prescription orders for aspirin and clopidogrel. Patients will be excluded from this study if on DAPT for any other indication (i.e. peripheral artery disease, atrial fibrillation, etc.) or if one or more of the following are present: coronary stent placement or coronary artery bypass grafting within the previous 12 months, a history of stent thrombosis, or a complex anatomy of stent placement. A pharmacist will perform chart review of all patients meeting the study inclusion/exclusion criteria to evaluate DAPT appropriateness. For all eligible patients identified as potentially receiving inappropriate DAPT (on DAPT greater than 12 months), a progress note recommending DAPT de-escalation will be placed in the electronic medical record. Retrospective review of the medical record will be conducted to determine the percentage of DAPT de-escalation recommendations accepted.

10-284

Title: Comparison of fixed versus patient-specific dosing of vancomycin for patients receiving intermittent hemodialysis

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Purpose: There is limited literature to provide evidence-based guidance for dosing vancomycin for patients receiving intermittent hemodialysis. The goal of this study is to determine whether a standard dose after hemodialysis for all patients or a more patient-specific dose based on pharmacokinetic parameters more consistently achieves therapeutic serum levels.

Methods: This is a retrospective review that will be submitted for exemption to the Institutional Review Board. Patient charts and hospital electronic health records will be used to identify patients who meet the following inclusion criteria: patients diagnosed with end stage renal disease receiving intermittent hemodialysis, over 18 years of age, producing less than 50 milliliters per day of urine, and a course of hemodialysis that does not exceed four hours but is a minimum of three hours. Exclusion criteria for this review include patients receiving continuous renal replacement therapy, peritoneal dialysis, or non-intermittent hemodialysis, under 18 years of age, diagnosed with acute renal failure, producing greater than 50 milliliters per day of urine, being treated for cellulitis, or a course of hemodialysis less than three hours or greater than four hours. An equal number of patients managed by each protocol will be reviewed. Data collected from patients will include age, weight, length of stay, blood cultures, length of hemodialysis course, and serum vancomycin levels. Upon completion of data collection, the data will be analyzed for clinical and statistical differences.

10-285

Title: Evaluation of a pharmacist-nurse managed anticoagulation service protocol following total hip and knee arthroplasty with a narrow INR goal

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Purpose: The American Academy of Orthopedic Surgeons and American College of Chest Physician guidelines recommend anticoagulation following total hip and knee surgery due to the high risk for venous thromboembolism (VTE). Warfarin is a convenient option since it can be taken by mouth and reversed if needed, but requires close monitoring due to a narrow therapeutic index. The objective of this study is to compare time in therapeutic range and percentage of INRs within goal by a pharmacist-nurse managed anticoagulation service versus usual care with an INR goal of 2-2.5.

Methods: A retrospective analysis will be performed on patients who underwent total hip or knee arthroplasty and were managed by a pharmacist-nurse run anticoagulation service. This group will be compared to patients whose anticoagulation was overseen by their orthopedic provider. The following data will be collected: patient age, gender, ethnicity, type of surgery, length of hospital stay, outpatient INR measurements, interacting medications, adverse events within 5 weeks of surgery, and history of bleeding disorder, liver disease, or VTE. Demographic information will be reviewed for homogeneity. The percentage of INR values and time within goal range of 2 to 2.5 will be analyzed between comparator groups. Incidence of reported adverse events related to major bleeding and VTE will be assessed. In addition, measures of anticoagulation control and INR characteristics will be evaluated. All recorded data will be de-identified and stored in a secure electronic format. This study will be submitted to the Clinical Research Steering Committee and Institutional Review Board for approval.

10-286

Title: Prescribing of antimicrobial agents and culture follow-up in the emergency department: a pharmacist review

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Purpose: Antimicrobial resistance is considered one of the most concerning issues facing today's world and can be prevented or slowed down through appropriate prescribing. The primary objective of this study is to assess physician-based culture follow-up in the emergency department (ED) and determine intervention rates on inappropriate antimicrobial therapy. The secondary objective is to determine readmission rates of physician-based culture follow-up. Such findings could potentially justify the need for antimicrobial stewardship in the ED setting.

Methods: This study will be submitted to the Institutional Review Board for approval. The study will consist of a retrospective chart review of ED patients who received antimicrobial therapy upon discharge prior to final culture results during the time period of January 1st, 2013 to June 30th, 2013. Review of the patient medical record will involve documentation of diagnosis, empiric therapy, microbiological and laboratory results, time to culture review and follow-up, and time to appropriate therapy (if initial therapy was inappropriate). If therapy was deemed to be inappropriate based on culture results, it will then be determined if the physician intervened by modifying the antimicrobial regimen (medication, dose, frequency, or duration). In addition to assessing intervention rates, the information previously mentioned will be used to determine re-admission rates based on a chief compliant that is associated with the initial documented infection within 96 hours of ED presentation.

10-287

Title: Use of secure messaging as a tool in the delivery of anticoagulation care

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Purpose: My HealtheVet is a patient accessible web portal within the Veterans Health Administration (VHA) providing patients to access their own medical records online. Secure messaging was then added allowing for web-based communication between patients and providers. In October 2012, secure messaging was initiated as a means of providing patient care within the anticoagulation clinic. The purpose of this evaluation was to determine the demographics of patients enrolled in secure messaging for anticoagulation management, qualify how secure messaging was used in anticoagulation management, and measure the satisfaction of providers and patients utilizing the secure messaging system for anticoagulation management.

Methods: The research and development committee reviewed and approved this evaluation. Patients were identified from a generated report including all patients enrolled in the secure messaging anticoagulation service between October 1, 2012 and March 1, 2013. All patients were sent an invitational letter and program information form explaining the program evaluation via the secure messaging portal. Patients willing to participate in the evaluation were then contacted via telephone to complete the satisfaction survey. Providers and program service assistants were also asked to complete satisfaction surveys. Data collected from the retrospective review included age, gender, length of time on current dose regimen, total time on warfarin, previous use of secure messaging for other services, distance of travel to the facility, and number of patients who returned to traditional anticoagulation clinic. Data collected from review of secure messaging history included the number and topic of anticoagulation messages sent in secure messaging.

Results: A total of 15 patients initially completed enrollment to secure messaging for anticoagulation management between October 1, 2012 and March 1, 2013. Of these, 14 patients were eligible for participation. A total of 58 visits were conducted via secure messaging with the mean number per patient of 4 (standard deviation of 1.57) visits. Ninety-two patient-initiated messages were received with the most common message topics related to usual appointment information (51 percent) and follow-up appointments (25 percent). Thirteen patients in addition to two providers responded to the survey where 100 percent agreed or strongly agreed secure messaging is a satisfactory way to send and receive answers to non-urgent questions about warfarin, lab results, warfarin dosing instructions, and follow-up appointment information.

Conclusion: Patients and providers felt secure messaging is a satisfactory option for communication of routine anticoagulation monitoring which provides patients greater flexibility and less interruption to their usual daily schedule. Further studies will need to be performed to determine the impact on clinical outcomes for those patients choosing this method of communication for anticoagulation management.

10-288

Title: Analysis of the efficacy and safety of U-500 insulin in patients transitioned from conventional insulin therapy

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Purpose: U500 insulin offers several benefits compared to conventional insulin for patients with severe insulin resistance. Large amounts of insulin can be administered with fewer injections and less volume, leading to less discomfort and potentially more reliable absorption. A potential risk however, is that hypoglycemia may develop 18 to 24 hours after the injection. There are limited data on diabetic outcomes in patients transitioned from conventional insulin therapy to U500 insulin. The objective of the study was to assess the efficacy and safety of U500 insulin in veteran patients transitioned from conventional insulin therapy.

Methods: The study was approved by the institutional review board. A retrospective chart review was performed on 107 patients with type 2 diabetes and severe insulin resistance with a duration of U500 insulin therapy of at least 3 months. The primary outcome of the study was change in A1c after transition to U500 insulin. Secondary outcomes included change in daily insulin dose, number of daily insulin injections, frequency of hypoglycemic episodes, body weight, and emergency department visits. Data for the A1c and frequency of hypoglycemia were collected every 3 months for 2 years prior to transition and up to 5 years after transition to U500 insulin. Interrupted time series analysis and linear regression were used to analyze A1c and frequency of hypoglycemia. Paired t-test was used to analyze change from baseline to one year in daily insulin dose, daily insulin injections, and body weight.

Results: The average duration of U500 insulin therapy at the time of study initiation was 2.2 years. The A1c decreased by an average of 0.9 percent within 3 months after transition to U500 insulin (p less than 0.001). The decrease in A1c appeared to be sustained for up to 5 years. The frequency of hypoglycemia increased by an average of 0.4 episodes per week within 3 months after transition (p less than 0.001). This frequency appeared to decrease on subsequent follow-up and stabilized for up to 2 years. At one year after transition to U500 insulin, the average number of daily insulin injections decreased by 1.9 injections (p less than 0.001), daily insulin dose increased by 52 units (p less than 0.001), and body weight increased by 4.0 lbs (p less than 0.001).

Conclusion: Transition to U500 insulin from conventional insulin therapy was found to be associated with improved glycemic control and an initial increase in hypoglycemia, which appeared to decrease and stabilize over time. This study has the largest sample size compared to other published studies

investigating U500 insulin. Overall, the data demonstrate that U500 insulin is effective and safe in patients with severe insulin resistance for up to 5 years.

10-289

Title: Cost analysis of bivalirudin versus heparin in patients undergoing percutaneous coronary intervention

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Purpose: The use of bivalirudin has been associated with lower risk of bleeding in patients who undergo percutaneous coronary intervention (PCI) when compared to unfractionated heparin (UFH). Even though a small reduction in the risk of bleeding is seen with bivalirudin, we are unsure if this is associated with a lower cost to our healthcare system. The purpose of this study is to compare the costs of therapy between bivalirudin and UFH in patients undergoing PCI from the hospital perspective.

Methods: This is a retrospective cohort study of patients who underwent PCI over a 6 month period. We will be evaluating patients who received either bivalirudin or UFH during PCI. The primary endpoint is to evaluate the total cost of care to the health system. The secondary endpoints are the length of stay, 30 day readmission rate, and the number of transfusions. We will conduct analyses on three predefined subgroups: 1) patients undergoing elective PCI, 2) unstable patients who are biomarker negative, 3) unstable patients who are biomarker positive. We will be collecting data for the cost of therapy and reimbursement. In addition, the following patient data will be collected: occurrence of bleeding, bleeding severity (rated using the Thrombolysis in Myocardial Infarction (TIMI) scale), PCI access site (femoral vs radial), type of stent placed, premedications, the dose of anticoagulant, and resulting activated clotting time. This study will be submitted to the Institutional Review Board for approval.

10-290

Title: Bridging the gap in current practice versus clinical guidelines for antiepileptic medication use in the inpatient setting

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Purpose: Due to variances in pharmacokinetics, potential severe adverse effects, and a variability in prescribing habits amongst clinicians, antiepileptic drugs (AEDs), including carbamazepine, ethosuximide, fosphenytoin, lamotrigine, phenytoin, phenobarbital, topiramate, and valproate, merit additional pharmacotherapy management and pharmacist intervention. The objective of this study is to compare the utilization and monitoring of antiepileptic drugs in an inpatient setting to the best practice guidelines. Identification of gaps in safety, appropriate use, and clinical monitoring may elucidate areas where an AED pharmacy service could bridge guidelines and practice.

Methods: Pending Institutional Review Board approval, data collection will be conducted using the health systems electronic medical record to identify adult patients with an antiepileptic medication used for the treatment of seizures or seizure prophylaxis. AED therapy and corresponding laboratory data will be utilized to compare current inpatient practice to clinical guidelines for antiepileptic medication use. Specifically, medication dosing, drug serum levels, adverse effects and/or toxicity, breakthrough seizures, and alterations in AED regimen will be evaluated. This retrospective review will provide a site-specific assessment of the use of antiepileptic medications, potentially identifying any gaps in practice which could affect patient safety, seizure control, and clinical outcomes. Anticipated data collection will include: patient demographic information, inpatient medications, home and discharge AED regimen, and serum AED levels. Additionally, relevant laboratory values pertaining to drug metabolism and clearance will be collected. Drug utilization reports, provider notes, and additional documentation pertaining to AED therapy and seizure status will be analyzed. A task force consisting of four pharmacists and a neurologist will assess the collected data and compare current AED management to predefined best practice guidelines to define what pharmacists can do to optimize AED management in the inpatient setting.

10-291

Title: Lean six sigma approach to improving timely procedural medication availability for inpatient hemodialysis patients

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Purpose: It has been identified at a tertiary care hospital that pharmacy is not meeting nursing expectations for delivery of patient specific medications for hemodialysis. Lack of communication regarding scheduling leads to missing medications and increased work for pharmacy and nursing staff. Despite an automated dispensing machine on the unit, pharmacy dispenses certain patient specific medications. Opportunity for process improvement and standardization to allow for medications to be available at the time of dialysis exists. The primary objective is to improve medication availability at the time of dialysis. The secondary objectives include standardizing the process and improving provider and nursing satisfaction.

Methods: This project has been identified as a quality improvement initiative and thus is exempt from review by the Institutional Review Board. A Lean Six Sigma approach will be taken to help drive process improvement. The entire workflow will be evaluated using process flow mapping to identify areas of opportunity. Baseline data will be collected to assess medication availability at the time of need and the amount of rework and waste due to missing doses. Data will be collected regarding customer service with the goal to improve satisfaction scores regarding pharmacy services. After the data is collected, it will be evaluated to identify areas of opportunity and key stakeholders from the pharmacy, nephrology, and the hemodialysis unit will be engaged to determine a plan for improvement. After the plan is implemented, data will be collected and analyzed to ascertain the impact of a standardized workflow on timely delivery of medications to hemodialysis, customer service, and amount of rework and waste due to missing medications.

10-292

Title: Increasing clinical pharmacist productivity through implementation of a targeted workflow tool within the electronic medical record

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Purpose: In an increasingly complex health care environment, with pharmacists responsible for over 5,000 drug products, development of enhanced tools and processes are paramount to meet the growing demands of patient care. The American Society of Health-System Pharmacists (ASHP) Section on Pharmacy Informatics and Technology created a vision statement on technology-enabled practice that foresees utilization of computer-based triage of patient data to provide triggers that require pharmacist intervention. The purpose of this project is to develop a tool within the electronic health record (EHR) to increase the efficiency of the clinical pharmacist in delivering patient-centered medication management.

Methods: An IRB exemption will be pursued for this project from the institution's research committee as patient-specific data will not be collected. Members of the hospital pharmacy's informatics team will build several modules in the EHR for use in clinical monitoring of patients. Each module will display the necessary patient-specific information required for the clinical decision making of defined clinical operations. Examples of these modules include: intravenous to oral medication administration route conversions, dose adjustments based on renal function, dose adjustments based on hepatic function, pharmacokinetic dosing, warfarin management, appropriate venous thromboembolism prophylaxis, and assurance of stress ulcer prophylaxis when indicated. Internal benchmarking will be measured though time studies, using the mean time required for the pharmacist to perform each module task in a set of test environments that compare pre-module to post-module data on medication management. This tool will then be implemented into the institution's electronic health record to drive clinical pharmacist workflow.

10-293

Title: Retrospective evaluation of spironolactone versus eplerenone on potassium homeostasis and renal function

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Purpose: The mineralocorticoid receptor antagonists (MRAs) spironolactone and eplerenone are used for resistant hypertension and in a broad spectrum of patients with heart failure. Despite strong clinical trial evidence, the use of MRAs is limited by the perceived risk of hyperkalemia. Differences in pharmacokinetics between spironolactone and eplerenone may result in differing rates of hyperkalemia, however direct comparative trials evaluating variation in risk are lacking. This retrospective review aimed to assess the differences between spironolactone (SP) and eplerenone (EP) on potassium (K) homeostasis and renal function following dose titration.

Methods: A retrospective chart review was completed in 78 veteran patients (39 SP, 39 EP) with an active MRA prescription between January 2007 and August 2012. Subjects were matched by age, baseline blood pressure for MRAs prescribed for hypertension, and ejection fraction for MRAs prescribed for heart failure. The primary outcomes were absolute change in serum K levels and estimated glomerular filtration rate (eGFR) between baseline and the first lab monitoring values. Secondary outcomes were frequency of hyperkalemia (defined as K greater than 5.0, 5.5, or 6.0 mEq/L), worsening renal function (defined as a 30 percent decline in eGFR), and incidence of discontinuation of either agent due to hyperkalemia or renal dysfunction.

Results: Baseline characteristics did not differ between SP and EP except weight (249 plus or minus 58 pounds versus 214 plus or minus 40 pounds, p equals 0.003). Baseline potassium levels and eGFR were similar between groups. Mean MRA doses were 31.1 plus or minus 22.2 mg for SP and 35.8 plus or minus 19.9 mg for EP. Following dose titration, there was a significantly larger mean increase in serum potassium with spironolactone compared to eplerenone (0.56 mEq/L and 0.092 mEq/L respectively, p less than 0.0001 adjusted for baseline K, eGFR, and history of diabetes). Spironolactone use was associated with a decline in eGFR of 9.9 percent during the titration period compared to 1.1 percent with eplerenone (adjusted p equals 0.03). Hyperkalemia (K greater than 5.5 mEq/L) or discontinuation due to hyperkalemia occurred more frequently with SP compared with EP (7 versus zero cases, p equals 0.01)

Conclusion: Spironolactone appears to be associated with a greater increase in serum potassium and worsening renal function compared to eplerenone. These hypothesis-generating data suggest that discontinuation of one MRA due to hyperkalemia or renal dysfunction should not preclude the use of the other, as risk may differ between MRAs.

10-294

Title: Retrospective review of the utilization of oral chemotherapy agents in the treatment of metastatic renal cell carcinoma in an ambulatory care setting

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Purpose: Treatment options for metastatic renal cell carcinoma (mRCC) have evolved from cytokine therapy (interferon-alfa and interleukin) to oral chemotherapy. Sunitinib, sorafenib, pazopanib, axitinib, and everolimus are oral agents approved for treatment of mRCC. Diverse prescribing patterns and high drug price warrant review of their utilization. Prescribing patterns are affected by many factors including adverse effects, disease progression, and organ function. The purpose of this study is to analyze the utilization of oral chemotherapy agents in the setting of mRCC, including duration of therapy, sequence of therapy, and reasons for dose reduction or discontinuation.

Methods: This retrospective study will include patients 18 years of age and older with a diagnosis of mRCC with clear cell histology and have been prescribed an oral chemotherapy agent by a clinic oncologist between January 2006 to September 2013. During this timeframe, 138 unique patients meet this inclusion criteria. Prior to initiation of this retrospective study, a proposal will be submitted to the Institutional Review Board for approval. Data to be collected will include number of patients on each of the oral chemotherapy agents, date of diagnosis of mRCC, date of initiation of oral chemotherapy, date of death if applicable, date and reason for dose reduction or discontinuation, and sequence of therapy (e.g. switched from one oral agent to another oral agent or switching from a cytokine agent to an oral agent). Descriptive statistics will be used to analyze the data.

10-295

Title: Major adverse outcomes associated with the use of non-steroidal anti-inflammatory drugs (NSAIDS) in a rural health system

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Purpose: It is well established non-steroidal anti-inflammatory drugs (NSAIDS) are associated with major cardiovascular events, gastrointestinal bleeding, and acute kidney injury. The purpose of this study is to develop or employ guidelines for use of NSAIDS in at-risk individuals using local data as compelling evidence for change. The objective of this study is to correlate NSAID use with major adverse outcomes collated by known risk factors.

Methods: This retrospective chart review will be submitted to the institution's pharmacy and therapeutics committee for approval. Investigators will review electronic medical records of adult patients to identify those receiving two or more prescriptions for NSAIDS from 2009 through 2013. For patients identified in this way, investigators will calculate a dose density by dividing the number of doses of NSAIDS prescribed by the time period over which they were prescribed. Patients determined to be regular NSAID users by a predefined dose density limit will be included in the final analysis. Information regarding major cardiovascular events, gastrointestinal bleeding, and acute kidney injury will be gathered for included patients. Investigators will also identify and document known risk factors for the three adverse outcomes of interest. Patients will then be placed in up to three subgroups according to their risk for a corresponding outcome. Investigators will analyze the number of risk factors, type of risk factor, NSAID used, and duration of therapy in relation to the patient's actual outcome.

