

200-1

Transitioning through ADHD: pharmacotherapeutic management from childhood to adulthood-recommendations on treating adult ADHD patients with common comorbid axis I disorders

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Adult patients with ADHD can present frequently with comorbid Axis I disorders which may complicate treatment or diagnosis. Common comorbid Axis I disorders in adults with ADHD include anxiety, depression, substance abuse, affective/mood disorders, and sleep disorders. Treatment considerations include which condition to treat first, impact of treatment on co-occurring disorder and impact the co-occurring disorders may have on each other. Choosing effective treatment for ADHD and co-occurring disorders while minimizing adverse effects or worsening of symptoms will be discussed.

Learning Objectives:

1. Discuss treatment options for patients with ADHD and co-occurring Axis I disorders.
2. Discuss considerations in determining if ADHD or co-occurring Axis I disorder should be treated first.
3. Discuss considerations in the diagnosis of ADHD and co-occurring Axis I disorders.

Self-Assessment Questions: (True or False)

1. Stimulant use may improve sleep quality
2. In patients with ADHD and co-occurring Axis I disorders ADHD should be treated first
3. Patients should be abstinent from substance prior to ADHD diagnosis

Answers: 1. (T); 2. (F); 3. (T)

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Recommendations for Adding an Agent in Patients Being Treated for ADHD

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Efficacy and safety should be carefully monitored after the initiation of stimulant therapy. If height/growth become an issue while on stimulant therapy a drug holiday over the summer may be used. However, care must be taken when restarting a stimulant to avoid complications. Considerations before restarting stimulants will be addressed. Adults with ADHD may be at risk for developing other psychiatric comorbidities such as major depression. Choosing an agent to effectively treat their depression while managing the symptoms of ADHD may prove difficult. The challenges and differences between pharmacologic agents in the treatment and management of adult depression in ADHD are discussed.

Learning Objectives:

1. Describe how to restart stimulants after a drug holiday.
2. Identify two pharmacologic agents to treat depression in adult ADHD.
3. Discuss the utility of using selective serotonin norepinephrine reuptake inhibitors (SNRIs) for depression in adult ADHD.

Self-Assessment Questions: (True or False)

1. Drug holidays should always be avoided when treating patients with ADHD.
2. Bupropion may be a preferred agent in adults with ADHD who experience major depression.
3. Venlafaxine should be avoided in treating depression in adults with ADHD.

Answers: 1. (F); 2. (T); 3. (F)

200-3

Differentiating Between Childhood and Adulthood Symptoms of ADHD

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ADHD is often mistaken as a disorder only of childhood, however many patients with childhood ADHD will continue to have symptoms of the disorder as adults. Symptoms of ADHD often change as the child transitions to an adult and the clinical presentation is often different. Many signs of inattentive behavior present in childhood ADHD are generally present in patients with adult ADHD, however hyperactive symptoms generally take on a different form. The diagnosis of adult ADHD is also one of controversy and lack of definitive diagnostic criteria can make assessment and treatment of patients with adult ADHD difficult. Collaborative information from secondary sources and use of standardized scales can assist with evaluating patients with adult ADHD. Management of ADHD in adults includes both non-pharmacological and pharmacological treatments including psychotherapy, psychostimulants, atomoxetine, monoaminergic antidepressants, and alpha-2 receptor agonists.

Learning Objectives:

1. Describe the difficulties with the current diagnostic standards used for ADHD.
2. Compare and contrast the signs and symptoms of ADHD in children versus adults.
3. Summarize the pharmacological strategies used in the treatment of ADHD in adults.

Self-Assessment Questions: (True or False)

1. Common impulsive symptoms of adult ADHD include making quick decisions and interrupting others while talking.
2. Clonidine is an FDA approved 1st line treatment for adults with ADHD.
3. Hyperactive symptoms of ADHD in childhood are very similar and are often the same in adult patients.

Answers: 1. (T); 2. (F); 3. (F)

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Introductions to ADHD pharmacotherapy and considerations

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Attention-deficit and hyperactivity disorder (ADHD) is commonly regarded as a condition in which those affected suffer from symptoms of restlessness, impulsivity, and other disruptive behaviors. This presentation discusses the wide gamut of symptomatology that includes such visible behaviors, as well as symptoms that may be less commonly noticed or dismissed as benign distractibility and disinterest in academic-related and work-related responsibilities. Questions regarding the diagnostic implications of ADHD will be explored. Finally, the common pharmacotherapy currently used for ADHD will be introduced.

Learning Objectives:

1. Differentiate between symptoms of ADHD presenting as mostly hyperactive and those presenting as mostly inattentive.
2. Introduction to the common co-morbidities in patients with ADHD.
3. Distinguishing between clinical relevant safety concerns across stimulant and non-stimulant pharmacotherapy for ADHD.

Self-Assessment Questions: (True or False)

1. Patients with cardiac malformations are limited to non-stimulant pharmacotherapy in the management of their ADHD symptoms.
2. Patients using stimulants for management of ADHD are 10 times more likely to develop a substance abuse disorder before the age of 18.
3. Once stimulants are started, the non-stimulants will no longer be a viable option for management of ADHD due to lack of efficacy.

Answers: 1. (F); 2. (F); 3. (F)

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Treatment strategies for delaying progression in non-diabetic nephropathy

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Hypertension is a common etiology and accelerating risk factor in patients with chronic kidney disease (CKD). Elevated systolic blood pressure, proteinuria and other factors are associated with increased risk of progressing to end-stage renal disease. Strategies to delay progression in patients with non-diabetic nephropathy have been investigated over the past 20 years with mixed results. Studies have shown both no benefit and positive benefits with blood pressure lowering and use of various antihypertensive agents. This presentation seeks to provide an evidence-based review of current literature to identify strategies to delay progression in non-diabetic nephropathy. This presentation will use the evidence to better define the role of renin-angiotensin blockade, blood pressure lowering and use of antihypertensive agents in the management of non-diabetic nephropathy.

Learning Objectives:

1. Identify patients at increased risk of CKD and progression
2. Compare and contrast evidence-based strategies to delay progression of CKD in patients with non-diabetic nephropathy
3. Given a patient with hypertensive nephropathy recommend a treatment strategy to delay progression of CKD

Self-Assessment Questions:

1. Which of the following is the strongest predictor of progression?
 - a. Age
 - b. History of hypertension
 - c. Urine protein to creatinine ratio
2. (True or False) Renin-angiotensin system blockade is the primary treatment strategy to delay progression of chronic kidney disease?
3. In addition to an ACE Inhibitor, which of the following agents should be added if blood pressure is not at goal?
 - a. Felodipine
 - b. Furosemide
 - c. Minoxidil

Answers: 1. (c); 2. (T); 3. (b)

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Are the kidneys just a filter? Update on estimating GFR and renal biomarkers

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Chronic kidney disease (CKD) is a world-wide epidemic that is expected to result in nearly 2 million people requiring renal replacement therapy in Europe and US by 2030. Early detection and monitoring is critical to appropriately manage patients with CKD. Progression of CKD can range from slow to rapid, with new therapies aimed at slowing GFR decline. The latest approach to categorizing CKD severity consists of risk models involving urinary albumin-to-creatinine ratio and estimated GFR. Experimental CKD biomarkers such as urinary kidney injury molecule (KIM-1) and proteomics fingerprints are being considered for clinical use.

Learning Objectives:

1. Define CKD progression using the KDIGO classification model.
2. Describe two methods to estimate kidney function.
3. Give two examples of new drug targets for slowing the progression of kidney disease.

Self-Assessment Questions: (True or False)

1. Urine albumin-to-creatinine ratio is included in new CKD classification systems.
2. The rate of GFR decline is the same for all patients with CKD.
3. Bardoxolone is an anti-oxidant that induces the Nrf-2 pathway with nephro-protective properties.

Answers: 1. (T); 2. (F); 3. (T)

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The tortoise and the hare of chronic kidney disease: Slowing progression of diabetic nephropathy

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Diabetic nephropathy is the leading cause of renal failure in the United States. Recent expert opinion encourages reserving angiotensin converting enzyme inhibitors or angiotensin receptor blockers for higher risk populations. Evidence suggests patients with diabetic nephropathy benefit most from interventions to prevent end stage renal disease yet pharmaceutical intervention is often centered on preventing microalbuminuria. There is a deficit of high quality randomized controlled trials comparing drug therapy options head to head. Due to a lack of clear guidelines, clinicians must tailor interventions to individualize therapy for every patient.

Learning Objectives:

1. Describe the latest evidence regarding when to add ACE inhibitor or ARB therapy to patients with diabetes
2. Discuss and prioritize interventions known to reduce the risk and progression of diabetic nephropathy
3. Choose safe and effective medication options for the treatment of diabetic nephropathy

Self-Assessment Questions:

1. (True or False) ACEI or ARB are effective in preventing nephropathy in patients that are normotensive and do not have microalbuminuria.
2. Which class of medications has evidence for higher doses being more effective than lower doses in preventing diabetic nephropathy?
 - a. ACEI
 - b. ARB
 - c. CCB
 - d. Diuretic
3. Evidence currently suggests which class of medications as add-on therapy to ACEI treatment for prevention of diabetic nephropathy?
 - a. ARB
 - b. Direct renin inhibitor
 - c. Dihydropyridine CCB
 - d. Diuretic

Answers: 1. (F); 2. (b); 3. (d)

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Strategic expansion opportunities for health systems – where does specialty pharmacy fit?

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Specialty drug spend is growing at a trajectory of 20% per year while traditional drug spend is flat. Specialty pharmacy provides a substantial opportunity for health systems across the US. However, it is considerably different in business model and service offerings than hospital pharmacy. The specialty pharmacy system in the US utilizes specialized providers in a distribution system similar to retail pharmacy. Initiation of a specialty pharmacy program requires thorough strategic planning. The purpose of this presentation is to provide a list of service and fulfillment considerations that should be explored when developing a strategic plan for a specialty pharmacy program.

Learning Objectives:

1. Develop a strategic plan for specialty pharmacy in a health system.
2. Identify the opportunities for specialty pharmacy at an institution, including how to analyze prescription data, and develop projections and a business plan

Self-Assessment Questions:

1. What three therapeutic categories make up almost 60% of the specialty pharmacy market?
 - A. Inflammatory conditions, HIV, transplant
 - B. Multiple sclerosis, cancer, pulmonary hypertension
 - C. Inflammatory conditions, cancer, multiple sclerosis
 - D. Pulmonary hypertension, hepatitis C, cancer
2. What three companies generate 65% of the specialty pharmacy revenue in the US?
 - A. Diplomat, Avella, MedPro Rx
 - B. Costco, Safeway, Giant Eagle
 - C. Aetna Specialty, Cigna Tel-Drug, WellPoint Precision Rx
 - D. Express Scripts, CVS Caremark, Walgreen
3. What should first be evaluated when developing a strategic plan for a specialty pharmacy program?
 - A. State licensure requirements & 340 B status
 - B. Current specialty business potential & capture rates
 - C. Case management and data collection/analysis capabilities
 - D. Contract access for limited distribution drugs

Answers: 1. (C); 2. (D); 3. (B)

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Nuts and bolts of implementing specialty pharmacy services in a health system

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Specialty pharmacy represents a missed opportunity for many health systems. With the advent of accountable care organizations and medical homes, there is a trend toward insourcing to improve continuity of care for health system patients. Direct access to patients, prescribers, and the electronic medical record allows for integrated systems. This presentation describes how one health system established specialty pharmacy services for take-home specialty medications. The key to success is establishing services in the specialty clinics, call center, and dispensing. The staff includes a pharmacy manager, clinical liaison pharmacist, clinical staff pharmacist, prior authorization technician, and pharmacy students. The first step is business planning which involves identifying opportunities that are relevant to the health system. A mission statement, rationale, and results over a ten year period are described. The second step is building services including services in specialty clinic(s), the call center, and dispensing. A process map describes the interaction between the services. Pharmacists provide face-to-face interaction with patients and prescribers in the specialty clinics. Prescriptions are referred to the call center for insurance benefit verification and prior authorization. Dispensing includes patient pick-up, mail order, or clinic delivery of medications. Refills and clinical assessments are coordinated by the call center. The third step is systems and metrics which involves quality improvement, assessing systems, teaching, and dissemination. Overall challenges, opportunities, lessons learned, and next steps are discussed. Attendees will receive ideas and templates they can take back to their health systems to help in establishing specialty pharmacy services.

Learning Objectives:

1. Design the clinical and operation elements of a specialty pharmacy practice model.
2. Identify barriers to access for specialty medication and how to overcome them, including limited distribution medications and payer restrictions.
3. Describe the role of specialty pharmacy in health system quality indicators.

Self-Assessment Questions: (True or False)

1. A health system is an ideal and practical setting to establish specialty pharmacy services.
2. The electronic medical record is essential to monitoring and managing patients prescribed a specialty pharmacy medication.
3. One potential barrier to access is restricted payer contracts.

Answers: 1. (T); 2. (T); 3. (T)

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Leveraging your own health plan to build a Specialty Pharmacy

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During this session, we will identify and describe the opportunities for Specialty Pharmacy at your institution, including specific 'how to' plans and steps in building a Specialty Pharmacy. Challenges and Opportunities will be identified for Specialty Pharmacies, including obtaining limited distribution medications and overcoming payer restrictions. Additionally, the financial rewards will be analyzed and reviewed.

Learning Objectives:

1. Understand the opportunities and challenges of building a Specialty Pharmacy.
2. Learn the 'how to' steps of building a Specialty Pharmacy.
3. Understand the potential financial rewards of building a Specialty Pharmacy.

Self-Assessment Questions:

1. Specialty Pharmacy is projected to grow to ____ of total Rx spend by 2020.
 - A. 20%
 - B. 30%
 - C. 40%
 - D. 50%
2. (True or False) Limited Distribution Drugs can be a challenge to obtain for your pharmacy.
3. (True or False) Opening a Specialty Pharmacy can be financially rewarding for your organization.

Answers: 1. (C); 2. (T); 3. (T)

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Providing care beyond cure: transitioning patients to palliative care

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The transition from curative care to comfort care is difficult for both providers and patients. Discussions and planning should be started as early as possible so patients and families do not feel pressured in an acute situation. The pharmacist is called upon to evaluate pharmacologic therapy at each point in this journey, to recommend which medications will benefit the patient most and which medications should be stopped. These choices should reflect evidence-based guidelines when possible and consider the patient's goals of care.

Learning Objectives:

Given a patient transitioning to a palliative care approach:

1. Determine the goals of care
2. Create a list of drug-related problems
3. Develop and present recommendations to address some of the key drug-related problems

Self-Assessment Questions:

1. When should goals of palliative care *first* be addressed?
 - a. When a patient is actively dying
 - b. When a patient is diagnosed with a serious illness
 - c. When there are no curative therapies left
 - d. All of the above
2. When considering withdrawing or withholding medications, which of the following should be considered?
 - a. Time until therapeutic benefit of treatment
 - b. Patient's goals of care
 - c. Treatment target
 - d. All of the above
3. Opioids may be used in which of the following situations?
 - a. Patient with end-stage cancer pain
 - b. Patient with end-stage COPD dyspnea
 - c. Patient with end-stage heart failure dyspnea
 - d. All of the above

Answers: 1. (b); 2. (d); 3. (d)

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Is natural better? Nutraceuticals in the treatment of headache and musculoskeletal pain

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Complementary and alternative medicines are used by patients for many conditions, including headache and other musculoskeletal pain conditions. Nutraceuticals that may be beneficial for treatment or prevention of headaches include butterbur, feverfew, coenzyme Q10, magnesium, and riboflavin. Other pain conditions may be improved with therapies such as acupuncture, devil's claw, magnesium, reflexology, willow bark, and reiki therapy. There are several dependable references for pharmacists and patients to investigate the safety and efficacy of complementary and alternative medicine therapies.

Learning Objectives:

1. Summarize the efficacy and safety of complementary and alternative medicine used for headache and musculoskeletal pain using an evidence-based approach to patient care.
2. Identify references containing quality information pertaining to complementary and alternative therapies.

Self-Assessment Questions:

1. In which of the following situations may a patient find feverfew beneficial for migraine headaches?
 - a) prevention of migraines with chronic ingestion
 - b) treatment of acute headache pain after failure of sumatriptan
 - c) treatment of migraine headaches, but only with migraines with aura
 - d) treatment of migraine headaches in pregnant patients
2. Which of the following complementary and alternative medicine modalities has evidence supporting use for musculoskeletal pain?
 - a) Butterbur
 - b) Phenylalanine
 - c) Saw palmetto
 - d) Acupuncture
3. Which of the following references would be a good recommendation if a patient would like to investigate the use of a complementary and alternative medicine?
 - a) Natural Standard
 - b) Natural Medicines Comprehensive Database
 - c) Memorial Sloan Kettering Cancer Center "About Herbs" Website

Answers: 1. (a); 2. (d); 3. (c)

204-2

Is natural better? Nutraceuticals in the treatment of arthritis and neuropathy

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Nutraceuticals are the most commonly used type of complimentary and alternative medicine, with pain being the frequently reported reason for use. It is imperative that pharmacists consider natural products when evaluating and recommending drug therapy, and educate patients regarding the safe and effective use of these supplements. Arthritis and neuropathy are difficult to manage pain disorders, with many patients seeking alternative treatments when traditional therapies are not desirable or fail to provide adequate relief. Glucosamine has been a popular product that demonstrated a lack of efficacy as osteoarthritis treatment. Capsaicin has been recommended for arthritis and neuropathic pain in clinical guidelines, despite the lack of robust evidence. Acetyl-L-carnitine and omega-3 fatty acids appear to be promising therapies for neuropathy and rheumatoid arthritis, respectively.

Learning Objectives:

1. Review the trends of complimentary and alternative medicine use
2. Summarize the effects and safety concerns of nutraceuticals used for arthritis and neuropathy
3. Determine the utility of natural products for the treatment of arthritis and neuropathy using an evidence-based approach

Self-Assessment Questions:

1. What is the most common reason patients use complimentary and alternative medicine?
 - a) insomnia
 - b) musculoskeletal pain
 - c) head or chest cold
 - d) cholesterol
2. Which of the following is metabolized to a long chain amino acid that may counteract the neuronal damage caused by hyperglycemia by increasing analgesia and promoting nerve fiber regeneration?
 - a) acetyl-L-carnitine
 - b) omega-3 fatty acid
 - c) capsaicin
 - d) alpha-lipoic acid
3. Which of the following natural products does the American College of Rheumatology no longer recommend in the treatment of knee osteoarthritis?
 - a) glucosamine
 - b) chondroitin
 - c) capsaicin
 - d) glucosamine and chondroitin

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e) glucosamine, chondroitin, and capsaicin

Answers: 1. (b); 2. (a); 3. (d)

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Incorporating hcv management into your pharmacy practice

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Hepatitis C virus (HCV) is the most common blood-borne infection in the United States. Most people exposed to HCV develop a chronic infection which may progress to complications including cirrhosis or liver cancer. Treatment of HCV may reduce the risk of these complications. Recent availability of a new class of anti-HCV drugs has expanded pharmacotherapy options. HCV treatment alternatives and important counseling points will be covered. The second part of this presentation will involve audience review and discussion of a HCV patient case scenario to help illustrate how pharmacists can overcome barriers in helping patients succeed with their treatment.

Learning Objectives:

1. Evaluate treatment options for managing hepatitis C virus (HCV) infection in 2012.
2. Identify key considerations in counseling patients with HCV infection, including adverse effect management, adherence concerns, and avoidance of drug interactions.
3. Plan how to incorporate HCV management into pharmacy practice.

Self-Assessment Questions: (True or False)

1. Telaprevir and boceprevir are nucleoside reverse transcriptase inhibitors.
2. Early HCV virological response can predict potential for sustained virological response.
3. The pharmacist can address patient concerns regarding HCV information obtained from the internet.

Answers: 1. (F); 2. (T); 3. (T)

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Hepatitis C in 2012: the clinical pharmacist's role in successful treatment

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HCV is a prevalent chronic infection in the United States. The foundation of its treatment is interferon, along with oral antivirals. Treatment for HCV infection is complicated by numerous adverse effects and unique administration issues. Pharmacists are an untapped resource for these patients; very little literature has addressed the benefits of pharmacist participation in HCV management. This presentation will review the treatment algorithm for HCV as well as important counseling points that must be provided to patients to facilitate treatment success. Additionally, it will clarify the role of pharmacists, encouraging them to become more actively involved in management of HCV to improve patient outcomes.

Learning Objectives:

1. Evaluate treatment options for managing hepatitis C virus (HCV) infection in 2012.
2. Identify key considerations in counseling patients with HCV infection, including adverse effect management, adherence concerns, and avoidance of drug interactions.
3. Plan how to incorporate HCV management into pharmacy practice.

Self-Assessment Questions: (True or False)

1. Telaprevir should be taken with non-fat foods.
2. Ribavirin cannot be used during pregnancy.
3. All interferons require weight-based dosing.

Answers: 1. (F); 2. (T); 3. (F)

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Optimizing antimicrobial therapy for gram-negative infections

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Antimicrobial resistance in Gram-negative organisms has emerged for many drugs that were once considered “last-line” therapies. This rapid emergence of resistance, combined with the lack of new therapies available for treating these organisms, has forced clinicians to reconsider the best way to treat Gram-negative infections. One of the most promising approaches to optimizing therapies for Gram-negative infections is the application of known pharmacokinetics and pharmacodynamics (PK/PD) principles for the design of optimal dosing strategies. By knowing the antimicrobial effect on the bacteria (PD) and the exposure of the antimicrobial in the human host (PK), investigators can employ mathematical modeling techniques to design the best drug regimen for the most patients. Monte Carlo simulation (MCS) is a mathematical modeling technique that is commonly employed but not generally well understood. This presentation will explore the components of MCS that are frequently applied in antibacterial dosing scheme development. We will discuss the benefits of using dosing schemes identified by MCS and will identify strategies for implementing optimized dosing schemes in the clinical environment.

Learning Objectives:

1. Evaluate population pharmacokinetic/pharmacodynamic (PK/PD) modeling approaches used for dose optimization of antimicrobial therapy for Gram-negative infections.
2. List advantages to applying PK/PD principles in the treatment of Gram-negative infections specifically related to extended infusion B-lactams.
3. Describe systematic approaches to implementing antimicrobial PK/PD dosing strategies in a clinical setting.

Self-Assessment Questions: (True or False)

1. Monte Carlo simulations explore the full variability of drug exposure and effect expected within a population of patients and organisms.
2. Beta-lactams are best dosed as short infusions to minimize toxicity.
3. Utilization standardized dosing schemes and “smart-pumps” eliminates the possibility for dosing errors.

Answers: 1. (T); 2. (F); 3. (F)

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Combination Therapy for Gram-Negative Infections

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The use of combination antibacterial therapy can be an important part of treating gram-negative infections. It is important for pharmacists to know the difference between combination therapy and double coverage (dual therapy). Using combination therapy may provide early appropriate therapy, synergistic killing and possibly improved outcomes when compared to single antibiotic regimens. These benefits must be weighed against the additional cost and risk of adverse effects. The presenter will provide an evidence-based look at key studies in the literature that have addressed combination therapy for gram-negative infections.

Learning Objectives:

1. Differentiate between combination antibiotic therapy and double coverage
2. Compare the results of key studies designed to evaluate combination therapy versus monotherapy for treating gram-negative infections
3. Discuss the need for combination regimens with colistin or polymyxin B

Self-Assessment Questions: (True or False)

1. Combination therapy with non-synergistic antibacterial agents have no clinical benefit against gram-negative organisms
2. Evidence from randomized clinical trials have demonstrated that combination antibiotic therapy prevent the occurrence of antibiotic resistance.
3. Colistin exerts concentration-dependent killing, but limited post-antibiotic effect.

Answers: 1. (F); 2. (F); 3. (T)

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Incorporating REMS into Your Daily Clinical Practice

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A large majority of practitioners and healthcare providers lack a good understanding of FDA REMS requirements and expectations. The FDA released final guidance for medication guide distribution and REMS inclusion in November 2011, significantly impacting inpatient requirements for REMS medications. Hospitals and healthcare providers are now challenged with building these necessary elements into practice and CPOE systems to guide prescriber compliance.

Learning Objectives:

1. Describe REMS Components and Elements to Assure Safe Use (ETASU).
2. Explain how to meet compliance with REMS requirements in daily clinical practice.
3. Propose practical methods for integration into various Computerized Provider Order Entry (CPOE) systems.

Self-Assessment Questions: (True or False)

1. REMS programs are developed by the FDA and are therefore standardized.
2. Resident and nurse practitioner compliance is the responsibility of the healthcare employer.
3. Inpatient prescriber compliance is only required once REMS CPOE integration has occurred.

Answers: 1. (F); 2.(F); 3.(F)

209-1

Antimicrobial Dosing in Obesity: Finding the Holy Scale

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One in three American adults is now considered to be obese. Despite this high prevalence of obesity, data on the optimal approach for estimation of kidney function and drug dose modification across body size is not well studied. In general, dose modification simply on total body weight leads to dose overestimation in obese adults. Several alternative body size scalars such as ideal body weight and body surface area have been developed to overcome this limitation of total body weight. However, these alternate body size scalars can have the opposite effect of underdosing obese patients. Newer body size scalars such as fat free weight and lean body weight have been used successfully to optimize drug dosing in obesity. Thus, the purpose of this educational session is to provide a state-of-the-art review on the origins and limitations of the various body size descriptors for dose modification across body size. Through specific case-studies, this educational session will improve the ability of the audience to consider alternative approaches to drug dose modification in obese adults.

Learning Objectives:

1. Given a specific obese patient case, evaluate the effects of body size descriptors on the estimate of kidney function
2. Interpret the population pharmacokinetic model to aid estimation of the optimal dose in an obese patient
3. Recommend an appropriate dose of an antimicrobial agent for an infected patient with chronic kidney disease where no guidance is available for dose modification

Self-Assessment Questions:

1. Two male white patients have the same height, age, and serum creatinine. Patient 1 has a creatinine clearance of 100 mL/minute and weighs 75 kg. Which of the following answers is the best estimate of creatinine clearance for Patient 2 if she weighs 150 kg?
 - A. 75 mL/minute
 - B. 100 mL/minute
 - C. 110 mL/minute
 - D. 150 mL/minute
 - E. 200 mL/minute
2. Which of the following equations provides an estimate of “lean body weight” as a function of height only?
 - A. Fat Free Weight
 - B. Ideal Body Weight
 - C. Lean Body Weight (2005)
 - D. Adjusted Body Weight
 - E. Patient Normalized Weight
3. The clearance of drugs like gentamicin and tobramycin can be best estimated across the weight continuum using which of the following equations?
 - A. Cockcroft-Gault

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- B. MDRD
- C. CKD-EPI Equation
- D. Salazar Corcoran Equation
- E. Mayo Clinic Equation

Answers: 1. (D); 2. (B); 3. (C)

210-1

Impact of allocation concealment on study outcomes in clinical trials evaluating dietary supplements

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Allocation concealment is a critical method for limiting the risk of selection bias in randomized controlled trials. However, many clinical trials fail to adequately describe measures to conceal allocation. Previous research has suggested that published trials evaluating conventional drug therapies tend to produce more favorable results when allocation concealment is inadequate or inadequately reported. This research project was developed to assess the reporting of allocation concealment in clinical trials evaluating dietary supplements and determine if a significant association between measures to conceal allocation and study outcomes exists. A systematic search of PubMed identified 202 randomized controlled trials evaluating dietary supplements published between July 1, 2010 and June 30, 2012. Of these, 41.1% reported adequate allocation concealment. A significant difference in primary outcome(s) between dietary supplement and control group was found in 27.7% of trials with adequate allocation concealment compared to 53.8% of trials with inadequate or unclear allocation concealment ($p=0.0003$). These results suggest outcomes of dietary supplement trials tend to be more favorable when allocation concealment is inadequate or unclear. Because of this, measures to conceal allocation should be assessed when critically evaluating the validity of dietary supplement trials.

Learning Objectives:

1. Explain the purpose of allocation concealment in randomized controlled trials.
2. Identify methods commonly utilized to assure concealment of allocation in randomized controlled trials.
3. Describe the impact of allocation concealment on outcomes in dietary supplement trials.

Self-Assessment Questions: (True or False)

1. Concealment of allocation is an important method in reducing the risk of ascertainment bias in clinical trials.
2. Exercise: Assessing concealment of allocation.
3. Dietary supplement trials report more favorable outcomes when allocation is adequately concealed.

Answers: 1. (F); 2. Audience Poll; 3. (F)

210-2

New York State Medicaid Prescriber Education Program and Drug Information Response Center

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The New York State Department of Health (NYSDOH) Drug Information Response Center (DIRC) is a novel drug information center developed in concert with the New York State Medicaid Prescriber Education Program (NYSMPEP). , These programs are the product of state legislation leading to collaboration between the NYSDOH and the State University of New York (SUNY) system with the goal of providing prescribers with evidence-based, objective information about pharmaceuticals. The PEP generates questions which are channeled through the academic detailers to the DIRC, which provides timely and detailed responses. Since February of 2011, the NYSDOH DIRC has responded to over 100 drug information requests. Though currently this model is unique to NYS it could be emulated by other states or organizations.

Learning Objectives:

1. Describe the development of the New York State Medicaid Prescriber Education Program (NYSMPEP) and the Drug Information Response Center (DIRC).
2. Define the role of the DIRC in the NYSMPEP.
3. Detail the operations of the DIRC.

Self-Assessment Questions:

1. (True/False) The DIRC was created because of legislation that passed in NYS.
2. The DIRC currently responds to drug information questions from which of the following healthcare professionals?
 - a. Dentists
 - b. Community pharmacists
 - c. Medicaid prescribers
 - d. All NYS prescribers
3. (True/False) The DIRC communicates directly with the prescriber submitting the drug information question.

Answers: 1. (T); 2. (C); 3. (F)

210-3

Use of Social Media and Perspectives on E-Professionalism

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The purpose of this study is to examine 1) use patterns of social media among pharmacy students completing their advanced pharmacy practice experiences (APPE), 2) students' views and opinions of professionalism on popular social media sites, and 3) the potential relationship between behavior on social media sites and seeking employment.

A previously published survey instrument assessing students' attitudes regarding professionalism while utilizing social media was adapted for use in this study. All graduating student pharmacists (n=516) at Purdue University, University of Findlay, Butler University, and Midwestern University were invited to complete the survey instrument during the fall semester of 2011, prior to the American Society of Health-System Pharmacists Midyear Clinical Meeting. Student confidentiality was maintained using Qualtrics™ Research Suite software and the project received IRB approval with exempt status for human subjects research.

A total of 212 students participated in the survey yielding a 41.08% response rate. Eighty five percent (141/166) of students currently engaging in social media reported their online profile represents who they are as a person; however, only 51% (83/164) felt their profiles represented who they are as a professional. In addition, 74% (120/162) of students felt they should edit their social media profiles prior to applying for a job and 32% (52/162) of students who reported current use of social media planned on editing their social media profiles prior to the ASHP Midyear Clinical Meeting or career fair.

The majority of student pharmacists responding to this survey recognized the importance of maintaining a professional image on social media sites prior to seeking employment. The addition of an educational session informing students of the dangers of using social media and ensuring students are properly utilizing the privacy settings may be beneficial to prepare students to present themselves as a professional on their social media profiles.

Learning Objectives:

1. Identify the appropriate definition of e-professionalism.
2. Explain the importance of student pharmacists maintaining professionalism while utilizing social media.
3. Describe the social media behaviors of student pharmacists in their last year of study.
4. Describe the importance of implementing an educational session on social media professionalism in pharmacy curriculums.