10-296

Title: Utilization of clinical and laboratory parameters to guide serum gentamicin monitoring in neonatal patients

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Purpose: A retrospective review was published in August of 2012 in the American Journal of Health System Pharmacy that identified serum creatinine, urine output, and shock requiring vasopressor therapy as three potential risk factors for out-of-range gentamicin levels in neonatal patients. The purpose of this retrospective analysis is to determine if the absence of one, two, or all of these risk factors is predictive of therapeutic gentamicin levels in patients admitted to the neonatal intensive care unit. Results of this analysis may impact criteria for obtaining serum gentamicin levels in neonatal patients per protocol at the study site in the future.

Methods: This retrospective review will be submitted to the Institutional Review Board for exemption. Patient-specific gentamicin monitoring cards will be used to identify eligible patients. The following data will be collected from the electronic health record and gentamicin monitoring cards: demographic information, gentamicin dose and interval, serum creatinine, urine output, vasopressor use, and gentamicin peak and trough levels. No patient identifiers will be recorded, and confidentiality will be maintained throughout the review. Patients eligible for inclusion in this review will have been maintained on gentamicin therapy long enough to require serum gentamicin levels to be drawn per pharmacy protocol. Patients previously treated with gentamicin or dosed outside of protocol parameters will be excluded. Patients will be sorted into one of four groups according to the number of the following risk factors present: serum creatinine greater than 0.8mg/dL, urine output less than 1mL/kg/hr, and vasopressor use concurrent with gentamicin. Groups will be compared for incidence of gentamicin levels outside of target range.

10-297

Title: Assessment of the impact of drug-drug interactions and risk factors on the QTc interval in patients on dronedarone

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Purpose: Acquired Long QT Syndrome (LQTS) is most commonly drug induced, with antiarrhythmics being the most common class of drugs implicated. Many of these patients have underlying risk factors for QTc prolongation (e.g., abnormal electrolytes) and are taking non-cardiac medications that have a drug-drug interaction with the antiarrhythmic which may amplify the risk of a potentially fatal arrhythmia, Torsade de Pointes (TdP). The purpose of this study is to determine the impact of drug-drug interactions and risk factors on the QTc interval in patients on dronedarone and to determine if QTc prolongation was associated with TdP and/or sudden cardiac arrest.

Methods: This retrospective study will be submitted to the Institutional Review Board prior to implementation. Up to 1500 patients at least 18 years of age who have been prescribed dronedarone for at least three consecutive months by a clinic physician will be included in this study. Patients with a baseline ECG and at least one additional ECG during dronedarone therapy will be included in this study. Data will be assessed by gender. All data assessed in this study, including risk factors for QTc prolongation and drug-drug interactions, will be obtained electronically. A manual chart review will be performed on 10% of the data to ensure validity. The primary outcome of this study is to determine if there is a change in the QTc interval(s) during dronedarone therapy compared to baseline QTc interval prior to dronedarone therapy initiation. Risk factors for QTc prolongation and drug-drug interactions with dronedarone will be assessed on dates an ECG was obtained. An association of a prolonged QTc interval with TdP and/or sudden cardiac arrest will also be assessed. The secondary outcome is to determine how often an ECG is obtained throughout dronedarone therapy. Statistical analysis will be performed by a biostatistician.

10-298

Title: Implementation of a drug induced QTc prolongation monitoring and pharmacist intervention program in a tertiary care setting

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Purpose: Drug induced QTc prolongation increases the risk of a potentially fatal polymorphic ventricular tachyarrhythmia commonly known as torsades de pointes. With proper monitoring of the QTc interval and patient specific risk factors along with medication management, the risk for torsades de pointes can be reduced. The primary objective is to implement a standardized pharmacy screening and monitoring program for drug induced QTc prolongation. The secondary objectives include evaluating pharmacist interventions relating to medication management, and quantifying the frequency of QTc drug interactions.

Methods: This project has been identified as a quality improvement initiative, and thus is exempt from review by the Institutional Review Board. Clinical management software will identify patients at risk for drug induced QTc prolongation. The following data will be collected: patient age, gender, pertinent labs, heart rate, history of arrhythmia, history of congestive heart failure, baseline QTc, and current QTc prolonging medications. An educational competency will be developed and presented as a guide for pharmacists in screening, monitoring, and intervening. A quiz will be administered to ensure competency. Pharmacists will evaluate all medications prescribed to at risk patients. Utilizing a site specific drug induced QTc prolongation reference, pharmacists will determine the risk of drug interactions and determine the appropriate action. To determine pharmacist impact on the monitoring of the QTc interval and interventions in medication management, documentation of interventions relating to QTc prolongation will be assessed prior to and post implementation of the drug induced QTc prolongation monitoring program.

10-299

Title: Clinical impact of FDA guidelines for simvastatin drug interactions

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Purpose: In June 2011, the Food and Drug Administration (FDA) released new recommendations regarding the maximum dose of simvastatin when used in combination with verapamil and diltiazem and new contraindication for gemfibrozil use with simvastatin. These new simvastatin labeling changes were based on increased risks of myopathy and rhabdomyolysis in patients on higher doses of simvastatin and verapamil or diltiazem and concomitant use with gemfibrozil. The purpose of this study was to evaluate the mean change in low-density lipoprotein (LDL) cholesterol after dose reduction of simvastatin or substitution in response to new FDA recommendations.

Methods: This study was approved by the institutional review board. A retrospective chart review was conducted for patients at a Veterans Affairs facility who were prescribed simvastatin in combination with verapamil, diltiazem or gemfibrozil prior to June 1, 2011. Eligible patients were chosen for review via computer generated randomization. Patients were excluded if any of the medications (simvastatin, verapamil, diltiazem or gemfibrozil) were not filled in the 4 months prior to pre and post change, if appropriate lipid panels were not available or if no changes were made to therapy. The primary endpoint was mean LDL change following therapy alteration in each treatment group. Secondary endpoints included LDL goal achievement before and after therapy change, changes in high-density lipoprotein (HDL) and triglycerides (TG), and identification of common interventions made following the new clinical recommendations.

Results: Four hundred twenty-five charts were reviewed, with 239 eligible for inclusion. In the calcium channel blocker (CCB) group, the intervention in 79 percent of patients was conversion from simvastatin to pravastatin. Post conversion, these patients were on overall lower mean equivalent statin dose. The mean pre-simvastatin dose was 48 mg per day and post-conversion to pravastatin, the mean equivalent simvastatin dose was 37 mg per day. These patients demonstrated an increase in LDL (p equals 0.0066), however there was no significant change in LDL goal achievement (p equals 0.54) following therapy change from simvastatin to mean lower equivalent pravastatin dose. For patients in the CCB group with other interventions, there was no difference in mean LDL change or LDL goal achievement following interventions. Seventy-five percent of patients on gemfibrozil and simvastatin had their simvastatin discontinued without further intervention. Patients previously on gemfibrozil and simvastatin demonstrated a decrease in mean LDL by 5.8 mg/dL (p equals 0.016) and mean increase in TG by 34.2 mg/dL (p equals 0.016) following medication changes. There was no statistically significant change observed for LDL goal achievement following therapy changes in this group.

Conclusion: Patients were able to maintain LDL goals on a lower statin regimen in those who were previously on a CCB in combination with simvastatin. In addition, patients were able to achieve and maintain LDL goals following medication changes in the gemfibrozil group, with majority of patients having their gemfibrozil discontinued. These patients also noted an increase in TG, however the clinical significance was not evaluated.

10-300

Title: Evaluation of quetiapine utilization to abate off label prescribing for insomnia (EQUALPI)

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Purpose: In 2004, The American Psychiatric Association and the American Diabetes Association developed a consensus position that addressed and confirmed the relationship between second-generation antipsychotics (SGAs) and obesity, diabetes and dyslipidemia. The primary objective of this study is to decrease the use of quetiapine (an SGA) for the non-FDA labeled treatment of insomnia in outpatients. The secondary objective is to evaluate metabolic syndrome risk factors (i.e., waist circumference, blood pressure (BP), fasting glucose (FPG), triglycerides (TG), high-density lipoprotein (HDL)) for those patients being prescribed quetiapine before and after intervention is made to recommend a change in therapy.

Methods: The study will be submitted to the IRB for approval. A retrospective chart review of outpatients who are prescribed nightly quetiapine at a dose of ≤ 125 mg/day will be conducted. Prescribing physicians will be contacted via electronic medical note that recommends discontinuation of quetiapine. Replacement with an alternative, evidence-based sleep-aid based on US clinical guidelines will also be recommended if indicated. Eligible patients (1) have an active prescription for quetiapine, (2) have filled the prescription within the last 3 months, (3) are taking ≤ 125 mg/day at bedtime and the dose has not exceeded 125 mg/day in the previous year, and (4) have had relevant metabolic syndrome monitoring parameters (BP, FPG, TG, HDL) assessed at least 3 months after beginning therapy with quetiapine. Patients will be excluded if they (1) are taking another antipsychotic in addition to quetiapine, (2) have a documented psychotic disorder on their problem list, or (3) are taking quetiapine during the day in addition to their bedtime dose. Follow-up lab work will be encouraged and evaluated 3 months after intervention whether or not quetiapine was discontinued to identify improvement/worsening of metabolic syndrome parameters. All data will be recorded without patient identifiers and maintained confidentially.

10-301

Title: Veterans with dysphagia: assessment and treatment for fracture risk

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Purpose: Due to shared comorbidities, many older patients with dysphagia may also be at high risk for fracture. These comorbidities include Parkinson's disease, dementia or Alzheimer's disease, stroke, chronic obstructive pulmonary disease (COPD), or having low body weight. It is unknown to what extent patients with dysphagia who are at high fracture risk do in fact receive treatment for osteoporosis. The purpose of this study was to determine how many Veterans with dysphagia that are at high fracture risk have been treated for osteoporosis.

Methods: The study was approved by the institutional review board. Computer records at a Veterans Affairs (VA) Hospital were used to identify Veterans at least fifty years of age who have been assessed for dysphagia per Current Procedural Terminology (CPT) code of 92611 during the period of 1/1/2005 through 10/1/2011. The primary study outcome was to determine the proportion of Veterans with dysphagia, classified as mild-moderate to severe, who met osteoporosis treatment criteria per the World Health Organization Fracture Risk Assessment Tool (FRAX) and have received treatment for osteoporosis. Subjects that met FRAX treatment criteria were identified as FRAX (+) and those that did not were identified as FRAX (-). Secondary outcomes included: the proportion of Veterans with dysphagia who met treatment criteria; the number of Veterans with dysphagia that were evaluated for fracture risk; frequency of comorbidities that may link dysphagia and osteoporosis; and severity of dysphagia in the patient population.

Results: One thousand four hundred and seventy one subjects met study criteria. All charts were reviewed and 147 subjects were included in the study. Of the 147 subjects, thirty five percent met FRAX criteria for treatment (95 percent CI, 28 percent to 43 percent). Of the 35 percent that met FRAX criteria, 29 percent were treated (95 percent CI, 17 percent to 41 percent) with antiresorptive agents. Of those that were FRAX (+), only 38 percent were assessed for osteoporosis. Eighty seven subjects had one of the comorbidities. Seven subjects had Parkinson's Disease, 24 had dementia or Alzheimer's disease, 44 had history of stroke, 34 had COPD, and 15 had low body weight. There was no difference in frequency of comorbidities between those that were FRAX (+) and FRAX (-) (p equals 0.191). However, frequency of dementia approached significance with it more commonly occurring in FRAX (+) subjects (p equals 0.066). Forty one percent of subjects had moderate dysphagia, 33 percent had mild/moderate dysphagia, while 15 percent had moderate/severe dysphagia and 11 percent had severe dysphagia.

When comparing those that were FRAX (+) to those that were FRAX (-), there was no difference in severity of dysphagia (p equals 0.755).

Conclusion: This study demonstrated that a significant fraction of Veterans with dysphagia were at high fracture risk and of those only 38 percent had been assessed for osteoporosis while only 29 percent were treated with antiresorptive therapy. Therefore, this showed that osteoporosis in this patient population is under assessed and undertreated. However, there was no association between fracture risk and severity of dysphagia or frequency of comorbidities. This study may warrant attention to Veterans with dysphagia in regards to assessment and treatment of osteoporosis.

10-302

Title: Evaluation of a pharmacist-led anticoagulation education service

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Purpose: Anticoagulants are commonly initiated in the inpatient setting. Patients discharged on anticoagulants are at high risk for complications due to complex dosing, insufficient monitoring, and inconsistent patient compliance. The Joint Commission, recognizing the increased risk for harm, has targeted anticoagulation therapy as a Hospital National Patient Safety Goal. Patient education has been pinpointed as a vital component for safe anticoagulation therapy. The objective of this study is to determine if initiation of a pharmacist-led anticoagulation education service improves Centers for Medicare and Medicaid Services (CMS) compliance scores, reduces readmission rates for anticoagulation related adverse events, and increases patient satisfaction.

Methods: A pharmacist-led anticoagulation education service will be implemented hospital-wide. The decentralized pharmacist managing each patient care unit will identify patients on anticoagulants using a report generated from the electronic medical record. Pharmacists will be responsible for educating all patients with new anticoagulation orders 1-2 days prior to expected discharge. Education will follow a template created to comply with The Joint Commission recommendations. A note will be attached to the anticoagulant order in the electronic medical record indicating to other pharmacists that education has occurred. Once complete, education will be documented in the patient's medical record. Prior to implementation, pharmacists will be educated on the purpose of the service, the elements of anticoagulation education, and the procedure for documenting education. Nurses will be educated on the service and asked to inform pharmacists of pending discharges to help pharmacists triage patients. The primary endpoint will be Centers for Medicare and Medicaid Services (CMS) compliance scores for patient education following a 3-month trial period. Readmission rates for anticoagulation related adverse events and patient satisfaction scores will be assessed as secondary endpoints. The study will be submitted to the Institutional Review Board for approval.

10-303

Title: Comparison of dexamethasone and prednisolone for the treatment of croup.

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Purpose: Croup is a frequent childhood illness and is characterized by symptoms such as hoarse voice and stridor resulting from inflammation of the upper airway. Corticosteroids have been proven effective in managing mild to severe croup. Single doses of oral dexamethasone and prednisolone have been proven effective in the management of croup symptoms. However, current evidence has not clearly demonstrated superiority of one agent over another. This descriptive study will aim to identify if there are any trends towards re-treatment with additional treatment courses of corticosteroids when a patient is initially prescribed dexamethasone or prednisolone for the treatment of croup.

Methods: Prior to data collection, approval will be acquired from the institutional review board. Patients eligible for this review will be children between the ages of 6 months to 6 years diagnosed with croup (identified by ICD-code 464.4) from September 1st, 2012 to November 30th, 2012, at Gundersen Health System (including emergency room visits, clinic visits, and urgent care visits) treated with either prednisolone or dexamethasone. Data collected from each patient will include age, sex, medical record number, weight, presence of pre-existing asthma, dosage of corticosteroid prescribed at initial encounter, number of additional encounters due to croup within 10 days of original diagnosis, and name and dosage of corticosteroid prescribed at additional encounters (if any).

10-304

Title: Development and implementation of an electronic form for patient-specific sliding scale insulin to improve safety of insulin orders

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Purpose: Three standardized sliding scale insulin regimens are used at the authors institution. No patient-specific sliding scale insulin orders are available to providers in the inpatient setting. The objective of this study is to develop and implement an electronic form for ordering patient-specific sliding scale insulin and to educate providers on its use, to improve safety of sliding scale insulin orders.

Methods: This is a quality improvement study to increase the safety of medication orders for patient-specific sliding scale insulin. A medication use evaluation will be performed on inpatient sliding scale insulin regimens before implementation of the electronic form to assess the degree of standardized sliding scales being modified by providers. Reported medication errors and adverse medication events with sliding scale insulin will be collected. An informatics pharmacist will assist in developing the electronic form for patient-specific sliding scale insulin orders. Electronic communication will be sent to all providers with instructions on how to input patient-specific sliding scale insulin orders using the electronic form. Electronic communication will be sent to other healthcare disciplines informing them of the changes to sliding scale insulin orders. Additional educational sessions will be offered to all healthcare disciplines. A medication use evaluation will be performed after implementation to assess patient-specific sliding scale insulin orders for appropriateness. Reported medication errors and adverse medication events will be assessed after implementation to determine the impact on safety of using the electronic form.

10-305

Title: Treatment of migraines in pediatric patients: evaluating the efficacy and safety of repetitive dose dihydroergotamine mesylate.

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Purpose: The primary objective of this study is to determine if the use of repetitive dose dihydroergotamine mesylate intravenous injection is effective in the treatment of migraines and abdominal migraines in pediatric patients. Dihydroergotamine mesylate is an ergot alkaloid with known vasoconstrictive effect on vascular smooth muscle. Current data evaluating dihydroergotamine mesylate use in pediatric patients is limited. This review is being performed to evaluate the efficacy and safety of repetitive dosing dihydroergotamine mesylate in patients less than 18 years of age.

Methods: A retrospective chart review of children between the age of 1 year and 18 years of age who received multiple dose dihydroergotamine mesylate while admitted between January 1, 2012 and September 1, 2013 was performed. Research methods were approved by the primary hospitals institutional review board. The primary outcome of this review will be to evaluate the dihydroergotamine treatment regimen, using basic descriptive statistics, of every course of therapy in migraine patients. Number of doses administered after initiation of therapy, frequency of dose changes, and range of administered doses will be collected. Secondary outcomes will evaluate the rate of adherence to the established hospital protocol including: administration of premedications, dose escalation, infusion method, and monitoring procedures. Adverse events and associated interventions may also be recorded as part of this review. Additional outcomes may be based on changes to home medications, and the initiation of additional medications, during therapy.

10-306

Title: Pharmacist impact on heart failure patient readmission and adverse event rates: a pilot program using discharge medication reconciliation and telephone counseling

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Purpose: It has been estimated that approximately 17% of patients will experience an adverse drug event in the first few weeks following discharge from the hospital. One study, by Walker et al, suggests 60% of these adverse drug events could be prevented or ameliorated. The purpose of this project is to determine the impact pharmacists can have on heart failure patient readmissions and adverse event rates when integrated into the discharge medication reconciliation process along with the addition of a pharmacist-driven post-discharge follow up program.

Methods: This project will be submitted for Institutional Review Board exemption. Patient charts and electronic health records will identify patients with a current or previous diagnosis of heart failure. Prior to discharge, the nurse will fax the completed discharge medication reconciliation forms to the pharmacist who will review the forms, focusing on new medications, dose or frequency changes, omissions, and therapeutic duplications. The nursing staff will also notify the pharmacist upon completion of the discharge medication plan so it may be reviewed for accuracy compared to the discharge medication reconciliation forms. Once the review has been completed, the pharmacist will inform the nurse of proposed changes and contact the prescriber if necessary. Prior to discharge, the pharmacist will document the patient account number, list of interventions made, and time to complete medication reconciliation. Within one week following discharge, the pharmacist will contact the patient to assess compliance and understanding of medications, barriers to obtaining medications, and answer questions. The pharmacist will document interventions made and encounter duration. The impact of the program will be assessed by comparing readmission and adverse event rates after program initiation to baseline data from the previous discharge medication reconciliation process.

10-307

Title: Impact of pharmacist medication education rounding on patient satisfaction scores

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Purpose: The Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey has become an important measure of patient satisfaction. Opportunity exists for improvement in the HCAHPS measures for communication about medications to patients at a tertiary care teaching center. The primary objective is to assess the impact on HCAHPS for communication about medications prior to and post intervention. Secondary objectives include assessing the percentage of patients who have documented medication education and describing the resource utilization needed to support the intervention.

Methods: This project has been identified as a quality improvement initiative and thus exempt from review by the Institutional Review Board. Currently at our institution, nursing staff is primarily responsible to meet Joint Commission standards of informing patients about their medications prior to administration. Opportunity exists to improve patient understanding of medications during hospitalization though intervention from inpatient pharmacy staff. Pharmacist medication education rounding will be conducted on a cardiac based, general medicine unit. All patients admitted or transferred to the cardiac medical unit beginning November 1, 2013 through December 31, 2013 will be considered for inclusion. A pharmacist or designee will perform all interventions to include education on chronic medications added within the last 72 hours. Clinical documentation software will be used as a tool for tracking the education and pharmacist intervention during the study. Impact will be evaluated on unit specific HCAHPS data and on the documented education rate. Analysis of resource utilization will also be performed through tracking time invested by pharmacy team members.

10-308

Title: Implementation of a clinical tool to assist pharmacists and providers in assessing and managing drug interactions that can prolong the QT interval

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Purpose: Prolongation of the QT interval, particularly beyond 500 milliseconds, is associated with increased risk of arrhythmias, most notably torsade de pointes. There are over 100 medications implicated in QT prolongation including antiarrhythmics, antipsychotics, antihistamines, and antimicrobials. The purpose of this project is to develop and present education for pharmacists and providers on managing medications in patients at risk for prolonged QT intervals and to develop a decision support tool within the electronic medical record (EMR) to facilitate appropriate drug therapy management to mitigate that risk.

Methods: To establish a baseline of current practice for monitoring and management of patients at risk for developing prolonged QT intervals, a retrospective review of patients who received two high risk medications, one high risk medication combined with a moderate risk medication, or two moderate risk medications will be conducted. Risk level will be determined based on literature review. Quality indicators including electrolyte monitoring, QT interval monitoring, and number of QT prolonging agents will be assessed. A decision support tool will be developed to provide guidance on appropriate management of drug therapy in patients receiving QT prolonging medications. In addition, the current drug interaction notification system within the EMR will be assessed for clinical utility of warnings and updated appropriately to support clinical decision making. Education will also be developed and provided to pharmacists and providers on how to utilize the decision support tool as well as how to manage medication alerts. To assess the impact of the decision support tools and education, a prospective review of patients on QT prolonging medications, as described above in the retrospective review, will be conducted after implementation. Approval from the Institutional Review Board will be obtained prior to data collection.

10-309

Title: Effect of a multidisciplinary intensive obesity treatment program on weight loss and clinical markers of diabetes, hypertension and hyperlipidemia in a veteran population

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Purpose: It is well known that obesity increases the risk of diabetes, hypertension and cardiovascular disease. One approach to treating obesity is using an intensive multidisciplinary weight loss program in the primary care setting. Weight loss intervention programs aim to treat obesity by assisting the patient in making lasting lifestyle changes. The objective of this study is to assess the efficacy of a multidisciplinary intensive weight loss program in decreasing clinical markers of diabetes and hypertension.

Methods: This study will be submitted to the Institutional Review Board for approval. A hospital-wide intensive multidisciplinary weight loss program currently exists which consists of a four month class that meets once every other week. Patients are voluntarily enrolled in the class if they have a body mass index (BMI) greater than or equal to 30 or a BMI greater than 25 with an obesity related disease state (i.e. diabetes mellitus, hypertension, dyslipidemia, degenerative joint disease, sleep apnea, metabolic syndrome, cardiovascular disease). This study aims to evaluate the clinical efficacy of this program. The following data will be collected at baseline and at the end of the four month program: BMI, body fat composition, height, waist circumference, fasting lipid panel, A1C and ALT. Weight and blood pressure will be measured at each visit. No additional patient interventions will be made in the study by the investigator other than those already included and outlined in the existing weight loss program. Descriptive statistics such as percent and average will be used to simplify and summarize data collected. A paired t-test will be used to detect a difference in the group before and after completing the program.

10-310

Title: Proton pump inhibitor use and outcomes in the neonatal intensive care unit

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Purpose: Literature suggests that proton pump inhibitors (PPIs) lack efficacy for gastroesophageal reflux disease (GERD) in the neonatal population. Despite the growing body of evidence which demonstrates the complications of PPI use in neonates, the use of PPIs for GERD in the neonatal population continues. Potential complications of PPI use in neonates include increased risk for the development of necrotizing enterocolitis (NEC), acute gastritis, osteopenia, and pneumonia. This study will characterize PPI use and PPI use outcomes within the Neonatal Intensive Care Unit (NICU) in an attempt to optimize PPI use in the neonatal population.

Methods: This study will be submitted to the Institutional Review Board for approval. PPI use data will be retrieved from the electronic medical record. A retrospective medication use evaluation (MUE) will be conducted for all doses of PPIs administered in the NICU from January 1, 2013 through July 31, 2013 to assess dose, number of doses, duration of use, reason for use, and coded diagnoses. Concurrent monitoring of patients on PPIs in the NICU will occur for a three month period in order to assess indication for use. Real-time surveillance of PPI use in the NICU will allow more detailed patient data collection and will also be available for comparison to retrospective MUE data. Based on the results of this study as well as the most recent literature regarding PPI use in neonates, standard prescribing practices will be developed.

10-311

Title: Comparison of two preventative hydration strategies utilized to reduce nephrotoxicity associated with cisplatin administration

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Purpose: Various hydration strategies have been used to prevent nephrotoxicity associated with cisplatin administration. Currently, there is not a universally accepted cisplatin hydration protocol, due to conflicting data in the literature. The purpose of the study is to evaluate the prevalence of nephrotoxicity in patients who received cisplatin, saline hydration, and mannitol diuresis compared to those who received cisplatin and saline hydration without mannitol diuresis. It is hypothesized that the current hydration regimen, without mannitol, is as nephroprotective compared to the previous hydration regimen with mannitol.

Methods: Prior to data collection, IRB approval will be obtained for this observational, retrospective cohort review. Eligible patients will include individuals 18 years or older who received cisplatin chemotherapy within an institutional health system. Patients will be excluded from the review if they have a documented renal carcinoma. Patients will be categorized into two treatment groups: those who received concomitant cisplatin, mannitol, and saline hydration and those who received cisplatin and saline hydration without mannitol. The primary outcome measure of the study is prevalence of nephrotoxicity, based on change in serum creatinine. Secondary outcome measures include the following: prevalence of hypokalemia and hypomagnesemia secondary to cisplatin administration, prevalence of hospitalizations due to nephrotoxicity associated with cisplatin administration, delays in cisplatin administration due to decreased renal function, prevalence of cisplatin dose adjustments due to decreased renal function, and prevalence of progression to chronic kidney disease secondary to cisplatin administration. Additional data to be collected will include: age, gender, malignancies, cisplatin dosing, relevant comorbidities, and concomitant nephrotoxic drug therapies and dosing. Appropriate statistical analysis as defined by a biostatistician will be employed.

10-312

Title: Improving medication adherence to reduce hospital readmissions through post-discharge patient follow up and transition of care handoff to outpatient pharmacies

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Purpose: Opportunities exist for increasing the quality of care provided to patients transitioning from an inpatient setting to an outpatient setting. Nearly two-thirds of post-discharge adverse events are related to medications. Pharmacists have an important role in follow up and transition of care handoffs. The implementation of the Patient Protection and Affordable Care Act allows pharmacists the opportunity to streamline the transition of care between the inpatient and outpatient settings. This project will develop a transition of care process and determine if post-discharge pharmacist follow up impacts medication adherence and 30-day readmission rate in newly discharged patients.

Methods: This project has been identified as quality improvement and thus exempt from Institutional Review Board review. Patients discharged from October 14th, 2013 through January 14th, 2014 who fill prescriptions at the in-house outpatient pharmacy will be identified and recorded. Pertinent patient information will be collected from the electronic medical record (EMR) and recorded in a confidential spreadsheet. These patients will be contacted by a pharmacy team member by telephone between two and seven days after discharge. The pharmacy team member will follow a standardized script to assess adherence, adverse events, and the patient's preference for prescription transfer. The pharmacy team member will provide education based on perceived opportunity and reinforce importance of adherence. When applicable, prescriptions will then be transferred to the patient's pharmacy of choice along with transition of care information. Rate of 30-day readmissions will be calculated for the intervention population over a three month period and compared to readmission rate of all patients discharged during the intervention period. Adherence will be assessed by patient report during the post-discharge telephone call with the patient and by refill history at 35-40 days post-discharge.

10-313

Title: Incidence of a subtherapeutic international normalized ratio (INR) after holding warfarin for two days

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Purpose: The current warfarin protocol within the anticoagulation service requires patients with an INR greater than four to hold warfarin for two days. The purpose of this study is to determine the percentage of patients who have a subtherapeutic INR after holding warfarin for two days when the initial INR is greater than four.

Methods: A retrospective analysis will be performed to determine patients with an INR goal range of 2-3 who presented to the outpatient anticoagulation service with a supratherapeutic INR between 4.1 and 5. A chart review will be performed for the identified patients and all data collected will be de-identified and secured in a confidential manner. Data collected will include: age, gender, warfarin indication, INR goal range, initial supratherapeutic INR value, INR value upon re-check in two days, concurrent interacting medications and any changes in diet that may affect INR. This data will be analyzed to determine the percentage of patients who have a subtherapeutic INR after holding warfarin for two days, and if there is a better minimum INR at which warfarin should be held for two days. This study will be submitted to the Institutional Review Board for approval.

10-314

Title: Implementing standardized pharmacist-run admission medication reconciliation and assessing its impact on inpatient medication safety

Primary Author: Nicholas Zupec**,** Clement J. Zablocki VA Medical Center, 5000 W. National Ave, Milwaukee, WI 53295; **Email:** nick.zupec@gmail.com

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Purpose: Medication reconciliation during transitions in care is a crucial component of promoting medication safety. Roughly a quarter of medication errors that occur during hospitalization are due to lack of reconciliation of inpatient medications with home medications. Studies show that pharmacists identify more medication related problems during transitions in care than physicians or nurses. Many institutions have implemented a standardized process for pharmacist-led medication reconciliation at admission with the goal of reducing medication errors and discrepancies in hospitalized patients. The objective of this study is to implement standardized pharmacist-run admission medication reconciliation and assess its impact on multiple patient safety outcomes.

Methods: The study is a prospective cohort study of inpatients on non-critical care units of a tertiary care Veterans Affairs (VA) medical center. Two months of data will be collected on current practice prior to interventions being made. After these two months, a pharmacist-run admission medication reconciliation program will be implemented. The same data will be collected for two months after the intervention. The primary outcome will be the number of medication interventions made at discharge by the pharmacist. Since pharmacists are already tracking interventions at discharge, a decrease in the number of interventions would be indicative of fewer medication errors and discrepancies occurring throughout the hospitalization. Secondary outcomes include the time spent on discharge medication reconciliation by the discharge pharmacist, number of reported medication errors, and answers to a pre-intervention and post-intervention pharmacist survey. The study will be submitted to the institutional review board for approval.

10-315

Title: Efficacy and Safety of Octreotide and Midodrine in Patients with Hepatorenal Syndrome

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Purpose: To evaluate the efficacy and safety of combining octreotide with midodrine in hepatorenal syndrome (HRS) patients.

Methods: This was a retrospective, single center study. We identified patients who were prescribed both midodrine and octreotide therapy from January 2005 to April 2013 from the electronic pharmacy records. The primary end point was the improvement in the GFR by 20% from the baseline to 30 days after study therapy. The secondary end points were medications adverse effects and mortality at 30 days. Clinical data were collected through patients charts and Electronic Medical Records (EMR). Chart reviews included baseline characteristics such as age, weight, gender, MELD score and Child-Pugh classification, serum sodium, serum bilirubin, serum albumin, INR, etiology of liver disease and co-morbid medical conditions. Nephrotoxic agents administered in the previous week prior to admission and up to 30 days of starting study medications were also documented. Dose, duration of therapy, number of courses and adverse effects of both study drugs were reported. Furthermore, serum creatinine, creatinine clearance (using MDRD and Cockcroft-Gault methods), urine output, systolic blood pressure and mean arterial pressure (MAP) were collected at baseline, 7, 14 and 30 days post initition of study medications, in addition to mortality at day 30.

Results: Results in progress

10-316

Title: Case report: crizotinib in a stage IV lung adenocarcinoma

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Case Report: 4 year-old patient diagnosed with advanced (stage IV adenocarcinoma) non small cell lung cancer. Initiated treatment with cisplatin and pemetrexed for 4 months obtaining a partial response, followed by pemetrexed as maintenance therapy from then onwards during 2 years with an excellent quality of life and sustained response. Once progression was radiologically confirmed, erlotinib treatment was initiated until disease progression when a BRAF mutation analysis was requested, resulting negative; and ALK (anaplasic lymphoma kinase), which was found to have a 2p23 rearrangment in 53% of evaluated cells. The authorization for Crizotinib treatment for this patient was approved in the hospitals pharmaceutical and therapeutic commission, under the indication approved by the FDA, EMA and AEMPS (Spain) in adult patients with previously treated ALK positive advanced non small cell lung cancer and because of the small probability in which this ALK rearrangement is found in these patients (3-5%). Before starting on crizotinib the patient presented disease progression with pain in the right iliac wing irradiated to the anterior area of the right thigh reaching the knee, weight loss and oncologic pain. On the 7th of May 2013 crizotinib 250mg every 12 hours was started. A week later the patient attended a treatment control visit in the oncology examination office, having a performance status (PS) 1, an electrocardiogram with a normal QT interval, elevated levels of alkaline phosphatase (ALP) 203 U/L and GGT 225 U/L, Iron 27 ug/dl, platelets 681.000, presenting a clear improvement in the iliac wing pain, mild nausea, weight loss, tumoral thrombocytosis and bone involvement without presenting drug-related toxicity, therefore the patient continued treatment and X-ray image and carcinoembryonic antigen (CEA) was requested for the next control visit. On the 28/05/2013 the patient continued with bone pain so fentanyl 25mg every 72hrs and dexketoprofen were prescribed continuing with Crizotinib. On the 25/06/2013 the patient affirmed that he felt better, gained weight, without cough or dyspnea, continued with fentanyl 25mg and dexketoprofen, the blood count and biochemistry were normal, the ALP was elevated, CEA 850, normal echocardiogram and in the X-rays no nodules were observed. On the 6th of August 2013 he had a good general status, active life, gained weight and pain disappeared. He had PS 1 and normal cardiopulmonary auscultation (CPA), and the X-rays showed a minor improvement of the bilateral pleural effusion, ALP was increased 211 U/L and the CEA was 783, the bone was still affected and a new X-ray and CEA were requested for the next visit. On the 10th of September 2013 the patient was asymptomatic, without the need of analgesia, with a very active life and without any bone pain. He presented a PS 0, normal cardiopulmonary auscultation, normal abdomen. ALP decreasing163

U/L,and continuing with treatment. Crizotinib is being an effective drug in this patient because the patient presented a bad prognosis before starting crizotinib, and since he started on crizotinib he has reached a progression free survival of 4 months. It is also a safe drug because it is not producing any kind of toxicity and the ALP levels have normalized with time.

54 year-old patient diagnosed with advanced (stage IV adenocarcinoma) non small cell lung cancer. Initiated treatment with cisplatin and pemetrexed for 4 months obtaining a partial response, followed by pemetrexed as maintenance therapy from then onwards during 2 years with an excellent quality of life and sustained response. Once progression was radiologically confirmed, erlotinib treatment was initiated until disease progression when a BRAF mutation analysis was requested, resulting negative; and ALK (anaplasic lymphoma kinase), which was found to have a 2p23 rearrangment in 53% of evaluated cells.

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Crizotinib is being an effective drug in this patient because the patient presented a bad prognosis before starting crizotinib, and since he started on crizotinib he has reached a progression free survival of 4 months. It is also a safe drug because it is not producing any kind of toxicity and the ALP levels have normalized with time.

10-317

Title: Corrective measures in the interpretation of drug plasma concentrations in a pharmacokinetics area

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Purpose: To analyze the information on the drugs request form in a pharmacokinetics area in order to interpret the plasma concentrations, establishing the necessary corrective measures to improve the pharmacokinetics reports elaboration.

Methods: The study was conducted between March and July 2013 in a pharmacokinetic area of a third level hospital. Only patients with levels above therapeutic range were selected. We analyzed demographic and pharmacological data missing in each of the monitoring requests. Drugs included were carbamazepine , digoxin, phenytoin, phenobarbital, lithium and valproic. We took into account the age, weight, treatment start date , dosing regimen, extraction time and last administration. We analyzed absent clinical data in the requests, which could interfere in the subsequent analytical results interpretation. We considered creatinine, albumin, liver enzymes, potassium and troponin. We quantified the total number of missing data in each of the requests. To collect the data we used the record of drug monitoring request in the pharmacokinetics area and the analytical data available in the day of monitoring.

Results: A total of 91 drug requests were analyzed. We found that 15.4 % (n = 14) had no application form, 6.6% (n = 6) lacked five or more data, 8.8% (n = 8), four data, 15.4 % (n = 14) three data, 18.7 % (n = 17) two data, 23% (n = 21) one data, being complete only 12.1% (n = 11) of requests. The data most frequently missing was the treatment start date (65 %), followed by the extraction time and the weight (both 31.8%), administration pattern (14.3 %), age (11%) and last administration (10 %). Regarding the necessary analytical data for the interpretation of the plasma concentrations, we did not find the following values: creatinine in 34% of thecases, potassium in 37,4%, troponin in 67%, liver enzymes in 72.5 % and albumin in 88% .

Conclusion: The lack of at least one datum in 87.1 % of drugs monitoring requets prevents the proper interpretation of plasma concentrations, which hinders the elaboration the report. The elaboration and validation of a protocol to be delivered to clinicians is proposed as a corrective measure. The monitoring drugs request protocol will facilitate the correct interpretation the plasma concentrations and subsequent report elaboration.

10-318

Title: Cloxacillin use in infections caused by Staphylococcus aureus methicillin- sensitive

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Purpose: In the context of an Antimicrobial Stewardship program, was proposed assess the use of cloxacillin infections caused by Staphylococcus aureus methicillin-sensitive (MSSA) and to consider the therapeutic alternatives used.

Methods: We performed a retrospective observational study promoted with the Antimicrobial Stewardship program of a Spanish tertiary hospital complex. All the patients with MSSA isolation was selected by the Microbiology service between January 1st and March 31st, 2012. The Pharmacy service, consulting hospital electronic medical records and electronic prescribing program, analyzed the following variables: prescribing service, antibiotic empiric used, targeted selected treatment, indication for use, allergy to beta-lactams and exitus. By consensus of the members of de Antimicrobial Stewardship group was also analyzed the antibiotics polymicrobial character of the infection.

Results: MSSA isolates identified were 89. In 23 of the cases was impossible to check the antibiotic treatment. In 66 remaining cases, were confirmed 3 cases of allergy to beta-lactams. Cloxacillin was used in 39.68% (25/63), 80.00% in combination (25.00% polymicrobial and 75.00% simple isolates). The services more involved in its use were: Neurosurgery (75.00%), Traumatology (60.00%) and Internal Medicine (55.55%).The majority indications for use were osteoarticular (32.00%) and skin and soft tissue (24.00%) infections. Among the 38 patients not treated with cloxacillin without allergy to beta-lactams, the majority were skin and soft tissue (23.08%) and respiratory (23.08%) infections. We identified five polymicrobial cultures. Excluding these patients, the most commonly used therapeutic groups were beta-lactam-beta-lactamase combinations (33.33%) and quinolones (27.27%), used as monotherapy in 54.54% and 55.56% respectively. Piperacillin /tazobactam was used in monotherapy in 40.00% and amoxicillin /clavulanic acid in 66.67% (all pediatric patients). The most prescribed quinolone was levofloxacin (63.64%), 57.14% in monotherapy. The prescription of carbapenems (24.24%) was associated with ciprofloxacin, daptomycin or linezolid in 87.50%. The exitus number was 2 in the group treated with cloxacillin and 8 in those treated with other antibiotics. Of all the exitus, 70.00% (7/10) were treated empirically with carbapenems.

Conclusion: The value of the indicator of use of cloxacillin retrieved, taking into account the most important factors that can contribute to avoid their use, show a possible underutilization. Analysis of alternative treatments used, excluding polymicrobial cultures, shows extensive use of combinations of antibiotics, including simple MSSA isolates. From the Antimicrobial Stewardship program, it should be evaluated the need to position the role of cloxacillin and other therapeutic alternatives in the management of infections caused by MSSA, to get an appropriate treatment of these infections.

10-319

Title: Medication reconciliation errors in Emergency Department

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Purpose: The Emergency Department of our third level hospital attends approximately 200,000 emergencies per year. Nowadays, there is not a medication reconciliation program at admission. We have started a retrospective study of medication reconciliation errors at the time of admission to the emergency department, in order to determine a baseline measure of discrepancies in medication reconciliation. This study was approved by the ethics committee of clinical trials. We present a partial description of the discrepancies found during this project.