Self-Assessment Questions: (multiple choice)

1. E-professionalism is defined as the attitudes and behaviors reflecting the traditional professionalism model through digital media occurring in:
 - a. private settings only
 - b. public settings only

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- c. professional settings only
 - d. public and private settings
2. Which of the following best represents the proportion of students who felt it is justified for a residency director or supervisor to research a candidate online and make decisions based on the information they find?
- a. 1/4
 - b. 1/3
 - c. 1/2
 - d. 3/4
3. Which of the following best represents the percentage of students who planned on making changes to their social media profile prior to an upcoming career fair or the ASHP Midyear Clinical Meeting?
- a. 90
 - b. 70
 - c. 50
 - d. 30
4. Which of the following best represents the percentage of students who felt that their social media image represented who they are as a professional?
- a. 90
 - b. 70
 - c. 50
 - d. 30

Answers: 1. (d); 2. (c); 3. (d); 4. (c)

210-4

Butler University adverse drug reaction causality assessment tool (BADCAT)

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Worldwide, approximately 35 adverse drug reaction (ADR) causality assessment methods have been proposed over the last 50 years. No single causality assessment tool has been proven superior, and all methods have limitations. In 2008 in the United Kingdom, Agbabiaka and associates conducted a comprehensive systematic review of ADR causality assessment methods and concluded “so far, no ADR causality assessment method has shown consistent and reproducible measurement of causality; therefore, no single method is universally accepted.” In the United States, the Naranjo scale is often considered the gold standard. The Naranjo tool was developed over 30 years ago. Some questions are no longer reflective of current standard of care and other questions can be interpreted in multiple ways; resulting in substantial interrater variability. The Butler university Adverse Drug reaction Causality Assessment Tool (BADCAT) was developed to provide an easy-to-use, point-of-care ADR causality assessment tool with less interrater variability than the current gold standard. This study was conducted in two phases. Phase one was tool development. A thorough literature search was conducted, previously proposed ADR causality assessment tools were evaluated, and critical content components were identified. An introductory draft of the new tool was created and sent to approximately thirty pharmacists for evaluation and improvement. The tool was revised. A standardized (real) case involving drug-induced hypokalemia was created and a “key” was agreed upon. The standardized case and revised 12 question BADCAT were distributed to pharmacists and final-year pharmacy students; 57 of whom completed the study. Responses to each question within the tool were evaluated. For 9 of the 12 questions, $\geq 90\%$ of the responses agreed with the key. The three questions with $< 90\%$ agreement were then re-evaluated. In all three situations, both the question and the possible response verbiage were revised and clarified. Phase two of this study is ongoing and is a head-to-head comparison of the BADCAT and the Naranjo tools. Interim data will be presented. Although no ADR causality assessment tool has yet been proven superior, BADCAT offers a modern, easy-to-use, point-of-care ADR assessment tool with relatively small amounts of interrater variability.

Learning Objectives:

1. Discuss the shortcomings of currently available ADR causality assessment tools.
2. Debate the ideal format and content of an ADR causality assessment tool.
3. Compare and contrast the BADCAT and Naranjo ADR causality assessment tools.

Self-Assessment Questions: (True/False)

1. Many ADR causality assessment tools have been created, but none has been proven to be superior in regards to validity and reproducibility.
2. The ADR assessment tool created by Naranjo and colleagues, which many consider to be the gold standard, was published in 1981.
3. BADCAT was created with a primary goal of decreasing interrater variability.

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Answers: 1. (T); 2. (T); 3. (T)

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210-5

Managing risk evaluation and mitigation strategies in a health system setting

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There can be many challenges with incorporating risk evaluation and mitigation strategy (REMS) program requirements within a health system. A REMS Pharmacist can be a point of contact for all employees, including pharmacists and physicians, and a resource of processes that have successfully been implemented. Development of a checklist and process for implementing REMS Programs can help ensure all elements to assure safe use are met. Challenges and solutions that are specifically addressed include verification of the safe use condition that a patient-physician acknowledgement form has been completed, verification of a certified prescriber, and procurement challenges with complex REMS Programs or restricted distribution.

Learning Objectives:

1. Describe the role of a Drug Information Center and a Risk Evaluation and Mitigation Strategy (REMS) Pharmacist in a health system.
2. Define a process that can be created to help standardize practice and ensure all elements to assure safe use (ETASUs) of a REMS Program are met.
3. Identify challenges with REMS Programs and list possible solutions.

Self-Assessment Questions: (True or False)

1. A REMS Pharmacist can coordinate standardization of REMS practice across the health system.
2. The Pharmacy and Therapeutics Committee can help ensure ETASUs are met for a REMS Program.
3. The electronic medical record is a resource for storing an internal list of certified prescribers.

Answers: 1. (T); 2. (T); 3. (T)

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211-1

Precepting PGY-2 Pharmacy Residents: Above and Beyond PGY-1 Precepting

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This talk will begin with a discussion of the similarities and differences of precepting techniques for PGY1 and PGY2. This will be followed by a listing of characteristics associated with more advanced training positions. The remainder of the talk will provide examples of how these characteristics are translated into the clinical setting.

Learning Objectives

1. Discuss similarities and differences related to PGY1 vs. PGY2 precepting.
2. List at least three characteristics of more successful PGY2 residents.
3. Provide examples of PGY2 learning that exhibit higher level skill development.

Self-Assessment Questions

1. Which of the following are essential differences between the function of a PGY1 and PGY2 resident:
 - a. PGY2 should be more of a team player
 - b. PGY2 should be more cynical of published literature
 - c. PGY1 are not expected to problem solve
 - d. None of the above are true
2. Which of the following learning techniques is more applicable to a PGY2 compared to a PGY1 resident?
 - a. Direct instruction
 - b. Modeling
 - c. Facilitating
 - d. None of the above
3. Which of the following approaches by a PGY2 resident is most likely to facilitate recommendations being considered and implemented by an interdisciplinary care team?
 - a. Using the “dumb question” approach
 - b. Find evidence when evidence does not exist
 - c. Bringing up all issues during patient care rounds
 - d. Using the “sarcastic” answer approach

Answers: 1. (d); 2. (c); 3. (a)

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211-2

Precepting PGY1 Pharmacy Residents: Above and Beyond APPE Precepting

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The training of pharmacy students and residents is essential to ensuring an effective pharmacy workforce. In 2012-2013, there are approximately 13,000 pharmacy students completing their advanced practice pharmacy experiences (APPEs) and 2,400 residents completing their postgraduate year one (PGY1) pharmacy residencies. In most institutions/ programs, the same preceptors are involved in precepting the various levels of trainees. The ASHP accreditation standard provides preceptors with required objectives that must be achieved for all PGY1 residents. Additionally, each objective has an associated cognitive level that provides preceptors guidance in determining the type of activity that will allow for resident achievement. This presentation will describe the four preceptor roles and review select elements of the Residency Learning System (RLS) and Accreditation Standard that are essential for PGY1 preceptors to understand. Expectations and characteristics of APPE students and PGY1 residents and preceptors will be compared.

Learning Objective:

1. Given a patient care scenario, design the preceptor's approach for a PGY1 resident versus a student.

Self-Assessment Question: (True or False)

1. Preceptors should have the same performance expectations for PGY1 residents and APPE students.

Answer: 1. (F)

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211-3

Precepting students on APPE's: Perfecting the process

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As pharmacy practice evolved into patient-centered care model, the training of future practicing pharmacy workforce, particularly students, is essential to implement this advanced model. Therefore, preceptors are key elements in shaping the new generations of practitioners.

In order to maximize the outcomes of advanced pharmacy practice experiences, a survey was conducted by the Section of Inpatient Care Practitioners-Advisory Group on Pharmacy Practice Experiences with the collaboration of Pharmacy Student Forum. Survey results identified desirable qualities of preceptors and students. Strategies to incorporate these qualities into students' rotations will be highlighted in order to assist preceptors and students in optimizing these experiences.

Learning Objectives:

1. Identify the top 3 desirable and undesirable traits of a preceptor and a student.
2. Recommend strategies that students should adopt before and during a rotation.
3. Design an approach for precepting students.

Self-Assessment Questions: (True or False)

1. Based on survey results, preceptor unavailability was considered to be the most undesirable preceptor trait.
2. The student should read rotation school requirements during the rotation.
3. The preceptor should tailor the rotation to the student's needs.

Answers: 1. (T); 2. (F); 3. (T)

212-1

Integrated Precepting: Maximizing Learning for Both Students and Residents

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Regardless of the level of learners you are precepting, balancing patient care, professional responsibilities and educating is challenging. Additionally, integration of these learners into different practice models may contribute to complexity. In order to ensure optimal learning and maximization of resources, preceptors must employ thoughtful strategies to enhance learner involvement in their clinical services. Furthermore, services must be continually evaluated to guarantee the relationship between learner and preceptor is being utilized to offer ideal benefits to the teacher, learner and ultimately patient care.

Learning Objectives:

1. Design strategies to integrate pharmacy student and resident learners into practice.
2. Evaluate current pharmacy services that could be extended through use of pharmacy students and residents.

Self-Assessment Questions:

1. (True or False) Students and residents may be utilized differently depending on practice model.
2. (True or False) It is impossible to optimize a learning experience if precepting both students and residents at the same time.
3. Which of the following is a perceived disadvantage of the unit-based model that may allow a greater involvement of students and residents in patient care?
 - a. Distribution responsibilities
 - b. Higher patient-to-pharmacists ratio
 - c. Overlap of pharmacy services
 - d. Less integration into interprofessional team

Answers: 1. (T); 2. (F); 3. (B)

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213-1

Antipsychotics for the Non-Psychiatric Pharmacist: Across the Ages

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New prescriptions for second generation antipsychotics in children and adolescents doubled from 2001 to 2005. The United States Center for Medicare and Medicaid are particularly concerned about higher prescribing rates in foster children. Schizophrenia, bipolar disorder and irritability associated with autism are the only FDA-approved indications for atypical antipsychotics in youth but evidence is moderately strong for their usefulness to manage tics and aggression associated with conduct disorder. Youth are particularly sensitive to metabolic side effects and olanzapine has the highest rates of weight gain, dyslipidemia and increased blood glucose. Risperidone is the agent most likely to increase prolactin and this may lead to decreased bone mineral density, amenorrhea and galactorrhea. Aripiprazole and ziprasidone are the least sedating antipsychotics but they can cause extrapyramidal side effects like restlessness and pseudoparkinsonism. Quetiapine has high sedation and moderate metabolic effects but poses a low risk of prolactin elevation and extrapyramidal side effects. Monitoring and management recommendations will be presented for youth treated with second generation antipsychotic medications.

Learning Objectives:

1. Recognize and evaluate adverse effects of antipsychotics in children admitted to a non-psychiatric floor.
2. Manage antipsychotic adverse effects in a pediatric population.
3. Discuss appropriate indications for antipsychotics in pediatric patients.

Self-Assessment Questions: (True/False)

1. Aripiprazole is the second-generation antipsychotic with the highest risk for elevating prolactin.
2. Olanzapine is FDA-approved for managing aggression and irritability associated with autism in youth.
3. Dystonia is an antipsychotic side effect more likely to occur in a child compared to a senior citizen.

Answers: 1. (F); 2. (F); 3. (T)

213-2

Antipsychotics for the Non-Psychiatric Pharmacist: Geriatric Case Discussions

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Antipsychotic utilization in the treatment of Behavioral and Psychological Symptoms associated with Dementia (BPSD) has become a very controversial topic in geropsychiatry. This presentation will give the audience an overview of the current political landscape of the use of antipsychotics in the treatment of BPSD, followed by an overview of the current treatment guidelines in treating behavioral symptoms in Dementia. Particular focus will be placed on both nonpharmacologic and pharmacologic treatment strategies for BPSD using a case based approach during this presentation. As far as the antipsychotics, most data suggests risperidone, olanzapine, and aripiprazole have the best data supporting efficacy. However, antipsychotics have a black box warning regarding increasing all cause mortality in dementia patients, thus risk versus benefit of antipsychotics must be evaluated prior to initiating therapy. In addition to all cause mortality, elderly dementia patients are especially sensitive to antipsychotic induced movement disorders and the anticholinergic effects of these agents, which will be reviewed in this presentation.

Learning Objectives:

1. Explain the CMS statement regarding over-utilization of antipsychotics in the long-term care setting and efforts to improve dementia care.
2. Recognize and evaluate efficacy and adverse events of antipsychotics in elderly admitted to a non-psychiatric floor.
3. Manage adverse events of antipsychotics in the elderly.

Self Assessment Questions:

1. In the treatment of behavioral and psychological symptoms associated with dementia (BPSD), which of the following steps must be done first, per the treatment guidelines?
 - A. Identify target behaviors
 - B. Start antipsychotic therapy
 - C. Initiate nonpharmacological treatment
 - D. Determine etiology of symptoms
2. Which of the following nonpharmacological treatments for BPSD has been shown to effectively reduce agitation and aggression?
 - A. Snoezelen Therapy
 - B. Validation Therapy
 - C. Reality-Orientation Therapy
 - D. Reminiscence Therapy
3. Which of the following antipsychotics has been shown to have the best efficacy in treating psychosis related to dementia?
 - A. Olanzapine

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- B. Quetiapine
- C. Aripiprazole
- D. Risperidone

Answers: 1. (D); 2. (A); 3. (D)

215-1

Risk-based approach to maintenance immunosuppression

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The evolution, and preferred regimen, of maintenance immunosuppression for solid organ transplant recipients are described. The quintessential challenge, the maintenance of balance between rejection and toxicities of immunosuppression, is highlighted, and such toxicities (including malignancies) are described. Specific data with respect to induction strategies, cytomegalovirus infections, gastrointestinal complications, and calcineurin inhibitor alternatives are presented. Specifically, the paradoxical immunobiology of proliferation signal inhibitors, the utility of alternative formulations of mycophenolate, and the role of belatacept in de novo or calcineurin experienced transplant recipients are outlined. Finally, these data and concepts are described in a case vignette.

Learning Objectives:

1. Identify conventional immunosuppression regimens used after transplantation.
2. Describe the risks associated with induction and maintenance immunosuppression medications.
3. Manipulate immunosuppressive regimens to maximize drug-related benefits while minimizing adverse effects.

Self-Assessment Questions:

1. The following groupings of immunosuppressants have been used in transplantation both historically and actively. Which most-closely reflects the most-utilized regimen for most de novo renal transplantation recipients today?
 - A. Cyclosporine, azathioprine, prednisone
 - B. Tacrolimus, azathioprine, prednisone
 - C. Sirolimus, mycophenolate, prednisone
 - D. Tacrolimus, mycophenolate, prednisone
2. Which of the following statements accurately reflects the lessons learned from the INTAC trial of induction immunosuppression after renal transplantation?
 - A. Basiliximab is more-effective than alemtuzumab in low-risk patients
 - B. Basiliximab is associated with more hematologic toxicities than alemtuzumab
 - C. Thymoglobulin is as-effective as alemtuzumab in high-risk patients
 - D. Thymoglobulin is associated with more hematologic toxicities than alemtuzumab
3. M.S.' hypertension has worsened on nifedipine XL 120 mg twice daily and lisinopril 40 mg daily to 168/90. Additionally, his LDL and triglycerides have increased 30% from before transplant. Which of the following is the most reasonable option for M.S.:
 - A. Continue tacrolimus at the current dose

- B. Switch tacrolimus to belatacept
- C. Switch tacrolimus to sirolimus
- D. Switch mycophenolate to azathioprine

Answers: 1. (D); 2. (C); 3. (B)

215-2

Manipulation of Immunosuppression for Rejection Management

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The host immune response will be described for both acute cellular rejection and antibody mediated rejection in this section, as well as pharmacotherapeutic targets for augmenting the immune response. Specifically, potent immunosuppressants will be discussed and issues surrounding their use – dosing and monitoring considerations, adverse effects, and mechanisms of action – will be described. The potential role of the pharmacist in the management of rejection will also be discussed. Options for enhancing maintenance therapy will also be discussed, focusing on preventing future rejection episodes. Finally, these data and concepts are described in a case vignette.

Learning Objectives:

1. Identify pharmacotherapeutic targets for modulation of the immune system in transplant recipients as it relates to the management of graft rejection
2. Describe how current strategies (both pharmacologic and non-pharmacologic) interfere with the immune system to prevent graft loss from acute rejection
3. Develop treatment strategies for the management of acute rejection in transplant recipients

Self-Assessment Questions:

1. M.S. is treated with corticosteroids and his creatinine does not improve. The next agent that should be used is:
 - A. Thymoglobulin
 - B. Bortezomib
 - C. Alemtuzumab
 - D. Eculizumab
2. M.S.' labs are reviewed and it is found that he has positive donor specific antibodies and his biopsy shows capillary edema and hemorrhage, which is significant for antibody mediated rejection. What would be the appropriate method for treatment of his AMR in addition to the steroids and thymoglobulin he has received?
 - A. Increase tacrolimus goal
 - B. Begin plasmapheresis
 - C. Begin total lymphoid irradiation
 - D. Radical splenectomy
3. The nurse taking care of M.S. has his scheduled dose of thymoglobulin ready and the plasmapheresis nurse is preparing to start M.S.'s plasmapheresis treatment. When should

the nurse hang his thymoglobulin to ensure maximum efficacy of his thymoglobulin therapy?

- A. Before plasmapheresis
- B. During plasmapheresis
- C. After plasmapheresis

Answers: 1. (A); 2. (B); 3. (C)

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216-1

Professional and Academic Publishing: Putting Your Ideas into Practice 2012: The characteristics of a good idea

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What are the characteristics of a good publishing idea? It must have a market, an audience that is willing to pay for the intellectual property being offered. Beyond this base good ideas can take many forms. A new product can help the user provide a new service or improve an existing service or procedure. A new product could help the user better comply with a new regulation or accreditation standard. A new product could help to define the scope of an emerging specialty or summarize the important aspects of a new field. Or a new product could present existing information in a new, or more user friendly format.

Learning Objectives:

1. Describe at least two editorial approaches frequently used in professional publications.
2. Explain the concept of commercial viability and how a publisher determines this.
3. Compare the difference between a “Primer” and a “Handbook”.

Self-Assessment Questions: (True or False)

1. The definition of what is called a handbook is common throughout all publishing?
2. Standards for commercial viability of a new publishing idea can sometimes be as much subjective as objective?
3. Major medical centers are often the source of the best source of new ideas for everyday clinical practice?

Answers: 1. (T); 2. (F); 3. (F)

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216-2

Professional and Academic Publishing: Putting Your Ideas into Practice 2012: Start with a Good Proposal

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An effective publishing proposal includes the following elements: (1) A statement of scope and intent. This statement should cover purpose of the proposed work; approach; subject; audience; timing considerations; format (software, print, online); (2) A detailed table of contents; (3) a review of competing works in the field; (4) description of the physical specifications of the publication; (5) Writing samples, preferably a sample chapter for a book; and (6) a curriculum vitae.

Learning Objectives:

1. Describe at least three important elements of an effective publishing proposal.
2. Explain what is meant by “timing considerations” in a publication proposal.
3. Describe the types of multiple audiences that may exist for a professional pharmacy book.

Self-Assessment Questions: (True or False)

1. A publishing proposal must always include a writing sample or sample chapter.
2. The audience for a professional book can often include students in colleges of pharmacy.
3. Having no competition might be an indication that there is little or no market for a proposed work.

Answers: 1. (F); 2. (T); 3. (T)

216-3

**Professional and Academic Publishing: Putting Your Ideas into Practice 2012:
Writing and Editing: Pitfalls and Pearls**

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The roles of writer and editor in the writing process require many skills and abilities. Understanding and embracing the challenges associated with writing a single chapter, or editing an entire project is the first step to achieving success in publishing.

Learning Objectives:

1. Describe the skills and abilities needed to become a writer.
2. List and define the keys to being an effective editor.
3. Explain the role of the publisher in the writing process.

Self-Assessment Questions:

1. Which of the following questions should you ask yourself before agreeing to participate on a writing project?
 - A. Do I have the time?
 - B. Will I make a lot of money?
 - C. Can I meet the deadlines?
 - D. What else do I have on my plate?
 - E. A, B and C
2. Which of the following are keys to being an effective editor?
 - A. Effective and constant communication
 - B. Providing constructive feedback
 - C. Being timely
 - D. Preparing for potential delays or problems
 - E. All of the above
3. Which of the following skills apply to both successful writing and editing?
 - A. Time management
 - B. Commitment
 - C. Preparation
 - D. Communication with the publisher
 - E. All of the above.

Answers: 1. (E); 2. (E); 3. (E)

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216-4

**Professional and Academic Publishing: Putting Your Ideas into Practice 2012:
Managing the author-editor team: Perspectives on the process**

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There are many ideas that can be incorporated into a book. However, before taking on such an endeavor, several factors need to be considered. All aspects of a book from developing its concept, creating a timeline, and approaching chapter authors must be taken into account. This presentation will cover the experiences of a book editor and offer insight into developing a solid book proposal. The challenges and satisfaction of the process of writing and editing a book will also be discussed.

Learning Objectives:

1. Describe how an effective book proposal was developed.
2. List five factors that need to be considered when developing a book proposal.
3. Discuss the process of writing and editing a book.

Self-Assessment Questions: (True or False)

1. One of the most important factors when developing a book proposal is having editor(s) that compliment your skill set.
2. Choosing authors who are friends and colleagues is the most effective way to publish your book.
3. Developing a manageable timeline will assist you in having a solid book proposal.

Answers: 1. (T); 2. (F); 3. (T)

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216-5

**Professional and Academic Publishing: Putting Your Ideas into Practice 2012:
Getting the word out: Being an effective author in the marketplace**

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The prospects for success of a work are greatly enhanced by author involvement from choosing the original concept through participation in marketing and promotion. The author who stays engaged and helps to make his book more “discoverable” can not only enhance the financial success of her work but increase and enhance their professional visibility and reputation.

Learning Objectives:

1. Identify some of multiple ways in which an author can do market research in planning their book.
2. Describe the value of closely analyzing competitive books.
3. Explain the power of social networking to enhance visibility of an author’s work.

Self Assessment Questions: (True or False)

1. Informal research among colleagues is a valuable initial form of market research.
2. Looking at the features of competitive books never yields useful ideas.
3. The book author’s job is finished upon publication.

Answers: 1. (T); 2. (F); 3. (F)

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**Professional and Academic Publishing: Putting Your Ideas into Practice 2012:
Evaluating Five Ideas**

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In this interactive exercise five proposal ideas are considered, debated, and either approved or rejected by vote of the participants. The role of the acquisitions editor as “product champion” is considered as is the effectiveness of five proposals of varying quality in conveying a marketable idea.

Learning Objectives:

1. Identify the characteristics of a proposal that is worth pursuing even when it does not meet the criteria of the proposal guidelines.
2. State the role of the product presenter in gaining approval for a product idea
3. Describe the role that reviews, or lack of reviews, played in the acceptance or rejection of each proposal.

Self-Assessment Questions: (True or False)

1. Proposals that do not strictly adhere to proposal guidelines are always rejected.
2. The enthusiasm of an acquisition editor for a proposal can influence the approval process.
3. A proposal without reviews will usually have difficulty gaining approval.

Answers: 1. (F); 2. (T); 3. (T)

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217-1

Challenges and opportunities in pharmacy education around the world

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Inadequate human resources for health, including pharmacists and pharmacy technicians, threaten to undermine all efforts to strengthen health systems and improve healthcare. In many countries there are shortages of pharmacists and shortages of pharmacy schools. This presentation will discuss some of the global trends in pharmacy education including the rise of the PharmD and the type of pharmacists being trained. The results to date of the WHO FIP global survey of pharmacy schools will also be discussed. Finally an overview of the work of FIPEd pharmacy education Taskforce will be presented.

Learning Objectives:

1. Identify the major factors that cause variability in the nature of pharmacy education around the world.
2. Describe the results of the WHO FIP global survey of pharmacy schools
3. Explain the work of the FIPEd Pharmacy Education Taskforce.

Self-Assessment Questions (True or False)

1. There is a shortage of pharmacist academics in both developed and developing countries.
2. The entry level qualification in the UK is PharmD.
3. The UNITWIN Network for Global Pharmacy Education Development is the first UNESCO network for health professional education.

Answers: 1. (T); 2. (F); 3. (T)

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217-2

Global perspectives on quality assurance in pharmacy education

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In every country patients need and can benefit from professional services provided by pharmacists. As more countries recognize and value what pharmacists can offer to individual patients and health care delivery in general, pharmacy practice and education have changed and expanded. Many countries have embraced the “pharmaceutical care” vision but lack the experience and resources to transform their pharmacy education, and to assure its quality. For a number of years, ACPE has been assisting other countries in this regard. In response to ongoing and growing demand for its services internationally, in 2011 ACPE established its International Services Program.

The presentation will describe ACPE’s international services and summarize its collaborative efforts to advance pharmacy education globally, with a primary focus on quality assurance.

Learning Objectives:

1. Explain the reasons for ACPE’s expanded international activities.
2. List the four main types of international services offered by ACPE.
3. Describe one example of a project that aims to improve quality assurance systems in other countries.

Self-Assessment Questions: (True or False)

1. ACPE’s International Certification Program will use the same accreditation standards as are used in the USA for PharmD programs.
2. ACPE advocates adoption of US standards internationally.
3. ACPE believes that national needs and health priorities should determine what the appropriate educational model should be.

Answers: 1. (F); 2. (F); 3. (T)

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217-3

U.S. perspectives on international/global collaborations in pharmacy education

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Over the past few decades, the American Association of Colleges of Pharmacy and its member colleges/schools of pharmacy have been forming collaborations around the globe with colleagues in colleges/schools of pharmacy, hospitals/medical centers, other institutions/organizations, pharmaceutical companies, etc. A series of surveys have captured information about formal and informal agreements by which U.S. colleges/schools of pharmacy have/are participating globally with colleagues. A network (American Association of Colleges of Pharmacy Global Pharmacy Education Special Interest Group) was created so U.S. faculty members could share ideas, information and experiences about collaborating globally. National associations of pharmacy educators and regional networks of pharmacy schools around the world founded the Global Alliance for Pharmacy Education to connect their leaders and to share resources to advance the quality of pharmacy education globally. Now that these organizations are connected, they are exploring synergies in programming and other elements of their work that can meet the goal of continuously improving the quality of their educational programs. This program is presented to update those in attendance about what is occurring in the area of pharmacy education collaborations globally.

Learning Objectives:

1. Describe typical types of formal and informal agreements that U.S. colleges/schools of pharmacy have embarked upon globally and what benefits they glean from such affiliations.
2. Discuss the work of the American Association of Colleges of Pharmacy Global Pharmacy Education Special Interest Group to expand interest and knowledge among their U.S. colleagues about pharmacy education, research and healthcare globally.
3. Describe how the members of the Global Alliance for Pharmacy Education are working to maximize the contributions of pharmacy education to advance pharmacy practice globally via networking and resource sharing.

Self-Assessment Questions: (True or False)

1. Two of the most common formal agreements that U.S. colleges/schools of pharmacy undertake with collaborators in other countries are for research and Doctor of Pharmacy experiential rotations.
2. The only goal of the Global Pharmacy Education Special Interest Group is to provide information about clinical research that can be used on a global basis.

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3. The Global Alliance for Pharmacy Education's Web site (www.gapenet.org) is a central platform for sharing resources to advance pharmacy education and for networking among member organizations.

Answers: 1. (T); 2. (F); 3. (T)

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217-4

Case Study in Collaboration: U.S.-Thai Consortium for the Development of Pharmacy Education in Thailand

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The US-Thai Consortium for the Development of Pharmacy Education in Thailand began as an initiative of the Thailand Ministry of Health. This program connected a selected group of Thai and US Colleges of Pharmacy for the purposes of enhancing education opportunities for Thai students and scholars and for the exploration of scholarly exchanges between pharmacy faculty in the two countries. The program has had substantial success with many PHD graduates, scores of faculty exchanges and an increase in scholarly collaboration in pharmacy related fields between Thailand and the US.

Learning Objectives:

1. Describe the history of the US-Thai Consortium.
2. Create a structure and process to engage in an international exchange of scholarly and educational activities.
3. Describe the resource planning that is needed to accomplish an educational academic exchange.

Self-Assessment Questions: (True or False)

1. The US-Thai Consortium has evolved to include other countries.
2. The Consortium is guided by a combination of a 'steering committee' and the Deans of the respective schools.
3. The next stages for collaboration of the US-Thai Consortium include creation of clinical experiences such as residencies.

Answers: 1. (F); 2. (T); 3. (T)

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218-1

Are you prepared? Excelling in Joint Commission surveys

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Most hospitals are accredited by The Joint Commission or one of the other two accrediting organizations and many will undergo a survey during 2013. This presentation continues to be of interest to organizations in general, and pharmacists in particular, due to the focus on medication management and the safe use of drugs. Because Medication Management standards must be in compliance, they may lead to a high number of deficiencies that must be corrected following the survey. Pharmacists who understand the survey process and the standards related to medication management, use an organized approach in their preparation, and are attentive to problematic areas can perform well in surveys conducted in 2013. This session presents medication-related issues in three parts. Each part fosters an understanding of critical standards, ensures adequate documentation, and facilitates an organized approach to being continuously prepared. One presentation focuses on pharmacy-nursing issues and provides insight on how to comply with Medicare's new interpretation of their 30-minute rule for drug administration. Each presentation focuses on The Joint Commission's National Patient Safety Goals (NPSG) and Medication Management and other organizational standards that affect the organization's accreditation and deemed status. The presentations offer information on new standards and NPSGs, changes in existing standards and overviews of problematic areas such as pharmacist review of orders, competence assessment, performance improvement, drug administration per Medicare's guidelines, labeling of medications, controlled substances, sterile preparation, high-alert medications, emergency drugs, anesthesia drugs, medication storage and security, infection control, medication safety, and adverse events.

Learning Objectives:

1. Develop strategies on how to prepare for tracers and other surveyor activities during an accreditation survey
2. Work with nursing to successfully prepare a strategy for Medicare's new interpretation of their 30-minute rule for drug administration
3. Describe how to comply with hospital-wide standards that affect all departments including pharmacy
4. Identify potential problematic areas prior to surveys and develop an action plan for success

Self-Assessment Questions: (True or False)

1. Evaluation of the effectiveness of the medication management system now includes evaluation of medication reconciliation.

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2. Organizations are allowed to determine which medications are considered time-critical for their facility.
3. Competence must be assessed and documented for all staff who prepare sterile medications.
4. Opened multiple dose vials may be labeled with the date opened in lieu of a beyond-use date.

Answers: 1. (T); 2. (T); 3. (T); 4. (F)

219-1

aPTT vs. anti-Xa monitoring of unfractionated Heparin--pro anti-Xa heparin level monitoring

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Unfractionated heparin has traditionally been monitored with the activated partial thromboplastin time (aPTT)—a test that when developed, was intended not for heparin monitoring—but as a general screening test of the intrinsic coagulation system. Inherent to problems associated with unfractionated heparin such as variable biochemical composition and unpredictable pharmacokinetics, these problems are compounded by the fact that pre-analytic, analytic and biologic variables all impact upon the aPTT test result—impacting negatively upon the monitoring parameter by which we make clinical decisions for dosing unfractionated heparin. Yet despite these observations, many still use aPTTs for guiding unfractionated heparin therapy—citing costs as well as it's being readily available.

The role of anti-Xa heparin levels has increasingly expanded and has been recommended by the College of American Pathologists as well as the 7th American College of Chest Physicians Conference Evidence-Based Guidelines based upon the relative absence of pre-analytic, analytic and biologic variables impacting upon this laboratory test.

Advantages and disadvantages for the anti-Xa heparin level will be identified and discussed. In doing so, the hope is that a better understanding of the impact upon laboratory monitoring for unfractionated heparin will improve our ability to offer efficacious and safe drug therapy to improve patient outcomes by optimization of heparin therapy.

Learning Objectives:

1. Explain the appropriate use of the anti-Xa heparin level to monitor and adjust unfractionated heparin.
2. Differentiate the advantages and disadvantages of using anti-Xa heparin level(s) for monitoring unfractionated heparin.
3. Review the oft-cited criticisms of anti-Xa heparin levels—and address these criticisms from the literature and from clinical experience.