Methods: We selected non-surgical patients admitted to the emergency service. Data were collected over four months in 21 randomized days, from Monday to Sunday in all three shifts (morning, afternoon, night). Discrepancies found in the reconciliation of medication were classified in two groups, intentional and unintentional. We created a database for registration and data mining. Finally, we analysed all the discrepancies found in the three shifts of a weekday (Wednesday, December 11) and a weekend day (Sunday).

Results: We interviewed 45 out of 71 potential patients, identifying 431 discrepancies in their treatments. 358 of these discrepancies were intentional: new medication (46.6%), medication withdrawn (30%), medication changes (15.9%) and formulary adjustments (7.5%). Remaining 73 discrepancies were unintentional: medication omission (76.7%), medication changes (13.7%), wrong medication (5.5%) and new medication (4.1%). On Sunday 68% of the patients had one or more unintentional discrepancies (median of 3 discrepancies per patient), whereas, on Wednesday, December 11 52% (median of 2 discrepancies per patient). Considering working shifts, in the morning 60% of the patients had one or more unintended discrepancies (median of 3 discrepancies per patient), in the afternoon 76% (median of 3 discrepancies per patient) and in the night 41% (median of 2 discrepancies per patient). On Sunday 23.8% of the prescriptions lines had at least one unintentional discrepancy, while, on Wednesday, December 11 14.2%. Considering working shifts, in the morning 19% the prescriptions lines had at least one unintentional discrepancy, in the afternoon 24% and in the night 12%. There was wide variability in the drugs affected by unintentional discrepancies (52 different therapeutic groups).

Conclusion: In our hospital there is no established a medication reconciliation program. The percentage of patients who, on admission to the emergency service, have one or more discrepancies in their treatment is similar to that reported in other studies. As seen in other studies, the most common discrepancy is medication omission.

10-320

Title: Gemcitabine and nab-paclitaxel in patients with metastatic pancreatic cancer

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Purpose: Scarce data regarding efficacy and safety makes it difficult to standardize a chemotherapy regimen for metastatic pancreatic cancer (MPC) after progression on gemcitabine (G) and fluoropyrimidine-based therapy. Previous studies reinforce the use of G and nab-paclitaxel (nab-P) in this setting. The objective of this study is to describe the use of G + nab-P for the treatment of MPC in a tertiary hospital and assess its efficacy and toxicity.

Methods: A retrospective and observational study was conducted. All patients who received at least one dose of G + nab-P between January 2012 and August 2013 were selected. Medical records were reviewed until end of August 2013 and data of age, sex, previous treatments, number of cycles received, dose reduction, performance status (ECOG scale) and adverse effects (AE) were collected. Treatment response was assessed by review of imaging studies using the RECIST criteria, CA19-9 plasma levels and symptomatic improvement. The progression-free survival (PFS) and overall survival (OS) were calculated from time of commencement of G + nab-P until documented progression or death, respectively.

Results: Four patients (3 male; median age 57, range 33-69) received at least one dose of G + nab-P. The treatment regimen consisted on G 1000mg/m2 and nab-P 100mg/m2 every 15 days. Two patients received the study regimen as a second-line treatment after progression on FOLFIRINOX; ECOG 1 and 2. The rest received it as third-line: 1 patient (ECOG 0) progressed on G and FOLFIRINOX; the other (ECOG 2) progressed on FOLFIRINOX and GEMOX. The median of cycles received was 4 (range 2-6). Last date of inclusion was March 2013. The most common grade I/II AE were fatigue (n=3), anemia (n=2), mucositis (n=2) and alopecia (n=2). No grade III/IV toxicity was reported. One patient required a 20% dose reduction due to fatigue and mucositis grade II. Three patients progressed on therapy, one was not evaluable. One patient showed a significant increase in CA19-9 levels during the treatment. The median PFS was 8,6 weeks (range 4,7-12,8) and OS was 16,1 weeks (range 6-27,8). Patients with ECOG 0-1 had an average PFS and OS of 11,8 and 26,8 weeks respectively, compared to patients with ECOG 2 whose PFS and OS means were 5,6 and 6,3 weeks respectively. All patients but one died.

Conclusion: Although it is a small sample, the G + nab-P treatment presents a positive safety profile. There is a trend towards a higher PFS and OS in those patients with a better performance status at the beginning of the treatment, regardless of the treatment line. More data is needed in order to situate this scheme in the metastatic setting.

10-321

Title: Study of the use and efficacy of tetrahydrocannabinol-cannadibiol in treating spasticity in multiple sclerosis.

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Purpose: The use of 9-tetrahydrocannabinol-cannadibiol (THC/CBD) in our hospital is limited to the treatment of spasticity in multiple sclerosis (MS) in those patients who do not respond to baclofen and tizanidine and have at least moderate o severe spasticity. This was defined by a score of 4 or higher in the Numeric Rating Scale (NRS) graded 0-10. Besides, the treatment can continue only if they achieve at least 20% of reduction in NRS spasticity score. The aims of our study were to assess the effectiveness of THC/CBD in these patients and to determine the adequacy of its prescription in our hospital.

Methods: Retrospective observational study including patients with spasticity MS receiving at least one dose of THC/CBD from January 2011 to September 2013 in our hospital. Epidemiological, clinical and pharmacotherapeutic variables were collected from their medical history, by telephone survey and pharmacy records. The clinical response to THC/CBD was assessed using the NRS spasticity score. Thus, responders were defined as subjects with at least 20% of improvement in spasticity from the beginning of the THC/CBD treatment.

Results: Seventeen patients were included in this study. Fifteen subjects were women and 2 men with a median age of 51,3 years old (26-72). Fifteen of them were diagnosed with relapsing-remitting MS, one with secondary progressive MS and one with myelitis. The mean duration of MS was 12,7 years (2-29). At the beginning of the therapy with THC/CBD, 8 patients were receiving natalizumab, 1 interferon beta, 2 fingolimod and 6 were without treatment for MS. Regarding the adequacy of this prescription, 35.29% of patients had not received previous antispastic treatment required and another was not diagnosed with MS, although all of them had a NRS above 4 at beginning of the THC/CBD therapy. After the period of adjustment, subjects had daily an median of 7,4 spray shots (3-12). Most patients (88,2%) continued to take concomitant medication for spasticity: baclofen (76,4%), tizanidine (29,4%), benzodiazepines (47,0%) and gabapentin (5,9%). The THC/CBD treatment was discontinued in two subjects before three months of therapy because of adverse effects, one of them with anxiety and the other one with paranoid ideation. After 12 weeks of treatment with THC/CBD, 93,3% of the patients who continued were considered responders, with an improvement of 30,5% from the baseline.

Conclusion: THC/CBD improve refractory spasticity in most of our patients after three months of therapy, although in a high percentage concomitant medication for spasticity is not discontinuated. The third part of the subjects do not meet the requirements approved in our hospital to start this therapy. Therefore, data from this study demonstrate many opportunities for hospital pharmacists to improve the use of THC/CBD for this indication.

10-322

Title: Efficacy and minimization cost study of protease inhibitors in hepatitis C infection

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Purpose: Boceprevir and telaprevir are protease inhibitors which combined with interferon and ribavirin in triple therapy in patients with genotype-1 hepatitis C infection (HVC) had changed the treatment, reaching high cure rates. However, triple therapy is associated with many adverse reactions requiring pharmaceutical management. The objective of this study is to compare patients treated with boceprevir and those treated with telaprevir and to perform a minimization cost study.

Methods: A retrospective study was conducted from September 2012 to July 2013. Inclusion criteria were patients initiating HCV treatment stratified by the protease inhibitor. Data collected was: demographics (gender, age), biochemical parameters (hemoglobine (Hb) and neutrophils), efficacy (HCV RNA in peripheral blood at week 0, 4, 8, 36 and 48) and treatment associated cost (erythropoietin stimulating factors, granulocyte colony-stimulating factor, ribavirin, interferon and the protease inhibitor deliveries). Both groups were compared with a Mann-Whitney test using SPSS v.21.

Results: Fourteen patients were included (12 men): 6 with telaprevir, 67% cirrhotic, mean age of 56.5 (7.6), 81.6kg (20.3), Hb 15.0 g/dL (1.4), neutrophils 3517 mm3 (1717), HCV RNA at baseline 3,660,215 (2,980,761); 8 patients with boceprevir (75% cirrhotic): mean age of 56.8 (4.6), 82.0kg (10.3), Hb 15.4 g/dL (12.4), neutrophils 2800 mm3 (1101), HCV RNA at baseline 4,665,219 (7,490,470). There were no significant differences at baseline characteristics, considering demographics as well as HCV RNA, hemoglobine and neutrophils. Virological response rates were achieved faster in the telaprevir group, with statistical difference at week 4 and 8; nevertheless, without difference at week 36 and 48. Four patients used erythropoietin and two granulocyte colony stimulating factor in boceprevir group whereas two used erythropoietin in telaprevir group. One patient stopped treatment at week 8 and was excluded in the cost analysis. Total pharmaceutical cost per patient treated associated to telaprevir group was 31,215 euros and boceprevir group 29,598 euros.

Conclusion: Protease inhibitors are used in the similar population. Adverse events and global therapy cost limit their use. Telaprevir acts faster, nevertheless is more expensive considering pharmaceutical cost. However, the study has a small sample size and efficacy post treatment still unknown.

10-323

Title: Effectiveness of tyrosine kinase inhibitors in the treatment of renal cells carcinoma

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Purpose: Traditional regimens used for the treatment of renal cells carcinoma (RCC) have reached their ceiling with considerable toxicity. Currently the intention is to reduce this toxicity and to increase the effectiveness developing new drugs directed against different therapeutic targets as tyrosine kinase inhibitors (TKIs). Differents TKIs have been used in the treatment of RCC, however there is scarce clinical evidence on which scheme is the best therapeutic alternative. Because of this, the aim of this study is to analyze the effectiveness of TKIs in the treatment of RCC according to the different therapeutic lines and the therapeutic regimen previously received.

Methods: Retrospective observational study completed in 2013. All patients with RCC in TKIs treatment were included. The variables were: demographic (age at start of treatment and sex), clinicals (active substance, time of treatment and reason for the end of treatment) and effectiveness (progression-free survival; PFS and overall survival; OS). Information sources used were electronic records of medical history and prescribing records from which sociodemographic, clinical and effectiveness variables were obtained. Also the pharmacological variables were obtained from medication prescription record.

Results: 29 patients were included with an average age of 69 at the start of treatment, with 72% men and 28% women. 97% of patients had stage IV at the beginning of treatment with TKIs and remaining 3% its not know this data type. 10%, 55%, 21% and 14% patients were treated with sorafenib, sunitinib, axitinib and pazopanib respectively. The mean treatment time was 15.7 months. The reason of end of treatment with TKIs in the 62% was the diseases progression, in the 21% was the death and in the 14% the toxicity. 48% patients received TKIs in the first line of treatment, 21% after failure with cytokines treatment and remaining 31% after failure with another previous TKI. The medians of PFS and OS in treatment with TKIs were 6.13 and 6.67 months respectively for group of patients received the TKIs as first-line treatment. The medians of SLP and SG in patients with previous cytokines treatment and the medians of SLP and SG in patients pre-treated with another previous TKI were 30.33 and 44.07 months and 7.9 and 4.57 months respectively.

Conclusion: PFS and OS in pre-treated patients with cytokines were higher than in patients with TKIs in first line or in patients treated after failure with TKIs treatment. TKIs can be considered in second line after treatment with cytokines as the best therapeutics alternative against pre-treated with TKIs, because previous exposure to the TKIs could involve the development of resistance to them. This conclusion should be confirmed with further studies that include more patients.

10-324

Title: Adequacy of erlotinib prescription to the clinical recommendations in the treatment of non-small cell lung cancer

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Purpose: Non-small cell lung cancer (NSCLC) is the leading cause of cancer-related mortality worldwide. The mutations in the epidermal growth factor receptor (EGFR) gene such as deletions in 19 exon or substitution in 21 exon recently have been incorporated as factor to consider in the selection of the best treatment for NSCLC diagnosed patients for being predictors of response to treatment. The objective of this study is to analyze the adequacy of erlotinib prescription for NSCLC to the clinical recommendations established by European Medicines Agency (EMA), Food and Drug Administration (FDA) and National Comprehensive Cancer Network (NCCN).

Methods: Retrospective observational study carried out in 2013. All NSCLC patients treated with erlotinib were included. The variables collected were: sociodemographics (sex), clinicals (stage at the beginning of treatment with erlotinib, mutational EGFR status) and pharmacological (types of previous treatment with systemic chemotherapy, treatment line with erlotinib).The information sources used were clinical story of electronic records on which sociodemographics and clinicals variables were obtained. The pharmacological variables were obtained from medication prescription record. Then the adequacy to the recommendations given by the EMA, FDA and NCCN were evaluated.

Results: 43 patients were included with an average age of 62 at the beginning of the treatment with erlotinib, being 69.8% men and 30.2% women. The stages of disease at the start of therapy were IV, IIIA and IIB in the 83.7%, 11.6% and 4.7% of patients respectively. The percentage of patients treated with erlotinib in first line of treatment was 2.3%, of which 100% had EGFR activating mutations. 83.7% of patients had received erlotinib after failure at least one systemic chemotherapy regimen and 2.3% of patients showed disease stabilization after 4 cycles of treatment with a scheme based in platinums. 100% patients treated in both, first and second line erlotinib, fit to the recommendations given by EMA and FDA. In the 14.3% patients treated in second or successive lines with erlotinib, were identified EGFR activating mutations. Regarding recommendations given by the NCCN, none of the patients were adapted due to gefitinib was marketed in Spain in July 2009 and the patients have been treated with erlotinib.

Conclusion: All the patients were adapted to the recommendations given by the EMA and the FDA, while none of the patients complied with the recommendations given by NCCN because of the use of erlotinib instead of gefitinib. It would be necessary to make recommendations to the clinician for the treatment of NSCLC to his adequacy to the clinical practicum guides.

10-325

Title: ANALYSIS OF THE USE OF INTRAVENOUS CONCENTRATED POTASSIUM SALTS VERSUS PREDILUITED SOLUTIONS IN A HOSPITAL COMPLEX

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Purpose: To calculate and compare the consumption of intravenous concentrated potassium salts and prediluited solutions per clinical management unit. To analyze the factors that can influence in the use of concentrated solutions versus prediluited potassium solutions.

Methods: All the hospital complex clinical management units (CMU) were included in the study: General Hospital (GH), Rehabilitation and Traumatology Hospital (RTH) and Maternal and Child Hospital (MCH). The study period was January 2013. The consumptions were calculated with the application of Dominion and Stock management application from the CMU of Hospital Pharmacy. From each CMU, the consumption of physiological saline, glucose and glucosalino with potassium were consulted and the different concentrated potassium salts. The results were expressed in total mEq of consumed potassium and the proportion of them were calculated. The CMU were classified according to the accreditation from Agencia de Calidad Sanitaria de Andaluca (Health Quality Agency of Andalusia) and the teaching sessions on preventing medication errors. Descriptive statistic was made with SSPS.

Results: 30 CMU were analyzed, 15(50%) from HG, 8(26,7%) from RTH and 7(23,3%) from MCH. Potassium glucose consumption was 292 units, corresponding to 4120 mEq K. Potassium saline consumption was 222 units, corresponding to 3530 mEq K. Potassium glucosalino consumption was 1584 units, corresponding to 18910 mEq K. Potassium chloride 2M 20 ml was 5028 units, corresponding to 201120 mEq k. Monopotassium phosphate 1M 10 ml consumption was 1070 units, corresponding to 10700 mEq K. Dipotassium phosphate 1M 10 ml consumption was 2167 units, corresponding to 43340 mEq K. The total mEq potassium concentrated/potassium prediluited was 9,68. The total mEq potassium concentrated/potassium prediluited in a CMU with certified quality management was 9,26. The total mEq potassium concentrated/potassium prediluited in a CMU trained in prevention of treatment errors was 6,74.

Conclusion: The prediluted solutions consumption was much lower than the intravenous concentrated potassium salts. The CMU with a certified quality management and/or that were trained in prevention of treatment errors had a slighty higher use of prediluted potassium solutions than the non-accredited units, being more intense in CMU that were trained in prevention of treatment errors.

10-326

Title: Measurement of muscle mass as a nutritional assessment tool in critically ill patients

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Purpose: Malnutrition in critically ill patients is common and causes negative clinical outcome. A valid nutrition assessment is essential and facilitates optimal nutrition support for patients. However, the application of traditional nutrition assessment tools is inappropriate in critically ill patients who have acute phase response characteristics. Therefore, the purpose of this study is to identify the clinical effectiveness of skeletal muscle measurement in critically ill patients as a nutrition assessment tool.

Methods: The institutional review board approved this study. The data were collected from adult patients who stayed in a medical intensive care unit (MICU) of Seoul National University Bundang Hospital (SNUBH) from August 25th to October 13th, 2011. Muscle mass, mid-arm muscle circumference (MAMC) and mid-arm muscle area (MAMA) as muscle mass were calculated by a math formula that was expressed midarm circumference and skinfold thickness which were prospectively measured on the right arm. As traditional nutrition assessment tools, the percent of ideal body weight (PIBW), serum albumin level, total lymphocyte count (TLC), and SNUBH-nutrition screening index (NSI) were collected.

Results: As a result, in the initially measured group (n=57), a significant correlation was observed between PIBW and MAMC, MAMA. However, there were no correlations among other traditional assessment tools. In the re-measured group (n=25), whose nutritional status was reassessed after a week, weak correlation was observed between the change of weight and MAMC, MAMA.

Conclusion: We concluded that PIBW is related with the skeletal muscle mass in critically ill patients. However, we did not identify the availability of MAMC, MAMA as a valid nutrition assessment tool. Further studies with larger sample size would be necessary to perform.

10-327

Title: Descriptive study of Clostridium difficile infection in a tertiary hospital

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Purpose: Clostridium difficile infection (CDI) in hospitalized patients is a growing problem, which generates high morbidity and mortality. The objectives are: 1. to describe the incidence, treatment and outcome of CDI in a tertiary hospital, 2. to estimate the adequacy of the treatments to the European Society of Clinical Microbiology and Infectious Diseases (ESCMID) guidelines and 3. to calculate the recurrence rate and the need of other drug treatments currently available.

Methods: This was a retrospective descriptive study of patients with diagnosis of CDI during 17 months, from 01/01/2012 to 05/31/2013. All patient over 18 years old with a discharge of intestinal infections caused by Clostridium difficile were included. (CDI- 9: 008.45). Incidence was calculated using hospitalization data within the study period. Cases were classified according to: first infection or recurrence; severity (mild , moderate or severe infections defined by ESCMID guidelines); origin (hospital-acquired if it appeared later than 48 hours after admission or if the patient had been admitted in a health care facility in the previous 4 weeks; community-acquired if symptom onset occurred within 48 hours of admission and the patient had not been admitted in the previous 12 weeks, or indeterminate if the patient had been admitted between the previous 4 and 12 weeks). Analysis included: Demographics variables, comorbidities, risk factors, treatment, complications, recurrence and mortality. Evolution variables were: cure rate (resolution of symptoms and no need for added treatment after the second day after the end of therapy), relapse rate (positive diagnosis after first infection cure) and global cure rate (cure with no recurrence). Mortality included death by any cause in the follow-up period.

Results: 37 CDI in 30 patients, incidence:1,5 per 10.000 patient-days. 43 percent female; mean age: 70 years (standard deviation: 17 years); mean duration of hospitalization: 30 days (standard deviation: 32 days). Infection classification: 27 first infections, seven first recurrences, three subsequent recurrences; 11 severe, 24 moderate and two mild; 26 health-acquired infections, eight community-acquired infections and three indeterminate. Risk factors: Eighteen in proton pump inhibitors treatment, nine immunocompromised patients, four receiving enteral nutrition. Twenty patients had received antibiotic in the previous month. Toxin detection test was positive in 53 percent of cases. Toxin culture was positive in all cases. Complications: sepsis (three patients), pseudomembranous colitis (six patients), toxic megacolon (two) and ileus (one). No surgery needed for any patient. One death related to CDI. Non

severe first infections or first recurrences were treated with metronidazole in 24 of 26 cases; adequacy: 92.3 percent. Severe first infections or recurrences were treated with: metronidazole (six patients), metronidazole plus oral vancomycin (one patient), metronidazole plus oral and intracolonic vancomycin (one patient); adequacy 25 percent. Two second or later recurrences were treated with vancomycin, one with metronidazole; adequacy 66.6 percent. Cure rate: 86.4 percent; relapse rate: 16.6 percent; global cure rate: 70 percent. Mortality: 20 percent.