Self-Assessment Questions: (select the one correct answer)

1. The original intent of the aPTT test was for monitoring unfractionated heparin therapy:
 - a. true
 - b. false
2. There have never been “clinical outcomes” tied to achieving a pre-specified anti-Xa heparin level range:
 - a. true
 - b. false

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3. Ant-Xa heparin levels should be drawn:
- a. at the 6th hour for UFH, targeting a therapeutic range of 0.3 – 0.7 IU/mL
 - b. at the 4th hour for LMWHs, targeting a therapeutic range of 0.5 – 1.1 IU/mL
 - c. either
 - d. neither

Answers: 1. (b); 2. (b); 3. (a)

219-2

Vitamin D: Once Weekly or Daily Weekly?

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The association of vitamin D deficiency with diabetes, cardiovascular disease, infection, and autoimmune disease (in addition to bone health), the monitoring of vitamin D levels, and the increase in interest of vitamin D replacement have markedly increased over the last 10 years. However, controversy remains regarding the appropriate target vitamin D level, the use of vitamin D2 vs. vitamin D3 supplementation, and the consideration of how large a dose and optimal dosing frequency should be used in vitamin D replacement therapy. This presentation is designed to enlighten audience members regarding these matters, thereby allowing each participant the ability to determine an appropriate patient-specific vitamin D regimen for the prevention and/or treatment of vitamin D deficiency.

Learning Objectives:

1. Be familiar with vitamin D nomenclature.
2. Compare the Pros and Cons of daily versus weekly dosing of vitamin D.
3. Determine an appropriate patient-specific vitamin D regimen for the prevention and/or treatment of vitamin D deficiency.

Self-Assessment Questions:

1. Vitamin D sufficiency as defined by the IOM is a 25(OH)D level of
 - A. > 10 ng/mL
 - B. > 20 ng/mL
 - C. > 30 ng/mL
 - D. > 40 ng/mL
2. The best clinical measure of vitamin D stores is
 - A. calcidiol
 - B. calitriol
 - C. cholecalciferol
 - D. ergocalciferol
3. The recommended vitamin D replacement preparation of choice is
 - A. calcidiol
 - B. calitriol
 - C. cholecalciferol
 - D. ergocalciferol

Answers: 1. (B); 2. (A); 3. (C)

219-3

Levetiracetam Prophylaxis Following Traumatic Brain Injury

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Posttraumatic seizure (PTS) is a common occurrence in patients with traumatic brain injury (TBI) and can be associated with serious consequences. The use of anticonvulsant agents for early PTS prophylaxis following TBI is common especially in high-risk patients. Phenytoin (PHT) is the most commonly utilized agent however it has several potential serious adverse effects. Additionally, PHT is prone to many potential drug interactions and it exhibits saturable metabolism resulting in a narrow therapeutic index. For these reasons, levetiracetam (LEV) has been investigated as alternative to PHT for early PTS prophylaxis. The main advantages of LEV are predictable, linear, and dose-proportional pharmacokinetics, low protein binding, non-enzyme-inducing metabolism, a low propensity for drug interactions, and lack of serum drug monitoring. Based upon the current evidence, LEV demonstrated equal efficacy in seizure prevention when compared to PHT. However, LEV is associated with significantly fewer adverse effects including better cognition and outcomes.

Learning Objectives:

1. Explain the rationale for seizure prophylaxis following traumatic brain injury and those patients at highest risk.
2. Differentiate the advantages and disadvantages of phenytoin compared to levetiracetam for seizure prophylaxis.
3. Describe the clinical evidence surrounding the use of levetiracetam for seizure prophylaxis following traumatic brain injury.

Self-Assessment Questions:

1. Select the an advantage for the use of LEV for PTS prophylaxis
 - A. Serum concentration monitoring required
 - B. Saturable hepatic metabolism
 - C. Predictable, linear pharmacokinetic profile
 - D. More extensively studied
2. Which of the following factors would result in an increased risk of PTS?
 - A. Glasgow coma score 12
 - B. Diffuse axonal injury
 - C. Subdural hematoma
 - D. Non-depressed skull fracture
3. (True or False) The use of LEV for seizure prophylaxis has been shown to be associated with improved patient outcome compared to PHT.

Answers: 1. (D); 2. (C); 3. (T)

219-4

Vitamin D: Once Weekly or Daily Meekly?

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Vitamin D deficiency is a growing epidemic with an association to many metabolic diseases. Vitamin D replacement is at the forefront of pharmacotherapy, though many controversies exist. Vitamin D dose and dosing frequency may be the least uniformly implemented pharmacotherapy regimen in the United States. This presentation is designed to highlight the evidence supporting weekly supplementation of vitamin D pharmacotherapy, including patient-specific regimens for the prevention and/or treatment of vitamin D deficiency.

Learning Objectives:

1. Be familiar with vitamin D nomenclature.
2. Compare the Pros and Cons of daily versus weekly dosing of vitamin D.
3. Determine an appropriate patient-specific vitamin D regimen for the prevention and/or treatment of vitamin D deficiency.

Self-Assessment Questions:

1. Which of the following is NOT an advantage to once weekly vitamin D replacement?
 - A. Convenience
 - B. Availability
 - C. Cost
 - D. Adherence
2. Which of the following is the best predictor of compliance with vitamin D replacement?
 - A. Weekly by mouth dosing regimen
 - B. Daily by mouth dosing regimen
 - C. Weekly intramuscular dosing regimen
 - D. Monthly intramuscular dosing regimen
3. Which of the following is the most consistent predictor of poor response to vitamin D replacement?
 - A. Presence of a loading dose
 - B. Increased age
 - C. High BMI
 - D. High baseline vitamin D concentrations

Answers: 1. (B); 2. (A); 3. (C)

219-5

aPTT vs anti-Xa monitoring of unfractionated Heparin- pro aPTT

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The use of activated partial thromboplastin time (aPTT) to monitor the safety and effectiveness of unfractionated heparin (UFH) has been a mainstay for nearly 30 years. However, recently there has been a push to utilize new methods that directly measure heparin concentrations (anti-Xa levels) to monitor UFH. This presentation will discuss the benefits and limitations of aPTT in the monitoring of UFH and compare the clinical evidence with anti-Xa monitoring. The aPTT is influenced by numerous preanalytic, analytic, and biologic factors that must be considered when utilizing this monitoring method. Many clinical trials have been performed comparing protocols utilizing aPTT and anti-Xa as the means to monitor UFH. The majority of these studies use surrogate markers such as time to therapeutic range, number of monitoring tests or dose adjustments and average heparin dose to make comparisons between the protocols. Two studies have assessed clinical outcomes such as recurrent venous thromboembolism, bleeding or mortality. Unfortunately, both of these studies were unpowered to truly assess differences in those outcomes.

Learning Objectives:

1. Explain the appropriate use of the activated partial thromboplastin time (aPTT) to monitor and adjust unfractionated heparin.
2. Differentiate the advantages and disadvantages of using activated partial thromboplastin time (aPTT) for monitoring unfractionated heparin.
3. Describe the clinical evidence comparing activated partial thromboplastin time (aPTT) and anti-Xa levels for the monitoring of unfractionated heparin.

Self-Assessment Questions: (select the one correct answer)

1. Select the current recommended goal for activated partial thromboplastin time (aPTT) when treating venous thromboembolism.
 - A. 1.5-2.5 times the control
 - B. 60-85 seconds
 - C. 0.2-0.4 units/mL
 - D. aPTT prolongation the corresponds to plasma heparin levels of 0.3-0.7 IU/mL anti-Xa activity
2. Which of the following factors would result in an increased aPTT time?
 - A. Delay in analysis greater than 2 hours
 - B. Obesity
 - C. Under-filled sample tubes
 - D. Antithrombin deficiency
3. (True or False) The use of anti-Xa level monitoring for unfractionated heparin has demonstrated a reduction in major bleeding.

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Answers: 1. (D); 2. (C); 3. (F)

219-6

Phenytoin Prophylaxis Following Traumatic Brain Injury

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Posttraumatic seizure (PTS) is a common occurrence in patients with traumatic brain injury (TBI) and can be associated with serious consequences. The use of anticonvulsant agents for early PTS prophylaxis following TBI is common especially in high-risk patients. This session will be part of a debate on the use of phenytoin or levetiracetam for PTS prophylaxis. Phenytoin is the most commonly utilized agent and is the only drug currently recommended in the Brain Trauma Foundation guidelines for PTS prophylaxis. Phenytoin has been shown to be relatively safe and effective in large randomized trials. However, IV levetiracetam is a theoretically an attractive alternative because it has more predictable pharmacokinetics, does not require pharmacokinetic monitoring, has fewer drug interactions, and may have fewer adverse events. Unfortunately, levetiracetam is not FDA approved for monotherapy of generalized seizures, and there is a lack of large randomized trials that show that levetiracetam is effective for PTS prophylaxis. Indeed, the best available data suggest that levetiracetam may be less effective than phenytoin at seizure prevention. As such, phenytoin should continue to be the drug of choice for PTS prophylaxis until a large randomized trial demonstrates that levetiracetam is as effective as phenytoin.

Learning Objectives:

1. Explain the rationale for seizure prophylaxis following traumatic brain injury and those patients at highest risk.
2. Differentiate the advantages and disadvantages of phenytoin compared to levetiracetam for seizure prophylaxis.
3. Describe the clinical evidence surrounding the use of phenytoin for seizure prophylaxis following traumatic brain injury.

Self-Assessment Questions:

1. What is the primary reason Dr. Wood argues for using phenytoin over levetiracetam for PTS prophylaxis?
 - A. Serum concentration monitoring allows for more tailored dosing of phenytoin
 - B. Phenytoin has a superior adverse event profile compared to levetiracetam
 - C. Phenytoin has fewer drug interactions compared to levetiracetam
 - D. Lack of large randomized trials showing efficacy of levetiracetam for this indication
2. How long should PTS prophylaxis be continued in patients without seizures?
 - A. 48 hours
 - B. 7 days
 - C. 14 days
 - D. 3-6 months

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3. (True or False) Phenytoin is the drug of choice for seizure prophylaxis in the Brain Trauma Foundation guidelines.

Answers: 1. (D); 2. (B); 3. (T)

220-1

Medical Marijuana: Rational Medication or Potential Medication Misadventure?

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Cannabis, or marijuana, has been used for medicinal purposes since 2737 BC. Despite the federal government endorsing the illegal status of this drug, patients have continued to obtain cannabis for medical purposes. Currently, eighteen states and the District of Columbia in the U.S. have laws that allow marijuana to be used for medicinal reasons (e.g., severe pain, muscle spasms, severe nausea) and have instituted decriminalization laws for possession of marijuana. It is important for pharmacists to understand the characteristics and appropriate use of medical marijuana with more patients seeking this alternative therapy. Speakers will present the pharmacology, therapeutic uses, side effects, psychiatric implications, drug interactions, and various dosage forms of medical marijuana using evidence-based medicine. Pharmacists need to know and be able to talk with patients about the risks and benefits of using medical marijuana.

Learning Objectives:

1. Evaluate and discuss clinical studies performed in patients with various conditions to determine the effectiveness of medical marijuana (MMJ).
2. Identify adverse effects, psychiatric implications, and potential drug interactions that may occur with the use of MMJ.

Self-Assessment Questions: (True or False)

1. The active component of medical marijuana targets CB1 and CB2 receptors in the brain.
2. There are no data evaluating medical marijuana for the treatment of neuropathic pain.
3. A common adverse effect of medical marijuana is difficulty concentrating.

Answers: 1. (T); 2. (F); 3. (T)

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221-1

Vaccinating inpatients: challenges and opportunities

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Immunization programs are excellent conduits for improving vaccination rates. Although enhanced immunization efforts have been successful, outbreaks of diseases once considered to be controlled continue to occur. Vaccine delivery in an institutional setting provides an additional means to vaccinate patients; however, challenges encountered in the institutional setting may contribute to missed opportunities to provide these life-saving vaccines. Pharmacists are poised to lead the efforts within the institutional setting designed to improve vaccination rates. The purpose of the second part of this presentation will be to discuss challenges associated with vaccine delivery in the institutional setting, and to address solutions to these challenges.

Learning Objectives:

1. Describe recent changes to adult vaccine recommendations.
2. Recommend appropriate vaccines for an adult patient at your institution.
3. Develop an action plan for improving vaccination rates at your institution.

Self-Assessment Questions: (True or False)

1. Vaccines should be easily accessible and may be stored in any refrigerator that facilitates administration.
2. Pharmacists play a key role in reporting adverse reactions associated with vaccines to the Food and Drug Administration (FDA) through the MedWatch program.
3. Pharmacists' involvement in institutional immunization programs actively supports the mission of the Pharmacy Practice Model Initiative (PPMI).

Answers: 1. (F); 2. (F); 3. (T)

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221-2

To vax or not to vax: adult immunization update

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Immunization programs are a vital component for improving and maintaining public health. Pharmacists in all settings are involved in immunizations with education, advocacy, or vaccine administration. Despite the success of immunization efforts, there have been recent outbreaks of diseases once considered to be controlled. Some barriers to vaccination opportunities arise from practitioners not being updated on current recommendations or logistical challenges with vaccine delivery in an institutional setting. The purpose of the first part of this presentation will be to review key changes to vaccine recommendations which can impact adult inpatients.

Learning Objectives:

1. Describe recent changes to adult vaccine recommendations.
2. Recommend appropriate vaccines for an adult patient at your institution.
3. Develop an action plan for improving vaccination rates at your institution.

Self-Assessment Questions: (True or False)

1. The influenza strains included in the 2012-2013 influenza vaccine are identical to the strains used in the 2011-2012 influenza vaccine.
2. A 67-year-old patient being discharged from your institution is recommended to receive a Tdap vaccine if he or she has not previously received one.
3. A 67-year-old patient being discharged from your institution is indicated to receive either an inactivated or a live influenza vaccine.

Answers: 1. (F); 2. (T); 3. (F)

222-1

Overview of Drug-Induced Diseases: Epidemiology, Public Health Impact, and Evidence That Pharmacists May Have an Impact

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The purpose of this presentation is to define drug-induced diseases, describe their epidemiology and impact on morbidity, hospitalization, cost to society, and mortality, and describe and discuss evidence that pharmacists, through participation on collaborative health care teams, can markedly reduce the risk of drug-induced diseases. A drug-induced disease is an unintended effect of a drug that may result in mortality, morbidity, or symptoms sufficient to prompt a patient to seek medical attention. Drug-induced diseases occur commonly and are responsible for approximately 5% of Emergency Room visits and 5-7.5% of all hospitalizations. Drug-induced diseases occur in approximately 7% of hospitalized patients, and result in prolonged length of hospital stay, excess cost of hospitalization, and increased incidence of mortality. Evidence indicates that pharmacists, practicing as members of collaborative health care teams, may directly reduce the incidence of preventable and overall drug-induced diseases. By developing a habitual thought process and always considering the possibility that new or exacerbated patient symptoms may be caused by drugs, hospital and health-system pharmacists can make an important impact and markedly reduce the incidence of drug-induced diseases.

Learning Objectives:

1. Describe the epidemiology of drug-induced diseases
2. Describe the impact of drug-induced diseases on morbidity, hospitalization, mortality and cost to society
3. Discuss evidence that pharmacists may have an impact on prevention of drug-induced diseases

Self-Assessment Questions:

1. Which of the following is the approximate proportion of all hospitalizations that occur as a result of drug-induced diseases?
 - A. 1 - 2.5%
 - B. 2.5 – 5%
 - C. 5 – 7.5%
 - D. 7.5 – 10%
2. In hospitalized patients, drug-induced diseases lead to an excess in length of hospital stay of approximately:
 - A. 12 hours
 - B. 1 day
 - C. 2 days
 - D. 3 days

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3. Pharmacist participation on patient care rounds in general medical units has been shown to result in a significant reduction in the incidence of:
- A. Non-preventable adverse drug events
 - B. Preventable adverse drug events
 - C. Death due to cardiovascular causes
 - D. Total mortality

Answers: 1. (C); 2. (D); 3. (B)

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Critical roles for certified pharmacy technicians in practice model change

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Hardy, M.J.

As reliance on pharmacists for patient care increases as outlined in PPMI, pharmacy technicians are called upon to fill roles to support the pharmacists' functions. In rural areas, pharmacists may not be available to provide patient care and access to care is limited. To assist with filling this void, pharmacy technicians may be supervised using telepharmacy as a means of oversight. This program describes not only the roles of technicians in telepharmacy, but in all new and evolving roles and the impact well trained and certified technicians can have in supporting the pharmacy team. New programs to provide guidance and support for technicians, educators, and employers will be highlighted.

Learning Objectives:

1. Explain new or modified roles that have been developed or expanded to assist in achieving PPMI recommendations and goals.
2. Identify training, certifications, and competencies needed to enhance pharmacy technician roles.
3. Discuss the PTCB C.R.E.S.T. Initiative and how it relates to PPMI

Self-Assessment Questions:

1. Pharmacy technicians may assist with the following:
 - A. Medication error reporting
 - B. Educating patients on medications
 - C. Collecting patient medication information
 - D. A and C
2. In 2013, new pharmacy technicians will:
 - A. See a standard national pay rate
 - B. Will sit for a new version of the PTCE
 - C. Witness no changes to regulations
 - D. B and C
3. (True or False) The 2013 PTCE blueprint is based on an updated pharmacy technician practice analysis.

Answers: 1. (D); 2. (B); 3. (T)

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Critical roles for certified pharmacy technicians in practice model change

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As reliance on pharmacists for patient care increases as outlined in PPMI, pharmacy technicians are called upon to fill roles to support the pharmacists' functions. In rural areas, pharmacists may not be available to provide patient care and access to care is limited. To assist with filling this void, pharmacy technicians may be supervised using telepharmacy as a means of oversight. This program describes not only the roles of technicians in telepharmacy, but in all new and evolving roles and the impact well trained and certified technicians can have in supporting the pharmacy team. New programs to provide guidance and support for technicians, educators, and employers will be highlighted.

Learning Objectives:

1. Explain new or modified roles that have been developed or expanded to assist in achieving PPMI recommendations and goals.
2. List steps to integrate remote supervision of pharmacy technicians and describe the impact on patient care.
3. Identify training, certifications, and competencies needed to enhance pharmacy technician roles.

Self-Assessment Questions: (True or False)

1. In North Dakota, pharmacy technicians are allowed to fill prescriptions and dispense to the patients as long as the log of the dispensed prescriptions is reviewed within 24 hours.
2. In North Dakota, telepharmacy solutions allow for increased access to care.
3. Pharmacy technicians in North Dakota must be certified by PTCB to be registered as pharmacy technicians in this state.

Answers: 1. (F); 2. (T); 3. (T)

225-3

Critical roles for certified pharmacy technicians in practice model change

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As reliance on pharmacists for patient care increases as outlined in PPMI, pharmacy technicians are called upon to fill roles to support the pharmacists' functions. In rural areas, pharmacists may not be available to provide patient care and access to care is limited. To assist with filling this void, pharmacy technicians may be supervised using telepharmacy as a means of oversight. This program describes not only the roles of technicians in telepharmacy, but in all new and evolving roles and the impact well trained and certified technicians can have in supporting the pharmacy team. New programs to provide guidance and support for technicians, educators, and employers will be highlighted.

Learning Objectives:

1. Explain new or modified roles that have been developed or expanded to assist in achieving PPMI recommendations and goals.
2. List steps to integrate remote supervision of pharmacy technicians and describe the impact on patient care.
3. Identify training, certifications, and competencies needed to enhance pharmacy technician roles.

Self-Assessment Questions:

1. (True or False) A nurse caring for patients in a North Dakota hospital can obtain a medication from a floor stock supply and hand that medication off to another nurse for administration to a patient.
2. Which of the following is a requirement for a pharmacy technician in North Dakota to work in a telepharmacy setting under the remote supervision of a telepharmacist?
 - A. Technician must be PTCB certified
 - B. Technician must have worked for 1 year as a technician
 - C. Technician must have completed an ASHP-accredited training program
 - D. All of the above
3. (True or False) Telepharmacy practice in North Dakota has increased patient safety, allowed for 340B optimization, and improved pharmacy and nursing workflow statistics.

Answers: 1. (F); 2. (D); 3. (T)

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Beers: an update in geriatric practice

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The Beers Criteria was recently updated in 2012 by the American Geriatrics Society (AGS) and has incorporated significant advances since the previous version in 2003. The current version was developed by a modified-Delphi method with an interdisciplinary panel of experts and an extensive literature search. The current version is available online for free access to any healthcare provider through the AGS website: www.american geriatri cs.org. Many changes have been made in the criteria, some of which will be highlighted in the presentation. The presentation will also cover pearls for implementation of the updated criteria into clinical practice, as well as describe additional resources available to pharmacists when utilizing the 2012 AGS Beers Criteria.

Learning Objective:

1. Explain pertinent updates to recently published guidelines for ensuring safe use of medications in the elderly (Beers Criteria) in comparison to the 2003 version.

Self-Assessment Questions: (True or False)

1. The updated AGS 2012 Beers Criteria is more evidence-based than previous versions.
2. When utilizing the AGS 2012 Beers Criteria, if a medication is not on the list then it can be deemed safe for use in older adults.

Answers: 1. (T); 2. (F)

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Hypertension management in the elderly patient

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Hypertension, particularly isolated systolic hypertension, is common among older adults; however, there is a paucity of data on the use and effectiveness of antihypertensives in this patient population. The epidemiology of hypertension; extent of awareness, treatment, and control of hypertension by age; and benefits and risks of antihypertensive use in older adults is described. Treatment recommendations based on placebo-controlled trials and expert consensus documents are reviewed.

Learning Objectives:

1. Describe the extent of awareness, treatment, and control of hypertension by age.
2. Discuss the current state of the literature as it applies to the use and effectiveness of antihypertensives in older adults.

Self-Assessment Questions: (True or False)

1. Most older adults who have hypertension actually have isolated systolic hypertension.
2. According to the 2011 American College of Cardiology Foundation/American Heart Association Expert Consensus Document on Hypertension in the Elderly, lifestyle modifications are considered last-line therapy for older adults with hypertension.

Answers: 1. (T); 2. (F)

226-3

**Beers, Antihypertensives, and Medical Home: An Update in Geriatric Practice
Patient Centered Medical Home**

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Transformation of the health care system is necessary in order to curtail rising health care costs and to improve the quality of care. The patient-centered medical home (PCMH) is a new model that is based in primary care that seeks to accomplish both goals. Joint principles of PCMH have been established by leading physician organizations and include the following tenets: each patient has a personal physician, the medical home is physician-led, whole person care is delivered, care is coordinated and integrated, quality and safety are hallmarks of care, enhanced access to care is available, and payment for services recognizes the value of improving quality. The National Committee for Quality Assurance has established standards for recognizing physician practices as a PCMH. National Demonstration Projects have evaluated the benefits of the PCMH model, and the Patient-Centered Primary Care Collaborative regularly summarizes PCMH outcomes. Overall, the PCMH model has been shown to increase quality, decrease hospitalizations, and lower the cost of care. The Physician Quality Reporting System (PQRS) allows physicians to identify and report quality measures relevant to their patient population, and demonstrated improvements can positively impact reimbursement. Examples of PQRS quality measures that impact the care of geriatric patients include hypertension, osteoporosis, falls prevention, medication reconciliation, and drugs to avoid in the elderly. Examples of pharmacist-led initiatives that focus on improving care for older adults in a level III PCMH will be provided.

Learning Objectives:

1. Discuss the impact of the patient-centered medical home model on quality of care measures, health care costs, and health care utilization.
2. Describe examples of Physician Quality Reporting System quality measures that are pertinent to geriatric practice.
3. Identify pharmacist-led initiatives that focus on improving care for older adults in a level III PCMH.

Self- Assessment Questions: (True or False)

1. The patient-centered medical home model involves transformation of health care delivery.
2. There are no Physician Quality Reporting System quality measures that are pertinent to geriatric practice.
3. The PCMH model has been shown to decrease cost, decrease health care utilization such as hospitalizations, and improve the quality of care.

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Answers: 1. (T); 2. (F); 3. (T)

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Using Pharmacy Services to Improve Transitions of Care

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An essential part of the transition of care process is good communication. Pharmacists are well trained to serve as part of the multidisciplinary team necessary for effective care transitions. As standards for more specific transitional care quality improvement are established, the role of the inpatient and outpatient pharmacist will continue to expand. Pharmacists have the opportunity to initiate change through participation in medical home models and efforts to improve care transitions.

Learning Objectives:

1. Describe risk factors for poor outcomes related to transitions of care.
2. Distinguish differing types of care transitions within health care systems.
3. Explain the role of the pharmacist in improving the care of patients during transitions of care.

Self-Assessment Questions: (True or False)

1. Rates of post-discharge adverse events during hospital to home transition range up to 19%.
2. The two main factors to prevent readmissions from inpatient settings are streamlined transition processes and effective communication with the health care team and the patient.
3. There are no studies assessing the impact of involving a pharmacist in the transition of care process.

Answers: 1. (T); 2. (T); 3. (F).

227-1

MDRD should be used for renal drug dosing

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Impaired renal function results in altered pharmacokinetics for many drugs, primarily due to impaired renal drug clearance. Failure to appropriately adjust the dose of these medications in patients with chronic kidney disease (CKD) may lead to excessive drug exposure and serious adverse drug events. Drug dosing nomograms for patients with CKD are constructed during drug development in clinical pharmacokinetic studies, which are based on the relationship between creatinine clearance (often estimated using the Cockcroft-Gault (C-G) equation) and total drug clearance. Some “new” renal function equations, such as the MDRD, were developed to estimate GFR for the purpose of CKD staging. Some have proposed substitution of the MDRD equation in place of the CG equation in renal dosing nomograms, but pharmacokinetic validation of this approach is lacking.

Learning Objectives:

1. Describe the intended use of the MDRD and CG equations.
2. Describe the arguments for, and against, using the MDRD equation for renal drug dosing.
3. Give two examples of drugs that specifically instruct clinicians to use the CG equation for renal drug dosing.

Self-Assessment Questions: (True or False)

1. The MDRD equation was originally designed for the purpose of staging CKD into categories.
2. The MDRD equation is used by clinical laboratories to report “eGFR” in electronic medical records.
3. Pharmacokinetic studies conducted by drug manufacturers most often use creatinine clearance to stratify patients in pharmacokinetic studies in renal impairment.

Answers: 1. (T); 2. (T); 3. (T)

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The best size descriptor for drug dosing in obese patients is not ideal body weight as determined by the Devine method.

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Obesity is a global health problem. The paucity of literature regarding the impact of obesity on drug disposition makes drug dosing in obese patients a challenging clinical issue for the practicing pharmacist. During this session, ideal body weight (as determined by the Devine method) and other size descriptors for drug dosing in obese patients will be presented in the context of how obesity affects absorption, distribution, metabolism, and elimination and how we estimate loading and maintenance doses. The presentation will conclude with tips on how to decide which size descriptor to use to recommend a weight-based dosing regimen for obese patients.

Learning Objectives:

1. Describe various body size descriptors and their limitations in drug dosing.
2. Describe the impact of obesity on pharmacokinetics and loading and maintenance doses.
3. Discuss the issues related to the controversies surrounding weight estimates for drug dosing.

Self-Assessment Questions: (True or False)

1. The Devine method assumes all adult patients of the same sex and height would receive the same dose.
2. If volume of distribution/total body weight (L/kg) estimates are similar in obese and non-obese patients, a weight-based loading dose for such a drug should use total body weight.
3. No single size descriptor characterizes clearance of drugs in obese patients.

Answers: 1. (T); 2. (T); 3. (T).

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Pharmacokinetic drug-drug interactions are mostly of theoretical rather than practical importance

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Pharmacy systems and computerized prescriber order entry systems that provide alerts for drug-drug interactions (DDIs) are generally considered to be of value in preventing harm to patients. However, the number of alerts can be overwhelming and clinicians frequently dismiss them as they work to complete medication orders. In this presentation, the frequency of alerts that are potentially dangerous (or actually dangerous) for patients will be examined along with the responses of clinicians to the alerts. Suggestions will be provided for improving the alerting system to enhance its value to clinicians and patients.

Learning Objectives:

1. Evaluate the impact of alerting on a large number of potential interactions with the possible prevention of harmful drug-drug interactions
2. Examine the frequency of actions to change therapy with the frequency of alerting
3. Reconcile the need to be alerted with the value of the alerts for individual patients
4. Provide suggestions for improving the alerting system

Self-Assessment Questions: (True or False)

1. Research presented during this session indicates that less than 1% of all prescriptions result in an interaction that is considered clinically important.
2. There is a fairly high degree of agreement among various textbooks and computerized rating systems on the significance of most drug-drug interactions.
3. Greater than 75% of DDI alerts are generally overridden by pharmacists and physicians because they consider them clinically irrelevant.

Answers: 1. (T); 2. (F); 3. (T)

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Antiepileptic drugs (AEDs) and generic substitution

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A number of antiepileptic drugs are available as generics and if prescribed universally would be a significant cost savings to the patient and the health care system. The FDA requires that generic equivalents demonstrate bioequivalence. However, because AEDs are narrow therapeutic index or titratable medications and therapeutic failure can result in serious consequences there is considerable hesitance on the part of both providers and patients to make the switch to generic AEDs. In addition there is little objective evidence that in clinical practice generic AEDs are indeed equivalent. If a switch to a generic AED is being considered all parties (pharmacist, patient, provider) should be involved in the decision making process. In addition careful considerations of the the indication, clinical stability, life style, as well as the consequences of a therapeutic failure should be taken. As much as possible an attempt should be made to keep everything other than the change to the generic AED that same.

Learning Objectives:

1. Describe the FDA Biopharmaceutical Classification System
2. Indicate which dosage forms are most likely to have bio-in-equivalence
3. List at least four indications other than epilepsy for which AEDs are prescribed
4. List the factors that should be considered when switching to a generic AED

Self Assessment Questions:

1. (True or False) A brand name and a generic drug product will that the same AUC in all patients if both products have the same bioavailability.
2. (True or False) Drugs with the BCS Class 1 rating should require more evidence of bioequivalence than BCS Class IV drugs
3. The rate of absorption will affect the AUC for which of the following AEDs?
 - A. lamotrigine
 - B. levetiracetam
 - C. phenytoin
 - D. None of the above, AUC is independent of absorption rate

Answers: 1. (F); 2. (F); 3. (C)

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Strategies worth sharing: practice innovations

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Currently there are health-systems that are actively implementing the PPMI recommendations into their practice settings, but many health-systems only are providing services and/or care to the PPMI standards minimally. The ASHP Sections/ Forums present their "stars" of PPMI and share how organizations are improving pharmacy practice in relation to these PPMI recommendations. Providing organizations and individuals with ideas and solutions for implementing the PPMI recommendations is paramount in advancing the practice of pharmacy.

Learning Objectives:

1. Identify and describe methods utilized to highlight which PPMI recommendations receive priority and resources.
2. Describe common barriers that affect PPMI advancement.
3. Identify and recommend effective strategies utilized to implement PPMI recommendations.

Self-Assessment Questions: (True or False)

1. Pharmacy students may be used effectively in practice settings to help achieve specific PPMI recommendations?
2. It is important to involve different levels of pharmacy practitioners in the plan for implementing the PPMI recommendations within health systems?
3. Pharmacy informatics designated pharmacists are crucial in developing systems to advance the role of the clinical pharmacy practitioner in the PPMI.

Answers: 1. (T); 2. (T); 3. (T).

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From defense to offense: PPMI from the frontlines

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The Pharmacy Practice Model Initiative was developed to improve patient care. This initiative calls for change of how patients are currently being cared for by pharmacists. Change is not always accepted without resistance. Overcoming some of these barriers is presented.

Learning Objective:

1. Understand barriers to practice model change amongst residency trained new practitioners.

Self-Assessment Question: (True or False)

1. Resistance to change can be overcome by keeping the patient as the top priority.

Answer: 1. (T)

228-3

We Want You – Informatics and PPMI

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Informatics Pharmacists have a significant opportunity to support the Pharmacy Practice Model Initiative through the implementation of electronic health records. These efforts support other pharmacists in their new evolving roles and also create new practice opportunities for Informatics Pharmacists. This presentation will discuss new opportunities for informatics pharmacists to become health system informatics team members. It will also describe how pharmacy technicians and other technical resources can support automation technologies and other functions to allow informatics pharmacists to expand their role. Terminology and informatics titles will be discussed as they impact the perceived role of the informatics pharmacist. Finally the importance of informatics pharmacists maintaining a patient focus rather than a pharmacy focus is discussed.

Learning Objectives:

1. Describe how PPMI provides opportunities for informatics pharmacist to define their role as informaticists.
2. Identify how pharmacy technicians and others can be used to support the technical components of EHR systems.
3. Identify the difference between informatics pharmacist titles and how they can impact the role of the informatics pharmacist.
4. Describe how informatics pharmacists need to transition from a pharmacy focus to a patient focus in order to be successful in their new evolving roles.

Self-Assessment Questions: (True or False)

1. PPMI has minimal impact on the practice model for informatics pharmacists.
2. In the evolving informatics pharmacist practice model, the informatics team consists of informatics pharmacists, physicians, nurses and other informatics practitioners.
3. The title “Pharmacy Informaticist” properly describes the evolving role of the informatics pharmacist.

Answers: 1. (F); 2. (T); 3. (F).

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Management of sedation in the intensive care unit

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The recent guidelines on pain, agitation, and delirium provide recommendations on assessment and management of these patients. Validated sedation assessment should be used and documented 4 times per shift and as needed. The general target is a light level of sedation, early in the course of critical illness. Treating pain first, using a multimodal strategy is suggested. Using light sedation will facilitate daily awakening, spontaneous breathing trials, increased patient communications, and early mobilization. Guideline committee suggests that sedation strategies using non-benzodiazepine sedatives (either propofol or dexmedetomidine) may be preferred over sedation with benzodiazepines (either midazolam or lorazepam) to improve clinical outcomes in mechanically ventilated adult ICU patients. These approaches are best accomplished with a multidisciplinary team approach. Beneficial outcomes of this strategy include reduced time on mechanical ventilation, shorter time in the ICU, fewer ICU complications, lower incidence of delirium, and shorter hospital stays. It is also important to use pharmacoeconomic data to aid in selection of therapies for agitation.

Learning Objectives:

1. Evaluate recent literature on the management of agitation in the ICU.
2. Discuss key concepts in the selection of sedatives in critically ill patients.
3. Describe key pharmacotherapy concepts and barriers to optimizing sedation pharmacotherapy in critically ill patients.

Self-Assessment Questions: (True or False)

1. Validated sedation assessment tools include SAS and RAAS.
2. Current data suggest targeting patients to a light level of sedation.
3. Pharmacoeconomic data can be used to assist with assessment of sedation therapies.

Answers: 1. (T); 2. (T); 3. (T)

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Safety and Quality Pearls

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The session is designed to appeal to (1) young practitioners who are becoming more active in safety and quality and are in need of guidance from seasoned practitioners, (2) safety and quality practitioners who would find information on their specialty interesting and helpful, and (3) practitioners whose interests and opportunities have taken them outside safety and quality arena, but who would like to "keep in touch."

Learning Objectives:

1. At the conclusion of this presentation, audience members will be able to identify specific medications and environmental factors which are prone to or may result in medication errors, and methods for identifying and reducing the risk of medication errors via the use of an assessment tool.
2. To identify the purpose and rationale behind the development of the Near Miss Tracking system.
3. Describe how opportunities to improve medication use systems can be identified by performance of Failure Mode Effects Analysis (FMEA) and ongoing review of data from medication error reporting systems.
4. List three strategies which may be combined to avoid duplication of anticoagulation therapy for hospitalized patients.
5. Describe at least two safety interventions to reduce distractions during the medication administration process and discuss the effectiveness of these interventions
6. Identify operational challenges and regulatory requirements associated in the management of pulmonary hypertension patients
7. Define TeamSTEPPS teambuilding training tools that help improve the culture of safety
8. Describe the model for a daily pharmacy safety huddle implemented at Brunswick Novant Medical Center
9. Describe how technology can decrease errors with multiple concentrations of IV medications
10. Discuss ways to apply smart pump data to promote compliance with administration of infusions using drug library guardrails
11. Identify one of the metrics for Novant Health's long term medication safety goal.
12. Analyze and evaluate the data to create the optimum opportunities to implement best practices for your organization.
13. Design and conduct an orientation session introducing safe medication practices to incoming first year Clinical Anesthesia residents.
14. To describe an effective method to utilize data and identify patients with high consumption of controlled substances that could potentially be a patient safety concern.

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15. Demonstrate how a multidisciplinary group using patient safety report data can implement process improvements to decrease naloxone administrations due to narcotic over sedation.
16. After completing this activity the learner should be able to implement a drug product replacement verification procedure to assure safe substitutions during drug shortages.
17. Describe the Partnership for Patients and Hospital Engagement networks efforts to develop standardized medication safety measures.

Self-Assessment Questions:

1. The use of a standardized assessment tool can be an effective method for identifying medication safety risks and opportunities for improvement.
2. Specifically addressing opportunities for improvement with High Risk Medications may be an effective method for reducing the risk of significant patient harm.
3. Why was the near miss tracking system developed?
 - a. To give the Medication Safety Fellow adequate information to make staffing recommendations without any input from the staff.
 - b. For review of event type and timing to uncover trends and use to facilitate discussion with staff for a safer work environment.
 - c. To determine which shift is making the most errors and discipline them.
 - d. To determine which shift is making the least errors and reward them.
4. What piece of information is NOT included in the near miss tracking system?
 - a. The type of error that occurred.
 - b. The day of the week that the error occurred.
 - c. The time of day that the error occurred.
 - d. The name of the person who made the error.
5. Performance of a Failure Mode Effects Analysis can identify opportunities for improvement of medication use systems, including those related to human factors.
6. Medication error reporting systems should have tools to provide trending of data to assist in identification of opportunities to enhance medication use systems.
7. Strategies designed to avoid therapeutic duplication include:
 - a. increasing reliance on memory
 - b. maximizing interruptions
 - c. collaborating with prescribers, pharmacists and nurses
 - d. ignoring incident/event reports
8. Combining strategies involving technology, education, and workflow can successfully reduce therapeutic duplications.
9. The combination of several safety interventions such as visual cues and behavioral changes is successful in reducing distraction during medication administration process.
10. Distraction/interruptions are part of each medication administration process.
11. It is important for pharmacists to know that treprostinil can be given as SC, IV and inhaled therapy.
12. Administering the wrong dose of epoprostenol can cause immediate adverse events.

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13. TeamSTEPPS® offers tools and processes that are evidence based teamwork systems to improve communication and cultural diverse teamwork skills among health care professionals.
14. TeamSTEPPS team events are:
 - a. Briefs – planning
 - b. Huddles – problem solving
 - c. Debriefs – process improvement
 - d. All of the above
15. Brunswick Novant Medical Center utilizes a safety huddle and reporting tool to communicate key information.
16. Phonetic alphabet and numeric clarifications are two useful strategies to improve patient safety.
17. Building in automatic forcing function in pharmacy information systems can lead to reduction in concentration preparation and dispensing errors.
18. The following actions can be used to minimize errors with multiple concentrations
 - a. allow for ordering of non-standard concentrations
 - b. implement a process to make dilute and standard concentration product labels look obviously different in the preparation areas
 - c. allow pharmacists to alter concentrations in the verification queue
 - d. Rely on pharmacist to catch concentration differences during the order checking process
19. Do you feel that you have a better understanding of how to improve smart pump utilization in your practice?
20. Do you feel more equipt to increase adoption of smart pumps to improve patient safety?
21. Metric 1 - 100% of patients receiving high risk medications via infusion pumps will receive the proper dose, rate of administration and proper utilization of safety guidelines
22. Metric 2 - 100% of patients in acute care facilities and in NMG practices will have an accurate height and weight recorded at times when this information is relevant to medication administration
23. How you use the data is crucial to improving the medication management system.
24. Leadership buy-in is crucial to improving medication management.
25. First year anesthesia residents have little experience with preparing medications and appreciate an opportunity for hands-on practice.
26. At this level of training, the medication safety education should focus on:
 - a. high level clinical issues.
 - b. appropraite aseptic technique to use when working inside a laminar airflow workbench.
 - c. Common "pitfalls" and how to avoid them.
 - d. the punishment that will dealt out to anyone who makes an error.
27. The stratification of patients includes of which of the following:
 - a. Total number of doses of controlled substances per day.
 - b. Morphine Equivalents greater than 120mg per day.
 - c. Total number of prescriptions filled.
 - d. Average quantity of prescriptions filled.

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28. In conjunction with education from pain management utilizing a systems approach to Control Substance Monitoring may result in a decrease in controlled substance prescribing.
29. Patient's at high risk for respiratory depression with opioids and should be started on lower doses include:
- a. Elderly patients
 - b. Opioid tolerant patients
 - c. Patients with obstructive sleep apnea
 - d. Answers a and c
30. To decrease risk of narcotic oversedation your Patient Controlled Analgesia (PCA) Order Form should only have one set of dosing recommendations.
31. Medication safety concerns surrounding substitutions include which of the following:
- a. Cost of Product
 - b. Size of bottle or vial
 - c. Orange Book Therapeutic Equivalence rating
 - d. Label coloring
32. When should a formal verification procedure be employed?
- a. Everytime an alternative product is purchased.
 - b. Only after a medication occurrence takes place.
 - c. Once weekly
 - d. Once monthly
33. Which of the following is not a measure that is being used by the Partnership for Patients initiative?
- a. INR >5
 - b. Blood glucose <50
 - c. Voluntary reports
 - d. Use of a protocol
34. HEN stands for Hospital Engagement Network.

Answers : 1. (T); 2. (T); 3. (b); 4. (d); 5. (T); 6. (T); 7. (c); 8. (T); 9. (T); 10. (T); 11. (T); 12. (T); 13. (T); 14. (d); 15. (T); 16. (T); 17. (T); 18. (b); 19. (T); 20. (T); 21. (T); 22. (T); 23. (T); 24. (T); 25. (T); 26. (b); 27. (b); 28. (T); 29. (d); 30. (F); 31. (c); 32. (a); 33. (c); 34. (T).

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Management Pearls

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The session is designed to appeal to (1) young practitioners who are becoming more active in management practice and are in need of guidance from seasoned practitioners, (2) management practitioners who would find information outside their specialty interesting, and (3) practitioners whose interests and opportunities have taken them outside the management arena, but who would like to "keep in touch."

Learning Objectives:

1. Provide a general overview of what a clinical pertinence review is and how this can be applied across many pharmacy practices
2. Review implementation strategies for a discharge medication bedside delivery service including the use of technology and pharmacy technicians
3. Describe how a pharmacy patient bill of rights can be used to further PPMI principles.
4. To demonstrate Surgical Care Improvement Project Core Measure improvement by implementing an Automatic Stop Prophylactic Protocol
5. After completing this session, the learner should be able to outline steps to improve medication safety in the ED
6. State three successes of integrating a pharmacy call center within a military hospital
7. Describe the four phases of care which require pharmacists' evaluation of patients' drug therapy regimens to decrease drug-related problems (DRPs) with each transition.
8. After completing this session, participants should be able to analyze IV batch frequencies and timing for purposes of identifying and fixing unnecessary spikes in workload.
9. Be able to discuss one hospital's experience with DoseEdge and how it improves potential errors being made in traditional picking without bar code scanning.
10. Develop a targeted notification tool to communicate drug shortage information
11. Discuss steps involved in creating a post-discharge call support workflow for patients to access an inpatient pharmacist.
12. Describe the changing role, priorities and responsibilities of an IDS Pharmacy in a growing health system.
13. Describe change management techniques used to address staff injury concerns
14. Describe the process for standardizing vasoactive medications in a pediatric population
15. To demonstrate how to utilize the electronic health record to ascertain a more accurate documentation of pharmacists' interventions
16. Identify how a pharmacy run clinic for patients new to a healthcare system can benefit patients, pharmacists, primary care providers, and the pharmacy budget.
17. Identify the two primary barriers to implementing procedures for compliance with RCRA medication disposal.

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18. Understand the importance of collaborating with sites from multiple regions when attempting to change federal law. Understand the importance of partnering with your Government Relations team to change the law.

Self-Assessment Questions:

1. The peer review process is only helpful as a possible disciplinary mechanism.
2. All pharmacists, regardless of job duty, should participate in a peer review process.
3. iPads can be useful for remote discharge counseling by pharmacists within a hospital setting.
4. Pharmacy technicians should not be a liaison between outpatient and inpatient pharmacy for discharge medication bedside delivery service.
5. A pharmacy patient bill of rights shows pharmacy practitioners how to think about practice change from the patient's perspective.
6. One aspect of a pharmacy patient bill of rights is the patient does not care WHO provides the care, just that the care is done correctly.
7. This protocol endorses what duration of antibiotics post operatively?
 - a. Three
 - b. One
 - c. 24 hours duration
 - d. Two
8. Bowel perforation, Appendicitis, Infection and Antibiotic prior to surgery are a few of the exceptions to the automatic stop protocol
9. The Joint Commission requires that a pharmacist prospectively reviews all medication orders in the ED.
10. In an acute care hospital the emergency department is a relatively safe area with respect to drug therapy.
11. What impact has the pharmacy call center had on outpatient and inpatient pharmacy operations?
 - a. Reduced distractions
 - b. Transition in care coordination
 - c. Problem resolution triage
 - d. All of the above
12. What are two possible future opportunities to explore for expansion of pharmacy call center activities?
 - a. Poison control center
 - b. 72 hours post-discharge call backs
 - c. Drug information service
 - d. B & C
13. Which of the following is/are phase(s) of care at which medications should be reconciled and evaluated by a pharmacist?
 - a. Only at Admission
 - b. Only at Discharge
 - c. Only Post-Discharge
 - d. Prior to Admission, Inpatient, Discharge, and Post-Discharge

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14. Pharmacists may decrease the potential for readmissions by carefully reconciling medications and evaluating drug therapy at each phase of care.
15. There is no efficiency benefit to evaluating the structure of your IV batches
16. The "right" number of IV batches for a hospital pharmacy is:
 - a. One
 - b. Always more than you're doing today
 - c. Always fewer than you're doing today.
 - d. Variable depending on the setting, staffing levels, and numerous other factors.
17. Is it fair to say that you had a 3% error rate before the implementation of this technology?
18. Another process improvement this technology helped us address is what happens to missing doses on the floor.
19. According to a recent, nationwide study, the three most common forms of drug shortage communication to providers are emails, newsletters, and clinician-to-clinician discussions.
20. According to the 2009 ASHP Guidelines on Managing Drug Product Shortages in Hospitals and Health Systems, an important piece of information to communicate regarding drug shortages includes
 - a. Reason for shortage
 - b. Anticipated resolution date
 - c. Identified therapeutic alternatives
 - d. Anticipated cost to hospital
21. Calls are escalated to which of the following disciplines as part of the post discharge call triage flow
 - a. Pharmacists, financial counselors, nurse on call, physician office
 - b. Physician office
 - c. Nurse on call, financial counselors, outpatient pharmacy
 - d. Nurse on call, pharmacists, financial counselor
22. How long were the pharmacists given to return calls sent to the inbox?
 - a. 36 hours
 - b. 8 hours
 - c. 24 hours
 - d. 48 hours
23. What are the advantages of utilizing an IDS Pharmacy as a study medication clearing house and logistics center for other sites in the health system?
 - a. High level expertise of staff involved in study drug use system.
 - b. Leverage economies of scale when studies are open at multiple sites.
 - c. Ensure alignment of policies and procedures affecting research medication acquisition, storage, dispensing and accountability.
 - d. All of the above.
24. Do the priorities of an IDS pharmacy have to change if the scope of service increases from a single to multiple geographically distinct sties?
25. Ergonomics is not a consideration in making work flow changes

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26. Interdepartmental communication and coordination are important when designing new pharmacy workflows.
27. A simultaneous change in medication concentration institutional wide in a pediatric institution can be performed
28. There are historical cultural barriers to standarizing medication concentrations in the pediatric and neonatal population
29. ASHP establishes practice standards for hospital pharmacies and regularly emphasizes the importance of documenting pharmacist interventions
30. A pharmacist intervention may be defined as actions that prevent medication therapy problmes, includeing adverse events, and optimize medication therapy that is patient-specific and in collaboration with other health professionals
31. The most common interventions made in the New Patient Clinic involved formulary changes
32. Clinical pharmacists in the New Patient Clinic were able to make sure appropriate followups were provided after recommended formuary changes.
33. The Resource Conservation Recovery Act was established in 1976 to ensure the proper disposal, transport, and destruction of environmentally hazardous pharmaceutical waste.
34. Prior to implementing a RCRA project at your facility, name examples of departments that are important to engage?
 - a. Nursing and environmental health and safety/environmental services
 - b. Finance
 - c. Patient Safety
 - d. Medical Education
35. It is important to target the key legislators of important committees to change the law
36. It is always better to work with only one political party if you want to change the law.

Answers: 1. (F); 2. (F); 3. (T); 4. (F); 5. (T); 6. (T); 7. (b); 8. (T); 9. (F); 10. (F); 11. (d); 12. (d); 13. (d); 14. (T); 15. (F); 16. (d); 17. (F); 18. (T); 19. (T); 20. (c); 21. (a); 22. (c); 23. (d); 24. (T); 25. (F); 26. (F); 27. (T); 28. (T); 29. (T); 30. (T); 31. (T); 32. (T); 33. (T); 34. (a); 35. (T); 36. (F).

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Clinical Pearls

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The session is designed to appeal to young practitioners who are becoming more active in clinical practice and are in need of guidance from seasoned practitioners, clinical practitioners who would find information outside their specialty interesting, and practitioners whose interests and opportunities have taken them outside the clinical arena but who would like to “keep in touch.”

Learning Objectives:

1. Recognize pharmacist opportunities to intervene in different types of weight loss surgeries to prevent medication errors and ADEs.
2. Be able to describe the clinical and logistical hurdles involved with a therapeutic substitution of Nebulizer therapy for long acting beta agonist/steroid metered dose inhalers
3. Understand and apply alternative therapeutic options for *Clostridium difficile* to clinical practice
4. Understand the current disconnect between susceptibility testing, the MIC, the CLSI breakpoint "rules," and clinical outcomes.
5. Identify the putative mechanism, extent, and duration of the interaction between valproic acid and carbapenems.
6. The participant will be able to explain the role of p-glycoprotein in drug interactions.
7. Describe preventative medication management strategies in patients with menstrually-associated migraines (MAMs).
8. Recognize the risk factors and clinical presentation of longlasting neurotoxicity associated with lithium intoxication
9. Discuss the clinical implications and risks associated with using citalopram in daily doses over 40 mg.
10. Calculate the CHA2DS2-VASc score to determine a patient's anticoagulation therapy and compare and contrast the stroke risk prediction between the CHADS2 and CHA2DS2-VASc scoring assessments
11. Know the role of pentoxifylline in the treatment of alcoholic hepatitis
12. Understand when to transition from U100 insulin to U500 insulin
13. After the completion of the session, the participant will be able to illustrate the roles of a pharmacist as an the expert witness in a trial and describe helpful attributes for testifying.
14. Discuss how to determine if an infant is sodium deficient despite having normal serum sodium levels.
15. Describe strategies to prevent readmission to the NICU and/or adverse outcomes related to post-immunization apnea.

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16. Design a dosing regimen for alteplase in the setting of cardiac arrest due to massive pulmonary embolism
17. After completing this activity, the learner should be able to explain why patients with end-stage liver disease with a baseline elevated International Normalized Ratio still require VTE prophylaxis
18. Evaluate the impact of pharmacy services to validate an adult anti-Xa level adjustment nomogram

Self-Assessment Questions:

1. Pharmacists can recognize and prevent drug therapy problems before and after a patient has weight loss surgery.
2. Sustained release medications are a common reason for adverse drug events and medication errors.
3. Aformoterol is compatible with budesonide when mixed together in nebulizer.
4. Aformoterol/budesonide via nebulizer is a cost effective alternative to LABA/steroid metered dose inhalers.
5. For patients with two or more recurrent events, the Clostridium difficile treatment guidelines endorse fecal transplant as an alternative to oral vancomycin tapers.
6. Patients requiring concomitant antibiotics during active C diff infections should always be prescribed fidaxomicin.
7. A successful outcome would be expected when using Piperacillin/Tazobactam at standard dosing to treat an infection caused by a Pseudomonas aeruginosa isolate with an MIC of 64/4 mcg/ml.
8. The interpretative criteria "rules" for automated susceptibility platforms are directly overseen by CLSI.
9. A carbapenem is initiated for a patient previously stabilized on valproic acid. What change in the valproic acid level is likely to occur, and what is the most likely explanation?
 - a. Valproic acid level rises due to enhanced absorption
 - b. Valproic acid level rises due to decreased elimination
 - c. Valproic acid level declines due to reduced absorption
 - d. Valproic acid level declines due to enhanced elimination
10. Based on published literature discussed during this pearl, the extent of the interaction between valproic acid and a carbapenem can be clinical significant and persist beyond 48 hours.
11. Drug interactions involving p-glycoprotein occur when p-glycoprotein causes more drug to be pumped into the cell.
12. Which cytochrome P-450 enzyme has the most substrate overlap with p-glycoprotein?
 - a. CYP 1A2
 - b. CYP 2C19
 - c. CYP 2D6
 - d. CYP 3A4
13. A true or pure menstrual migraine occurs exclusively in the peri-menstrual time period and not at other times during the month.

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14. Which of the following is a probable cause of menstrual migraines?
 - a. Decreased serum estradiol levels
 - b. Increased serum magnesium levels
 - c. Decreased glutamatergic tone
 - d. Increased GABA-ergic tone
15. A predominant neurologic feature of SILENT would include:
 - a. Persisting cerebellar dysfunction
 - b. A clinical syndrome similar to frontotemporal dementia
 - c. Symptoms related to nigrostriatal pathway destruction
 - d. Hyperalgesia
16. SILENT may be prevented by discontinuing interacting medications or increasing monitoring if interacting medication must be prescribed concomitantly. Which of the following medication(s) have known drug-drug interactions with lithium?
 - a. Metformin
 - b. Diclofenac
 - c. Gabapentin
 - d. Aripiprazole
17. Which of the following statements is correct regarding the use of citalopram in daily doses above 40 mg?
 - a. Citalopram should never be doses above 40 mg per day because of toxicity concerns.
 - b. Citalopram doses above 40 mg per day are not considered effective.
 - c. Citalopram use above 40 mg per day has been associated with QT prolongation.
 - d. In no clinical situation should Citalopram be dosed at 60 or 80 mg per day.
18. The risk of QT prolongation appears to most likely be associated with the r-enantiomer of citalopram.
19. The CHADS2 risk assessment can potentially underestimate the stroke risk in patients with atrial fibrillation.
20. Which of the following risk factors is included in the CHA2DS2-VASc scoring assessment?
 - a. Age of 55-64
 - b. Female gender
 - c. Estrogen therapy
 - d. Chronic kidney disease
21. Which of the following is the evidence-based dosing regimen of pentoxifylline for improving survival in severe alcoholic hepatitis?
 - a. 400 mg po BID
 - b. 800 mg po BID
 - c. 400 mg po TID
 - d. 800 mg po TID
22. Pentoxifylline is associated with improved survival in patients with alcoholic hepatitis who have failed corticosteroids.
23. Which of the following best describes an adverse effect associated with injecting large volumes of insulin?

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- a. Alopecia
 - b. Dyslipidemia
 - c. Dystonia
 - d. Lipodystrophy
24. There are only 2 companies that currently make insulin syringes that are calibrated for U500 insulin.
25. Pharmacists help establish the facts of the case.
26. Using highly technical scientific terms will help establish your credibility while on the witness stand.
27. A urine sodium level less than 10 mEq/L in an infant with an ostomy suggests the need for sodium supplementation.
28. Neonates with total body sodium depletion are at increased risk of failure to thrive.
29. A history of apnea of prematurity is one risk factor for post-immunization apnea.
30. To prevent post-immunization apnea, you should:
- a. Observe in the unit for at least 48 hours following vaccine administration
 - b. Defer vaccinations until baby is at least 70 days old
 - c. Defer vaccines until baby is ready to start kindergarten
 - d. Both A and B
31. A shorter duration of time between start of cardiopulmonary resuscitation (CPR) and the administration of alteplase significantly increased the chance of return of spontaneous circulation.
32. Which of the following is an absolute contraindication to the administration of alteplase?
- a. Age greater than 75 years
 - b. Active chest compressions
 - c. Active internal bleeding
 - d. Pregnancy
33. Patient KU is a 57 yo male with end-stage liver disease admitted to the hospital with community acquired pneumonia. Patient is subsequently intubated and transferred to the intensive care unit. KU has a baseline INR of 2.2. Therefore the patient is "au
34. Hospitalized patients with end-stage liver disease with elevated PT/INR have a similar risk of developing a VTE as other hospitalized patients.
35. Pharmacist are able to dose enoxaparin and achieve therapeutic enoxaparin anti-xa levels in adults by following:
- a. Nutescu et. al published nomogram
 - b. Linear dosing nomogram
 - c. Non-linear IBW dosing nomogram
 - d. a or b
 - e. Enoxaparin anti-xa levels reliably predict bleeding and thrombosis risk.

Answers: 1. (T); 2. (T); 3. (T); 4. (T); 5. (F); 6. (F); 7. (F); 8. (F); 9. (d); 10. (T); 11. (F); 12. (d); 13. (T); 14. (a); 15. (a); 16. (b); 17. (c); 18. (T); 19. (T); 20. (b); 21. (c); 22. (F); 23. (d); 24. (F); 25. (T); 26. (F); 27. (T); 28. (T); 29. (T); 30. (d); 31. (T); 32. (c); 33. (F); 34. (T); 35. (d); 36. (F).

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Emergency Medicine Pearls

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This session is designed for practitioners in emergency medicine or for other practitioners with an interest in emergency medicine. Seasoned practitioners will describe how to apply clinical pharmacotherapy to unique circumstances and clinical presentations in the Emergency Department.

Learning Objectives:

1. Describe the therapeutic utility of droperidol for acute migraine treatment.
2. Identify scenarios where intranasal midazolam would be appropriate for mild to moderate pediatric sedation
3. Describe the clinical indications and the various doses and routes of administration for glucagon in the management of acute asthma exacerbation.
4. Describe the benefits of using RASS for the assessment of alcohol withdrawal in an adult emergency department
5. Identify the common symptoms of undiagnosed congenital heart disease and early treatment strategies that improve clinical outcomes.
6. Choose appropriate dosing of adenosine for alternative vascular access
7. Describe the incidence of Alcohol Withdrawal Syndrome and highlight the properties of propofol that make it an attractive alternative to benzodiazepines for Alcohol Withdrawal Syndrome
8. Understand the common causes of coagulation disturbances related to trauma and some strategies to manage trauma-induced coagulopathy.
9. Describe the appropriate medication management of a patient with SCIWORA
10. To list 4 available topical anesthetic agents/preparations and describe a specific clinical application for each.
11. Compose a pharmaceutical treatment plan for patients presenting to their ED with High Altitude Pulmonary Edema and/or High Altitude Cerebral Edema
12. Describe the current use of physostigmine for anticholinergic toxicity
13. Discuss the evidence surrounding the use of thrombolytic therapy for PEA secondary to suspected PE.
14. List three medications that can be administered via the intranasal route.
15. Describe the use of nebulized naran in the management of opioid toxicity
16. List alternative uses for medications routinely used in the Emergency Department (ED)

Self-Assessment Questions:

1. Patients are less likely to experience adverse drug effects from droperidol (<2 mg) when used for acute migraine treatment

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2. The FDA issued a black box warning due to the association of droperidol and fatal cardiac dysrhythmias.
3. Which of the following is not an appropriate use for pediatric intranasal midazolam?
 - a. Light sedation to obtain CT scan
 - b. To calm agitation prior to IV start
 - c. Post intubation sedation
 - d. Relax patient for reduction of fracture
4. Maximum administration volume per nare is one milliliter.
5. Which of the following routes of administration have been evaluated for glucagon in the treatment of acute asthma exacerbation?
 - a. Intravenous
 - b. Subcutaneous
 - c. Nebulized
 - d. Both (A) and (C)
6. What is the dose of nebulized glucagon that can be used for the treatment of patients with an acute asthma exacerbation?
 - a. 1 mg
 - b. 2 mg
 - c. 5 mg
 - d. 10 mg
7. Once benzodiazepines are given to patients to treat acute alcohol withdrawal, to what RASS should patients be titrated?
 - a. 1
 - b. 0
 - c. -1
 - d. -2
8. Through utilization of RASS, the emergency department team has an objective measurement to titrate treatment.
9. Which of the following is a common symptom associated with undiagnosed congenital heart disease?
 - a. Weight gain
 - b. Hypertension
 - c. Feeding intolerance
 - d. Bradycardia
10. Infants with congenital heart disease should all receive alprostadil upon diagnosis in the ED.
11. It is recommended that intravenous adenosine be administered at equal doses regardless of central or peripheral vascular access.
12. Which dose and route would be most appropriate for first dose adenosine administration for paroxysmal supraventricular tachycardia?
 - a. 12mg peripheral IV
 - b. 3mg central IV
 - c. 9mg intraosseous
 - d. 6mg oral

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13. Alcohol Withdrawal Syndrome occurs in 8-31% of hospitalized patients.
14. Propofol is an attractive alternative agent for benzodiazepine-resistant alcohol withdrawal.
15. Use of allogeneic blood and factor products in trauma-induced coagulopathy is without risks.
16. It is reasonable to consider using multiple factor products with different mechanisms of action when treating trauma-induced coagulopathy.
17. The physician inquires about using high dose methylprednisolone for a patient with presumed SCIWORA following an MVC. Your answer is:
 - a. High dose methylprednisolone is never used any longer.
 - b. High dose methylprednisolone is strongly advocated for these types of presentations.
 - c. High dose methylprednisolone is rarely used any longer and should be a team decision based on the risk/benefit profile for this patient.
 - d. High dose methylprednisolone has never been used in these types of cases.
18. All topical anesthetic agents/preparations can be used intact and broken skin.
19. Which of the following topical anesthetics would be appropriate to use facilitate patient comfort during a laceration debridement?
 - a. Lidocaine 5% patch
 - b. Lidocaine and prilocaine cream (EMLA (R))
 - c. Lidocaine, epinephrine and tetracaine solution
 - d. Lidocaine 4% cream
20. Which of the following medication is utilized as treatment for HAPE?
 - a. Dexamethasone
 - b. Tadalafil
 - c. Acetazolamide
 - d. Salmeterol
21. Which medication is the primary treatment for HACE?
 - a. Acetazolamide
 - b. Dexamethasone
 - c. Ginkgo leaves
 - d. Sildenafil
22. Physostigmine can improve delirium, tachycardia, and hyperthermia in a patient with anticholinergic toxicity.
23. Physostigmine is most often administered as a 2 mg IV push over 10 minutes.
24. The evidence surrounding the use of TPA for PEA due to PE is mixed, however is considered to have potential efficacy when used early on in resuscitation efforts.
25. The dosing recommendation for PE in PEA/cardiac arrest is the same as for non-arrest PE.
26. Naloxone can be administered via the intranasal route.
27. What is the maximum total volume in adults that should be administered intranasally?
 - a. 1 mL
 - b. 0.5 mL
 - c. 2 mL

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- d. 3 mL
28. Nebulized narcan can successfully reverse opioid toxicity.
29. Nebulized naloxone may decrease the degree of opioid withdrawal a patient experiences.
30. In the emergency department, clinicians may need to resort to alternative uses of medications in order to provide patient care
31. Patient safety should NOT be considered when using medications for "off labeled" uses

Answers: 1. (F); 2. (T); 3. (T); 4. (T); 5. (c); 6. (T); 7. (F); 8. (T); 9. (T); 10. (T); 11. (b); 12. (c); 13. (c); 14. (F); 15. (c); 16. (T); 17. (F); 18. (T); 19. (T); 20. (b); 21. (F); 22. (F); 23. (c); 24. (T); 25. (c); 26. (b); 27. (d); 28. (T); 29. (c); 30. (T); 31. (T).