Conclusion: Clostridium difficile infection continues to be a major cause of diarrhea in hospitalized inpatients and outpatients. Our study shows an incidence of CDI lower than reported in the literature and an average adequacy guideline of 61 percent but remains lower in severe infection treatment. Increasing physician awareness and education of CDI treatment should be a priority for pharmacists in order to improve patient outcomes and optimize care as findings utilizing the current pharmacotherapeutics protocol show relatively successful results.

10-328

Title: Pemetrexed in patients with non-small-cell- lung cancer: changes in use profile in Andalusia

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Purpose: To determine the pemetrexed use profile in 2010 and 2011 in locally advanced or metastatic non-small-cell-lung cancer (NSCLC) patients in Andalusia (Spain) and to analyze the variation between the two periods.

Methods: Retrospective and descriptive study. Inclusion criteria were: adult patients diagnosed with locally advanced or metastatic NSCLC who received chemotherapy with pemetrexed in the first term of 2010 and the last term of 2011 in Andalusia, a 8.5 million population spanish region (2012 census data). Exclusion criteria: patients who received pemetrexed in a clinical trial. For each patient we collected: age, sex, smoking habits, renal function, tumor histology and stage, pemetrexed indication and ECOG (Eastern Cooperative Oncology Group) performance status at the start of the treatment. In addition, pemetrexed use profiles were described and analyzed for both periods. Data were analyzed and processed using Microsoft Excel 2005.

Results: 107 and 170 patients from 16 hospitals were included in 2010 and 2011, respectively. 16 patients in 2010 and 14 in 2011 were excluded because they were enrolled in a clinical trial with pemetrexed, so 89 patients and 156 were finally included. The mean age was 62.11 years. 74% were men. All of them had adequate renal function and 80 % had been smokers at some point in their lives. The predominant histology was adenocarcinoma (85%). At the start of the pemetrexed treatment 88 % had stage IV tumor and 52% had ECOG 1. Pemetrexed indications were: First line combined with platinum in 27% of patients (2010) and in 36% of patients (2011). First line combined with platinum and maintenance with pemetrexed in 21% (2010) and in 20 % (2011). Second line monotherapy in 14% (2010) and in 9% (2011). Maintenance in patients whose disease has not progressed immediately following a platinum-based regimen in the 14 % (2010) and in the 9 % (2011). None of the above in the 24 % (2010) and in the 26 % (2011).

Conclusion: Pemetrexed combined with platinum is used mainly as first-line treatment in patients with stage IV adenocarcinoma and ECOG 1. As expected, in 2010 pemetrexed use in clinical trials was higher than in 2011. The use profile is similar in both periods, but a higher percentage of patients received this drug off-label in 2011.

10-329

Title: Impact of the ENDORSE study results on thromboprophylaxis prescribing patterns in medical patients attending the Emergency Room

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Purpose: The ENDORSE study, published in 2008, warned of the large number of medical patients not receiving prophylaxis for the prevention of venous thromboembolic disease according to the ACCP criteria. These results promoted the development of numerous initiatives in order to increase awareness of this lack of thromboprophylaxis prescribing to clinicians in charge of them. The aim of this study was to evaluate the impact of the ENDORSE study results on thromboprophylaxis prescribing patterns in medical patients attending the Emergency Room (ER) by assessing prescribing appropriateness at admission.

Methods: A cross-sectional, observational, descriptive study was designed and included all adult medical patients admitted from an ER between 20/11/12 and 26/11/12 at a large tertiary hospital. Patients to whom anticoagulants were prescribed for therapeutic purposes, patients admitted to the Intensive Care Unit or matemity wards were excluded. The protocol used in order to evaluate prescribing appropriateness was elaborated by the antithrombotic therapy group which belongs to the Pharmacy and Therapeutics Committee of the hospital. It includes the Padua Prediction Score (2012 ACCP guidelines) for thromboembolic risk assessment and the NICE model to determine risk of bleeding, and assigns to each thromboembolic risk score a prophylaxis recommendation. A database was designed and included the following information: demographic data, date of admission and discharge, diagnosis at admission, laboratory data at admission, presence of risk factors for thrombosis and bleeding complications at admission, the final thromboembolic risk score and kind of thromboprophylaxis prescribed at the ER. The primary endpoint was the adequacy of thromboembolic prophylaxis prescribed at the ER according to the protocol.

Results: 207 patients were included in the study (53.1% were male) with a mean age of 68.5 years 19.8. The most common diagnosis at admission was related to a respiratory disease (41.1%). In 33.3% of the patients (69 patients), the recommendation of prophylaxis according to the protocol did not match with the prophylaxis prescribed at admission. Reasons for non concordance were: thromboprophylaxis prescription in patients not meeting indication criteria (17.4% of the patients), omission of thromboprophylaxis (13.5%), underdosage (1.5%) and overdosage (1%).

Conclusion: The percentage of patients with conflicting prescriptions is high. Despite the existence of omissions, this percentage has been overcome by patients overtreated. At present, various strategies are being developed in order to optimize these results. It would be desirable to perform similar experiences in other centers to confirm our finding or, otherwise, face the fact that it is an isolated incident in our institution.

10-330

Title: Cardiovascular risk factors therapy and quality of life in older HIV patients in use of antiretroviral

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Purpose: To analyze the clinical characteristics and pharmacological treatment of cardiovascular risk factors (CVRF) and quantify health-related quality of life (HRQoL) of HIV-infected patients older than 50 years in antiretroviral therapy.

Methods: Cross sectional study. The study was conducted in the outpatient unit of a tertiary hospital and included 70 patients on antiretroviral therapy, older than 50 years, who provided written informed consent. Study variables were age, sex, CD4 count, viral load, antiretroviral therapy, comorbidities, blood pressure, total cholesterol, LDL-cholesterol (LDL-c), triglycerides, blood glucose, smoking, cardiovascular risk and quality of life. The variables were collected at interview, clinical history and dispensing registers. The cardiovascular risk (CVR) was estimated by the Score equation translated and validated for the Spanish population. The HRQoL was assessed through the Medical Outcomes Study HIV Health Survey (MOS-HIV) questionnaire.

Results: The study included 70 patients, 81% were men, average age of 57 years old. Most of them presented CD4 >500 cells/mm3 and undetectable viral load. The most prescribed antiretroviral were darunavir and tenofovir. The most frequent comorbidities were: metabolic syndrome (35.71%), hypertension (30%) and hypercholesterolemia (37.14%). The prevalence of smoking was 45.71%. The mean values of systolic blood pressure were: 128.78 mmHg (non-hypertensive patients) and 142.72 mmHg (hypertensive patients). The mean values of total cholesterol (201.42 mg/dl versus 188.57 mg/dl), LDL-c (114.57 mg/dl versus 112.58 mg/dl) and triglycerides (205.78 mg/dl versus 138.74 mg/dl) were higher in patients with lipid-lowering therapy compared to patients without it. Mean blood glucose found in patients with a diagnosis of diabetes was higher than the remaining patients (136.63 mg/dl versus 96.58 mg/dl). The estimated mean CVR was 4.42% and 40% of patients were classified at high risk. Concerning quality of life, social functioning obtained the highest score (mean 86.32) and general health perception the lowest score (mean 48.11). The Physical Health Summary score average was 48.38 and Mental Health Summary score average was 48.09.

Conclusion: HIV patients older than 50 years presented a high prevalence of cardiovascular risk factors. Despite the use of specific pharmacologic therapy not all patients maintained desirable levels of blood pressure, serum lipids and blood glucose. The general perception of health was the domain with the worst quality of life assessment by patients so that the control of cardiovascular risk factors is a challenge that requires better follow up.

10-331

Title: Interim analysis of the efficacy and safety of Afatinib in patients with locally advanced or metastatic Non-small Cell Lung Cancer (NSCLC) in two Spanish hospitals

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Purpose: Recently, FDA has approved Afatinib as first-line treatment for patients with metastatic NSCLC with epidermal growth factor receptor (EGFR) mutations. While EMA approved the new indication, in Europe is open the special access scheme of Afatinib, based on the results of the pivotal LUX-Lung1 trial. Compassionate use program (Named Patient Use, NPU) provides early access to treat patients with progressive disease after one line of platinum-based chemotherapy and patients progressing after erlotinib /gefitinib. We report efficacy and safety data of Afatinib in patients enrolled in the NPU program in two Spanish hospitals comparing with results obtained in the pivotal trial.

Methods: We retrospectively studied patients with advanced NSCLC included in the NPU program of Afatinib in order to evaluate its efficacy, assessed by overall survival (OS) and progression free survival (PFS), and safety. The relevant medical records including diagnosis, histology, therapy, outcome and adverse effects were collected from the archive of the two hospitals. Additional data were recorded by clinical interview conducted by the oncology pharmacist in the outpatient pharmacy located in the hospital were the Afatinib is dispensed. OS was calculated from the treatment start date with Afatinib to death or last contact date if patients were alive at analysis time. We measured PFS from the treatment start date with Afatinib to disease progression or death, whichever occurred first.

Results: Totally six patients (pts)with stage IIIb (1/6)and IV(5/6) were enrolled into the NPU program. Most pts (4/6) were female; the median age was 62 years (range, 37-75 years). Most pts (4/6) were never smokers, two pts were ex-smoker. The majority of pts (4/6) were ECOG performance status 1 and the rest of pts were ECOG performance status 2. Most subjects (4/6) had L858R mutation and two had deletion in exon 19. At the time of reporting, 3 pts were alive, two of whom still remain in therapy with Afatinib. In the LUX-Lung1 trial the median OS was 10.8 months (95% CI 10.0-12.0) in the Afatinib group, in our patients the median OS was 7.1 months (95%CI 3.5-10.7). Median PFS in the cited trial was 3.3 months; in our study was 6.1 months (95%CI 2.3-9.9).In the LUX-Lung1 trial the most common adverse events (AEs) were diarrhea (87%), rash/acne (78%) and stomatitis (61%). Other AEs were nail effect (39%), vomiting (20%), pruritus (18%), dyspnoea (15%), ocular effects (13%), and cough (13%). Following, AEs appeared in our patients are detailed: diarrhea (83%), rash/acne (67%), stomatitis (50%), pruritus (50%), ocular effects (50%), nail effects (33%), vomiting (33%), dyspnea (33%) and caugh (17%).

Conclusion: Median OS in our patients was lower than that reported in the pivotal LUX-Lung 1 clinical trial; however, median PFS was longer. The safety profile was similar to that observed in the pivotal study, being the most common adverse events diarrhea, rash/acne and smotatitis with comparable percentages. On the other hand, dyspnea and ocular effects had a significant higher prevalence in our patients. In any case, must be taken into account that this analysis is limited by its sample size.

10-332

Title: Effectiveness and safety of protease inhibitors (telaprevir and boceprevir) in off-label use.

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Purpose: Evaluate the effectiveness and safety in the short term, boceprevir (BOC) and telaprevir (TPV) in combination with peginterferon and ribavirin, in the treatment of chronic hepatitis C virus (HCV) in adult patients coinfected with HIV / HCV and transplanted liver.

Methods: Descriptive retrospective observational study which included all patients coinfected with HIV / HCV and liver transplant who started off label triple therapy between January 2012 and June 2013. We collected demographic, laboratory and clinical: age, sex, date of transplant, antiretroviral therapy (ATRV) concomitant HCV viral load (CVbasal), at 4, 8, 12 and 24 weeks after initiation of tritherapy, CV HIV, CD4, hemoglobin, neutrophils, platelets, liver fibrosis and previous response. Effectiveness was assessed by rapid viral response (RVR), defined as undetectable viral load (CVI) at 4 weeks and partial early viral response (EVR) or late (DVR) defined as CVI at 12 or 24 weeks respectively. Scale was used WHO toxicity to evaluate the safety profile.

Results: 9 patients received tritherapy (3 coinfected and 6 trasplanted), 78% male, mean age 46 years (39-55), 100% had HCV Cvbasal >800,000 IU/mL and fibrosis grade 3. All CV HIV coinfected patients had undetectable and CD4 >100 cells/ml [mean 375 cells/ml], 5 patients were null responders (RN) and 1 naive patient (N). 4 patients were treated with telaprevir and 2 patients with boceprevir. BOC group were treated with ATRV not recommended (maraviroc, enfuvirtide or atazanavir). RVR reached all patients except one treated with telaprevir, which treatment was withdrawn at week 4 due to inefficacy (RN). 3 transplant relapsing patients (R) and treated with boceprevir required cyclosporin dose decrease 33%. 1 patient achieved RVR and another one CVI at 8 weeks. 2 patients were withdrawn, one by inefficiency / poor response and another one by risk of rejection at week 21. No ADRs hematologic type grade 3 were detected in TPV group but 50% of these patients developed skin reactions (erythema, rash, pruritus, anorectal rash). TPV was discontinued by a patient at week 5 for 7 days, severe oropharyngeal thrush. BOC group presented dysgeusia and ADRs grade 4: thrombocytopenia (1 patient), neutropenia (2 patients), and anemia in transfusion range (2 patients).

Conclusion: The short-term analysis shows a high rate (>60%) of RVR for both groups of patients. Tritherapy causes a high incidence of side effects. All patients treated with boceprevir presented dysgeusia also in these patients observed anemia and neutropenia more sever in both groups (trasplanted and co-infected patients) compared with telaprevir. The frequency and severity of anemia and neutropenia should have the need of an intensive monitoring in this population. It is necessary to continue the study to assess the effectiveness and long-term security by Sustained Viral Response and the development / maintenance of ADRs, as well as its severity, in transplanted patients with

10-333

Title: Effectiveness and safety bendamustine-rituximab scheme in patients with non-Hodgkin lymphoma pretreated

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Purpose: Bendamustine is an antineoplastic which apparently shows a hybrid long line action mechanism (antimetabolite and alkylating agent). It is known that patients with non-Hodgkin's lymphoma refractory to or after multiple relapses have a poor prognosis, particularly when it comes to an aggressive lymphoma. The aim of this study is to evaluate the effectiveness and safety of Bendamustine-Rituximab scheme (BR) as off-label treatment in patients extensively treated with non-Hodgkin lymphoma (who you cant use CHOP-R due to age or comorbidity) as according to the published literature combined scheme provides greater efficiency than bendamustine or rituximab monotherapy.

Methods: We conducted a retrospective observational study of all patients who received bendamustine combined with rituximab in the Ambulatory Treatment Unit (UTA) of a tertiary hospital during 2012. The scheme was administered bendamustine 90 mg/m2 days 1 and 2 (by intravenous infusion over 30 min) + rituximab 375 mg/m2 day 1 every 28 days. The patient data (weight, height, body surface area, diagnosis) as well as all information about chemotherapy treatments received were obtained from Oncofarm program. Reviewing clinical reports prepared by Hematology department was evaluated treatment response and toxicity, and laboratory data were collected accessing the application OpenGipi .

Results: A total of 7 patients (6 males and 1 female) with a median age of 73 years (58-76) and advanced disease (stage III-IV) were included. 3 patients had follicular lymphoma, 2 marginal zone lymphoma (1 cutaneous and 1 on the other flexure), a B lymphoma diffuse large cell lymphoma and another patient B cell diffuse small. All these patients had received a median of 2 prior therapy lines (1-4) and thereafter a median of 4 BR cycles (2-6). As for the response only 1 patient had treatment failure and another patient complete response was obtained. The rest of patients showed partial response or stable disease. Nausea was the most frequent non-hematologic toxicity and as hematological adverse effects were recorded neutropenia (grade 3) and leukopenia (grade 2-3) in all patients. They pointed also administering a granulocyte colony stimulating factor (filgrastim and lenograstim).

Conclusion: In our study bendamustine-rituximab scheme has shown to be effective in most patients with both indolent and aggressive lymphoma treated extensively. Notably however appeared neutropenia grade 3 and grade 2-3 leukopenia all patients need supportive treatment with colony stimulating factors.

10-334

Title: EFFICACY OF PIPERACILLIN/TAZOBACTAM ADMINESTERED BY CONTINUOUS INFUSION VERSUS INTERMITTENT INFUSION FOR PSEUDOMONAS AERUGINOSA INFECTION

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Purpose: The main objetive of this trial was to verify that piperacillin/tazobactam administered by continuous infusion (CI) is superior in efficacy to a 30 % higher dose administered by short intermitent infusion (SI), in patients with nococomial or serious infections with suspected or isolation of Pseudomonas aeruginosa.

Methods: This was a prospective, double-blind, randomized controlled trial of CI versus intermittent SI of the drug. Patients included were randomized to receive piperacillin/tazobactam 8 g administered continously over 24 h or 4 g intermittently every 8 h for 1-14 days. The primary efficacy endpoint was defined as the percentage of patients with satisfactory clinical response at the end of treatment, defined as clinical cure (complete resolution of clinical signs and symptoms of infection) or clinical improvement (resolution or reduction of most signs and symptoms of infection). Treatment failure was defined as the persistence and/or progression of the sings and symptoms of infection. To evaluate this, we collected anthropometric data, microbiological data and, daily, clinical response, temperature, blood pressure and white blood cell count.

Results: Sixty-three patients were enrolled with 33 allocated to CI group and 30 to SI group. The treatment was empiric in 87.5 % of the patients in the CI group and in the totally of the SI group. The demographic and the baseline characteristics were similar for the patients receiving the two treatment regimens. Median Charlsons index score was 2 in CI group and 2.5 in SI group. No differences were found in primary efficacy endpoint between the two groups, 45.5 % and 50 % of the patients treated with the CI and the SI, respectively, were clinically cured or improved at the end of the treatment. Clinical failure was occured in 6.1 % of the patients in the CI group and in 6.7 % in the SI group. There was a death in the SI group due to infection treated. Median duration of treatment was 4 days in the CI group and 4.5 days in the SI group. The rate of Pseudomonas Aeruginosa piperacillin/tazobactam-resistant at the end of the treatment was 3 times higher in CI group (9,1 %) than SI group.

Conclusion: Piperacillin/tazobactam adminestered by CI failed to show more efficacy than a 30% higher dose administered by SI in patients with infections due to Pseudomonas aeruginosa. The rates of clinical cure are similar between the 2 forms of administration, therefore the CI of piperacillin/tazobactam is an alternative in the clinical practice and allows use a lower dose than that used with the conventional administration of the drug.

10-335

Title: Evaluation of effectiveness and safety of protease inhibitor-based triple therapy in patients with chronic hepatitis C genotype 1

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Purpose: The addition of hepatitis C virus (HCV) protease inhibitor, boceprevir (BOC) and telaprevir (TVR), to standard therapy with ribavirin and pegylated-interferon improved sustained virologic response (SVR) rate for genotype 1 chronic hepatitis C but also increased adverse events (AEs). The purpose of this study was to asses the effectiveness of telaprevir and boceprevir-based triple therapy, defined by SVR rate, and to evaluate the incidence of side effects with the new standard of care for chronic hepatitis C genotype 1.

Methods: A single-center, observational, retrospective study of patients that initiated treatment with telaprevir and boceprevir in January 2012 was performed. The patients were included in the International Early Access Program. The follow up was until July 2013. On-treatment viral kinetics was used to evaluate the effectiveness by assessing SVR rate, defined as an undetectable serum HCV RNA level 24 weeks after cessation of therapy. The following data were recorded: sex, age, IL28B genotype, fibrosis grade, viral genotype, prior response to treatment (naïve, relapser, null responder), baseline plasma HCV RNA levels and during the treatment period, at weeks 4, 12, at the end of treatment and 24 weeks afterward. Adverse events were also recorded. The information was collected from medical records.

Results: A total of 15 patients were included in the study: 9 were treated with BOC and 6 with TVR. Baseline characteristics in the BOC group were: 77.8% male, median age 51 years, 44.4% genotype 1a, 44.4% genotype 1b, 55.6% CT IL28B polymorphism, 33.3% CC IL28B polymorphism, 77.8% grade 4 fibrosis, 1 naïve, 1 relapser and 7 null responder patients. Among patients in the TVR group, baseline characteristics were: 83.3% male, median age 54 years, 100% genotype 1b, 83.3% CT IL28B polymorphism, 16,7% TT IL28B polymorphism, 66.7% grade 4 fibrosis, the 6 patients included in the TVR group were no responder to prior therapy. The SVR rate was 55.5% in the BOC treatment group vs. 66.7% in the TVR group. In the BOC treatment group 4 patients had viral breakthrough, 2 during the treatment period and the other 2, 4 weeks after the end of treatment. Among the TVR-treated patients, 2 had a viral breakthrough, one of them during the treatment period. The most common AE was anemia, occurring in 88.9% of the BOC-treated patients and 100% of the TVR-treated patients. One

patient in the TVR group needed treatment with erythropoiesis-stimulating agent. Rash appeared in 66.7% of the patients receiving TVR.

Conclusion: The treatment of chronic hepatitis C genotype 1 with HCV protease inhibitor-based triple therapy increases the response rates in naïve and in previously treated patients. The safety profile was similar to that described in clinical trials. Additional studies with larger samples are needed to compare response rates between boceprevir and telaprevir triple therapy and to identify predictive factors of response to HCV protease inhibitors.

10-336

Title: Effectiveness and safety of tocilizumab in corticoid refractory Graves' Orbitopathy

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Case Report: This case shows Tocilizumab (Roactemra) as a new therapeutic alternative in the treatment of patients diagnosed of GravesOrbitopathy (GO), with moderately to severely activity or sight-threatening, without response to treatment with corticoid intravenous pulses, or diabetic patients with poor response to any therapy. GO is manifested for inflammation of the orbital and periorbital soft tissues. The cause is complex. It is thought autoreactive T cells to recognize an autoantigen, the TSH receptor present in the orbit and thyroid follicular cell, secrete cytokines (IL-6), which stimulate the fibroblasts to synthesize glycosaminoglycan, which draws liquid produce periorbital edema and muscle, causing exophthalmos. This approach suggests that inhibition of IL-6 can be an effective treatment for this problem. Tocilizumab is an humanized anti-IL-6 receptor antibody, which is the rationale to test the efficacy of this drug in the GO. In fact, there is a clinical trial ongoing to test it. Our case is a sixty year old woman diagnosed of post-ablative hypothyroidism after treatment with radioactive iodine, and severe GO with bilateral optic neuritis. The purpose of the treatment was to reestablish the euthyroidism and control the disease by the administration of high-dose of intermittent intravenous corticoids (metylprednisolone 500mg weekly for 6 weeks, followed by 250mg weekly for six weeks more). The response was poor, and orbital decompression surgery was needed immediately due to worsening of visual acuity (VA). However GO progressed to VA of counting fingers in the right eye and <0.05 in the left eye (measured a distance of 1 metre, normal AV =1), being classified by the clinical activity score of 6/7. In this situation, with no more alternative, it was requested to the Pharmacy Committee of the Hospital the authorisation of using tocilizumab off-label for this patient. After authorisation and the informed consent obtained , tocilizumab was administered as single intravenous infusion (8 mg/kg) every 4 weeks, for 5 doses. - After 2 weeks the patient says feeling better and AV in left eye is 0.05. - After 9 weeks, the AV in left eye is 0.1, with almost no signs of edema and no signs of conjunctival and palpebral erythema - After 18 weeks, the AV in left eye is 0.6. - After 20 weeks, the AV in left eye improved to 1 (normal AV). No improvement was obtained in right eye at any time. So after five doses of tocilizumab, the response found was an important clinical and subjective improvement. No inflammatory activity was found. After the first dose, it was found a subjective improvement, after three doses there was a improvement in the signs and symptoms, being the AV the last variable in improving. The drug was well tolerated, without any adverse event. In our experience, the efficacy of tocilizumab in the treatment of GO in a patient refractory to corticoids, was surprising regarding promptness and magnitude of the improvement of signs, symptoms and AV, with a good safety profile.

10-337

Title: Adherence to highly active antiretroviral therapy as a risk factor of ribavirin-induced anemia in HIV/HCV coinfected patients

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Purpose: It has been reported a significant association between undetectable HIV-RNA at the beginning of the HCV therapy and development of anemia in coinfected patients. The purpose of this study was to examine if adherence to highly active antiretroviral therapy (HAART) is associated with a higher incidence of anemia.

Methods: Clinical records of coinfected patients treated for the HCV infection between 2009-2012 in a large teaching hospital were reviewed. Inclusion criteria were the following: HCV therapy completed, more than or equal to 18 years and undetectable HIV RNA, creatinine less than or equal to 1.6mg/dL and haemoglobin more than 11g/dL at the beginning of the therapy. Demographic features and laboratory data were recorded at the start of the HCV therapy. Adherence to HAART was measured by pharmacy-based time-to-refill. Non-adherence was defined as taking less than 95 percent of HAART doses in the six months before the start of HCV therapy. Chi-square test as well as univariate and bivariate logistic regression were performed to examine the role of adherence to HAART on the incidence of anemia, using IBM SPSS 19.0.

Results: Fifty-three patients [46 (87 percent) male, 46 (standard deviation:5,9years] were included. A total of 28 (53 percent) had anemia (haemoglobin less than or equal to 11g/dL) and 31 (58 percent) were considered adherents. Median baseline haemoglobin, CD4 cell count, HCV RNA levels and length of HCV therapy were 14.8 (Interquartile rank (IQR):13.5-16) g/dL, 453 (IQR:284-634) cells/mm3, 28 (53 percent) less tan 800.000 IU/mL and 33 (IQR:24-50.5) weeks, respectively. Adherence to HAART was significantly (P equals 0.04) associated with anemia. In contrast, anemia was not associated with sex, age or HCV RNA levels. On logistic regression, both adherence to HAART OR: 3,18 [95 percent CI 1,01-9,93] and baseline hemoglobin OR: 0,24 [0,11-0,51] were significantly associated with anemia. This association remained significant after controlling independently for sex, age and HCV RNA levels but not after baseline haemoglobin, CD4 cell count or creatinine.

Conclusion: Adherence to HAART is associated with a higher incidence of ribavirin-induced anemia. However, there may be others explanatory factors such as baseline haemoglobin.

10-338

Title: EFFECTIVENESS VERSUS EFFICACY OF BEVACIZUMAB AND CHEMOTHERAPY IN THE TREATMENT OF NON SMALL CELL LUNG CANCER

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Purpose: To determine the overall survival (OS) and progression-free survival (PFS) of patients with advanced non-small-cell lung cancer (NSCLC) with non-squamous histology treated with carboplatin, paclitaxel and bevacizumab (CPB) and compare it with the results obtained in the E4599 clinical trial (CT). To determine the most frequent toxicity observed in our patients compared with the one observed in the E4599 patients

Methods: Retrospective observational study between March 2010 and July 2012, in which 18 patients with non-resectable, metastastic or recurrent advanced NSCLC with non-squamous histology were treated with standard dose of paclitaxel, carboplatin and bevacizumab as first line chemotherapy for a maximum of six cycles, followed by bevacizumab monotherapy until evidence of disease progression or unacceptable toxicity. The following data was registered: antropometric measures, ECOG, TNM stage, doses, number of cycles, date of initial treatment, treatment duration, date of progression according to RECIST criteria and follow-up (subsequent lines of therapy, date of last visit). We used the following variables: Overall survival (OS): time from the beginning of the treatment with PCB to death or last registered visit, Progression-free survival (PFS): time from the beginning of the treatment with CPB to disease progression, death or last registered visit and cost of drug acquisition. The data was obtained from the medical histories, our informatic program (Farmatools) used in the Cytostatics Unit of our Pharmacy Service, the nurse records from the oncology outpatient clinic and the hospital complex intranet. We conducted an analysis with SPSS V15.0, and event-time distributions were estimated by the Kaplan-Meier method.

Results: A total of 18 patients were enrolled, the median OS was 6 months (IC 95%: 5.178-6.822) and the median progression free survival 5.33 months (IC 95%: 4.095-6.565) compared to the 12.3 months of median OS and 6.2 months of PFS achieved in the E4599. The median number of cycles of therapy was 4 (including monotherapy) compared to 7 cycles in the E4599 clinical trial. The metastasic locations in our patients were different than those described in the E4599 trial: brain 6 (33.3%), lung 6 (33.3%), kidney 1 (5.6%), soft tissues 1 (5.6%), lymph nodes (5.6%). All patients who received at least one cycle of PCB were included in the analysis of toxic effects. Most frequent adverse events were grade 1 and 2. Grade 3-4 toxicity was observed in 44.4% of patients, being neutropenia, febrile neutropenia, hyponatremia,

fatigue, dyspnea, CNS hemorrhage, peripheral neuropathy, myalgia, hyperglucemia and alopecia. Our toxicity profile was similar to the adverse events observed in the E4599.

Conclusion: Although in our study the effectiveness of the PCB regimen in PFS (5.3 months) was similar to the one observed in the pivotal clinical trial (6.2 months), a benefit in OS was not observed, as it did happen in the pivotal trial (12.3 months). It is impossible to compare statistically the results, but we are concerned about the poor results in OS observed in our population. The higher number of patients with ECOG 1 and the different metastasic locations compared to those described in the E4599 trial, may have had a negative impact in OS.

10-339

Title: Ustekinumab use study in patients with moderate to severe psoriasis. Effectiveness and safety

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Purpose: To analyze the effectiveness, safety and conditions of the use of ustekinumab in patients diagnosed with moderate to severe psoriasis in a first level hospital.

Methods: Retrospective observational study of the use of ustekinumab in patients diagnosed with moderate to severe psoriasis who had received at least one dose of the drug. The study was conduced between october 2010 and April 2013. Demographic and disease-related data were collected: age of onset, family history, affectation status and arthropathies. To evaluate the conditions of use of the drug both clinical indications and previously used therapies were reviewed. In terms of effectiveness "psoriasis area and severity index" (PASI) score reduction, dose frequency, dose and duration of treatment were considered as well as the reason for termination. In relation to safety medical records were reviewed in order to highlight possible adverse drug reactions (ADR).

Results: 17 patients(12 men) with a mean of 45.8(28-66) years, mean age at diagnosis of 30.2(8-49) years.In 4 patients family history was described, in 4 arthropathies and in 8 cardiovascular risk factors.Fifteen patients had received systemic therapy prior to therapy of study, including methotrexate and/or cyclosporine, but no phototherapy since a phototherapy unit (PUVA) is not available in the centre.Out these, thirteen also received biological therapy with adalimumab or etanercept. Regarding ustekinumab effectiveness only PASI data of nine patients were available, eight of whom achieved a PASI 90 score. Two of these patients achieved and maintained a 100% response (PASI=0).One patient had received a single dose at the time of ending the study, so the effectiveness in terms of PASI score reduction could not be measured. In the remaining cases, effectiveness was measured by the reduction of the lesions extension.Only in one case ustekinumab administration was not continued due to lack of efficacy after seven doses. In ten patients weight records were found, seven of which weighed more than 80kg;however,only three of the seventeen patients received 90mg/12weeks.The patient whose administration was stopped received 45mg/12 weeks (weight 90kg). The median dose received was 5.5 (3-9).No serious adverse effects were detected.

Conclusion: Ustekinumab was used according to the described technical specifications in 88.3% of the patients, demonstrating a good profile of effectiveness, measured in terms of PASI score reduction, and safety. Only in one case treatment was discontinued due to lack of effectiveness, probably related to the dose received, not adjusted to the patients weight

10-340

Title: Descriptive study of medication therapy management programs in Puerto Rico: Medicare Part D sponsors perspective

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Purpose: Medicare Prescription Drug, Improvement, and Modernization Act of 2003 required all Part D sponsors to include Medication Therapy Management Programs (MTMPs) to optimize therapeutic outcomes for patients with multiple conditions and medications. CMS requirements for MTMPs have changed since its initial implementation and some flexibility exist for Part D Sponsors in the design of the programs. Every year CMS publishes findings on MTMPs, but little is known about these programs in Puerto Rico. The purpose of this study is to describe the perspective on MTM services of Part D Sponsors in Puerto Rico and how they were provided in 2012.

Methods: A survey was sent by email to all Medicare Part D Sponsors in Puerto Rico. The questionnaire, that included twenty questions, assessed the required eligibility criteria for participation in the MTMP, MTM services provided in 2012, including method for MTM services delivery, interventions to beneficiaries, MTM services providers, strengths and barriers identified for the provision of MTM services, and perceived value of the MTMP for the Medicare five star quality rating system. SPSS Statistics was used for statistical analysis. All results presented are descriptive.

Results: Eight of nine Part D sponsors completed the survey.In 2012, 47.6% of all eligible patients in Puerto Rico received at least one Comprehensive Medication Review (CMR). Eligibility criteria was similar in all MTMPs, all requiring the beneficiary to have at least 3 chronic diseases, 7 Sponsors requiring the beneficiary to have filled eight Part D covered medicationsto be eligible. Chronic diseases targeted by MTMPs included Diabetes Mellitus, Congestive Heart Failure, Hypertension, Dyslipidemia, and Respiratory Diseases. The majority of MTMPs used a combination of face to face and telephone consultations to provide services. All MTMPs provided beneficiaries with an action plan and a personal medication list after an encounter. All Part D sponsors reported pharmacists were the main providers of MTM services. The pharmacist's salary and shortage, were main barriers of why pharmacists were not the solely providers. Lack of the perceived value of services to patients (50%) was also identified as a barrier. According to Part D Sponsors, increased medication adherence was the main value of MTM services. A reduction inhealth care associated costs, standardizing MTM documentation practices, establishment of professional relationships, and maintenance of the patient-pharmacist relationship were benefits associated with MTM programs.

Conclusion: Medicare Part D sponsors in Puerto Rico met the CMS minimum requirements for the provision of MTM in 2012. However, less than 50% of eligible beneficiaries actually received an intervention. MTM Programs have shown to improve patient adherence and persistence with their therapy regimen, and is perceived by medical plans as a valuable service to enhance their rating stars. More studies are needed on the perception of patients about the MTM program to determine the real impact of this factor on the actual number of patients who receive the service, in order to create strategies to address this barrier.

10-341

Title: Perception, practices and barriers of cancer-screening health promotion services among community pharmacists in Puerto Rico

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Purpose: Screening tests have shown great benefits for the detection and diagnosis of some of the most prevalent types of cancer. It has been demonstrated that one of the barriers for controlling cancer morbidity and mortality is poor patient education regarding cancer-screening tests. Community pharmacists play an important role in providing outstanding health promotion services and could educate the public about cancer screening and early detection. The objective of this study is to assess Puerto Rican community pharmacists current practices and perceptions on cancer-screening health promotion services and to identify barriers that limit pharmacists involvement in this practice.

Methods: This study will be submitted to the Institutional Review Board for approval and an informed consent will be obtained from all subjects. This study will use a structured questionnaire that will be distributed to pharmacists practicing across the community pharmacy setting in Puerto Rico. The questionnaire will assess pharmacists involvement in cancer health promotion activities and their perception about this practice. This questionnaire will also evaluate barriers that limit pharmacists involvement in this practice, such as: time availability, educational materials used, perceived value of activities, and topic confidence level. Other variables to be evaluated will be age, gender, number of prescriptions filled daily and hours worked weekly. The pharmacists perception regarding cancer-screening promotion will be assessed in the questionnaire through dichotomous, contingency, and 1-to-5 Likert scale questions. Both descriptive and inferential statistics will be used to analyze pharmacists responses in this study.

10-342

Title: Multicenter study to determine the safety of telaprevir and boceprevir in patients infected with hepatitis C virus

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Purpose: Recently we have seen the approval of protease inhibitors boceprevir (BOC) and telaprevir (TLV) as first generation direct-acting antiviral agents, and they are a milestone in the treatment against chronic hepatitis C virus (HCV) infection. The purpose of this study is to analyze the adverse events (AEs) appearing in patients infected with HCV who are treated with protease inhibitors (PIs) and to study: a) the safety of these drugs compared with that reported in clinical trials (CTs), b) the security of TLV versus BOC.

Methods: Retrospective, observational, multicenter study. Pharmacotherapeutic records of patients who initiated therapy with a PI between January'12 and January'13 were reviewed to collect the adverse events (AEs) and relevant analytical data. For comparison, safety data from pivotal CTs were obtained and the most frequent AEs were taken into account. Anemia was defined as Hb <11mg/dL, neutropenia: neutrophil count <0.75 x 10^3/mm3 and thrombocytopenia: platelet count <100000U/mm3. The variables were: age, sex, type of patient according to previous response to treatment with interferon and ribavirin (nave, nonresponder or patiens who had a relapse), fibroscan, basal and nadir Hb, neutrophil count, platelet count, presence of rash and anorectal discomfort. The percentage of patients with each AE for each drug was calculated. We also recorded the number of patients requiring erythropoietin (EPO) and granulocyte colony stimulating factor (G-CSF).

Results: 76 patients were studied, the mean age was 50.9 years and 21 were women. 14 were nave patients (18.4%), 31 were non-responders (40.8%) and 31 had a previous relapse (40.8%). The mean fibroscan value was 18.2 kPa (indicating cirrhosis). In CTs with TLV the specific AEs described are: rash (55%), anemia (32.1%) and anorectal discomfort (13%). The specific AEs described for BOC are: anemia (49%), neutropenia (29%) and thrombocytopenia (3%). 51 (67.1%) patients were treated with TLV and 25 (32.9%) were treated with BOC. In those treated with TLV anemia was observed in 24 cases (47.1%), 18 patients experienced thrombocytopenia (35.3%), in 18 cases anal discomfort was described (35.3%), rash was detected in eight subjects (15.7%) and one patient showed neutropenia (1.9%). Of the 25 patients treated with BOC, 15 had anemia (60%), ten had thrombocytopenia (40%), three experienced neutropenia (12%), and rash was described in two cases (8%). Furthermore dysgeusia and pruritus were experienced in 11,8% and 35% of patients with TLV versus 52% and 20% respectively in the group

treated with BOC. The total of patients with any of the previously described AE was 59 (77.3%). Two patients required G-CSF (2.6%) and 16 took EPO (21%).

Conclusion: 1. BOC and TLV have shown a worse safety profile in terms of anemia than in CTs. Conversely incidence of neutropenia and rash was lower in our population than as described in CTs. 2. As in CTs, the presence of anemia, neutropenia, thrombocytopenia and dysgeusia was more common with BOC in the other hand patients treated with TLV have experienced more rash, anal discomfort and pruritus.

10-343

Title: DETECTION OF GENEMARKERS INVOLVED IN RESISTANCE TO TRASTUZUMAB AND LAPATINIB IN HER-2 POSITIVE BREAST CANCER PATIENTS

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Purpose: Mutations or alterations in the expression of certain components of EGFR/Her-2 signaling pathway have recently been associated to resistance to trastuzumab and lapatinib. The most representative molecules are PI3KCA, AKT1, PTEN, FCGR2A, FCGR3A and FGFR1. The objective of this study is to analyze the influence of genetic markers on resistance to trastuzumab and/or lapatinib in patients diagnosed with breast cancer.

Methods: This study was approved by the ethics committee. Inclusion criteria for breast cancer patients are: >18 years, positive Her-2 receptor and previous trastuzumab and/or lapatinib treatment. Metastasis from another origin or inavailability of tissue samples are exclusion criteria. Cytology or paraffin embedded tissue samples will be provided by the local hospital Biobank. Genotyping of polymorphisms and mutations (PI3KCA, PTEN, AKT, FCGR3A, FCGR2A) will be performed by PCR-RFLP or DNA sequencing after DNA extraction. Protein and RNA expression (PTEN, EGFR FGFR1) will be assessed by immunohistochemistry and/or quantitative PCR, respectively and gene amplification by Fluorescence In Situ Hybridization. Clinical and histopathological data will be collected: overall and progression free survival, complete and partial response, age, nulliparity, family history of breast cancer, lymph node involvement, estrogen and progesterone receptors expression, Ki 67 antigen, p53 oncogene, stage of the disease, tumor size, grade and histological type and prescribed treatments. All data will be recorded without patient identifiers and maintained confidentially. Statistical analysis will be performed to investigate the association of gene alterations with trastuzumab and/or lapatinib resistance.