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Informatics Pearls: Bytes of Informatics

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The session is designed to appeal to (1) young practitioners who are becoming more active in informatics and technology and are in need of guidance from seasoned practitioners, (2) informatics and technology practitioners who would find information on their specialty interesting and helpful, and (3) practitioners whose interests and opportunities have taken them outside the informatics and technology arena, but who would like to "keep in touch."

Learning Objectives:

1. How to optimize the safety features offered smart pumps and enhance their positive impact in quality of care offered to patients
2. At the end of the session a pharmacist or technician will be able to discuss the use of active RFID tags to track pharmacy issued products or kits.
3. Recognize the issues related to implementation of controlled substances ePrescribing in an already near-paperless CPOE environment
4. To understand the benefits and features associated with a web based checklist to assure consistent and standardized medication order build.
5. Identify methods to identify and remediate previously unidentified risks within electronic medication reconciliation processes and describe elements of a plan for ongoing system monitoring and remediation of identified issues.
6. List five types of automation/technologies that must be considered during a relocation process.
7. After completing this session, the learner should be able to describe a tool that pharmacy can utilize to influence the eMAR and improve medication safety.
8. To support the implementation of CPOE, a drug-drug interaction and drug-allergy warning survey was designed to supply feedback and help in the establishment of benchmarks and baseline data.
9. At the conclusion of the presentation, the learner should be able to discuss appropriate methods of reducing alert fatigue.
10. Identify two factors that can be considered when assessing the impact and classification of a drug-drug interaction alert
11. Pharmacist Timing of Therapeutic Drug Levels Can Lead To More Accurate Levels Being Drawn.
12. List the display differences in the notification process of the Electronic Health Record
13. To determine whether or not your health system has the capacity to develop an electronic interface between the wholesaler and robotic dispensing equipment vendor.
14. Describe a strategy to assist hospital to improve HCAHPS (Hospital Consumer Assessment of Health Care Providers and Systems) on the Communication about Medication domain.

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15. Describe one way a hospital has used clinical decision support and computerized provider order entry to facilitate transitions of care between inpatient to outpatient.
16. Explain how an electronic health record can be used to support a remote pharmacy medication management consultation.

Self-Assessment Questions:

1. Limit override data always provides information related to a practice issue
2. Bolusing from the bag should never be allowed in the smart pump
3. The use of active RFID tags require the use of an RFID portal or "pinch point."
4. Which RFID tag has the potential to use the hospitals wifi system?
 - a. Active RFID tag
 - b. Passive RFID tag
 - c. Submissive RFID tag
 - d. Pensive RFID tag
5. The DEA Interim Final Rule on Electronic Prescriptions for Controlled Substances treats C-II medications differently than other scheduled drugs.
6. The security concept of two-factor authentication refers to:
 - a. Something you know (e.g., password)
 - b. Something you have (e.g., smart card)
 - c. Something you are (e.g., biometric)
 - d. Any two of the above
7. Which of the following features do users of an electronic medication build checklist benefit from?
 - a. Automatic import of data into EHR
 - b. Reminders to retrofit new orders into existing functionality (alerts, reports, etc)
 - c. Paging of analysts when new/urgent orders are requested
 - d. Reminders when tasks are overdue
8. The electronic medication build checklist could be used with any vendor order entry system.
9. All system implementations involving medications, including electronic medication reconciliation systems, must include pharmacy representation in the system design, analysis, and testing.
10. Pharmacy leadership must engage Information Services (IS) leadership and partner to develop tools to provide a "source of truth" for drug information within clinical systems which clarify the effects of data entry processes on final system output.
11. Floor plans and space allocations are an essential component of technology planning in a relocation process.
12. Power sources and data drops are last minute issues to be dealt with in a relocation process.
13. "Dummy drugs" can be a useful tool for communication through the eMAR for medication safety initiatives.
14. Alert fatigue and eMAR "pollution" are not potential problems of using "dummy drugs"
15. A warning alert survey can be used as a tool in the assessment of a hospital's understanding of the current drug-drug, drug allergy warning alert system.

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16. Overall the survey found that pharmacists-physicians were very satisfied with and felt that there was no need for a more accurate and clinically relevant drug alert system
17. Turning off a subset of the DDI CDS, for example the interactions rated less than most severe, is a safe and effective method to reduce alert fatigue.
18. Which of the following is not a cause of alert fatigue?
 - a. Screening programs with low specificity for clinical significance.
 - b. Alerts based on theoretical, non-clinically derived data.
 - c. The inclusion of interactions known to cause patient death.
 - d. Databases designed to include all known and potential interactions.
19. Including institution-specific factors, such as the percent override, can be used in the assessment for the usefulness of a drug-drug interaction alert.
20. Which of the following can be a factor to include in the assessment of the usefulness of a drug-drug interaction alert?
 - a. Practitioner ordering the medication
 - b. Patient weight
 - c. Patient age
 - d. Severity of the interaction
21. After CPOE implementation unit coordinators timed therapeutic drug levels based on the physicians written order.
22. After implementation of this project orders for "Stat/Now" Levels vs. "Routine" Levels were separated and processed differently.
23. The notification display to the provider for a patient telephone prescription renewal request is an informational notification.
24. When a provider selects an informational notification, the renewal prescription for the patient is displayed to the provider.
25. In order to initiate an electronic interface for ordering you will need to involve your wholesaler, robotics vendor and the hospital I/S department.
26. The testing phase of the implementation process is typically straight-forward and requires few adjustments.
27. An interdisciplinary team built an electronic documentation process and reminders to help staff to educate the patients efficiently and effectively
28. All nurses on all shifts were responsible for addressing and educating patients about their medications
29. An integrated discharge tool should allow for
 - a. Clinical decision support
 - b. Medication reconciliation
 - c. Computerized provider order entry
 - d. All of the above
30. Discharge planning should begin upon admission
31. The main components utilized in a remote pharmacy consultation are electronic notification of the consult and electronic submission of medication management recommendations.
32. A virtual pharmacy consultation can be a step towards developing a collaborative practice.

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Answers: 1. (T); 2. (T); 3. (T); 4. (d); 5. (T); 6. (T); 7. (F); 8. (T); 9. (F); 10. (T); 11. (T); 12. (F); 13. (d); 14. (T); 15. (c); 16. (F); 17. (F); 18. (T); 19. (F); 20. (T); 21. (F); 22. (T); 23. (T); 24. (T); 25. (T); 26. (b); 27. (d); 28. (F); 29. (a); 30. (F); 31. (F); 32. (F).

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236-1

Domo Arigato, Mr. Roboto: Advancing technician roles through IV room technology & quality assurance

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This session emphasizes the ASHP Pharmacy Practice Model Initiative (PPMI) objective of advancing pharmacy technician roles and the use of technology. This session discusses increasing the responsibility of technician roles with sterile products robotics, IV workflow management software, and the integration of a quality assurance program. Technician ownership in the medication distribution process and respective benefits to pharmacist and pharmacy manager resource allocation is highlighted. This role advancement and integration with technology will allow for practice model realignment and a more efficient use of resources for improved medication safety and quality.

Learning Objectives:

1. Identify how the ASHP Pharmacy Practice Model Initiative (PPMI) promotes pharmacy technician career advancement through increased involvement with technology.
2. Describe how an institution has improved resource allocation by shifting responsibilities to pharmacy technicians that have traditionally been pharmacist and pharmacy manager roles.
3. Develop a departmental action plan for technician driven, quality assurance testing of compounded sterile products (CSPs).
4. Evaluate ways to advance pharmacy technician roles through the use of IV room technologies, quality assurance testing, and reporting responsibilities.

Self-Assessment Questions: (True or False)

1. The Pharmacy Practice Model Initiative (PPMI) discourages pharmacy technician involvement in the medication distribution process.
2. Staff pharmacists are the lead employees in charge of the continuous quality assurance program.
3. Quality assurance testing for end product sterility is sent out once a month.
4. Pharmacy technicians played a key role in the implementation and sustainability of Sterile Products Robotics.

Answers: 1. (F); 2. (F); 3. (F); 4. (T)

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237-1

Replaced by technology: could the EMR materially reduce the role of the pharmacist?

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The incentives and penalties associated with the American Recover and Reinvestment Act appear to have been a major catalyst in moving the majority of US acute care facilities toward the adoption of an electronic medical record (EMR) on or before 2016. Incorporating this technology into hospital workflow will likely impact the daily activities of a variety of healthcare professionals including the pharmacist. This moderated session utilizes a panel of four pharmacists representing a broad range of patient care expertise and experience to discuss and debate if the EMR could present a material threat to the role of the pharmacist. The potential benefits of the technology will be discussed as well. Attendees will be encouraged to participate by offering questions and comments. The desired outcome of the discussion is to increase awareness of the potential impact of technology as part of system-wide change and to encourage pharmacy professionals to engage in EMR leadership activities and policy development.

Learning Objectives:

1. Evaluate various scenarios where a strong clinical decision support technology could replace the oversight of a pharmacist.
2. Interpret the impact of technology on staffing in other industries such as manufacturing and retail and how that might apply to pharmacy.
3. Recommend proactive strategies for pharmacists to prevent misuse of electronic medical record technology.

Self-Assessment Questions: (True or False)

1. The American Recovery and Reinvest Act provides monetary incentives to hospitals to implement computerized prescriber order entry systems.
2. The use of computerized prescriber order entry negates the need for pharmacist oversight.
3. Clinical decision support can serve as an extension of clinical pharmacy services in the acute care environment.

Answers: 1. (T); 2. (F); 3. (T).

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239-1

Improving Medication Therapy Management Services through technology integration

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As our population continues to age, and the number of primary care providers continues to decrease, all professionals will need to work to the top of their licensure as well as effectively utilize technology to be able to meet this demand. In the ambulatory care setting, technology is emerging as new medical devices and/or delivery tools. Medication adherence devices, disease detection and monitoring devices, and electronic and web based care delivery systems will impact our practices and need to be explored to determine how they fit into patient centered care.

Learning Objectives:

1. Identify the need for bringing more technology into our daily practice
2. Review various products to assist with medication adherence
3. Explore devices/technology used to assist with detection and treatment of chronic conditions
4. Discuss virtual care technology being used in the delivery of care.

Self-Assessment Questions: (True or False)

1. As the population continues to age, technology is one area that will need to be utilized to care for the population effectively.
2. Medical device sales have increased and have surpassed pharmaceutical sales.
3. When determining if a medical device will benefit a patient, it is important to take the needs, capabilities, and financial costs of the patient into the decision.

Answers: 1. (T); 2. (F); 3. (T)

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239-2

Current and Future State of Device Integration

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Although both acute care setting and ambulatory related medical device integration continues to be an important piece to fully integrating patient health and wellness records across the continuum of care most health care systems have yet to adequately tackle the issue due to competing priorities. This presentation will discuss the benefits and driving forces for device integration and examine the most significant issues taking precedence over devices communicating with electronic health records.

Learning Objectives:

1. Identify the top three information technology related priorities identified in the 2012 HIMSS leadership survey.
2. Identify the key benefits of medical device integration.
3. Describe three types of ambulatory medical device integration sources that may be beneficial to a medication therapy management pharmacist.

Self-Assessment Questions: (True or False)

1. The most important IT related priority identified in the 2012 HIMSS leadership survey involved the achievement of meaningful use.
2. A key benefit of medical device integration includes accuracy of documentation.
3. Medical device integration may improve medication related compliance

Answers: 1. (T); 2. (T); 3. (T)

239-3

The last 100 feet of data integration at the point of care; CPOE to smart pumps- Auto programming

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IV therapies represents a common source of medication errors, made a higher risk in that many high alert medications are given through the use of an intravenous infusion pump. IV smart pumps which include a programmable drug library to provide dosage guidelines and limits have increased the safety of IV infusions. However; with the safety advancements smart pumps provide, several risks are still present which can be addressed through integration of the hospitals electronic medical record (EMR) and these smart pumps. This integration provides direct bi-directional communication of patient and order details at the point of care.

Learning Objectives:

1. Describe the risks associated with IV Pumps and manual programming
2. Understand the data flow from an EMR to an IV pump.
3. Identify the safety and efficiency benefits associated with IV Pump auto-programming.

Self-Assessment Questions:

1. IV Pump Auto-programming is best described as (single best answer):
 - A. Nurse selection of a drug from the drug library on an infusion pump prior to starting an infusion.
 - B. Nurse association of an IV pump to the EMR to pass order specific details to the pump, allowing the nurse to confirm before starting the infusion.
 - C. Nurse association of an IV pump to the EMR allowing infusion rate adjustments from a remote location.
 - D. Automatic adjustment of an Infusion by the system based on order parameters and patient vital signs.
2. (True or False) IV pump programming does not contribute to medication errors and adverse drug events.
3. All of the following are typical requirements of IV Pump Auto-Programming EXCEPT:
 - A. IV smart pumps that are capable of being networked
 - B. RFID capabilities
 - C. An electronic medical record capable of connecting with an IV Pump gateway
 - D. An IV Pump gateway

Answers: 1. (B); 2. (F); 3. (B)

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240-1

Getting the heart out of the fast lane: Novel therapies in preventing postoperative atrial fibrillation after cardiac surgery.

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Postoperative atrial fibrillation (POAF) following cardiac surgery occurs frequently and is associated with significant morbidity and mortality. The etiology of POAF is likely multifactorial. Several drugs are used prophylactically to reduce the incidence and burden of POAF. The use of beta blockers, amiodarone, and sotalol have received guideline support, while others novel agents are emerging and show promise. The proposed mechanisms and published efficacy of these agents will be presented.

Learning Objective:

1. Compare the efficacy of novel pharmacologic agents versus standard therapies in the prophylaxis of atrial fibrillation after cardiac surgery.

Self-Assessment Questions:

1. Which of the following is not associated with development of postoperative atrial fibrillation after cardiac surgery?
 - A. Inflammation
 - B. Hypermagnesemia
 - C. Increased activation of the sympathetic nervous system
 - D. Oxidative stress
2. (True or False) Advanced age increases the risk for postoperative atrial fibrillation more so than does a history of smoking.
3. (True or False) Given the anti-inflammatory effects of thiazolidinediones, they are more likely to reduce the risk of POAF when compared to statins.

Answers: 1. (B); 2. (T); 3. (F)

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240-2

Reducing the Stressed Stomach: Optimal Stress Ulcer Prophylaxis Strategies

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Critically ill patients are at risk for developing gastrointestinal (GI) bleeding related to stress-related ulcers. Although several risk factors for stress-related bleeding have been identified, only two independent risk factors (mechanical ventilation ≥ 48 hours and coagulopathy) have been significantly associated with increased risk of bleeding. Several controversies surround stress ulcer prophylaxis (SUP) including the optimal drug therapy agent, enteral nutrition's role in preventing stress-related GI bleeding, and concerns of thrombocytopenia associated with histamine-2 receptor antagonists. Optimal SUP strategies are presented to evaluate the data surrounding each of these controversies.

Learning Objectives:

1. Review pharmacologic and enteral feed clinical data as optimal stress ulcer prophylaxis agent.
2. Discuss histamine-2 receptor antagonist-induced thrombocytopenia.
3. Recommend an evidence-based stress ulcer preventative strategy in critically ill .

Self-Assessment Questions: (True or False)

1. Sucralfate is the more cost-effective drug therapy over histamine-2 receptor antagonists and proton pump inhibitors for stress ulcer prophylaxis.
2. Histamine-2 receptor antagonists may be considered for stress ulcer prophylaxis in patients with mild thrombocytopenia (i.e. platelet count of $90,000/\text{mm}^3$).
3. Pharmacologic stress ulcer prophylaxis is never required in patients receiving enteral nutrition.

Answers: 1. (F); 2. (T); 3. (F)

240-3

Controversial ICU Prophylactic Drug Therapies: Playing With a Royal Flush or Bluffing on a Busted Hand

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The presence of an acute VTE in the critically ill is of considerable concern as its occurrence can lead to increased morbidity and mortality. To prevent this, various approaches to pharmacologic prophylaxis may be considered. Approaches may consider risk assessments weighing the risk for VTE to bleeding. Clinical trials have not been able to describe differences between anticoagulants in the critically ill, nor able to frequently achieve target serum concentrations. Other common situations such as renal or hepatic failure may influence approaches to prophylaxis. This presentation will explore different options for pharmacological prophylaxis, describing the benefits and disadvantages with various agents available.

Learning Objectives:

1. Design an evidence-based pharmacotherapy regimen for prevention of VTE in a critically ill patient.
2. Compare the efficacy of a novel pharmacologic agent versus standard therapies in the prophylaxis of VTE post-surgery.
3. Evaluate the different approaches to providing thromboprophylaxis in the critically ill.

Self-Assessment Questions: (True or False)

1. The evidence supporting LMWH prophylaxis over unfractionated heparin in the critically ill medicine patient is considerable.
2. Dabigatran has not been shown to have advantages over LMWH for VTE prophylaxis after surgery.
3. In the critically ill, low anti-Factor Xa activity levels during LMWH prophylaxis can be common.

Answers: 1. (F); 2. (T); 3. (T)

240-4

Seizure Prophylaxis after Traumatic Brain Injury

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Patients with severe traumatic brain injury (TBI) are at risk for post-traumatic seizures. Severe TBI is typically characterized by hematoma or contusion on head computed tomography (CT) scan, depressed skull fracture, prolonged loss of consciousness or amnesia, or a Glasgow Coma Scale (GCS) score of 3 – 8. Prevention of early post-traumatic seizures (those occurring within 7 days of injury) has been described with administration of phenytoin, carbamazepine, valproic acid, and levetiracetam. However, clinical trials for prevention of post-traumatic seizures are flawed by inconsistent definitions and monitoring for seizures, heterogeneous populations, data from single center studies, and lack of placebo control. Prophylaxis for late seizures (those occurring after 7 days of injury) and in patients with mild to moderate TBI is not recommended. In order to minimize risk of adverse drug reactions, patient-specific factors should be considered when selecting an appropriate anti-epileptic drug for prevention of post-traumatic seizures.

Learning Objectives:

1. Review the epidemiology and classification of traumatic brain injury (TBI)
2. Assess risk factors and review terminology for post-traumatic seizures
3. Critically assess the effectiveness of levetiracetam for post-traumatic seizures
4. Using patient-specific factors, recommend appropriate regimen for seizure prophylaxis after TBI

Self-Assessment Questions: (True or False)

1. Falls represent the most common cause of TBI.
2. A patient with an epidural hematoma and a GCS score of 5 likely has a severe TBI.
3. Phenytoin is effective for prevention of late seizures after TBI.

Answers: 1. (T); 2. (T); 3. (F)

241-1

Novel Oral Anticoagulants: Renal Impairment and Laboratory Monitoring, What Clinicians Should Know

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The introduction of novel oral anticoagulants has allowed for the administration of fixed, dose, oral anticoagulants which do not require routine laboratory monitoring. FDA approved agents in this class currently include dabigatran and rivaroxaban with apixaban pending FDA approval. Although the concept of an anticoagulant that does not require laboratory monitoring sounds advantageous, there are a number of clinical scenarios in which clinicians desire to know the level of anticoagulation. Dabigatran, a direct thrombin inhibitor, will prolong the activated partial thromboplastin time (aPTT) more than the prothrombin time (PT). Rivaroxaban, a direct factor Xa inhibitor, will prolong the PT more than the aPTT. Despite dose dependent prolongations in these global coagulation tests, neither the PT nor the aPTT can be used to monitor therapy with the newer oral agents. For dabigatran a dilute thrombin time can confirm presence of the drug as can an anti-factor Xa assay calibrated with rivaroxaban for rivaroxaban. Renal impairment is an area of caution with these newer agents as their dependence on renal elimination is as follows: dabigatran 66%, rivaroxaban 33% and apixaban 25%. The half-life of dabigatran increases considerably as creatinine clearance drops to below 30ml/min; from 14-17 hours to > 27 hours. Decreases in renal function will necessitate a dose modification for dabigatran, rivaroxaban and apixaban. Understanding the interpretation issues with laboratory testing and considerations for use in renal impairment is an important component of promoting the safe use of the novel oral anticoagulant agents.

Learning Objectives:

1. List the pharmacology of the novel oral anticoagulants.
2. Identify a test which can confirm the presence of dabigatran.
3. Explain the difference in renal elimination profiles of the oral agents.

Self-Assessment Questions: (True or False)

1. Rivaroxaban is a direct factor Xa inhibitor.
2. A dilute thrombin time can confirm the presence of dabigatran.
3. Apixaban is 66% renally eliminated.

Answers: 1. (T); 2. (T); 3. (F)

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241-2

Treating your patient with novel anticoagulants: optimizing transitions of care

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The mainstay of chronic oral anticoagulation management for disease states, such as atrial fibrillation (Afib), has been warfarin since the 1950's; the recent Food and Drug Administration (FDA) approval of two orally administered anticoagulants has significantly expanded the possible treatment options for patients. Dabigatran etexilate was approved by the FDA for prevention of stroke in patients with Afib on October 19th, 2010, followed by approval of rivaroxaban on November 4th, 2011. Apixaban is not currently FDA approved in the United States. Novel anticoagulants are attractive alternatives to warfarin; they possess a more predictable pharmacokinetic profile, offer a "fixed dosage" regimen, do not require dietary restriction of Vitamin K intake, have less potential for interaction with other medications, and, in most circumstances, offer to patients the convenience of little to no routine laboratory monitoring requirements. Having a comprehensive transition of care program for these agents is imperative to insure safe and effective use across the continuum of care. Currently there are no specific reversing agents for the novel anticoagulants, therefore to reduce the risk for adverse events, such as bleeding, screening patients for appropriate use is imperative to insure optimal patient outcomes. Factors to consider in patient selection include: indication for use, the presence of any co-morbidities, concomitant medications, patient compliance, and patient age. Guidelines for patient selection and study population characteristics in the pivotal trials will be reviewed. Specific drug and dose selection based upon potential drug and disease state interactions will be discussed. Guidelines for the management of these agents in emergency settings or in patients undergoing invasive procedures will be presented. The use of these agents in special patient populations and strategies for laboratory monitoring, utilizing readily available laboratory assays, will be reviewed. Additional key components for developing a transition of care program, including educational processes, care plan development and communication strategies will be reviewed.

Learning Objectives:

1. Describe drug specific strategies to manage serious bleeding events in patients receiving novel anticoagulants, including useful laboratory assays to monitor the degree of anticoagulant effect.
2. List at least 2 relative and absolute contraindications to use for the following novel anticoagulants: dabigatran, rivaroxaban and apixaban.
3. Compare and contrast differences in study population characteristics between the following three trials: RE-LY, Rocket-AF and ARISTOTLE.

Self-Assessment Questions:

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1. In an emergency situation, a readily-available laboratory assay that is useful to measure for the presence of dabigatran is:
 - a. The Prothrombin Time (PT)
 - b. The International Normalized Ratio (INR)
 - c. The activated Partial Thromboplastin Time (aPTT)
 - d. An Anti-Xa Level
2. (True or False) When comparing study subject population characteristics, subjects in the ROCKET-AF trial were older, over 55% had a prior history of a stroke, TIA or systemic embolism, and had a higher CHADS₂ score in comparison to subjects enrolled in the RE-LY trial.
3. Hemodialysis is an effective means of reversing the effects of which of the following agents:
 - A. Apixaban
 - B. Rivaroxaban
 - C. Dabigatran
 - D. All of the above
 - E. None of the above

Answers: 1. (C); 2. (T); 3. (C)

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242-1

Bad to the Bone: Acute Calcium Disorders

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Calcium disorders (hypo- and hypercalcemia) can result from a variety of causes, and as such, their identification and treatment can be complicated. Additionally, the treatment of these disorders is not directed by specific guidelines. This evidence-based presentation will allow one to follow the path from clinical presentation, to initial diagnosis, to treatment and monitoring of these disorders in the acute setting.

Learning Objectives:

1. Recognize the pathophysiology of hypo- and hypercalcemia
2. Identify acute causes of calcium dysregulation causing hypo- or hypercalcemia
3. Create a treatment plan for hypo- or hypercalcemia

Self-Assessment Questions: (True or False)

1. Most of the calcium found in the body is found in the blood.
2. Chvostek's and Trousseau's sign can be identified as a clinical manifestation of hypocalcemia.
3. Intravenous bisphosphonates for the treatment of hypercalcemia works immediately.

Answers: 1. (F); 2. (T); 3. (F)

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242-2

Lytes off in Vegas!: Hypokalemia

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Hypokalemia is a frequent subclinical finding in the emergency department and thus gets limited attention as an emergency on relative to hyperkalemia. The problem arises, though, when a patient presents with significant symptoms. This low incidence, high-risk scenario is a cause for much anxiety and inadequate management in the Emergency Department. This evidence-based presentation will allow us to explore the different treatment options available for managing hypokalemia of different severities in the acute setting.

Learning Objectives:

1. Describe the different formulations of Potassium and determine which formulations are best for different forms/severities of hypokalemia.
2. Create an effective treatment regimen for hypokalemia in the emergency department.

Self-Assessment Questions: (True or False)

1. Hypokalemia is seldom caused by medications.
2. Potassium can be given intravenously at rates exceeding 20 meq over 15 minutes when medically necessary.
3. Potassium concentrations greater than 10meq/100ml can be given via peripheral intravenous access in the emergency setting.

Answers: 1. (F); 2. (T); 3. (T)

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242-3

Hyperkalemia – Protect, Shift and Eliminate

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The treatment of severe hyperkalemia is multifactorial. Since electrocardiographic abnormalities can lead to life-threatening cardiac arrhythmias, it is important to augment the effect of potassium on the heart using intravenous calcium. In addition, therapies to decrease serum potassium by shifting potassium from the extracellular to intracellular space are necessary. This evidence-based presentation will utilize a clinical case to illustrate important therapeutic interventions to protect the heart from life threatening arrhythmias and decrease serum potassium in the acute setting.

Learning Objectives:

1. Identify severe hyperkalemia using laboratory studies and signs/symptoms.
2. Design an initial treatment plan to decrease serum potassium.
3. Summarize the supporting evidence from clinical trials.

Self-Assessment Questions:

1. The most common symptom associated with hyperkalemia is difficulty breathing.
2. The electrocardiogram should serve as the guide for using intravenous calcium for the treatment of hyperkalemia.
3. Current treatment recommendations are based on clinical trials conducted in patients presenting with acute hyperkalemia.

Answers: 1. (F); 2. (T); 3. (F)

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243-1

Making students indispensable: Involving students in patient care roles

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Student pharmacists are an important resource that can help pharmacy departments expand current capacity, enabling extension of services currently provided to patients. Better integration of students into the work of the pharmacy department will also help meet the students' educational needs, assist colleges of pharmacy meet American Council for Pharmaceutical Education accreditation standards for Doctor of Pharmacy programs, and promote practice model change. This presentation will 1) establish the rationale for making student pharmacists indispensable to patient care and 2) discuss an effective collaboration between a university health system pharmacy department and a college of pharmacy that engages student pharmacists in meaningful, value-added work that has made student pharmacists indispensable to the care of patients.

Learning Objectives:

1. Explain the need for innovative student training models.
2. Describe services implemented in health systems that have a focus on direct patient care that are provided by students.
3. Recommend a service that can be provided to patients by students.

Self-Assessment Questions:

1. (True or False) Current ASHP policy position statements support incorporating student pharmacists into active, meaningful roles in pharmacy practice models.
2. (True or False) Third-year pharmacy students can have a significant effect on patient care when incorporated into the practice model to perform admission medication reconciliation.
3. Integration of student pharmacists into the pharmacy practice model can help a pharmacy department extend its services to include
 - a. Discharge counseling
 - b. Anticoagulation monitoring
 - c. Antimicrobial stewardship
 - d. All of the above

Answers: 1. (T); 2. (T); 3. (D)

244-1

Dyslipidemia Guideline Update: NCEP ATP IV

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Pharmacists play an integral role in the management of dyslipidemia. Over the past few years multiple trials have been completed that have expanded the current best evidence in the area of dyslipidemia management and drove change in the new dyslipidemia guidelines. Clinical trial evidence focusing on statin therapy, optimal lipid goal attainment, rationale for combination therapy, and the minimization of drug interactions that have clinical consequences for the patient with dyslipidemia will be reviewed.

Learning Objectives:

1. Review changes to the national guidelines on hypertension, dyslipidemia, and chronic obstructive pulmonary disease.
2. Interpret and apply the new guidelines to the management of patients with hypertension, dyslipidemia, and chronic obstructive pulmonary disease in specific patient populations.
3. Identify clinical controversies regarding the benefits of treating hypertension, dyslipidemia, and chronic obstructive pulmonary disease.
4. Evaluate challenges with the application of the updated guidelines when treating hypertension, dyslipidemia, and chronic obstructive pulmonary disease.

Self-Assessment Questions: (True or False)

1. Patients with diabetes and multiple cardiovascular risk factors should target a low-density cholesterol concentration (LDL-C) of less than 70 mg/dL.
2. The primary cholesterol target in the NCEP ATP 4 guidelines is low-density lipoprotein cholesterol.
3. Clinicians should not treat stage 2-3 CKD patients with statin therapy based on lack of benefit seen in clinical trials.

Answers: 1. (T); 2 (T); 3 (F)

244-1

Hypertension Guideline Update

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Hypertension is a major cardiovascular risk factor. The current consensus guidelines used by most providers in the United States is the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7). This guideline was published in 2003. The JNC 8 has been under development for several years, and is scheduled to be released sometime in 2012. As of November 2012, the draft of this guideline has not yet been released. However, several other influential expert consensus publications from the American Society of Hypertension, American Heart Association, National Institute for Health and Clinical Excellence, and the American Diabetes Association have been published in 2010-2012. In the absence of the JNC 8 guidelines, these publications provide pharmacists with insights regarding cutting edge opinions and directions in the management of hypertension. This session will review these newer publications and highlight relevance for patient care, clinical controversies and challenges and provides some predictions on how they will be reflected in the JNC 8.

Learning Objectives:

1. Review new hypertension guidelines and expert consensus publications
2. Interpret and apply new guidelines and expert consensus publications to the management of patients with hypertension in specific patient populations
3. Identify clinical controversies regarding benefits of treating hypertension
4. Evaluate challenges with application of new hypertension guidelines and expert consensus publications

Self-Assessment Questions:

1. Which of the following is considered a preferred drug combination for the treatment of hypertension according to the American Society of Hypertension?
 - A. An ACE inhibitor with a beta-blocker
 - B. An ACE inhibitor with an angiotensin receptor blocker
 - C. An ACE inhibitor with a calcium channel blocker
 - D. A calcium channel blocker with a beta-blocker
2. Which of the following diuretics is considered a preferred agent for the management of hypertension according to the National Institute for Health and Clinical Excellence guidelines?
 - A. Chlorthalidone
 - B. Spironolactone
 - C. Hydrochlorothiazide
 - D. Furosemide

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3. Which of the following is considered a clinical controversy in the management of hypertension?
- A. Antihypertensive drug therapy in the very elderly
 - B. ACE inhibitor therapy in patients with type 2 diabetes
 - C. Bedtime administration of antihypertensive medications in all patients
 - D. Initial two-drug antihypertensive therapy in stage 2 hypertension

Answers: 1. (C); 2. (A); 3. (C)

246-1

Improving Patient Care and Facility Finances through Optimizing Transplant Pharmacy Services

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Transplant specialty pharmacy (TSP) services are an important part of post-transplant care for both the patient and the transplant center. For the patient, ideally these services improve immunosuppressant access and remove barriers to non-adherence. TSP services should include resources to help patients navigate through prior authorizations and facilitate enrollment in patient assistance programs. Ideal services would also include prospective refill monitoring to identify non-adherence before it impacts graft function. If implemented properly, TSP services can also provide essential financial resources and incentives for the transplant center, improving the economic viability of this life saving surgery. Prolonged admissions and early readmissions are common problems with transplant patients, partly due to medication related issues. Pharmacists can lead in the development and implementation of initiatives aimed at improving the safe use of medications within this vulnerable patient population. Additionally, transplant pharmacists have a unique set of skills that also allows them to implement programs to reduce medication errors and hospital costs through programs aimed at delivering efficient services and providing a safe transition for the patient to the outpatient setting.