10-344

Title: Comparison of two granulocyte colony-stimulating factor agents in breast cancer patients as neutropenic prophylaxis in adjuvant chemotherapy

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Purpose: In January 2012, change of Neupogen to Nivestim was made. Nivestim is a biosimilar of Neupogen, both are a Granulocyte Colony-Stimulating Factors (G-CFS) drugs. To compare: 1. The duration of prophylactic treatment with Neupogen versus Nivestim . The target was breast cancer patients treated with Adriamycin (A) and Cyclophosphamide (C) followed by Docetaxel (T) or TAC schemes. These schemes include by protocol the co-adjuvant G-CFS treatment. 2. The amount of switches from Neupogen and Nivestim to Neulasta (pegylated G-CSF). Hospitalizations for febrile neutropenia were registered. 3. Adverse effects associated.

Methods: Retrospective, observational study in a 500 bed hospital. Medical records of breast cancer patients undergoing chemotherapy who received AC-T or TAC schemes were reviewed. Two study groups were established: -Group 1: The studied drug was Neupogen corresponding to year 2011. -Group 2: The studied drug was Nivestim corresponding to years 2012-2013. Variables recorded in an Excel database were: age, neutrophil count before and after each cycle to detect neutropenia, number of hospital readmissions for febrile neutropenia, number of adverse reactions associated with each drug, changes to Neulasta for insufficient efficacy or intolerance of each studied drug, number of doses of G-CFS administered per cycle. The dosage of G-CFS is one injection per day. Statistic analysis (SPSS program version 17) with mean (SD) and percentages was made with inferential analysis Chi 2 or Fisher exact test and Student t test depending of the variables. Significance was considered when $p<0.05$. Limitations of the study: The sample size was small. Although patients in each group compared are not the same, adjuvant treatment for breast cancer patients present similar demographic and clinical characteristics.

Results: Sixty-six patients were included, 33 per year with a mean age of 55.31 (9.62) in Group 1 and 50.32 (10.71) in Group 2. A total of 635 doses of Neupogen were administered with an average of 5.21 (1.38) doses per cycle; 721 Nivestim doses with a mean of 6.48 (2.18) doses per cycle were administered. This difference was statistically significant ($p<0.001$) Six per cent of patients had to switch to Neulasta because of Neupogen low efficiency and poor tolerance while 15% suffered the same process with Nivestim. This difference was not statistically significant ($p=0.427$). Twelve per cent of patients suffered of neutropenia with Neupogen (100% were febrile) and a 24% with Nivestim (50%

were febrile). This difference was not statistically significant (p=0.202). All febrile neutropenia were cause of hospital admission. Thirty-six per cent of patients experienced some type of adverse reaction with Neupogen and 45% with Nivestim. In both cases the joint pain was the most common adverse reaction; 33% in Group 1 and 42% in Group 2. Other adverse effects were vomits (3%) and allergic reaction (3%) with Neupogen and hypotension (3%), fatigue (3%), peeling hands/feet (3%) and headaches (3%) with Nivestim.

Conclusion: The duration of the prophylactic treatment with G-CFS was statistically significant longer with Nivestim. The switches to Neulasta were also more common with Nivestim. This was not statistically significant. The neutropenias were more frequent with Nivestim than with Neupogen, although both had the same absolute number of febrile neutropenias. The difference in neutropenias was not statistically significant Patients treated with Nivestim suffered more adverse reactions. This was not statistically significant. Adverse reactions of both drugs had a different profile, except for joint pain. Results obtained suggest the need to study furthermore these drugs to assess their effectiveness and safety.

10-345

Title: STABILITY OF AN ANTIMICROBIAL LOCK SOLUTION OF AMIKACINE AND SODIUM HEPARINE

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Purpose: To determine the concentrations of amikacine and sodium heparine which are stable as antimicrobial lock solutions. To evaluate the physical stability of the amikacine and sodium heparine lock solutions protected from light at 37C and refrigerated.

Methods: 4 solutions where prepared from a commercial amikacine 500 mg/2ml vial, extracting 0.1, 0.2, 0.3 y 0.4 ml and rising them up to 10 ml with saline serum, producing 4 solutions with different amikacine concentrations: 2.5 mg/ml, 5 mg/ml, 7.5 mg/ml y 10 mg/ml, respectively. Taking 1 ml of every one of the solutions and mixing them with 1 ml of commercial sodium heparine solution of 5000 UI/ml, producing 4 solutions of 2 ml of 1.25 mg/ml, 2.5 mg/ml, 3.75 mg/ml y 5 mg/ml of amikacine with 2500 UI/ml of sodium heparine. A physical study of stability by visual method was applied. The physical parameters where: presence/absence of precipitates, change of colour (assessed on white and black background by three observers) and turbidity of the solutions by visual method. The solutions that where visually stable where kept during 7 days, protected from light and under two different temperature conditions: 37C and refrigerated (2-8C).

Results: The solutions of amikacine of 1.25 mg/ml and 2.5 mg/ml with sodium heparine of 2500 UI/ml, where clean, without turbidity, without precipitates and where stable for at least 7 days at 37C and refrigerated and protected form light. The solution of amikacine of 3.75 mg/ml with sodium heparine of 2500 UI/ml, had a slight turbidity at the moment of preparation. The solution of amikacine of 5 mg/ml with sodium heparine of 2500 UI/ml, was turbid and had precipitates at the moment of preparation.

Conclusion: The solutions of 1.25 mg/ml and 2.5 mg/ml of amikacina with 2500 UI/ml of sodium heparine where physical stable during 7 days and 37C and refrigerated, while the 3.75 mg/ml and 5 mg/ml of amikacine with 2500 UI/ml sodium heparine solutions where physically unstable.

10-346

Title: Antimicrobial stewardship programs: interventions and associated outcomes

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Purpose: Studies conducted over the years indicate that antibiotic use is unnecessary or inappropriate in as many as 50% of cases. Antimicrobial stewardship (AS) is a key component of a multifaceted approach to preventing emergence of antimicrobial resistance. The AS aims to optimize the selection, dosage and duration of antimicrobial treatments in order to improve results in the prevention and treating infection ensuring minimal toxicity and minimal impact on the resistances creation.

Methods: Prospective and interventional study was developed during 18 months (January 2012-June 2013) in a public tertiary teaching hospital.
A non-restrictive Antibiotics Stewardship Program (ASP) developed by clinical pharmacists in non intensive care medical and surgical wards and emergency service, exluding pediatrics.
Daily clinical chart review identified initiation of fluorquinolones, third generation cephalosporins, carbapenems, glycopeptides and aminoglycosides multiple daily dose were assessed adequacy of published internal empirical protocols. We reviewed those requirements which would apply sequential antibiotic therapy, ensuring an early switch to the oral route when the patient is clinically stable. Recommendation was left in the chart and attending physician was contacted when changes were considered urgent. Intervention acceptance was assessed after 48 hours post-intervention.
Main outcome measures number and type of interventions made by ASP, demographics variables, antibiotic prescription, infection origin (nosocomial, community and health care associated infections), type of infection (intraabdominal, respiratory, bacteraemia, urinary, skin and soft tissue) protocol adequacy and acceptance.

Results: The ASP made 783 recommendations (14 percent prescriptions reviewed) in 658 patients (1.18 interventions per patient), 60 percent male and 67.2 years (standard deviation 16.3 years).
Most interventions were done in: emergency service 178(22.7 percent), pneumology 163(20.8 percent), internal medicine 112(14.3 percent) and oncology 37(4.7 percent).
Most common infections were: respiratory (39.2 percent), urinary (16.5 percent), intraabdominal (10.3 percent), skin and soft tissue (9.1 percent) and bacteraemia (5.9 percent) ,other infections: 19 percent.
Origin distribution was: nosocomial 49.7 percent, community 41.5 percent and health care associated infections 8.8 percent. More involved antibiotics in interventions were: fluorquinolones (52 percent), third generation cephalosporins (14.7 percent), glycopeptides (12.2 percent) and carbapenems (7.7 percent) ,others: 13.4 percent.
Interventions were: antibiotic treatment modification or de-escalate (30.5 percent); medical order completion by dose adjusting or monitoring (21.7 percent); antibiotic interruption (15.3 percent);

change from intravenous to oral therapy (32.5 percent). Efficacy and security of interventions were 52.2 percent and 47.8 percent respectively.
The acceptance for each intervention was: sequential antibiotic therapy (253/2), antibiotic change (140/56), posology change (98/14), not indicated treatment interruption (82/38), drug levels monitoring (55/2) and antibiotic addition (34/9).
Overall acceptation was 84.5 percent, being higher in emergency and pneumology service.

Conclusion: The ultimate goal is the preservation of current and future antibiotics against the threat of antimicrobial resistance, although improving patient safety and reducing healthcare costs are important concurrent aims.
An intervention was required in 14 percent of predetermined antibiotic prescriptions and decreased by 40 percent after 6 years of ASP development. Acceptation rate was 84.5 percent. Further evaluation of clinical outcomes, evolution of Hospital antimicrobial resistance patterns and antibiotic consumptions are required.

10-347

Title: BIOLOGICAL TREATMENT IN PEDIATRIC PATIENTS WITH AUTOIMMUNE DISEASES IN A TERTIARY HOSPITAL

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Purpose: To study the profile of utilization for biological and immunosuppressive drugs in the treatment of autoimmune diseases in pediatric patients in a tertiary hospital. To analyze the indications for which the biological treatment is most frequently used. To assess the clinical response to biological treatment.

Methods: Patients under 16 years who had been diagnosed of autoimmune disease in the hospital were identified using digital medical records. Patients with inflammatory bowel disease and autoimmune arthritis were selected (septic arthritis and infectious arthritis were excluded). From the digital history and the pharmacy database, we collected the gender, diagnosis and pharmacologic treatment received (including those who had received biologic therapy). The clinical course after the beginning of biological therapy was followed, checking the clinical response, dose modifications/changes in treatment and continuation/discontinuation of therapy.

Results: 100 females and 48 males were diagnosed of autoimmune diseases: idiopathic juvenile arthritis(IJA-88.51%), psoriatic arthritis(3.4%), inflammatory bowel disease(IBD-8.8%), inflammatory arthritis(4.1%) and mediterranean familial fever(one case). 18.9% of patients received only NSAIDs and/or steroids as pharmacological treatment. 81.1% of patients required methotrexate (oral/subcutaneous) as immunosuppressant drug. 70 patients received biological therapy, most of them didnt respond to methotrexate (4 to azathioprine): Etanercept(30 patients with IJA): 7 required dose adjustment by weight, 7 dose reduction (3 responses), 6 that discontinued treatment had to restart, 5 had clinical remission and 5 didnt need treatment modifications. Adalimumab: 2 patients with IBD (one requiered addition of methotrexate) and 14 with IJA (4 had clinical improvement, 4 dose escalation, 2 discontinued and restarted treatment, 2 switched to etanercept for lack of response and 2 hadnt dose modification). Infliximab (8 patients with IBD): One required dose increase and other switched the biological therapy for clinical worsening. Tocilizumab(6 children with IJA): 2 with dose increase and 2 had treatment discontinuation (one for improvement and other for adverse reactions) and needed to restart. Anakinra: one case of mediterranean familial fever (with dose increase), 6 of IJA (2 had adequate response, 3 dose increase and one clinical remission) and one of IBD (stopped for inefficacy).

Conclusion: The profile of utilization indicates that this therapy is used in cases where the response to other immunosuppressants of choice (such as methotrexate) is not adequate The most common pathology detected was idiopathic juvenile arthritis, and some variability and difficulty was observed in the control of the disease with the different drugs. The most satisfactory response was observed in IBD treated with infliximab.

10-348

Title: Temozolomide: indications, safety, poblacional and economic analysis in a third level hospital during 2012

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Purpose: Temozolomide(TMZ) is an oral alkylating agent indicated for the treatment of Glioblastoma Multiforme(GBM) and progression or recurrence of malignant gliomas after standard treatment. TMZ is usually given after surgery, with radiotherapy at a dose of 75mg/m2/da for 5 days a week for 6 week and subsequently as monotherapy at doses of 150-200 mg/m2/da for 5 days every 28 days to complete 6 cycles. The aim of this study is to evaluate its use in a third level Hospital during 2012, by type patient, diagnosis, indication, tolerance and economic cost.

Methods: This was an observational retrospective descriptive study of patients who received TMZ in our outpatient pharmacy. The data used were obtained from the electronic outpatient prescription program, patient medical histories and blood analytical results. Was analyzed demographic data, primary diagnosis and indication based on the classification of the World Health Organization of Central Nervous System Tumors 2007, previous surgical treatment, use of concomitant TMZ with radiotherapy and/or as monotherapy, pharmaceutical products(TMZ 5mg, 20mg, 100mg, 140mg, 100mg) and number of capsules dispensed per patient. The laboratory price of different specialties and dispensations for each patient was considered to calculate the economic cost. Treatment safety was measured by the number and type of adverse reactions recorded in clinical history, and by the number of patients who died during treatment.

Results: There were a total of 46 patients, 33(72%) men and 13(28%) women, with an average age of 52 (SD:15.4)years, the main diagnosis was grouped into 6 different types, ordered from the highest to the lowest number of cases: GBM(17), Astrocytoma grade II-III(12), Oligoastrocytoma(5), Oligodendroglioma(4), high-grade glioma not classified histopathologically(4), Ependymoma(1) and Other(3)(thymic carcinoma, macroadenome and desmoplastic small round cell). 29(63%) patients were operated on surgically, 39(85%) received radiotherapy with concomitant TMZ and 37(76%)TMZ alone as adjuvant treatment after radiotherapy. TMZ consumed in 2012 represented a cost of 88,256 USD. The difference between the beginning of treatment and the dosage regimen used, this made the cost per patient was varied, obtaining a 50th percentile of 1,592.91USD. The most common adverse reaction was asthenia, and only two patients had serious adverse reactions, lower limb venous thromboembolism

and thrombocytopenia that required two platelet concentrate transfusion. Of the total 46 patients, 8 died during the same year 2012.

Conclusion: Our study has population and diagnosis characteristics similar to bibliography. Proper use of TMZ measured by compliance with the details on the product information is 93%. Overall treatment tolerance is good, although in a small percentage (4%), severe hematologic adverse reactions are difficult to reverse. Treatment cost is high considering that it is a palliative treatment whose effectiveness is limited and it has a great interindividual variability according to bibliography, because of this it requires a good follow-up to avoid serious adverse reactions. Currently biomarkers predictive of response to TMZ are being studied to avoid overtreatment in patients bad responders.

10-349

Title: Antimicrobial stewardship programs: interventions and associated outcomes

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Purpose: Previously conducted studies indicate that antibiotic use is unnecessary or inappropriate in as many as 50% of cases. An Antimicrobial Stewardship Program (ASP) is a key component of a multifaceted approach to preventing emergence of antimicrobial resistance. ASP aims to optimize the selection, dosage and duration of antimicrobial treatments in order to improve results in the prevention and treating infection ensuring minimal toxicity and minimal impact on the resistances creation.

Methods: This prospective and interventional study was developed during 18 months (January 2012-June 2013) in a public tertiary teaching hospital. A Non-Restrictive Antibiotics Stewardship Program (ASP) was developed by clinical pharmacists in non intensive care medical and surgical wards and emergency service, exluding pediatrics. Daily clinical chart review identified initiation of fluorquinolones, third generation cephalosporins, carbapenems, glycopeptides and aminoglycosides. Multiple daily doses were assessed against adequacy of published internal empirical protocols. Requirements were established in which sequential antibiotic therapy would be applied, such as ensuring an early switch to the oral route when the patient is clinically stable. A recommendation was left in the respective patients chart and the Attending Physician was contacted when changes were considered urgent. Intervention acceptance was assessed after 48 hours post-intervention. Main outcome measures included number and type of interventions made by ASP, demographics variables, antibiotic prescription, infection origin (nosocomial, community and health care associated infections), type of infection (intraabdominal, respiratory, bacteraemia, urinary, skin and soft tissue), and protocol adequacy and acceptance.

Results: The ASP made 783 recommendations (14 percent prescriptions reviewed) in 658 patients (1.18 interventions per patient), 60 percent male and 67.2 years (standard deviation 16.3 years). Most interventions were done in: emergency service 178(22.7 percent), pneumology 163(20.8 percent), internal medicine 112(14.3 percent) and oncology 37(4.7 percent). Most common infections were: respiratory (39.2 percent), urinary (16.5 percent), intraabdominal (10.3 percent), skin and soft tissue (9.1 percent) and bacteraemia (5.9 percent) ,other infections: 19 percent. Origin distribution was: nosocomial 49.7 percent, community 41.5 percent and health care associated infections 8.8 percent. More involved antibiotics in interventions were: fluorquinolones (52 percent), third generation cephalosporins (14.7 percent), glycopeptides (12.2 percent) and carbapenems (7.7 percent) ,others: 13.4 percent. Interventions were: antibiotic treatment modification or de-escalate (30.5 percent); medical

order completion by dose adjusting or monitoring (21.7 percent); antibiotic interruption (15.3 percent); change from intravenous to oral therapy (32.5 percent). Efficacy and security of interventions were 52.2 percent and 47.8 percent respectively. Acceptance achieved: sequential antibiotic therapy, 99 percent; antibiotic change, 71 percent; posology change, 87 percent; treatment interruption, 68 percent; levels monitoring, 96 percent; and antibiotic addition 79 percent. Overall acceptation was 84.5 percent, being higher in emergency and pneumology service.

Conclusion: The ultimate goal is the preservation of current and future antibiotics against the threat of antimicrobial resistance, although improving patient safety and reducing healthcare costs are important concurrent aims. An intervention was required in 14 percent of predetermined antibiotic prescriptions and decreased by 40 percent after 6 years of ASP development. Acceptation rate was 84.5 percent. Further evaluation of clinical outcomes, evolution of Hospital antimicrobial resistance patterns and antibiotic consumptions are required.

10-350

Title: Value of alpha-fetoprotein as an early biomarker for treatment response to sorafenib therapy in advanced hepatocellular carcinoma

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Purpose: Sorafenib is the only standard line of treatment showing a survival benefit in patients with advanced hepatocellular carcinoma (HCC). The purpose of this study was to evaluate the role of alpha-fetoprotein (AFP) as a potential biomarker for sorafenib treatment effectiveness. Furthermore the second endpoint was described the treatment outcome and tolerability.

Methods: The Clinical Research Ethics Committee of Asturias approved this single-center, observational, retrospective study of patients with HCC treated with sorafenib between 2008 and 2013. The follow up was until July 2013. To evaluate the role of AFP as a possible response predictor, serum AFP levels at baseline and after six weeks were collected. Patients were classified in two groups: with an AFP decline < 20 % and > 20% after six weeks of sorafenib therapy. The effectiveness was defined by overall survival (OS). Variables included were: sex, age, ECOG performance status, etiology, extra hepatic spread, Child Pugh status, AFP level at baseline and six week after, serum albumin, prior treatments, treatment duration, initial dose and adverse events. The Kaplan-Meier method was used for the survival analysis and a Cox proportional hazard analysis was performed to assess a potential correlation between early serum AFP decline and survival, followed by a multivariate Cox regression analysis.

Results: A total of 134 patients were included: mean age 65.3 years, 113 males and 107 cirrhosis. Alcohol was the primary cause of liver disease followed by hepatitis C virus. Staging advanced HCC 42.5%, well preserved liver function (Child Pugh A) 37.3% and median alpha-fetoprotein at baseline was 72.8 ng/mL. Prior to sorafenib therapy, 37.3% of patients received transarterial chemoembolisation (TACE). Sorafenib was first treatment for 26.1% of patients. The median duration of treatment was 5 months. A large proportion of patients started at a full dose of 800 mg daily. However, 54 (40.3%) patients reduced dose during the period of treatment and 5 (3.7%) discontinued. One patient achieved complete response after 53 months of therapy. The median overall survival (mOS) was 9 months (95%IC 7.4-10.5). The mOS was significantly longer for patients with an AFP decline >20% than for patients with an unchanged or rising serum AFP after six weeks (20 months vs. 8 months, p=0.01). In addition, the results of multivariate analyses indicated that early AFP decline was associated with significantly better overall survival (HR, 0.25; 95%IC, 0.073-0.88, p=0.03). The most frequent adverse events were fatigue, diarrhea and hand-foot syndrome. Three patients suffered ischemic stroke related to sorafenib.

Conclusion: Drop in serum AFP > 20% in the first six weeks may be a useful early response predictor associated with longer survival in patients with advanced HCC receiving sorafenib treatment. Further prospective studies are necessary to confirm these preliminary results.