Learning Objectives:

1. List three advantages to developing and implementing a specialty pharmacy for transplant patients within your institution
2. Describe potential medication safety improvements that occur by providing specialty pharmacy services for transplant patients
3. List three initiatives that can improve medication safety while retaining transplant patients' prescription business
4. Describe evidence based improvements in medication safety associated with transplant pharmacy services

Self-Assessment Questions: (True or False)

1. To prevent complicated discharges from the hospital, transplant specialty pharmacy services should be provided through a third party mail order agency not located within the transplant center.
2. Transplant pharmacy services provide excellent resources for the patient, but are costly to develop and usually do not increase revenue generation for the transplant center.
3. Admission and discharge medication reconciliation for transplant patients is best provided by surgical interns.

Answers: 1. (F); 2. (F); 3. (F)

247-1

Frontline pharmacists make a difference for patients

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The ASHP Pharmacy Sensitive Accountability Measures Work Group began work in November of 2011. They are charged with identifying a suite of quality measures for preventable harm in both inpatient and outpatient settings that fulfill two requirements: 1. The measures align with the national healthcare agenda; and 2. The measures have evidence that integration with health-system pharmacy can prevent harm. This session will cover the four high priority domains related to quality improvement metrics for preventable harm determined by the work group. A focus will be made on glycemic control outcome measures. Implementation strategies to enhance patient care and support organizational leadership goals will also be identified. The audience will be informed on the alignment strategies for medication related quality measures from a variety of stakeholders in the health care spectrum.

Learning Objectives:

1. Identify four evidence-based domains where frontline pharmacists can directly improve patient care and clinical outcomes.
2. Examine specific clinical activity and outcome measures to improve glycemic control in your diabetic patients.
3. Discuss strategies to efficiently and effectively implement the use of these metrics to exceed patient care and organizational leadership goals.

Self-Assessment Questions:

1. What is the estimated return on investment of having a clinical pharmacist integrated into the health-care team in charge of medication management in a as shown in the VA model.
 - A. 50%
 - B. 600%
 - C. 300%
 - D. 200%
2. What does the VA PACT stand for?
 - A. Patients Aggregating Clinical Therapeutics
 - B. Patient Aligned Care Teams
 - C. Principle Appendicitis Care Treatments
3. Which two glycemic control measures have been identified by the PSAM work group to adopt in all health-system pharmacies to reduce preventable harm?
 - A. % of patients with at least one glucose < 50mg/dL
 - B. Diabetes HbA1C poor control (<9%) NQF #59
 - C. Diabetes Suboptimal treatment regimen NQF #546

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D. Uncontrolled diabetes admission rate PQI 14 NQF #634

Answers: 1. (C); 2. (B); 3. (A, B)

250-1

Rivaroxaban is the preferred agent to prevent stroke due to atrial fibrillation in a treatment naïve patient

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We have witnessed monumental change in the landscape of anticoagulant therapy over the past few years. Patients and providers now have several options when selecting antithrombotic therapy for atrial fibrillation. Rivaroxaban is an orally available factor Xa inhibitor. It is direct-acting and highly selective in its reversible, competitive binding of the factor Xa active site. Rivaroxaban is given in a fixed dose according to renal function and has few drug and no known dietary interactions. The ROCKET-AF randomized, controlled trial demonstrated rivaroxaban is at least as effective as warfarin in preventing stroke for patients with atrial fibrillation without the need for routine anticoagulation monitoring. Overall, major bleeding with rivaroxaban and warfarin are similar, but rivaroxaban has a lower risk of intracranial hemorrhage and fatal bleeding. Unlike dabigatran and apixaban which are taken twice daily, rivaroxaban is given just once per day. This is an important advantage for rivaroxaban because good adherence is essential due to the shorter half-lives of novel oral anticoagulants. Nonadherence with novel oral anticoagulants will not be as readily apparent as with warfarin. Rivaroxaban has been studied in a broad spectrum of prothrombotic conditions, including: treatment of deep vein thrombosis and pulmonary embolism, acute coronary syndromes, and prevention of venous thromboembolism after total joint replacement surgery. No other novel oral anticoagulant is as thoroughly studied. The optimal strategy to manage bleeding and reverse the anticoagulant effect of novel anticoagulants remains to be determined, but a small study of healthy volunteers suggests prothrombin complex concentrates are useful in reversing protime prolongation by rivaroxaban. However, there was no effect on the ecarin clotting time when prothrombin complex concentrates were given to dabigatran treated patients.

Learning Objectives:

1. Describe 3 advantages of rivaroxaban over warfarin in the prevention of stroke due to atrial fibrillation.
2. Describe 2 advantages of rivaroxaban over dabigatran and apixaban.
3. Discuss at least two limitations each for dabigatran and apixaban in the prevention of stroke due to atrial fibrillation.

Self-Assessment Questions: (True or False)

1. Rivaroxaban is preferred to warfarin for atrial fibrillation in patients with chronic kidney disease and a creatinine clearance less than 15 mL/min

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2. Rivaroxaban reduces the composite endpoint of recurrent myocardial infarction, stroke and cardiovascular death when added to dual antiplatelet therapy in patients suffering a myocardial infarction
3. Rivaroxaban reduces the risk of major bleeding compared to warfarin in patients treated for atrial fibrillation

Answers: 1. (F); 2. (T); 3. (F)

250-2

Bloody Debate: Warfarin in AF for stroke prevention: The best show in town

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One of the most concerning consequences of Atrial Fibrillation is the development of a thrombotic event, which includes embolic strokes. Because of this, most patients who have risk factors for stroke receive some form of anticoagulation therapy. The most common class of agents currently used is the vitamin K antagonists, for which warfarin is available in the United States. Recently, two new oral anticoagulants, rivaroxaban and dabigatran, became available in the United States for preventing strokes in the setting of atrial fibrillation. Although these new options have been long awaited by clinicians, there are some notable challenges associated with their use. Warfarin may have several advantages including experience with its use especially in the presence of other clinical problems. This presentation will focus on the reasons why warfarin should be selected over other oral anticoagulants in the prevention of thromboembolic events in the setting of non-valvular atrial fibrillation.

Learning Objectives:

1. Evaluate options for stroke prevention and arguments in favor of using warfarin as the appropriate therapy for stroke prevention in a patient who has new atrial fibrillation.
2. Describe why warfarin as the preferred agent for stroke prevention due to atrial fibrillation in a treatment naïve patient.
3. Interpret the scientific literature supporting the approval of agents used to prevent stroke in atrial fibrillation by identifying the strengths and weaknesses of each study.

Self-Assessment Questions: (True or False)

1. In patients receiving well controlled warfarin in the Rocket AF trial, the incidence of bleeding was lower compared to Rivaroxaban.
2. Dabigatran has a lower incidence of bleeding during cardiac ablation compared to warfarin.
3. Dabigatran is preferred to warfarin in patients with mechanical heart valves and concurrent atrial fibrillation.

Answers: 1. (T); 2. (F); 3. (F)

250-3

Dabigatran Etexilate is the Preferred Agent to Prevent Stroke Due to Atrial Fibrillation in a Treatment Naïve Patient

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This presentation serves as a critical analysis of the data supporting the use of dabigatran etexilate for stroke prevention in atrial fibrillation.

Learning Objectives:

In the context of a patient case who needs stroke prophylaxis for atrial fibrillation:

1. Compile reasons that dabigatran etexilate therapy is the best “first line” option for a patient who has new atrial fibrillation and needs a medication for stroke prophylaxis
2. Identify reasons that show why dabigatran etexilate agent can be preferable to other agents
3. Breakdown the available literature supporting dabigatran etexilate to prevent stroke in atrial fibrillation

Self-Assessment Questions: (True or False)

1. Dabigatran etexilate has been shown to have superior efficacy in preventing stroke and systemic embolism when compared to warfarin.
2. Dabigatran etexilate can be cleared by dialysis in an emergency situation.
3. Dabigatran etexilate has equal amounts of gastrointestinal bleeding when compared to warfarin.

Answers: 1. (T); 2. (T); 3. (F)

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Bet on Red: New Challenges and Therapies for Bleeding

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With the advent of anticoagulation therapy, adverse events such as bleeding create a notable concern with their use. For established therapies such as warfarin, several agents known to reverse its effects can be used. With the recent availability of newer oral anticoagulants such as dabigatran and rivaroxaban, less is known about assessing the level of anticoagulation present and reversing their effects. In addition, reports of fatal bleeding associated with their use are increasing. Unfortunately, insights on the approach to managing bleeding or reversing the effects of the newer anticoagulants are limited. This presentation will explore considerations for monitoring and managing patients who require reversal of their anticoagulation effects.

Learning Objectives:

1. Recommend strategies for the reversal of oral anticoagulants such as direct thrombin inhibitors and factor Xa inhibitors
2. Develop a plan for bleeding cessation due to traumatic hemorrhage and in the perioperative setting in the presence of an anticoagulant.
3. Evaluate dosing considerations for factor products such as prothrombin complex concentrates and Factor VIIa to reverse the effects of an anticoagulant.

Self-Assessment Questions: (True or False)

1. The dose of prothrombin complex concentrates to reverse warfarin is similar to those recommended in hemophiliac patients.
2. Vitamin K is an effective agent to reverse the elevated INR values due to dabigatran.
3. Dabigatran should be held longer prior to a procedure if renal insufficiency is present.

Answers: 1. (F); 2. (F); 3. (T)

251-2

Bleeding in Trauma / Surgical Patients: Common Causes, Mechanisms, and Treatment

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Coagulopathy is a significant risk factor for uncontrolled or refractory hemorrhage in patients with injury. The etiology of coagulopathy involves activation of protein C and consumption of clotting factors, both of which lead to fibrinolysis. Several contributing factors include hypothermia, acidosis, hypocalcemia, massive transfusion, dilution during resuscitation, and thrombocytopenia. Recognition of these etiologies is important for directing specific therapies aimed at rapidly correcting coagulopathy. Multiple blood products and pharmacologic agents are available as potential therapeutic options; however, optimal use of these products requires knowledge of their situational efficacy and limitations. Targeted therapy with thromboelastography reduces procoagulant and blood product use while improving patient outcomes. In order to facilitate hemorrhage control and minimize adverse events, pharmacists must be aware of the benefits and disadvantages of the various treatment modalities and understand the goals of therapy.

Learning Objectives:

1. Delineate parameters contributing to critical bleeding
2. Describe the pathophysiology of coagulopathy related to injury
3. Recommend therapeutic strategies for the resuscitation and management of coagulation in the bleeding trauma/ surgery population
4. Analyze the safety and efficacy of various agents used to control hemorrhage and manage coagulation in the trauma/surgery population

251-3

Bet on Red: New Challenges and Therapies for Bleeding: optimizing the use of factor products

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The American College of Chest Physician guidelines recommend factor products such as prothrombin complex concentrate (PCC) for bleeding associated with the use of vitamin K antagonists. However, there is great variability in the factor content of PCCs. In the United States only 3-factor PCCs are currently available. However, 4-factor PCC are likely to be available in the future. The guidelines do not provide recommendations regarding the dosing of these products. Therefore, there are unanswered questions regarding the optimal dosing of PCCs. In this session, pharmacists will be provided with important evidence and practical information on which to base dosing of PCCs to optimize care in this setting. In addition, dosing information for the ‘off-label’ use of recombinant factor VIIa will be provided.

Learning Objectives:

1. Discuss the difference between 3-factor and 4-factor PCCs.
2. Explain dosing strategies of PCCs given a patient specific scenario.
3. Describe the dosing of recombinant factor VIIa for surgical bleeding.

Self-Assessment Questions: (True or False)

1. The primary difference between 3-factor and 4-factor PCCs is that 4-factor PCCs contain more factor VII.
2. Patients with a higher international normalized ratio would likely require a higher dose of PCC for adequate reversal.
3. A recombinant factor VIIa dose of 400 mcg/kg IV should be used for surgical bleeding.

Answers: 1. (T); 2. (T); 3. (F)

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Gram-negative infections and the emergence of resistance: is one drug enough?

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Antimicrobial resistance among Gram-negative pathogens is on the rise, particularly among the Enterobacteriaceae. Problematic and prevalent resistance mechanisms in the United States include carbapenemases, particularly *Klebsiella pneumoniae* carbapenemases (KPCs). Optimal treatment for infections caused by KPCs remains unknown. In vitro and clinical data suggest combination therapy is more effective than monotherapy for infections caused by KPCs. Although there are several β -lactamase inhibitors in the development pipeline which show in vitro activity against KPC-producing isolates, they may not be commercially available for some time.

Learning Objectives:

1. Examine the current state of resistance in Gram-negative pathogens.
2. Summarize relevant literature on effective combinations for drug-resistant bacteria.
3. Discuss key concepts and recent literature on new agents in development for Gram-negative infections.

Self-Assessment Questions: (True or False)

1. Significant morbidity and mortality are associated with infections caused by KPC-producing organisms.
2. Monotherapy is superior to combination therapy for KPC-producing infections.
3. The optimal treatment for KPC-producing infections is colistin + tigecycline.

Answers: 1. (T); 2. (F); 3. (F)

254-1

Use of Simulation in Advanced Cardiopulmonary Life Support

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The introduction of simulation training in medical education (eg high-fidelity mannequin, role-playing, patient or patient actors, computer programs and virtual reality) has allowed the mastery of skill sets in a controlled environment. Simulation training has assisted multidisciplinary rapid response teams in the hospital setting improve the quality of advanced cardiac life support (ACLS). Pharmacy programs have now begun to incorporate simulation in many aspects of their training including ACLS. In addition, the Accreditation Council for Pharmaceutical Education has recognized and encouraged the use of simulation training based upon its effects on retention of knowledge and improvement in skills. Unfortunately, many licensed pharmacists have had limited education and exposure to simulation technology during their pharmacy education compared to their younger colleagues. Incorporating ACLS simulation training as a part of ongoing education for the pharmacy student and practicing pharmacist can improve baseline clinical skills, analyze patient response, work in a multidisciplinary team and improve patient survival. However, ACLS training utilizing mannequin-based simulators requires financial and in some circumstances informational technology resources which may be challenging. Pharmacists able to integrate ACLS simulation training as an ongoing educational initiative would enhance clinical skill development resulting in a better qualified practitioner.

Learning Objectives:

1. Define simulation training and review its components with emphasis on role of the pharmacist.
2. Explain how to advocate for pharmacist involvement in simulation based training and education.

Self-Assessment Questions: (True or False)

1. Evidence suggests that teams make fewer mistakes and improve patient safety.
2. The four main purposes of simulation training include education, assessment, research and health-system integration.
3. Pharmacy directors can easily justify the need of pharmacists as a part of a rapid response team.

Answers: 1. (T); 2. (T); 3. (F)

254-2

Are You Ready? Preparing and Responding to Codes: ACLS and PALS Update with Practical Tips for Code Response

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The American Heart Association has updated their guidelines for the management of emergency cardiovascular care including cardiac arrest. Responding to cardiac arrest also known as a 'code' is a vital function of hospital pharmacists. However, the nature of code response can be anxiety provoking. In this session, pertinent changes to ACLS and PALS with regard to medication therapy recommendations will be highlighted and evidence to support these changes will be discussed. In addition, pharmacists will be provided with practical tips to optimize their role during code response.

Learning Objectives:

1. Explain the role of drug therapy during cardiac arrest
2. Discuss pertinent medication therapy changes in the updated ACLS cardiac arrest algorithm
3. Describe practical tips to optimize the pharmacists role during code response

Self-Assessment Questions: (True or False)

1. High quality CPR is of primary importance and drug therapy is of secondary importance during code response
2. There is good evidence that atropine use during cardiac arrest is associated with improved survival to hospital discharge
3. Sodium bicarbonate is incompatible with several medications that are commonly used during code response

Answers: 1. (T); 2. (F); 3. (T)

255-1

Antibiotic stewardship: get on board before we drown in bacterial resistance

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Conduct of effective antimicrobial stewardship is required to ensure optimal patient outcomes at the societal level. Conversely, overuse and inappropriate use of antimicrobials can lead to widespread antibiotic resistance and the creation of “super-pathogens”. Improving utilization of antimicrobials at the hospital level requires an understanding of local consumption. Calculation of antibiotic consumption can be accomplished by enumerating antibiotic days and standardizing these amounts with patient census data to identify the rate of use. Rates of antimicrobial usage can either be evaluated between years at a single hospital or compared within the same year at similar hospitals. Clinical decision support techniques can facilitate these data compilations and help clinicians identify areas where antimicrobial usage can be improved. This presentation will discuss methods for tracking antibiotic consumption and techniques facilitated by clinical decision support system tools that can aid in antibiotic optimization.

Learning Objectives:

1. Given a specific hospital scenario, identify factors that increase injudicious use of antimicrobials.
2. Design a scheme to analyze the data that captures antimicrobial utilization at a hospital.
3. Utilize Clinical Decision Support techniques to the fullest capability.

Self-Assessment Questions: (True or False)

1. The single largest factor that predicts antibiotic resistance is antibiotic use.
2. The Defined Daily Dose (DDD) of an antimicrobial is the most accurate metric of antibiotic consumption at the patient level.
3. Clinical decision support systems can usually obviate the need for clinicians since artificial intelligence mimics optimal human thought processes.

Answers: 1. (T); 2. (F); 3. (F)

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Resisting Inertia: Approaches to Managing Resistant Hypertension

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Pharmacists play an integral role in the prevention and management of hypertension. Based on the most recent National Health and Nutrition Examination Survey (NHANES) data, hypertension rates are increasing with minimal change in blood pressure control rates over the past few years. A 2008 scientific statement by the American Heart Association (AHA) provided treatment recommendations for patients with resistant hypertension. Clinical trial evidence substantiating the recommendations in the AHA scientific statement will be reviewed. Clinical application of AHA recommendations for individual patients will be discussed.

Learning Objectives:

1. Identify risk factors for the development of resistant hypertension.
2. Evaluate specific antihypertensive agents to treat resistant hypertensive patients using current guidelines and evidence-based medicine.
3. Compare and contrast the mechanisms of action, role in therapy, benefits and risks, and special considerations with antihypertensive agents that are used in the management of resistant hypertension

Self-Assessment Questions: (True or False)

1. The American Heart Association defines resistant hypertension as having blood pressure that remains above goal in spite of the concurrent use of 3 antihypertensive agents at optimal doses with one being a diuretic.
2. Hydrochlorothiazide is the preferred thiazide diuretic for the treatment of resistant hypertension
3. Spironolactone is an effective add-on therapy for the treatment of resistant hypertension.

Answers: 1. (T); 2 (F); 3 (T)

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Dyslipidemia Guidelines

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Pharmacists play an integral role in the management of dyslipidemia. Over the past few years multiple trials have been completed that have expanded the current best evidence in the area of dyslipidemia management and drove change in the new dyslipidemia guidelines. Clinical trial evidence focusing on statin therapy, optimal lipid goal attainment, rationale for combination therapy, and the minimization of drug interactions that have clinical consequences for the patient with dyslipidemia will be reviewed.

Learning Objectives:

1. Describe clinical controversies related to the treatment of hypertension and dyslipidemia.
2. Summarize the JNC 8 and NCEP ATP IV guidelines for the management of hypertension and dyslipidemia.
3. Identify how clinical trials evidence support recommendations in the JNC 8 and NCEP ATP IV guidelines.
4. Evaluate therapy that effectively implements new JNC 8 and NCEP ATP IV guidelines

Self-Assessment Questions: (True or False)

1. All patients with established coronary artery disease should target a low-density cholesterol concentration (LDL-C) of less than 70 mg/dL.
2. The primary cholesterol target in the NCEP ATP IV guidelines is non-high density cholesterol.
3. Clinicians should discontinue treating CKD patients with statin therapy once long-term hemodialysis is required.

Answers: 1. (T); 2 (F); 3 (F)

257-2

Overview of Cardiovascular Disease and Hypertension Guidelines

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Over 80 million Americans have cardiovascular disease (CVD). It is consistently the #1 killer in the United States and estimated costs of CVD are projected to increase from \$300 billion annually to over \$800 billion by the year 2030. Hypertension is a major cardiovascular risk factor in the development of CVD morbidity and mortality. The current consensus guidelines used by most providers in the United States is the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7). This guideline was published in 2003. The JNC 8 has been under development for several years, and is scheduled to be released sometime in 2012. As of November 2012, the draft of this guideline has not yet been released. However, several other influential expert consensus publications have been published in 2010-2012. Pharmacists should be aware of these newer publications despite absence of the final JNC 8 guidelines so that patients with hypertension can be treated according to the best available evidence, which is reflected in many of these newer expert consensus statements. This session will review these newer publications and highlight relevance for patient care, clinical controversies and challenges and provides some predictions on how they will be reflected in the JNC 8.

Learning Objectives:

1. Describe clinical controversies related to the treatment of hypertension
2. Summarize newer expert consensus publications for the management of hypertension
3. Identify how clinical trials evidence support recommendations in newer expert consensus publications
4. Evaluate therapy that effectively implements recommendations from expert consensus publications

Self-Assessment Questions:

1. Which of the following is recommended by the American Society of Hypertension with regards to combination therapy in hypertension?
 - A. Restricted use of combination therapy for hypertension
 - B. Use of single pill combinations rather than separate agents
 - C. Routine use of an ACE inhibitor with an angiotensin receptor blocker
 - D. Using two-drug combinations only when maximum dose monotherapy is not effective
2. Which of the following clinical trials support the use of antihypertensive drug therapy in very elderly patients with hypertension?
 - A. HYVET
 - B. ALLHAT

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- C. HOT trial
 - D. ACCOMPLISH
3. Which of the following treatments is considered appropriate step 1 therapy according to the National Institute for Health and Clinical Excellence for a 50 year old man with hypertension and no other medical conditions?
- A. Amlodipine
 - B. Carvedilol
 - C. Hydrochlorothiazide
 - D. Losartan

Answers: 1. (B); 2. (A); 3. (D)

258-1

Update in Emergency Department Practice: Service Optimization and Collaborative Practice

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The pharmacist is a valuable member of the healthcare team in the emergency department (ED). In order to best serve the ED, the pharmacist must identify and optimize which services will be provided. Optimal and essential services to provide in the ED can be identified through completion of a needs assessment, combined with input from ED providers and staff, and hospital administration. In general, services provided in the ED should focus on high risk populations, resuscitation, medication information and order review, documentation, and education. Collaborative drug therapy management can be used as one tool to provide optimized services in the ED.

Learning Objectives:

1. Given limited time and resources, develop a strategy to optimize the type and level of services provided in the ED.
2. Develop innovative collaborative practice agreements to be implemented in the ED.

Self-Assessment Questions:

1. Which of the following describes a high-risk patient that warrants immediate pharmacist attention in the emergency department?
 - A. A 47-year-old male with knee pain for one month
 - B. A 54-year-old female requesting a medication refill of her hydrochlorothiazide
 - C. A 65-year-old male patient requesting medical clearance for an upcoming surgery
 - D. A 74-year-old female with new onset, crushing substernal chest pain for one hour
2. (True or False) Medication information is an essential service provided by emergency department pharmacists.
3. Which of the following statements most accurately describes regulatory requirements of collaborative drug therapy management (CDTM) in the emergency department?
 - A. There are no regulatory requirements associated with CDTM; pharmacists should refer to institutional requirements
 - B. Regulatory requirements are specific to each state; pharmacists should refer to their individual state for specific regulatory guidance
 - C. Regulatory requirements

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- D. Regulatory requirements associated with CDTM only apply to pharmacy technician participation in CDTM

Answers: 1. (D); 2. (T); 3. (B)

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Integrating into the emergency department team

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The practice of emergency medicine pharmacy is continuously expanding. However, many pharmacists entering into this area of practice are faced with barriers to implementation and challenges when integrating into the interdisciplinary emergency department team. Successful implementation and integration is essential for optimization of this pharmacist role, thus allowing for improvement in medication and patient safety. Strategies to overcome common barriers and challenges are presented to assist new or soon to be emergency medicine pharmacists in the development of emergency medicine pharmacy services.

Learning Objectives:

1. Describe at least two barriers to the integration of the pharmacist into the interdisciplinary emergency department team.
2. Discuss the challenges faced by the pharmacist when establishing interdisciplinary relationships in the emergency department.
3. Describe strategies to overcome barriers and challenges for successful integration.

Self-Assessment Questions: (True or False)

1. Support from key players is crucial to the integration of the pharmacist into the interdisciplinary emergency department team.
2. Lack of understanding of the role of the emergency medicine pharmacist is one challenge faced when establishing interdisciplinary relationships.
3. Identification of a support champion within each interdisciplinary team can help pave the way for successful integration.

Answers: 1. (T); 2. (T); 3. (T)

259-1

What is the Pharmacy Enterprise? A Framework for Success and for the Future of the Profession

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The evolution of healthcare reform and new payment structures such as medical home and accountable care require the evaluation of the process and infrastructure for the provision of pharmaceutical care. The Pharmacy Enterprise is offered and defined as a model to support changes needed for the evolution of pharmacy practice. Aspects that support an effective Pharmacy Enterprise are provided and discussed. The importance of defining and creating the Pharmacy Enterprise to ensure future success in pharmacy practice is related to the changes in healthcare reform.

Learning Objectives:

1. Describe the significance of the Pharmacy Enterprise.
2. Define key aspects of the Pharmacy Enterprise.
3. Relate the importance of defining the pharmacy enterprise to current dynamics in healthcare and future success of pharmacy.

Self-Assessment Questions: (True or False)

1. The concept of the Pharmacy Enterprise encompasses medication-related care for patients in all settings and through transitions between levels of care.
2. Structural elements such as organizational charts and leadership governance are of minimal importance to the effective Pharmacy Enterprise.
3. In future healthcare payment structures such as medical home models, controlling medication utilization and monitoring medication therapy outcomes are critical elements of success.

Answers: 1. (T); 2. (F); 3. (T)

260-1

Automating Productivity Metrics of Clinical Pharmacy Services

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Clinical pharmacist productivity while difficult to measure is needed for the justification of clinical pharmacist roles and the securing of staff for increased workloads in the face of decreasing resources. Manual collection of data can capture clinical cognitive tasks but is time consuming and leads to under-reporting. Automated means of data collection are necessary to track clinical pharmacist productivity. At Regions Hospital, we were able to using the EMR to track clinical pharmacist productivity through orders verified, orders discontinued, verbal orders entered, progress notes entered and consults ordered. This data was used to develop an acceptable number of workload units per pharmacist with the eventual use for the justification of full time equivalent pharmacist hours. The use of pharmacist consult orders and reason codes for discontinued orders was further developed to capture the cognitive clinical activities completed by a pharmacist upon patient profile review. We recognize limitations still exist with the ability to capture interventions prior to an order being entered in the EMR and that further work is needed to link clinical pharmacy interventions with patient outcomes and cost of care.

Learning Objectives:

1. Describe current challenges in collecting cognitive productivity measures in clinical pharmacy services.
2. Identify components of the automated productivity tool applicable for their institution.

Self-Assessment Questions:

1. (True or False) One of the limitations of benchmarking in clinical pharmacy is the inability to capture clinical tasks through automated applications
2. Which of the following is an example of an automated metric:
 - A. Orders verified/reviewed
 - B. Orders discontinued due to contraindications, allergies, drug interactions, renal dosing, etc.
 - C. Progress notes entered by pharmacists
 - D. All of the above
3. (True or False) All metrics can be equally weighted.

Answers: 1. (T); 2. (d); 3. (F).

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260-2

Strategies for the Development of Clinical Productivity Metrics and Benchmarks

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The strategy of benchmarking metrics to as a continuous improvement process and to evaluate and assess clinical productivity is increasing in healthcare. Successful benchmarking requires an analysis of the problem areas, identification of the leaders in these areas, development of best practices and the implementation of new and improved practices. Software used for benchmarking purposes are available, but pharmacy managers should clearly understand the limitations of the metrics being measured to avoid misinterpretation of the results. Pharmacy managers should develop strategies on how external and internal benchmarking system best capture workload and productivity.

Learning Objectives:

1. Describe benchmarking and different types of metrics used in measuring productivity.
2. Define methods for ensuring the metrics chosen are both valid and relevant.

Self-Assessment Questions:

1. (True or False) The objective of benchmarking is to understand and evaluate the current position of an organization in relation to “best practice” and identify areas and means of improvement.
2. (True or False) Benchmarking assists health care administrators make operational decisions that ensure desired budget reductions.
3. Which of the following is a common mistake associated with benchmarking?
 - A. Goals, objectives criteria align with a desired business outcome
 - B. Establishing a baseline for future comparisons
 - C. Treating benchmarks as a continuous process as opposed to a singular project
 - D. No executive champion or support

Answers: 1. (T); 2. (T); 3. (D)

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Perspectives of a New Corporate Director

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Hospital mergers continue at a rapid pace and the challenges facing a new corporate director of pharmacy are numerous and significant. Being involved in key decision making processes within the healthcare system is critical to success. Identifying the needs of the staff and the healthcare system and then creating visible change enables the new corporate director to build momentum and progress. In order to be successful, developing an organizational structure and medication management strategy to accomplish corporate goals requires vision, patience and focused commitment. Adapting the course of action from lessons learned and encouraging new ideas helps to solidify staff support for the future.

Learning Objectives:

1. Describe the conditions which made the development of a new corporate pharmacy director position achievable.
2. Discuss the approach taken to develop a new medication management corporate strategy.
3. Identify the challenges presented, successes achieved and the lessons learned.

Self-Assessment Questions: (True or False)

1. The new corporate director of pharmacy should focus primarily on the pharmacy departments under his/her responsibility.
2. The corporate director should set all the goals and drive unwaveringly towards them.
3. The corporate director will need to be a participant at the highest levels of decision making regarding medication management system.

Answers: 1. (F); 2. (F); 3. (T)

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261-2

Coordinating a Corporate Pharmacy Executive Committee

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In a large northeastern hospital network, the development and coordination of a Pharmacy Executive Committee requires support from all facilities. Early on, the Committee's focus was on operational, clinical and information technology collaborative opportunities. As the system Committee developed, initiatives were added in the areas of formulary management, development of clinical guidelines, contract management, promotion of best practices, improvement in quality and safety, pharmacy strategic planning and cost reduction. The Committee's goal is to support the full continuum of care for system patients. A Center for Drug Policy was developed. The Committee is continually evolving and changing to meet the medication management needs of the patients and the system.

Learning Objectives:

1. Describe the formation and maturation of the health care system and the corporate pharmacy committee role.
2. Discuss the development of a Center for Drug Policy.
3. Discuss the opportunities and challenges met and those that the future may bring.

Self-Assessment Questions: (True or False)

1. A corporate pharmacy committee should focus on operations and clinical pharmacy services.
2. Because of the size, scope and mission of each individual hospital, coordination of major system changes is not possible.
3. Active participation on the part of the pharmacy director and his/her leadership is critical for success.

Answers: 1. (F); 2. (F); 3. (T)

261-3

System Formulary Development

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As hospitals continue to consider mergers and consolidation options as a mechanism to drive cost savings and quality improvements, the ability to standardize practices is a crucial element for success. For pharmacy services one of the basic building blocks for “systemness” is a common formulary platform. This presentation describes the experience gained by a large integrated health delivery system in designing and implementing a common system-wide formulary.