10-351

Title: Pharmacogenetics of colorectal cancer in patients treated with monoclonal antibodies and fluorouracil-based schemes

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Purpose: Main objective: To evaluate the influence of genetic markers on treatment toxicity and survival of patients with colorectal cancer (CRC). Specific Objectives: To assess medication negative results of different treatment schedules, calculate progression-free survival (PFS) and overall survival (OS) after administration of different treatment schedules, determine the presence of polymorphisms in TS, DPYD UGT1A1 in healthy tissue, the presence of KRAS mutations in p53, BRAF and PI3KCA and loss of PTEN in tumor tissue and evaluate the influence of genetic alterations in the toxicity of the various treatment regimens.

Methods: This will be a retrospective observational study in patients diagnosed with CRC during the period February 2004 to February 2013 and eligible for KRAS determination. Target Population: Patients with CRC susceptible to initiate treatment with Tyrosine Kinase Inhibitors (Cetuximab and Panitumumab). Sample: 68 patients. Variables: survival (overall survival and progression-free survival will be measured until the end of the study), toxicity (considering independently any adverse reactions associated to different treatment regimens), age (at time of diagnosis), sex, histopathology, status of genetic markers (presence/absence of the genetic alteration), prescribed treatment (all drugs and combinations used in the treatment of colon cancer), treatment line, prescribed dose of each drug treatment, treatment duration. Tissue samples were obtained through local HUVN Biobank. The identification of genetic markers will be done by the following techniques: real-time PCR, PCR-restriction fragment length polymorphism or sequencing after DNA extraction (polymorphisms and mutations) and immunohistochemistry (protein expression).

10-352

Title: Pharmaceutical Care Program in outpatients with antineoplastic agents

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Purpose: The appearance of oral antineoplastic agents (OAA) has revolutionized the therapy of solid and hematologic tumors in recent years. In our hospital, their use has increased by 63% since 2008. In Spain, due to their high cost and high risk, they are delivered from hospital pharmacies. Therefore, the pharmacist is the last professional in touch with the patient before drug administration and must ensure an adequate education. Our goal is to develop and evaluate a Pharmaceutical Care Program applied to patients who are starting treatment with OAA.

Methods: This program was developed by a group of clinical pharmacists, based on scientific evidence and clinical experience. The aim is to systematize a clinical interview, conducted by the pharmacist at the time of starting treatment, in order to ensure proper delivery, dose, drug administration and adherence as well as detect drug interactions and handling adverse events by the patient himself. Subsequently, data from all patients starting treatment with OAA and undergoing a clinical interview from January 2012 to August 2013 were analyzed. Following variables were recorded: demographic (age and gender), clinical (ECOG and type of tumor), pharmacotherapeutic (type and dose of AAO, other chronic drugs and interactions). The pharmaceutical activity was assessed by the number of interventions made and accepted. For data analysis we used SPSS v. 21. Results were expressed with means, standard deviations and percentages.

Results: 121 patients were included (62.0% male). The mean age was 67.9 (14.3) years old and 9.9% had an ECOG2. The most prevalent diagnoses were renal carcinoma (20.7%), multiple myeloma (19.8%), prostate carcinoma (18.2%) and lung carcinoma (13.2%). The main AAO dispensed were: abiraterone (19.0%), lenalidomide (18.2%), sunitinib (11.6%), gefitinib (10.7 %), imatinib (9.1 %) and sorafenib (9.1%). The mean number of chronic co-medications used was 5.0 (2.1). Seventy two interactions were identified, 27.8% had category D or X according to the FDA classification. Principal groups of drugs interacting with AAO were proton pump inhibitors (25.0%), antihypertensive drugs (20.8%) and statins (15.3%). The total number of pharmaceutical interventions was 143 (1.2 interventions/patient). The most frequent reasons were clinical significant drug interaction (35.7%), error in drug administration (14.7%), contraindicated drug interaction (3.5%), wrong dose (2.8%) and lack of information in the medical order (2.8%). The global acceptance by physicians or patients was 87.4%.

Conclusion: The Pharmaceutical Care Program has allowed the systematization of onco-haematologic outpatients care by patient education. The pharmacist helps to improve safety drug by identifying drug interactions and errors at the administration or dose.

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Title: THE DE-ESCALATION STRATEGY IN EMPIRICAL TREATMENT WITH CARBAPENEMS AS A PART OF ANTIMICROBIAL STEWARDSHIP PROGRAMME

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Purpose: The aim of this study is to analyze the carbapenems prescriptions as empirical antimicrobial therapy and to assess the use of antibiotic de-escalation strategy by prescribing medical services, as a part of the antimicrobial stewardship program.

Methods: An observational prospective three month long study (March to June 2012) was carried out in a tertiary university hospital. One of the objectives of the study was to monitor the prescriptions with carbapenems and to promote the use of de-escalation strategy on the basis of culture results. The variables analyzed were: number of patients prescribed carbapenems, prescribing medical services, request of cultures, isolated microorganisms, duration of treatment, combination with other antibiotics and de-escalation performed. The Oncology-Haematology, Orthopedics&Trauma, Neurosurgery and Neurology departments were excluded. The monitoring of the carbapenems prescriptions was made through the electronic prescribing software and checking the results of microbiological cultures through the webpage Mycrobdinamic. De-escalation was defined as the administration of an antibiotic with a narrower spectrum or switching from combination therapy to mono-therapy.

Results: A total of 369 patients were included, with 433 prescriptions. Mean age was 71 years and sex ratio: 59% Male. The most prescribed carbapenems were Ertapenem (37.6%) and Meropenem (36%). The carbapenem most used in Internal Medicine was Meropenem (58.2%) and Imipenem in Urology (75%). Ertapenem was used more frequently in General Surgery (53.7%) and Vascular Surgery (86.0%). Out of total 316 requested sensitivity? tests for carbapenems prescriptions, 172 (54.4%) were positive. The most common isolated pathogen was Escherichia coli (24.7%), being 20.8% of them Extended-Spectrum Beta-Lactamase (ESBL)-producing, being 60% sensitive to piperacillin-tazobactam or fosfomycin. Pseudomonas aeruginosa (11.9%) 91.3% were sensitive to piperacillin-tazobactam, Klebsiella spp. was isolated in 3.6%, where 33.3% were ESBL-producing and 50% were sensitive to piperacillin-tazobactam. In the case of Gram-positive bacteria, Staphylococcus aureus were more frequently isolated, being 63.2% sensitive to oxacillin. The median days of treatment was 6 (range 3-9). Antimicrobials most used in combinations were Fluorquinolones (35.3%) and Linezolid (30.3%). Total treatments subject to de-escalation was 96 (55.8%), out of 172 showing this possibility. The Departments with higher degree of de-escalation strategy performance were Internal Medicine (47.9%)

and General Surgery (22.9%) however the departments least involved were Gastro (5.2%) and Urology (4.2%).

Conclusion: De-escalation after empirical treatment with carbapenems was performed in more than 50% of the prescriptions based on the in-vitro sensitivity tests. Although the request of the microbial cultures should be encouraged as a routine practice before starting treatment with carbapenems, there is a wide range of variability and inconsistency in the way different medical services following-up these interventions and practice, being Internal Medicine more involved in performance of de-escalation. Significant work is needed to establish the most effective tools to implement a de-escalation procedure, mainly in terms of providing guidance to prescribing clinicians.

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Title: Prevalence of off-label use in antineoplastic drugs and their associated cost

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Purpose: Some antineoplastic drugs are used in medical practice in conditions unapproved by European and Spanish regulatory agencies. Because of its recent marketing, there are not too much safety data and it is unknown the associated risks with this use in untested indications. Also, patent protected drugs mean a high economic impact. The prevalence of off-label use is not well known. Purposes: 1.To calculate the prevalence of off-label use of anticancer patent protected drugs in 2012. 2.To quantify the cost associated with that use. Secondary objective:To analyze the supporting evidence of off-label use of these drugs.

Methods: A descriptive, retrospective study was carried out. All treatments administered of patent protected drugs in a 500-bed hospital during 2012 were collected. Chemotherapies related to clinical trials and orally administered drugs were excluded from the analysis. Eleven medications were included: alemtuzumab, azacytidine, bendamustine, bevacizumab, bortezomib, cetuximab, fotemustine, panitumumab, pemetrexed, rituximab and trastuzumab. The following variables were recorded in an Excel database: prescriber service, pacients age, sex, tumor type, stage or line of therapy. If a treatment was used in a tumor location, stage, line and chemotherapy schedule different than the approved, was considered off-label. In this case, it was recorded whether that use was supported by the Food and Drug Administration (FDA) or referenced in the database DRUGDEX MICROMEDEX. To calculate the cost of each treatment administered, the unitary cost of each drug and the number of units spent of each one were registered.

Results: Ninety-one treatments were analyzed for 90 patients, of whom 49% were women. The sample mean age was 60.2 years (SD: 14.7 years). The most commonly used drugs were rituximab (42.9%), trastuzumab (23.1%) and pemetrexed (9.9%). Medical services involved were hematology (54.3%), oncology (42.4%) and internal medicine (3.3%). In each service, off-label treatments represented 22.4% for hematology, 12.8% for oncology and 100% for internal medicine. The proportions of the most off-label used drugs were: 42.1% rituximab, 15.8% bortezomib and pemetrexed and trastuzumab 10.5% for each one. For whole off-label indications in 42.1% of cases were FDA approved indications, another 42.1% were collected in MICROMEDEX and 15.8% were supported in other literature sources. The annual expense of the 11 drugs amounted to 822,665.73 with a median cost of 6,963.17 (range 1,150.56-32,135.60). The prevalence of off-label use was 20.9% (95% CI 12.5-29.3%). This use supposed

151,466.46 with a median of 6,312.35 (range 1,725.84-17,241.19). In descending order, the drugs that most contributed to that total off-label cost were: bortezomib, azacytidine, trastuzumab and fotemustine.

Conclusion: The prevalence of off-label use in 2012 amounts to more than a fifth of the total. Internal medicine prescribes the 3.3% of treatments and all are off-label use. Drugs most commonly off-label used are different that those that contribute most to the total of off-label cost: rituximab is the most widely prescribed drug in this way but it is not the major contributor to the total cost. On the other hand, azacytidine is the fifth most widely administered drug but supposes the second contributor. The 84.2% of off-label use is supported by FDA or other prestigious sources.

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Title: Causes of increased plasma drug concentrations in a pharmacokinetics area

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Purpose: To analyze concomitant treatment and clinical status of the patient responsible of plasma concentrations above therapeutic range with a potential risk of drug intoxication in a pharmacokinetic area in order to establish appropriate dosage adjustments and recommendations.

Methods: Observational descriptive study in a third level hospital. It was conducted between March and July 2013. We considered patients attending pharmacokinetic area for monitoring. We analyzed plasma concentrations. Only patients with levels above therapeutic range were selected. Drugs considered were carbamazepine, digoxin, phenytoin, lithium and valproic. The record of drug monitoring request in the pharmacokinetics area was used to compile the data. Drug-drug interactions according to the categories of Lexicomp database and the main drugs responsible for the same were analyzed. We considered only types C interactions, which recommendation is to monitor and D, modify therapy. We also took into account patients clinical status. Data reviewed were creatinine, transaminases , potassium and albumin. Analytical data requests in the day of monitoring were collected.

Results: During the study period a total of 91 drug levels above therapeutic range were found. Drug were 50.5% (n = 46) digoxin, 37.4% (n = 34) valproic 6.6% (n = 6) carbamazepine, 4.4% (n = 4) phenytoin and 1.1% (n = 1) lithium. A total of 53 potencial drug-drug interactions were detected, all of them type C. In 67.9% (n = 36) patients one interaction was found. In 24.5% (n = 13) two and in 7.6% (n = 4) three . The drugs most frequently involved in the interactions were loop diuretics (40%) and betablockers (16.3 %). We lacked 74,3% of the analytical data in the day of the monitoring or the previous day lacked . Only renal function data were relevant , with 34% (n = 31) of the patients with altered creatinine (normal value:0,5-1 female; 0,4-1,3 male) important fact considering the percentage kidney removal of these drugs.

Conclusion: Data obtained justified the necessity of monitoring drugs involved in type C interactions. Recommendation to establish the measure of analytical data in patients undergoing monitoring is necessary, to allow the subsequent posology adjustment considering the patient clinical status.

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Title: Targeted Antimicrobial Stewardship of Piperacillin-Tazobactam: Impact on Utilization, Resistance, and Inpatient Cost at a Community Hospital

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Purpose: In many cases, broad-spectrum antimicrobials are initiated to empirically treat infections. Overuse of broad-spectrum antimicrobials has been shown to increase the prevalence of multi-drug resistant pathogens. The purpose of this study was to determine the impact that targeted antimicrobial stewardship by clinical pharmacists using existing resources have on piperacillin-tazobactam (PN-TZ) utilization.

Methods: The investigational review board approved this study comparing PN-TZ utilization from historical control to that after targeted antimicrobial stewardship. All acute inpatients over the age of 18 who received at least one dose of PN-TZ were considered for review. Patients younger than 18 years of age, pregnant, nursing, or receiving antibiotics as an outpatient were excluded. Clinical pharmacists reviewed all patients receiving PN-TZ, intervening if necessary based on the patient's clinical status, culture and sensitivity results, and renal function. Clinical pharmacists also offered didactic seminars to various physician groups and associated registered nurses, certified nurse practitioners, and physician assistants reviewing the appropriate selection for PN-TZ therapy, dose optimization, and appropriate de-escalation from broad-spectrum PN-TZ therapy. The primary objective of this study is to determine the impact that targeted antimicrobial stewardship by clinical pharmacists, pharmacy residents, and pharmacy students using existing resources have on PN-TZ utilization, specifically the defined daily doses per 1000 acute patient days. Secondary outcomes include the number of patients who receive PN-TZ upon admission; average duration of PN-TZ therapy; duration of hospital stay; inpatient PN-TZ cost.

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Title: Intravitreal methotrexate in the management of serpiginous choroiditis. A case report: compounding and results

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Case Report: The serpiginous is a rare, bilateral, chronic and recurrent idiopathic inflammatory disease affecting the inner choroid and retinal pigment epithelium. Subsequent destruction of the retina leads to a permanent visual disability, especially when the disease involves the central macula. The treatment is controversial. Different systemic drugs have been used, such as prednisone, cyclosporine, azatioprine and cyclophosphamide. If the evolution is desfavourable, biologic therapy with a TNF inhibitor is an alternative. Another option is the intravitreal (IVT) use of methotrexate (MTX). We describe a pharmaceutical compounding for a patient with serpiginous choroiditis refractory to oral immunosuppressive treatment, in whom the use of oral corticosteroids was contraindicated. After subconjuntival administration of triamcinolone, no improvement was noted, so she was prescribed IVT MTX off-label. Firstly, the patient gave her informed consent because it was an indication not authorized in Spain. Work in a vertical unidirectional flow cabinet (VUFC).Take 0.4ml from a vial of MTX containing 50mg/2 ml. Make up to 1ml with normal saline in a 1 mL syringe and wave (A). Take 0.4 ml from A, make up to 1 ml with normal saline in a 1 ml syringe and wave (B). Take 0.2 ml from B in the 0.3 ml syringe, insert a sterile stopper and put into a sterile bag. Seal it immediately, protect it from light and label it. Conservation conditions: 7 days protected from light and refrigerated xxxxx. An IVT MTX injection of 400 mcg in 0.1 ml was administered in each eye at seven-day interval. MTX injections were well tolerated and did not cause any discomfort, improved visual acuity and reduced cystoid macular edema. We conclude that IVT MTX injections may provide such an alternative local therapy, are easy to prepare, have minimum side effects and are cheap. The use of IVT MTX seems effective in the management of the serpiginous choroiditis.

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Title: Stability of Lenalidomide When Prepared Using a Simple Suspension Method for Tube Administration.

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Purpose: A simple suspension method has been developed for the tube administration of tablets and capsules that can be dissolved in hot water (55C) without requiring grinding or opening. In the present study, we evaluated the feasibility of using this simple suspension method for lenalidomide (REVLIMID®; Celgene, Summit, NJ, USA) by testing the stability of this drug at 55C and examining its absorbability using a percutaneous endoscopic gastrostomy (PEG) tube.

Methods: We used high-performance liquid chromatography (HPLC) to examine the time-dependent change in the concentration of lenalidomide after the application of the simple suspension method. HPLC analyses of the lenalidomide concentration were performed using a Prominence LC-20AB/SPD-20A device (Shimadzu, Kyoto, Japan) with a ZORBAX SB-C18 RR analytical column (Agilent Technologies, Santa Clara, CA, USA; particle size: 2.1~100 mm, 3.5 m) at a flow rate of 0.4 mL/min. A solvent system consisting of 10-mM ammonium acetate (pH7.0)/acetonitrile was used for HPLC elution, and the eluate was detected using ultraviolet light at 254 nm or mass spectrometry (API3200; Framingham, MA, USA). A PEG tube was used to evaluate the passage and adsorption of the lenalidomide capsule.

Results: Lenalidomide was confirmed to be stable in hot water at 55C for 24 hours after the preparation of the suspension, and more than 99% of the lenalidomide was recovered from the suspension. In addition, 94.5%-98.0% of this drug was able to pass through a PEG tube. Lenalidomide was hardly absorbed when an 8-Fr PEG tube composed of silicon was used.

Conclusion: Lenalidomide was found to be stable even in hot water, and it was not absorbed by a PEG tube. These results suggest that lenalidomide can be safely administered to patients with dysphagia using the simple suspension method.

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Title: Pharmacist assisted billing and reimbursement at an Indian Health Service pharmacy

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Purpose: Reimbursement from pharmacy benefit managers do not always equal total drug expenditure. Furthermore, the percentage of actual claims reimbursed is inadequate. This problem may have several origins such as prescribing habits, drug selection, inability to effectively communicate with payors and providers, or lack of documentation by the clinic. The objective of this study is to determine the extent to which a pharmacist can address and influence these problems and increase billing revenue (based on percentage of claims paid) to a more satisfactory level.

Methods: This study will be submitted to the Institutional Review Board for review. All drug and claims data will be discussed with medical providers and payors, and will be recorded without patient identifiers. Resource and Patient Management System point-of-sale software will provide year-to-date and monthly totals for billing and reimbursements to the pharmacy within the past year. Percentage of claims paid will be calculated based on these totals. Point-of-sale will also identify all submitted claims that were not paid and provide the reasons for their decline. The following data will be collected during the six week study period: top three reasons for decline (drug not covered, need prior authorization, does not meet step criteria, exceeds quantity limits, ect.) for all submitted claims and interventions made by the pharmacist to rectify these rejections. Declines will be reviewed individually and an attempt to remedy the billing problems will be made by communicating with providers and pharmacy benefit managers, facilitating adjustment of therapy, and suggesting formulary changes. Total reimbursement during the six week study period will be tracked and compared to historical data.

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Title: Pharmacy Driven Acute Pain Management in the Hospital Setting

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Purpose: Inadequate pain management is a significant medical problem among hospitalized patients. This results in slower recovery times, lengthier hospital stays, increased costs, and decreased patient satisfaction. The Joint Commission (TJC) addressed pain management standards in January 2001. These standards require hospitals to recognize patients rights, provide appropriate screenings and treatments, and educate patients. Therefore it is imperative that all hospital comply with the standard set forth by TJC. Effective individualized pain management and compliance with the TJCs standards can cut overall costs by accelerating patient recovery, decreasing hospital stays and ultimately increasing patients healthcare satisfaction.

Methods: The proposal for this project will be submitted to the Medical Executive and Pharmacy and Therapeutics Committees. Consent forms will be obtained from all patients in order to collect personal health information during the interview process. This project will implement a protocol based on standards of best practice. Assessments of patients pain will take into consideration the root cause of pain, disease states, reported pain based on the visual analog scale and previous exposure to opioids. Based upon this assessment, the pharmacist will implement an individualized pain management protocol. Patients pain will be monitored and appropriately managed twice a day on the day of admission and then on a daily basis thereafter. Each reassessment will give the pharmacist an opportunity to adjust the patients pain regimen to reflect their current needs. The pharmacist will be providing in-services to ensure that all medical staff is able to proficiently carry out the pain protocols. Data will also be collected on patients length of stay, disease state, and overall healthcare satisfaction. This data will then be compared to a control group interviewed prior to the initiation of the pain management protocol.