Learning Objectives:

1. Describe the opportunities for improvement that formation of a system-wide formulary presents.
2. Discuss the potential reasons for success or failure.
3. Describe activities and components of a successful collaboration.

Self-Assessment Questions: (True or False)

1. Because of the uniqueness of each facility, its patients and its prescribers, a highly coordinated formulary for the system is unachievable.
2. Support for a system-wide formulary is needed at the highest executive and medical staff levels in the participating organizations.
3. Ongoing support requires dedicated staff.

Answers: 1. (F); 2. (T); 3. (T)

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261-4

Planning challenges in a value based purchasing (VBP) environment

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The Medicare value based purchasing (VBP) program is described. VBP redistributes a portion of hospitals' fee-for-service payments based on a quality performance score. Achievement and improvement on a set of clinical and patient experience of care measures provide hospitals with an opportunity for incentive payments. The VBP and other accountable care organization models are changing quality reporting, coordination of care and reimbursement mechanisms. Pharmacy has a significant opportunity to contribute, and pharmacy leaders need to consider the implications of transitioning to these models in planning and implementing future pharmacy services.

Learning Objectives:

1. Describe Medicare's value based purchasing (VBP) program.
2. Discuss paradigm changes resulting from VBP and accountable care organization (ACO) models.
3. Identify 3 planning challenges for pharmacy as we move into VBP and ACOs.

Self-Assessment Questions: (True or False)

1. Medicare's value based purchasing (VBP) program primarily focuses on pharmaceutical purchasing.
2. New care models focus on quality outcomes and coordination of care.
3. Pharmacy will need to coordinate across sites of care and unaffiliated providers.

Answers: 1. (F); 2. (T); 3. (T)

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262-1

Medication reach program

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The healthcare reform focuses on improved transitions of care in efforts to reduce hospital readmissions. Medication related errors, adverse drug events, and medication non-adherence are among the top reasons for hospital readmissions. Enhancing the discharge process by direct pharmacist involvement can positively impact patient care and reduce readmission rates. Future pharmacy practice models should strive to overcome barriers to care transition and continuously expand upon current practices to reach more patients.

Learning Objectives:

1. Identify the need for a pharmacist's role in transitions of care.
2. Describe essential components and successes of a transition of care model.
3. Demonstrate methods to overcome barriers and to institute program expansions.

Self-Assessment Questions: (True or False)

1. Medication related discrepancies account for only a small fraction of hospital readmissions.
2. Access is a barrier to care that needs to be addressed in care transition models.
3. Partnering with and delegating tasks to other health care professionals is key to optimizing resources and encompassing more patients in care transition models.

Answers: 1. (F); 2. (T); 3. (T)

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262-2

Project PRIMED: pharmacist reconciliation and medication education at discharge

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Pharmacist involvement in medication management at discharge from the hospital can help to improve the safety, efficacy and cost-effectiveness of medication use. Additionally, patient access to medications can be enhanced. Pharmacy services that are beneficial at discharge include medication reconciliation, medication education and bedside prescription delivery. Implementation of pharmacy services at discharge requires pharmacist and technician resources that can be justified through the use of quality and financial metrics. Increased discharge prescription capture at an internal pharmacy is a financial metric that can be used, while intervention and cost avoidance data can be used as quality outcomes. In an initial pilot at Froedtert Hospital, it was found that 52% of patients required some type of medication intervention by the pharmacist at discharge. Of these interventions, 45% were categorized as National Coordinating Council for Medication Error Reporting and Prevention (NCC MERP) index category D or higher (would require intervention to preclude harm if the error were to occur). Approximately 60% of patients elected to fill discharge prescriptions at Froedtert's outpatient pharmacy. Based on these results, additional pharmacist and technician positions were approved to expand the provision of these services to all patients. As with the implementation of any new service, it is important to identify and overcome barriers. Common barriers to implementing discharge services include the incorporation of the pharmacist into the discharge workflow, providing the services consistently (including evenings, weekends and holidays), ensuring that discharges are not delayed, and setting and meeting reasonable prescription turn-around time goals.

Learning Objectives:

1. Describe the role and impact of pharmacist involvement in comprehensive discharge pharmacy services
2. List quality and financial metrics that could be used to justify discharge pharmacy services
3. Discuss the implementation of additional pharmacy services to optimize transitions of care

Self Assessment Questions:

1. What was the most common intervention type detected by pharmacists at discharge?
 - A. Unnecessary medication
 - B. Dosage or dispensing error
 - C. Duplicate Therapy
 - D. Missing medication

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2. What is the best combination of metrics to justify additional pharmacy services around discharge medication reconciliation and counseling?
- A. RN time savings, MD satisfaction with pharmacy services, MD detection of errors
 - B. STAT med turn around time, % INRs in range, volume of IV to PO interventions
 - C. Frequency of drug therapy interventions, patient satisfaction, cost avoidance, outpatient prescription capture
 - D. Time taken for MD response, RN medication understanding, patient awareness of pharmacists
3. Which of the following are potential barriers to implementing pharmacy discharge services?
- A. Establishing a consistent workflow
 - B. Developing a process for handling medications requiring prior authorization
 - C. Setting and meeting reasonable turn-around times for delivery
 - D. All of the above

Answers: 1. (B); 2. (C); 3. (D)

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263-1

Developing Ambulatory Care Clinical Services: Financial Incentives and Service Value

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As pharmacists seek to expand their roles in interdisciplinary care models, expansion of clinical services in ambulatory venues becomes imperative. Justification of ambulatory clinical pharmacy services requires development of a sound business plan. This session will provide a brief overview of the essential components of business plan development and demonstrate application given a patient case scenario.

Learning Objectives:

1. Identify the key components of business plan development for an ambulatory clinical pharmacy service.
2. Review potential clinical, economic, and humanistic outcomes used to strengthen the business plan for an ambulatory service.
3. Apply concepts of business plan development to an interactive case.

Self-Assessment Question: (True or False)

1. Clinical outcomes are the MOST important outcome of a service; therefore, it is not necessary to monitor economic or humanistic outcomes.
2. Marketing is not necessary for successful implementation of an ambulatory clinical service and therefore should not be an essential component of the business plan.

Answers: 1. (F); 2. (F)

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Developing Ambulatory Care Clinical Services: Financial Incentives and Service Value

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This session will provide a brief overview of strategies to create sustainable clinical pharmacy services (CPS) through a variety of programs such as ACOs, PCMHs and P4P. Health information technology will be explored to identify opportunities to perform population management that ultimately leads to increased financial and operational performance to help build the case for CPS.

Learning Objectives:

1. To compare other methods of offering financial value to create a sustainable program through cost-avoidance, pay-for-quality initiatives (PCMH, ACO), state Medicaid programs that have pharmacist provider status.*
2. To review interactive case to discuss other financial incentives as a source of funding depending on practice setting and scope of practice.

*health information technology

Self-Assessment Questions: (True or False)

1. Health information technology is helpful only to those providers recognized by Medicare.
2. Quality improvement organizations primarily work exclusively with physicians to improve quality and effectiveness of care for Medicare beneficiaries.

Answers: 1. (F); 2. (F)

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263-3

**Developing Ambulatory Care Clinical Services: Financial Incentives and Service Value
Financial Incentives for Collaborative Drug Therapy Management (CDTM)**

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This session will guide attendees through an interactive patient case to briefly review typical fee for service reimbursement models and shifts towards population management for Collaborative Drug Therapy Management (CDTM). The role of health information technology (HIT) for population management will also be discussed to increase financial and operational performance for CDTM.

Learning Objectives:

1. To review typical fee for service models for clinical service reimbursement
2. To discuss newer clinical service models for CDTM incentives
3. To explore how information technology can aid in population management for pay-for-performance initiatives to justify financial incentives for pharmacist services

Self-Assessment Questions: (True or False)

1. Fee for service models are the only way pharmacists can generate salary support for Collaborative Drug Therapy Management (CDTM).
2. Pharmacists can play a key role in quality improvement and pay for performance initiatives.
3. Pharmacists do not have a role in the Patient Centered Medical Home (PCMH), this only pertains to the Primary Care Physician (PCP).

Answers: 1. (F); 2. (T); 3. (F)

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263-4

Developing Ambulatory Care Clinical Services: Sustainability and Expansion

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Justification of ambulatory care pharmacist services does not end once a service has been approved and funded. Continual assessment is necessary to determine sustainability based on pharmacist work-load and expansion as opportunities arise. This session will provide insight into estimating the capacity of a pharmacist service, creating financial projections to justify service expansion, and determining ways to integrate learners into a service to increase capacity.

Learning Objectives:

1. Estimate the pharmacist FTE needed to run a clinical pharmacy service
2. Create financial projections that can help to justify a service expansion
3. Describe ways to sustain clinical pharmacy services utilizing learners

Self-Assessment Questions: (True or False)

1. When estimating revenue generation, the CMS physician-fee-look-up website is a helpful tool to determine the Medicare reimbursement rate for a specific CPT code.
2. Integration of learners into a clinical pharmacy service decreases service capacity.

Answers: 1. (T); 2. (F)

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Reimbursement \$ Are Driven by Quirks, Responsibilities and Compliance

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This presentation focuses on Outpatient changes affected by Medicare's outpatient prospective payment system (OPPS). The Pharmacy Management Team cannot afford to assume that the billing system is working correctly and that anticipated revenue is being realized without an understanding of the reimbursement rules and careful monitoring of the systems involved. This is vital in all facilities, regardless of whether they are free-standing or part of a multi-hospital system. This session is designed to provide an in depth look at how the rules are formulated, what they are for 2013 and what this means to pharmacy practice including the clinician making decisions on therapy. Additionally it will provide suggestions and tools for assessing current practice and making needed changes. Health Care Reform has set the stage for additional changes and as they mature, applicable ones will be reviewed with suggested action steps for pharmacy.

This learning session also reviews the required elements needed to establish a charge in the pharmacy chargemaster. During the session, outpatient claims processing will be examined as well as the proper billing for drug and chemotherapy administration services, medication therapy management services, modifiers, waste and value codes. Scenarios in which the use of the drug is important in determining proper billing are presented including self-administered drugs, clinical trials, NCDs and LCDs and RAC audits.

Learning Objectives:

- 1:** Explain 2013 changes to Medicare reimbursement and identify operational changes required to implement them.
- 2:** Describe three Medicare reimbursement challenges and complexities in your practice setting.
- 3:** List the compliance requirements for Medicare and how they apply to the 2013 Outpatient Prospective (OPPS) Payment Systems.
- 4:** Describe the role of pharmacy leaders in educating their health systems on the impact of IPPS and OPPS changes.

Self-Assessment Questions:

1. Should the facility bill for all medications even if they know that some of them are not going to be reimbursed?
 - A. Yes
 - B. No
2. (True or False) Outpatient billing is covered by OPPS while Inpatient billing and Observation patient billing are covered by IPPS.
3. (True or False) CMS changes to IPPS and OPPS will not have an influence on Pharmacy Operations in 2013.

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4. (True or False) CMS is the largest insurer in the US with policies that are often followed by other third party payors.

Answers: 1. (A); 2. (F); 3. (F); 4. (T)

265-1

Innovative Practice: Sustainable Approaches for Reducing 30 day Hospital Readmissions

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A major urban thousand bed hospital has implemented pharmacy services to reduce readmissions in a high risk population on a general medicine unit. Two programs, the STAAR initiative and Care Management Program have joined efforts in utilizing pharmacists to improve the transition of care by identifying and resolving medication discrepancies prior to discharge and reducing the readmission rate. The positive outcomes of the pilot have enabled the institution to consider expanding pharmacy services.

Learning Objectives:

1. Describe multi-disciplinary initiatives that support the role of the pharmacist in reducing readmissions.
2. Explain the benefits of having a pharmacist perform pre-discharge interventions.
3. Describe the successes and opportunities within the program in order to provide a sustainable service.

Self-Assessment Questions: (True or False)

1. It is the combined effort of two multi disciplinary initiatives that enabled pharmacist to perform pre-discharge interventions.
2. Pharmacists have shown to reduce the readmission rate in a high risk population.
3. The following factor(s) may be considered when assessing the financial benefit of pharmacist driven pre-discharge interventions.
 - A. Annual cost of readmissions
 - B. Cost of adverse events prevented
 - C. Pharmacist time
 - D. All of the above

Answers: 1. (T); 2. (T); 3. (D)

265-2

Pharmacist involvement in improving transitions of care, readmission rates, and quality indicators

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Medication errors and excessive readmissions represent areas to improve quality of care and protect the financial viability of a health system. An innovative strategy was developed using inpatient (hospital) and outpatient (community) pharmacists to build a bridge to provide patient counseling during their hospital stay and following discharge. In an effort to elevate the standard of care, inpatient pharmacist time was reallocated from order entry to perform medication reconciliation and face-to-face patient counseling. Medication therapy management (MTM) delivered by community pharmacists during the 30-day window following discharge was employed to identify medication-related problems and promote medication adherence. Coordination of these efforts supports the goal of decreasing preventable readmissions. Deploying pharmacists in this manner positions our healthcare team and the profession of pharmacy to improve medication safety through the transition of care following discharge from the hospital.

Learning Objectives:

1. Identify and describe effective programs and services that have reduced preventable readmissions to hospital.
2. Develop a plan to incorporate new practice models, programs, services and/or pharmacist interventions to reduce hospital readmissions in the inpatient, outpatient and transitional care settings.
3. Identify how to gather return on investment data for reducing readmissions and creating sustainable services.

Self-Assessment Questions: (True or False)

1. Collaboration with other healthcare professionals (nursing, physicians) is a critical step in the design of a transition of care programs.
2. Discharge issues (incorrect drug, incorrect dose, drug omitted) are potential areas of intervention that can be corrected by pharmacist review.
3. A uniform, widely accepted standard is available to define the financial value associated with avoidance of adverse drug events.

Answers: 1. (T); 2. (T); 3. (F)

265-3

Approaches to Defining Pharmacy Role in Reducing Potentially Preventable Readmissions (PPRs).

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Multiple opportunities exist for pharmacists in readmissions reductions initiatives. This presentation highlights several pilots aimed at reducing potentially preventable readmissions (PPRs) with pharmacy involvement. The foundation for optimal pharmacy practice has been developed via the Pharmacy Practice Model Initiative (PPMI). In each pilot, concepts of the PPMI were applied, and pharmacists were able to make several interventions and/or recommendations per patient. The impact of pharmacist involvement on readmission rates during these pilots remains inconclusive. Common barriers encountered include the time required to complete patient interviews, medication reconciliation, profile review, and consult notes. Optimization of technology, determining the appropriate patient population(s) for intervention, and reallocation of, or addition of, resources will likely be vital in the success of current and future initiatives.

Learning Objectives:

1. Identify realistic opportunities for pharmacists in reducing potentially preventable readmissions.
2. Describe successes, barriers, and challenges for multiple different pharmacist interventions.
3. Highlight PPMI recommendations incorporated into past, current, and future pharmacy roles in readmissions reductions initiatives.
4. Discuss potential opportunities for future pharmacy involvement.

Self-Assessment Questions: (True or False)

1. Improvement of medication reconciliation, identifying barriers to medication compliance, and optimization of medication regimens are areas of opportunity for pharmacy intervention.
2. The Pharmacy Practice Model Initiative (PPMI) identifies pharmacist facilitation of medication-related continuity of care as a component of optimal practice.
3. Pharmacist involvement has always proven to be effective in reducing readmissions rates.

Answers: 1. (T); 2. (T); 3. (F)

265-4

Pharmacy's Role in Reducing Readmissions: A Review of Established Programs & Outcomes

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Reducing avoidable readmissions has become a national healthcare priority driven by a variety of regulatory and reimbursement incentives, including most notably Medicare's Hospital Readmission Reduction Program (HRRP). Pharmacy and pharmacists are well positioned to impact readmissions by provision of care across the continuum. Recently a number of health care organizations have been developing successful approaches to reducing readmissions; many of which include services provided by pharmacists. The key to a successful readmissions reduction program are to have effective services that are sustainable from a resource/fiscal perspective. This review will explore the emerging care models and services targeting 30-day readmissions and examine the strategies for achieving sustainability and desired outcomes.

Learning Objectives:

1. List 3 of the current major market place drivers for reducing hospital readmissions.
2. Describe how pharmacy can position services across various points in the continuum of care to reduce avoidable 30-day readmissions.
3. Develop a plan for reducing readmissions that incorporates 3 diverse value points to support the sustainability of the services offered.

Self-Assessment Questions: (True or False)

1. Which of these directives are the key to a successful service for addressing readmissions?
 - A. Understand the gaps in care for your specific organization
 - B. Focus on services that have clear value and impact outcomes
 - C. Build in sustainability to ensure the viability of your service
 - D. All the above
2. (True or False) Medicare's Hospital Readmission Reduction Program is an excellent way to justify your services since all hospitals are subject to penalties for readmissions and administration will see value in avoiding these financial losses.
3. A good example of a method for creating sustainability to support the value of a readmissions program might include...
 - A. A discharge medication service
 - B. Risk stratification of patients to identify those most in need of services
 - C. Utilizing a pilot program to explore impact and resource needs
 - D. Providing services that are supported by reimbursement
 - E. All the above

Answers: 1. (D); 2. (F); 3. (D)

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267-1

Give me fat, or give me death: the use of lipid emulsion therapy in calcium-channel blocker and other toxicities

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The systemic toxicity caused by local anesthetics or calcium channel blockers has been challenging to treat and often resulted in significant morbidity and mortality. A new modality which has shown potential benefit in these toxicities is the use of lipid emulsion rescue therapy during resuscitation. The data supporting lipid emulsion rescue therapy in the emergency department has been overwhelmingly positive to date but large prospective trials are still lacking. The evidence, risks, and benefits of using lipid emulsion rescue therapy for calcium channel blockers and other toxicities in the emergency department are presented.

Learning Objectives:

1. Describe the general approach to treatment of a calcium-channel blocker overdose.
2. Describe the possible benefits of using a lipid emulsion infusion and the strength of supporting evidence.
3. Calculate the dosing and the infusion rates for administration of lipid emulsion in a patient with a suspected calcium-channel blocker overdose.

Self-Assessment Questions: (True or False)

1. Calcium-channel blocker toxicity is usually well tolerated requiring only supportive care.
2. Rapid infusion of lipid emulsion is generally well tolerated.
3. Lipid rescue is the standard of care in the emergency departments for all undifferentiated lethal ingestions.

Answers: 1. (F); 2. (T); 3. (F)

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267-2

Thrombolysis in Pulmonary Embolism (PE)

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Pulmonary Embolism is a life threatening disease process that until recently has very little treatment option. Recently, there has been literature looking at thrombolytic therapy for massive and submassive pulmonary embolism. We will discuss both a case and the current literature regarding this disease state.

Learning Objectives:

1. Describe patients at risk of pulmonary embolism
2. Describe risk/benefit of thrombolytic therapy for pulmonary embolism
3. Describe mortality associated with pulmonary embolism

Self-Assessment Questions: (True or False)

1. Patients who are having a massive pulmonary embolism should receive a thrombolytic.
2. Pulmonary embolism is usually not life threatening.
3. Any thrombolytic can use used for pulmonary embolism.

Answers: 1. (T); 2. (F); 3. (T)

267-3

Best Bets for Calcium Channel and Beta-Blocker Toxicity: Hyperinsulinemia Euglycemia Therapy

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Toxicity from cardiovascular medications carries a significant risk of morbidity. Calcium channel blockers (CCB) and beta-blockers (BB) are among most common cardiovascular medications associated with toxicity as reported to United States Poison Control Centers. This lecture will briefly describe the toxicology CCB and BB. We will then explore the treatment on CCB and BB toxicity focusing on the use of Hyperinsulinemia-Euglycemia.

Learning Objectives:

1. Describe the similarities and differences in the toxicologic presentation of calcium channel blockers (CCB) and beta blockers (BB).
2. Describe the benefits of Hyperinsulinemia-Euglycemia (HIE) over standard therapy and identify when and how HIE should be initiated.

Self-Assessment Questions:

1. Calcium channel blockers (CCB) are more likely to cause hyperglycemia in the setting of toxicity compared to beta-blockers (BB).
2. Glucagon effectively manages CCB and BB toxicity by bypassing the beta-receptor and directly stimulating the G_s protein.
3. Insulin infusions as high 22 units/kg/hr have been used in the management of CCB toxicity.

Answers: 1. (T); 2. (T); 3. (T)

268-1

**A Smooth Transition: Moving Pain Management from Here to There
The Last Step: From Hospital Discharge Prescription to Community Pharmacy Filling the Prescription**

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There are multiple points along the process of a patient's hospital discharge process, ideally ending with the patient filling their discharge prescription, that are opportunities for communication breakdown. This includes communication with inpatient hospitalist team and the patient's primary care provider, communication with inpatient hospitalist team and the patient's family, communication with inpatient hospitalist team and the patient's pharmacy, and the impact of the prior authorization process on the ability of a patient to fill the patient's discharge prescription. Direct communication between hospital physicians and primary care physicians occurs infrequently and discharge summaries often lack important information such as discharge medications. Many patients have reported it was somewhat or very difficult to understand why they were prescribed discharge medications, how to take these medications, or how to reconcile them with the medications they had been taking before hospitalization. Patients have stated that transportation issues, cost of discharge prescriptions, and wait times at the pharmacy were cited as the main barriers to filling discharge prescriptions. Approximately half of patients reported some degree of nonadherence after discharge with their discharge medications. Patients have said pharmacist counseling before discharge, along with lower medication costs, transportation to the pharmacy, and a pillbox could improve medication use after discharge. The cumbersome prior authorization process can also contribute to decreased discharge medication adherence and cause negative outcomes for the patient who has been discharged from the hospital.

Learning Objectives:

1. Discuss points of communication that can be opportunities for breakdown related to having hospital discharge prescriptions filled at a patient's local pharmacy
2. Discuss the impact that prior authorizations imposed by insurance companies have on the transition of care from hospital discharge prescription to local pharmacy to patient filling their discharge prescription
3. Discuss solutions to the current reality where points of communication that are required for a patient's discharge from a hospital become opportunities for breakdown of communication for having that patient's discharge prescriptions filled.

Self-Assessment Questions: (True or False)

1. The process of discharging a patient from the hospital to having that patient fill their discharge prescription is a simple one.
2. Having a pharmacist counsel the patient that is being discharged from the hospital about the patient's discharge prescriptions could increase medication adherence.

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3. The cumbersome prior authorization process has a negative effect on discharge medication adherence and contributes to overall negative health outcomes.

Answers: 1. (F); 2. (T); 3. (T)

268-2

A Smooth Transition: Moving Pain Management from Here to There - Connecting the Missing Links from Inpatient Admission to Discharge

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Accountable Care Organizations (ACOs) must achieve quality care by improving the patient and caregiver experience, coordinating transitions of care, promoting patient safety, fostering healthcare prevention programs, and targeting populations at risk. Pain is often cited as a leading factor that influences the patient's overall experience with the hospital admission. Gaps in the pain treatment plan can occur along the pathway from admission to discharge that negatively impact the patient's satisfaction, increase the risk of adverse events, and may lead to early readmissions due to consequences of inadequate medication management. This presentation will use patient cases and real practice examples to demonstrate hospital transitions of care and how a pharmacist can provide an important role in the coordination of pain management to meet ACO quality goals.

Learning Objectives:

1. Describe pain management transitions and the connection to Accountable Care Organizations.
2. Formulate discharge plans for complex pain medication therapy.
3. Demonstrate opportunities to incorporate opioid prescription monitoring to reduce healthcare acquired adverse events.
4. Discuss the value of a pharmacy pain specialist in hospital transitions of care.

Self-Assessment Questions: (True or False)

1. Accountable Care Organization quality measures aim to improve hospital care through providing an exceptional patient experience, coordinating transitions, and preventing healthcare acquired adverse events.
2. Opioid prescription monitoring databases serve only as a resource for identifying drug-seeking patients on admission to the hospital.
3. According to the Joint Commission, organizations should create and implement policies and procedures that allow for a second review of high-risk opioids by a pharmacist.

Answers: 1. (T); 2. (F); 3. (T)

268-3

Transitioning Pain Management Patients from Hospital to Home

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Pain management patients are complex patients that appear in all the practice areas of pharmacy. When it is decided that the patients should be at home, there are several steps that need to be completed to make this a successful transition. This process can encompass inpatient, ambulatory, chronic care and home care pharmacists for a successful transition. This program addresses the inpatient preparation for discharge, including the choice of drug, access and delivery device. It also addresses the monitoring of the patients at home by the pharmacist and the nurse. Additional considerations of the legal requirements are addressed as well.

Learning Objectives:

1. Discuss the considerations of determining when a patient is ready to be discharged and the steps and personnel involved in the discharge process
2. Discuss the choice of the medication and the most appropriate method of administration
3. Explain how patients will be monitored at home by nursing and pharmacy.

Self-Assessment Questions: (True or False)

1. All patients that are discharged home will have an IV access.
2. The legal requirements for home infusion prescriptions are not the same as for other retail pain prescriptions.
3. Pharmacists are an integral part in monitoring pain management patients at home.

Answers: 1. (F); 2. (F); 3. (T)

268-4

Preventing pain management emergencies

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Emergency departments have the highest incidence of preventable adverse drug events and medication errors among healthcare settings. Overcrowding in the ED compounds this problem, and is associated with a further increase in events and decreased patient satisfaction. Uncontrolled pain is the most common reason for patients visiting the ED, and patients with unmet social needs, such as lack of a primary physician or insurance, may be using the ED as primary care. Both of these factors may increase overcrowding. For chronic pain patients frequently visiting the ED, a blended model using individualized care plans and case management has been proven to decrease the number of visits to the ED for chronic pain, and is more effective than either method alone. This increases consistency and quality of care, decreases time spent in the ED, and thus may also reduce overcrowding and increase patient satisfaction. Most importantly, it allows patients adequate outpatient follow-up. Implementation of a program utilizing this technique is relatively easy to do, but requires an interdisciplinary approach with pharmacists, physicians, nurses, and social workers.

Learning Objectives:

1. Identify two common barriers to care within the Emergency Department (ED).
2. Discuss strategies to reduce these barriers, with a focus on a blended model of personalized care plans with case management.
3. Describe the role of the pharmacist and multidisciplinary team in controlling pain within the ED.
4. Implement a blended model to increase quality of care to chronic pain patients in the ED.

Self-Assessment Questions: (True or False)

1. Emergency department overcrowding is a major cause for concern in the United States healthcare system.
2. A blended care model of individualized care plans and case management is an effective model for improving quality of care and meeting the pharmacologic and social needs of patients who frequently visit the ED with complaints of pain.
3. Implementation of a blended care model can be done by the physician, with no need for an interdisciplinary team.

Answers: 1. (T); 2. (T); 3. (F)

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Crisis in medical mycology: the urgent need to adjust antifungal breakpoints

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Antimicrobial susceptibility testing can be a valuable tool in patient care. These tests can provide be used to predict therapeutic potential as well as a means to survey the development of resistance. However, it is important to remember that in vitro results do not always predict treatment success, and that host factors are very important in determining clinical outcomes. The Clinical and Laboratory Standards Institute (CLSI) are changing the clinical breakpoints for the azoles and echinocandins against *Candida* species. The new breakpoints will be both drug and species-specific. A major factor in setting the new antifungal clinical breakpoints is the epidemiologic cut-off value (ECV). The ECV for a specific drug and fungal species can serve as a sensitive measure of the emergence of resistance and help identify isolates that are less likely to respond to therapy. It is currently unknown what how the new breakpoints for the azoles and the echinocandins will affect patient therapy.

Learning Objectives:

1. Describe the rationale for the change in antifungal clinical breakpoints.
2. Given a specific patient case, identify factors that increase a patient's risk of treatment failure.
3. Given a specific patient case, determine if the fungal isolate is resistant and explain what treatment options exist.

Self-Assessment Questions: (True or False)

1. A major rationale for changing antifungal clinical breakpoints is the epidemiologic cut-off value.
2. Host factors are often less important than microbiological factors in determining clinical outcomes in patients with invasive fungal infections.
3. The new antifungal breakpoints for both azoles and echinocandins will be both drug and species-specific.

Answers: 1.(T); 2 (F); 3 (T)

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Hitting the trifecta: improving safety and quality without breaking the budget

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As health systems are being pressured more and more to perform financially, new and innovative models of pharmacy practice are needed to ensure safety and cost savings across the continuum of care. One approach for managing four remote hematology and oncology sites from a single central location was developed using a telepharmacy model. Additionally, regulatory change was necessary to allow for such practices.

In the summer of 2008, Oregon Health & Science University acquired a physician lead community-based hematology & oncology network of clinics around the greater Portland, Oregon metropolitan area. Several IV room management systems were evaluated for their ability to manage the geographic challenges of remote technicians in the preparation of chemotherapy. Initiated in January 2009 as a pilot with the Oregon Board of Pharmacy, the project successfully allowed a pharmacist in a remote location to use a telepharmacy system to oversee the safe preparation of chemotherapy and other medications. As a result, the rules and regulations of telepharmacy within the State of Oregon were written and finally approved allowing for Remote Dispensing Facility licensure in April 2011.

Implementation of cutting edge technology is not without its challenges. Leveraging the role of the pharmacist and the pharmacy technician to new arenas must occur in order to further our profession without adversely impacting patient outcomes. A model using an IV room manager information system as a telepharmacy solution along with overhead video and audio monitoring systems ensures compliance with Oregon Board of Pharmacy regulations. The success of this model allows for future implementations to other OHSU infusion sites.

Learning Objective:

1. Identify pharmacy responsibilities that could be managed through telepharmacy or remote verification and what regulatory issues must be addressed.

Self-Assessment Question:

1. Through telepharmacy, what duty can a pharmacy technician perform with remote verification by a pharmacist?
 - A. Mixing chemotherapy
 - B. Counseling patients
 - C. Ordering Labs
 - D. Reading an MRI

Answer: 1. (A)

271-1

Residency Precepting: Strategies Worth Sharing

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This talk will begin with a discussion of how residency precepting will vary depending on preceptors and other site-specific consideration. This will be followed by a listing of personal characteristics associated with more advanced residents and preceptors. The remainder of the talk will provide examples of how difficult situations involving residents can be handled in the clinical setting.

Learning Objectives:

1. Discuss how precepting may vary depending on site-specific considerations.
2. List at least three characteristics of more successful PGY2 residents.
3. Provide examples of how to handle at least 3 difficult situations likely to be encountered in residency training.

Self-Assessment Questions:

1. Which of the following are essential differences between the function of a PGY1 and PGY2 resident:
 - A. PGY2 should be more of a team player
 - B. PGY2 should be more cynical of published literature
 - C. PGY1 are not expected to problem solve
 - D. None of the above are true
2. Which of the following is the single most important thing that can be done to avoid problems arising during a residency rotation?
 - A. Threatening the resident with consequences of failure
 - B. Not challenging the resident to perform at higher levels
 - C. Having a discussion of expectations at the beginning of the rotation
 - D. Not allowing the resident to give feedback prior to the end of the experience
3. Which of the following tends to be the most difficult problem to resolve during residency training?
 - A. Lack of motivation
 - B. Lack of knowledge base
 - C. Speaking up during rounds
 - D. Lack of previous experience

Answers: 1. (D); 2. (C); 3. (A)

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Creating residency projects that make a difference

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PGY1 and PGY2 residency standards require completion of a practice-related project and demonstration of effective project management skills. There is evidence that some of the projects are of benefit to the institution and it is presumed that most help develop the resident. It is also known that few projects are published. This presentation will describe what is known about projects and provide suggestions to help improve the outcomes for the institution and resident.

Learning Objectives:

1. Describe briefly various types of residency projects
2. Discuss issues that make the projects of value to:
 - a. The institution
 - b. The resident
3. Examine issues that lead to projects getting presented and published in order to enhance value to patients and the profession as well as the resident
4. Provide descriptions of effective residency project advising and mentoring so that attendees can assess the outcomes of residency projects at their institution and incorporate changes to increase the likelihood projects will be completed and disseminated

Self-Assessment Questions: (Circle one best answer or true or false)

1. Which of the following is not an example of an acceptable residency project?
 - A. Evaluation of adherence to practice guidelines for treatment of congestive heart failure.
 - B. Study of the compatibility of phenytoin in various intravenous solutions.
 - C. Impact of pharmacist-led patient counseling on adherence to treatment regimens 7 days post-discharge.
 - D. Survey of pharmacy student attitudes about the value of case-based learning in a pharmacotherapeutics course.
2. (True or False) A recent study found that administrators at academic medical center believed that having residents fostered innovative ways to provide patient care that is vital to their institution's success.
3. (True or False) Roughly 25% of residency projects submitted to the American Journal of Health-System Pharmacy are accepted for publication.

Answers: 1. (D); 2. (T); 3. (F)

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Residency Precepting Strategies Worth Sharing: Assessment That Improves Outcomes

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Resident assessment is a frequently cited finding during residency accreditation surveys. Providing good feedback and implementing plans to help residents achieve program outcomes are an integral part of the training process. This presentation discusses expectations for resident assessment and evaluation in the residency standard and the iterative resident assessment cycle for preceptors and program directors. Examples of assessment tools for feedback and developing the customized training plan will be provided. Group activities will focus on evaluating and improving resident feedback.

Learning Objectives:

1. Discuss residency accreditation standards guiding assessment and evaluation of residents.
2. Describe feedback that helps residents improve or enhance their performance.
3. Explain how preceptors and program directors use feedback to help residents achieve program outcomes.

Self-Assessment Questions: (True or False)

1. Three of the top six partial compliance findings during residency accreditation surveys were related to assessment in 2012.
2. According to the Residency Learning System Preceptors Guide, criteria-based feedback should be provided to residents that helps improve future performance.
3. Failure to mark enough goals and objectives achieved is a common issue related to providing good resident feedback.

Answers: 1. (T); 2. (T); 3. (F)

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280-1

Sleep apnea and opioids

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Opioids are a mainstay in the treatment of moderate to severe cancer pain worldwide. Well known adverse effects of these analgesics are frequently preventable or managed when adequately predicted. While previously felt to be safe and effective in this particular patient population, new evidence questions the safety of opioid use in patients with malignancy. This session will review data to both support and refute the concept that opioids may hasten death in patients with cancer through various pathophysiologic mechanisms.

Learning Objectives:

1. Describe the pathophysiologic process and differences of central, obstructive, and mixed sleep apneas
2. Explain the process in which opioids effect respiratory drive
3. Discuss recent studies suggesting increased risk of opioid use in those with sleep apnea
4. Formulate a plan to incorporate screening tools into current health-systems practice

Self Assessment Questions: (True or False)

1. Ventilation regulated via the respiratory centers in the pons and medulla are most sensitive to changes in pO₂ versus pCO₂ or pH.
2. Obstructive Sleep Apnea is best described by a condition of absent airflow AND absent ventilatory effort.
3. Opioids may contribute to sleep disordered breathing ONLY via changes in Central Sleep Apnea related changes with no effect on Obstructive Sleep Apnea related changes.

Answers: 1. (F); 2. (F); 3. (F)

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Comorbidities, Pain and Opioid Therapy

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Savvy practitioners will recognize the interplay between pre-existing comorbidities and chronic pain, or opioid-induced comorbidities. Practitioners are very familiar with opioid-related adverse effects such as the most common (constipation) and the most feared (respiratory depression). However, chronic opioid therapy has been associated with hypogonadism, which can result in a wide variety of comorbidities for both men and women. Hypothyroidism is associated with the development of pain that affects the skeletal muscle (myopathies). Inadequate levels of Vitamin D have been associated with chronic musculoskeletal pain. Participants in this session will learn about how to recognize and manage these comorbid conditions.

Learning Objectives:

1. At the end of this presentation, the participant will be able to discuss the effects of low Vit D on opiate therapy.
2. At the end of this presentation, the participant will be able to discuss the effects of hypotestosteronism on opiate therapy.
3. At the end of this presentation, the participant will be able to discuss the effects of hypothyroidism on opiate therapy.

Self-Assessment Questions: (True or False)

1. A patient with low Vit D may need less opiate doses to achieve adequate pain relief.
2. A patient with hypothyroidism may need more opiate doses to achieve adequate pain relief.
3. A patient with low testosterone levels will respond adequately to average doses of opioids.

Answers: 1. (F); 2. (T); 3. (F)

281-2

Effect of PTSD on Chronic Non-Cancer Pain

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PTSD and chronic non-cancer pain (CNCP) often exist together as co-morbidities. Patients with PTSD and CNCP can share the common symptoms of anxiety and depression, hyperarousal, fear and avoidance behavior, and reduced activity levels. The symptoms of PTSD and CNCP often evolve in a parallel fashion and the presence of PTSD and CNCP can increase the severity of either condition. The dynamics of how PTSD impacts on CNCP is unknown, however, there are multiple models employed to try and delineate the effect of PTSD on CNCP. There are recommendations that every patient with CNCP should be screened for PTSD. Of the different screening tools used to assess patients at risk for aberrant behavior with opiate medication, only the Opiate Risk Tool asks a question to screen for PTSD. Treatments for patients with both co-morbidities that have found to be beneficial include cognitive behavior therapy and eye movement desensitization and reprocessing. Medications that have been used in patients with PTSD and CNCP include tricyclic antidepressants, SNRIs, NMDA receptor antagonists, alpha adrenergic blocking agents and central alpha-2 agonists. Low dose naltrexone may be of benefit in the future.

Learning Objectives:

1. Describe the prevalence of co-morbidity of PTSD and chronic non-cancer pain (CNCP).
2. List the common symptoms of PTSD & CNCP and the impact that co-morbidity can have on symptoms of both conditions.
3. Describe the implications for assessment and implementation of therapy for patients with both PTSD & CNCP.

Self-Assessment Questions: (True or False)

1. The presence of PTSD in a patient with CNCP has an ameliorating effect on the symptoms of both conditions.
2. Every patient with CNCP should be screened for PTSD.
3. Tizandine is a good choice for a muscle relaxer in a patient with both PTSD and CNCP.

Answers: 1. (F); 2. (T); 3. (T)

281-3

Opioids and Sleep Disordered Breathing

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Opioids have long been known to affect the CO₂ and pH dependent respiratory drive in acute dosing. These affects quickly dissipate as tolerance develops and the peripheral and central chemoreceptors in the aortic and carotid bodies and midbrain compensate for changes in respiration. Perhaps more compelling is the changes on respiration that occur during sleep, in which patients are more susceptible to discreet changes that may result in either obstruction of normal airflow, reduced respiratory effort, or both. Given the tremendous prevalence of Obstructive Sleep Apnea in the US population and the contributory effects of opioids on this breathing disorder as well as that of Central Sleep Apnea, persons who are tolerant to the normal respiratory depressant effects of opioids may still be at risk for hypoxic events during sleep. Pathophysiology, risk factors, and screening recommendations will be presented to create awareness around this potentially dangerous combination.

Learning Objectives:

1. Describe the pathophysiologic process and differences of central, obstructive, and mixed sleep apneas.
2. Explain the process in which opioids affect respiratory drive.
3. Discuss recent studies suggesting increased risk of opioid use in those with sleep apnea.
4. Formulate a plan to incorporate screening tools into current health-systems practice.

Self-Assessment Questions: (True or False)

1. Ventilation regulated via the respiratory centers in the pons and medulla are most sensitive to changes in pO₂ versus pCO₂ or pH.
2. Obstructive Sleep Apnea is best described by a condition of absent airflow AND absent ventilatory effort.
3. Opioids may contribute to sleep disordered breathing ONLY via changes in Central Sleep Apnea related changes with no effect on Obstructive Sleep Apnea related changes.

Answers: 1. (F); 2. (F); 3. (F)

281-4

High-dose opioids for chronic non-cancer pain: should the sky be the limit?

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The use of opioids for chronic non-cancer pain (CNCP) has increased significantly over the past several years, and there is mounting concern about use at high doses, particularly due to a lack of long-term evidence to support this indication. Several observational studies have identified patient factors that may correlate to an increase in overdose for patients receiving high-dose opioids for CNCP, including the presence of multiple pain diagnoses, comorbid mental health disorders, concomitant use of sedative-hypnotics, and being prescribed opioids at doses ≥ 100 mg of morphine equivalents. Additional factors that can contribute to this include lack of provider knowledge on proper opioid use, patient non-adherence to therapy, and various psychological issues such as chemical coping. Initiatives to reduce the risk of opioid-related overdose deaths have been developed in certain states and health-systems; however, curtailing inappropriate prescribing patterns and preventing adverse opioid-related outcomes needs to be balanced with the considerable number of patients who continue to report under-treated chronic pain.

Learning Objectives:

1. Identify factors that may be associated with an increased risk of overdose in patients receiving opioids for CNCP.
2. Discuss the clinical implications associated with the use of high-dose opioids in patients with CNCP.
3. Given patient-specific information, analyze the risk of overdose in the setting of high-dose opioid use for CNCP.

Self-Assessment Questions: (True or False)

1. Patients are considered to be on high-dose opioid therapy if they are receiving ≥ 60 mg of morphine equivalents.
2. Factors that may contribute to increased risk of overdose in patients receiving high-dose opioids for CNCP include the presence of multiple pain diagnoses and concomitant use of sedative-hypnotics.
3. Reducing the risk of opioid-related overdose deaths will involve improving provider education, streamlining access to prescription drug monitoring programs, and increasing overdose prevention initiatives.

Answers: 1. (F); 2. (T); 3. (T)

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Case-based approach to insulin initiation and intensification: Part 1

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Diabetes has become an epidemic with 346 million people worldwide now affected. In the United States alone, we have 25.8 million children and adults with diabetes. Pharmacists need to be a critical part of the frontline of defense as the nations work together to solve this surmounting problem. This session is designed to review the physiological function of insulin. In addition the pharmacokinetic properties of various types of insulin will be reviewed for the learner to build upon and apply in the later parts of this session.

Learning Objectives:

1. Describe the diabetes epidemic.
2. Review normal physiological insulin release & insulin action.
3. List the onset, peak, and duration of: rapid-acting insulin analogs, regular insulin, NPH insulin, and long-acting insulin analogs.

Self-Assessment Questions: (True or False)

1. Insulin reduces glycogenesis.
2. Insulin secretion is much greater when the same amount of glucose is delivered orally compared to intravenously.
3. Rapid acting insulin has an onset of action of 0-15 minutes.

Answers: 1. (F); 2. (T); 3. (T)

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Case-based approach to insulin initiation and intensification: Part 2

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Diabetes has become an epidemic both within the United States and internationally. Pharmacists possess the clinical skill set and medication knowledge to be effective practitioners and educators for patients with diabetes. Using insulin therapy is becoming more common place for managing hyperglycemia, yet the pharmacodynamics and pharmacokinetics coupled with the multitude of factors which alter insulin dosing and effect are very patient specific. This session is designed to have the learner take patient specific clinical information regarding insulin regimens and self-monitoring of blood glucose (SMBG) log results, and apply clinical knowledge obtained to determine how to effectively adjust an insulin regimen.

Learning Objectives:

1. Review how the varying insulin pharmacokinetics and pharmacodynamics effect insulin dosing.
2. Compare and contrast limitations of fixed mixed dosing with non-fixed mixed dosing using a patient case.
3. Using pattern management interpret clinical information and SMBG results to determine insulin regimens

Self-Assessment Questions: (True or False)

1. Insulin stacking leading to hypoglycemia is a limitation with using regular insulin three times daily.
2. Fixed-mixed insulin preparations offer more options for optimized dosing changes.
3. For a 75-year-old T2DM patient with moderate non-proliferative retinopathy, CAD, hyperlipidemia, HTN, and osteoporosis, the A1C goal is < 7%.

Answers: 1. (T); 2. (F); 3. (F)

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Case-based approach to insulin initiation and intensification: Insulin cases

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The incidence of diabetes is increasing, and pharmacists should be well informed about the treatment of this potentially devastating disease. Glycemic control, although difficult to achieve for many patients, reduces the risks of complications. To achieve recommended glucose levels, many patients will require insulin therapy, which typically entails dose titration and extensive patient education. Additionally, in order to maximize the effectiveness, insulin therapy should be tailored to the patient's glucose patterns. However, some health care providers are adverse to using insulin because of regimen complexity and fear of hypoglycemia. Therefore, it is important for pharmacists to be able to make appropriate recommendations on insulin dosing. In this presentation, participants will apply their knowledge of insulin pharmacokinetics and normal insulin physiology, which they learned in the previous sessions, to patient cases to determine appropriate insulin adjustments.

Learning Objective:

1. Appropriately adjust insulin based on a patient's self-blood glucose monitoring results.

Self-Assessment Questions: (True or False)

1. If fasting blood glucose levels are elevated in a patient taking glargine insulin 20 units sq qhs and aspart insulin 5 units tid ac, glargine insulin should be increased.
2. If pre-dinner pre-insulin blood glucose levels are elevated in a patient taking regular insulin 10 units q am and 15 units q pm and NPH 25 units qam and 37 units qpm, then the evening dose of regular should be increased.
3. If a patient has hypoglycemia before lunch and is taking regular insulin 22 units q am and 45 units q pm and NPH 62 units qam and 56 units qpm, the morning regular should be decreased.

Answers: 1. (T); 2. (F); 3. (T)

283-1

Troubled Teen 101: Topics in Adolescent Psychiatry

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Dopheide: Introduction and Case Discussions

Adolescence is known as a time of profound change, growth and development. Psychiatric disorders and substance abuse are also known to have their onset during adolescence with 7.5% of adolescents presenting with the new onset of more than one psychiatric diagnosis in a one-year period. Maturational brain changes and the onset of psychiatric illness can contribute to higher rates of substance abuse and suicide in adolescents. This presentation will introduce the prevalence of psychiatric disorders in youth and discuss the clinical presentation of depression, attention deficit hyperactivity disorder (ADHD) and bipolar disorder in youth. Evidence based treatment options for depression, ADHD and bipolar disorder will be discussed along with recommendations for adverse effect monitoring for antidepressants, mood stabilizers and second generation antipsychotics.

Sowell: Child and Adolescent Brain Development: Implications

Human brain maturation continues dynamically throughout and beyond adolescence, and many intrinsic processes and environmental experiences help shape its ultimate form and function.

Brain imaging research supports the notion that cortical pruning of unneeded synaptic connections along with increasing myelination (evidenced by cortical thinning on MRI) both decrease plasticity while increasing cognitive efficiency in the context of longitudinal brain multimodal imaging. These brain changes during development impact impulse control, decision making, future planning and appreciation of future outcomes in typically developing individuals and in those with heavy prenatal alcohol exposure. Smaller brain volume and thicker cortex associated with fetal alcohol exposure can impair normal brain development leading to lifelong disabilities. An appreciation of normal and abnormal brain development can improve understanding of child/adolescent onset neuropsychiatric disorders.

Learning Objectives:

1. Explain how the development of the brain progresses from childhood into adulthood and how this ongoing brain development impacts attention, mood and behavior.
2. Recognize signs and symptoms of psychiatric disorders, including ADHD, substance abuse, eating disorders, mood and psychotic disorders in adolescents.

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3. Given a case of an adolescent prescribed an antipsychotic, mood stabilizer or antidepressant, determine which adverse effects are most problematic and recommend management and counseling strategies.

Self-Assessment Questions: (True or False)

1. Children whose cortex thins more over time have improved vocabulary scores compared to children with less cortical thinning.
2. Childhood onset bipolar disorder presents with more mixed episodes compared to adult onset bipolar disorder.
3. Metabolic side effects of second generation antipsychotics such as weight gain and hyperlipidemia are more common in adults compared to youth.

Answers: 1. (T); 2. (T); 3. (F)

284-1

From Drug Shortage to Order Entry Error to Device Failure: Managing a TPN Event in a Large Health System

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Errors happen. The 1999 IOM report "To Err is Human" and its alarming statistics are well known. Typically an error occurs as a distinct event impacting one patient. What happens when a drug shortage leads to a software entry error that causes a large-scale event over several months impacting many patients? We will present a case in which a single human error resulting from a purchasing anomaly caused by a drug shortage, compounded by device and process design failures, put hundreds of TPN patients in danger. We will describe this event from start to finish and focus on drug shortages and human factors as the root cause. Discussion will include the identification, investigation, mitigation and application of a Just Culture. Communications with the system's leadership, physicians, consultants, regulatory bodies, governing board and ultimately its patients will be covered.

Learning Objectives:

1. Identify common pharmacy human factors failure points which could lead to extensive system errors.
2. Define process improvements which can be used to effectively prevent the identified potential failures.
3. Describe the safety processes which should be required to replace drugs that cannot be obtained due to shortage
4. Describe leadership strategies and tactics to effectively handle a serious medication error or other patient safety event
5. Summarize the "Just Culture" concept and its implementation during a serious medication error.

Self-Assessment Questions:

1. There are adequate safety checks in the automated compounder to prevent wrong drug/wrong concentration errors when adding new drugs to compounder formulary. (True or False)
2. Identification, review and evaluation of a TPN medication error can require:
 - a. Pharmacists
 - b. Prescribers
 - c. Nutritionists
 - d. Nurses
 - e. Leaders
 - f. All of the above
3. Which of these factors may have been a setup for inattentional blindness in this case?
 - a. Pharmacy focuses on ingredient name and volume but not the concentration

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- b. Staff believes they only use standard electrolyte concentrations
 - c. A practice of conveying information about the drug name and volume but not the concentration
 - d. The high level of trust in staff members and expectation that trusted people do not make mistakes
 - e. Product labeling issues
 - f. A and B only
 - g. A, B, D only
 - h. C and E only
 - i. None of the above
 - j. All of the above
4. (True or False) In regards to patient safety, a pharmacy technician preparing a PN solution needs not have his or her work independently checked as long as they have utilized a checklist.
5. A “Just Culture” in a healthcare environment can utilize:
- a. Associate survey measurements
 - b. Blame for medical errors
 - c. Training and education
 - d. Support for associates involved in errors
 - e. All of the above except “b”.

Answers: 1. (f); 2. (f); 3. (j); 4. (f); 5. (e).

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Expecting the unexpected: treatment of opiate dependence in pregnancy

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Opioid use in pregnancy includes the use of heroin and the misuse of prescription opioid medications. Untreated opioid dependence during pregnancy can have devastating consequences to a developing fetus. Methadone maintenance has been the standard of care; however its use can lead to significant neonatal abstinence syndrome. Emerging evidence supports the use of buprenorphine for opioid maintenance during pregnancy. During the intrapartum and postpartum period, special considerations are needed for women who are opioid dependent to ensure appropriate pain management, to prevent relapse and decrease risk of overdose. Breastfeeding should be encouraged in women who receive buprenorphine or methadone maintenance in the absence of HIV infection or other contraindications. Use of buprenorphine or methadone in pregnancy puts the neonate at risk of abstinence syndrome, which is characterized by hyperactivity of the central and autonomic nervous systems. This educational session will contrast the benefits and disadvantages associated with use of buprenorphine or methadone in pregnant women.

Learning Objectives:

1. Evaluate evidence-based literature regarding treatment of opioid dependency during pregnancy with buprenorphine or methadone.
2. Discuss the management of intrapartum and postpartum pain in opioid dependent patients.
3. Examine the incidence and treatment of neonatal abstinence syndrome associated with buprenorphine and methadone use in pregnancy.

Self-Assessment Questions:

1. A 31-year-old woman has been stabilized on buprenorphine/naloxone for opioid dependence for the last 2 years, and says that it “saved her life.” She just found out she is 7 weeks pregnant. What would you recommend?
 - A. Stop medication immediately
 - B. Switch medication to buprenorphine alone
 - C. Switch medication to methadone maintenance
 - D. Continue buprenorphine/naloxone at current dose
2. A 28-year-old woman maintained on methadone is experiencing mild to moderate pain 36 hours after a normal vaginal birth. What would you recommend?
 - A. Increase the methadone dose
 - B. Add buprenorphine to methadone
 - C. Ibuprofen 600 mg orally every 6 hours
 - D. Maintain current dose of methadone

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3. A 27-year-old woman has been addicted to oxycodone and hydrocodone for the past 6 years. With the support of her family and new husband, she wants to begin outpatient opioid maintenance with counseling and strict monitoring parameters. In planning for the future, the patient's husband asks about the risks associated with neonatal abstinence with buprenorphine and methadone. Which of the following is most accurate about opiate withdrawal in neonates whose mothers are treated with methadone or buprenorphine based on the Maternal Opioid Treatment: Human Experimental Research (MOTHER) trial?
- A. Duration of symptoms of withdrawal were shorter with methadone
 - B. Buprenorphine had longer stays in the hospital
 - C. Buprenorphine had decreased severity of neonatal abstinence symptoms
 - D. Methadone required less medication given to neonates

Answers: 1. (B), 2. (C), 3. (C)

286-1

Working with a medical writer

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The value of knowledge and expertise is increased when communicated by publication. Writing for publication maintains and enhances personal knowledge and contributes to academic or professional advancement by showcasing expertise, communicating new concepts, and augmenting recognition of work. Knowledge dissemination is a positive professional contribution. For all its benefits, publication is a time-consuming process with many steps — from concept, design, outline creation, multiple drafts and revisions, and publication submission to publication. Professional medical writers can drastically improve the efficiency of publication. A professional medical writer assists authors in developing, submitting, and publishing medically accurate documents, and accurately captures and reflects the authors' opinion and interpretation of the data. Generally, medical writers are not authors. The criteria for authorship, which have been defined by the International Committee of Medical Journal Editors (ICMJE) Uniform Requirements for Manuscripts, set forth these requirements for authorship: substantial contributions to conception and design or acquisition of data, or analysis and interpretation of data, and final approval of the version to be published. Other contributors to the publication, such as medical writers, statisticians, and graphic designers should be named in the acknowledgments section of a publication. A *ghost author* is a person who meets criteria for authorship, but is not listed as an author. A *guest author* is a person who does not meet criteria for authorship, but is listed as an author. A *ghostwriter* is an unacknowledged person who writes the publication. Ghost authoring, guest authoring, and ghostwriting are unethical and unacceptable practices. Working with a professional medical writer may create an occasional negative perception of working as a ghostwriter paid by a pharmaceutical company. Transparency validated by proper acknowledgment is important to reverse this misperception. Fully acknowledged professional medical writers can make the publication process more efficient by assisting with background research, reducing editing time by improving the clarity and readability of the text, and, typically, strengthening the publications by adding a unique set of skills that act synergistically with investigators and authors alike.

Learning Objectives:

1. Differentiate between ghost writing and professional medical writing.
2. Describe reasons why pharmacists should contribute to medical publications.
3. List contributors to a manuscript: who should be authors and who should be acknowledged?

Self-Assessment Questions:

1. Which of the following are reasons for pharmacists to write?
 - A. Personal knowledge enhancement or maintenance

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- B. Academic or professional advancement
 - C. Showcase expertise
 - D. Contribution to profession
 - E. All of the above
2. (True or False) The International Committee of Medical Journal Editors (ICMJE) Uniform Requirements for Manuscripts defines authorship.
 3. (True or False) “Medical writer” is synonymous with “ghostwriter.”

Answers: 1. (E); 2. (T); 3. (F)

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Education, organizations, certifications in medical communications

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More often than not, a career in medical communications occurs by chance rather than formal training. Many medical communications professionals have scientific or medical degrees, but others enter the field with a liberal arts background. Characteristics of a successful medical communications professional include the ability to communicate scientific information and simultaneously manage multiple projects. Familiarity with medical databases and basic understanding of biostatistics are useful. Medical communications, while providing a professional service, offers the opportunity for learning new concepts. Avenues for contributing to the body of medical knowledge are plentiful. Examples include writing an article for a professional or lay press newsletter, commenting on an article in a medical journal or newspaper via a letter to the editor, writing a policy or position statement for a professional organization, and submitting a case report or article to a medical journal; all of these provide professional benefit, self-satisfaction, and insight into a medical publications career. Writing these publications generates feedback, with comments from peers, coauthors, editors, reviewers, publishers, and other readers. Comments should be regarded as constructive criticisms and an opportunity to improve personal writing skills. Several professional organizations, including the International Society of Medical Publications Professionals, American Medical Writers Association, International Publication Planning Association, and Drug Information Association, offer educational programs, workshops, and certifications in the various aspects of medical communications.

Learning Objectives:

1. List resources for current and aspiring medical writers.
2. Characterize the successful medical communications professional.
3. Describe opportunities for writing in professional and lay publications.

Self-Assessment Questions:

1. (True or False) American Medical Writers Association offers workshops in basic grammar and composition.
2. (True or False) A career in medical publications requires a master's degree.
3. Writing which of the following is (are) opportunities to write to "test the waters?"
 - A. Short newsletter article
 - B. Training manual about a pharmacy procedure
 - C. Letter to the editor
 - D. All of the above

Answers: 1. (T); 2. (F); 3. (D)

286-3

Regulations and guidelines for medical publications

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Medical publications form the basis of evidence-based clinical practice. Peer-reviewed publications are also important in formulary decision-making. Therefore, it is important that medical publications are ethically written and in compliance with current guidelines and legislation. Although the clinical trials process has been highly regulated for many years, regulations and guidelines for medical publications were developed only a few years ago. One set of guidelines, proposed by the International Committee of Medical Journal Editors (ICMJE), advises on authorship criteria and has been universally adopted. Other guidelines, such as the Good Publication Practice (GPP and GPP2) and Committee on Publication Ethics (COPE), provide guidance on publication of all trial results, role of all publication contributors, and all aspects of publication ethics. Guidelines have also been developed on exactly how to report different types of studies, e.g. Consolidated Standards of Reporting Trials (CONSORT) provides guidance on how to report each section of a randomized clinical trial publication. Legislations governing publications include the United States Food and Drug Administration Amendments Act (FDAAA), which mandates that pharmaceutical and device companies must register all clinical trials conducted in the United States and report and publish the results of these data. Noncompliance with this mandate is associated with severe penalties. Moreover, this and other national/international legislation have important implications for medical publications. This presentation will explain why and which regulations and guidelines were developed for publications. Practical tips for medical publications will also be presented.

Learning Objectives:

1. Describe regulations and guidelines governing medical publications.
2. Explain publication authorship criteria.
3. Gain practical tips on developing ethical medical publications.

Self-Assessment Questions: (True or False)

1. It is okay for the primary results of a clinical trial to be published in two different journals.
2. The CONSORT provides guidance on how to report each section of a publication for randomized clinical trials.
3. An author for a publication needs to meet all three ICMJE criteria.

Answers: 1. (F); 2. (T); 3. (T)

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Opportunities in medical communications: Getting started

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The pharmacy profession is on the rise, with more than 60,000 students enrolled in a pharmacy school each year and enrollment continuing to rise for the past 11 consecutive years. The majority of PharmD graduates have historically pursued a career in either retail-based pharmacy or hospital pharmacy, with only a small percent of graduates pursuing other career opportunities, such as nursing home, academic, or clinic-based pharmacy. Another career opportunity not widely known to pharmacy graduates is the field of medical communications, which is a diverse field that allows pharmacy graduates to use and build on clinical and pharmacologic knowledge obtained in school. The pharmacy school graduate who is interested in pursuing the field of medical communications can explore many career options, such as strategic planning, medical writing, client relations, copyediting, and outcomes research. Strategic planning involves the development of a scientific strategy and publication plan, and medical education initiatives, including promotional medical education and advertising. Scientific writing can be geared to personal subject matter of interest. Scientific writers assist in guiding the development of scientific content that benefit both clinicians and patients. If interested in outcomes research, writers can work in outcomes research review and guide studies on the outcomes of health care interventions and treatment practices. Regulatory medical writing and advertising copywriting are among other options available. In client relations, team members partner with writers and clients from pharmaceutical or medical device companies to ensure that publications satisfy the unmet needs in the medical literature, publications are submitted to appropriate journals and congresses, and all guidelines for ethical publication and documentation are followed. Copyeditors conduct peer reviews and correct materials, such as manuscripts or slide decks. Pharmacists interested in these aspects of medical publications should consult the checklist of questions provided in this presentation to assess if medical communications might be a good career option.

Learning Objectives:

1. Describe the types of medical communications career opportunities available for individuals with a degree in pharmacy.
2. Explain the field of medical communications.
3. Assess areas of skill that are required for a career in medical communications.

Self-Assessment Questions:

1. (True or False) Most graduating pharmacists pursue a career in retail or hospital pharmacy.
2. What type of career opportunities can a PharmD graduate anticipate in the field of medical communications?
 - A. Medical writing

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- B. Client relations
 - C. Outcomes research
 - D. Graphic artist
 - E. A,B,C
 - F. All of the above
3. (True or False) The medical communications field allows someone to work with clinical data, partner with opinion leaders, and assist with development of medical publications.

Answers: 1. (T); 2. (E); 3. (T)

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Strategies for Reducing Medication Errors in Anesthesia

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Drug administration errors are known to be a leading cause of patient harm throughout the world. This is a problem of particular concern in anesthesia due to the large number and various types of potent and potentially harmful drugs given during an anesthetic procedure. The factors that can promote or limit the occurrence of drug errors during anesthesia are only partially understood, and it remains unclear what causal relationships that local or cultural differences in workplaces may have in error rates. Studies from different countries around the world, using a comparable and scientifically sound method, are therefore valuable and important in better understanding this significant source of iatrogenic harm. This lecture reviews the history of medication error literature, addresses challenges faced in the reporting of errors, provides the most current worldwide anesthesia-specific medication error data, and offers implementation strategies that can lead to proven reductions in the occurrence of anesthesia medication errors.

Learning Objectives: At the end of this presentation, the learner will be able to:

1. Describe the incidence and types of medication errors in anesthesia
2. Discuss reporting of medication errors
3. Discuss ways to prevent medication errors in anesthesia

Self-Assessment Questions:

1. What is the most commonly reported incidence of medication errors in anesthesia?
 - a. 1: 840
 - b. 1: 1,000
 - c. 1: 133
 - d. 1: 550
2. Voluntary reporting of errors may under-estimate the actual incidence of medication errors. (True or False)
3. Ways to prevent medication errors in anesthesia include:
 - a. Customized/organized workspaces
 - b. Pre-filled and barcoded syringes with an anesthesia information management system (electronic record)
 - c. Purpose-designed drug drawers
 - d. Auditory and visual alerts
 - e. All of the above

Answers: 1. (c); 2. (T); 3. (e)

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Compounding conundrums: hazardous drugs

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Strong evidence of continued occupational exposure to hazardous drugs (HD) is provided in updated studies on surface contamination with HD residue; HD drug uptake into exposed workers and resulting chromosomal changes; and 2012 data on reproductive risks. Activities to promote increased awareness of the issue and to provide guidance to improve mitigation are ongoing by regulatory agencies and accreditation organizations such as the National Institute for Occupational Safety and Health (NIOSH), the Occupational Safety and Health Administration (OSHA) and The Joint Commission (TJC). How effective are these activities? Those conundrums, as well as other thought-provoking themes, are discussed. A number of improved work practices may help reduce the overall risk of exposure to HD drug residue. The concept of safety as only patient safety must be rethought. Worker safety should not be sacrificed for patient safety. A focus on **safety**, not occupational safety or patient safety, but *just safety*, must be advocated by workers and employers alike for there to be any true advancement in reducing worker exposure to the dangers of hazardous drugs.

Learning Objectives:

1. Describe at least two worker health concerns with handling exposure to hazardous drugs.
2. Identify several activities undertaken by NIOSH, OSHA and TJC to promote awareness of the dangers of exposure to hazardous drugs.
3. List three improved work practices in the safe handling of hazardous drugs.

Self-Assessment Questions: (True or False)

1. There are no worker health risks in handling hazardous drugs.
2. NIOSH, OSHA and TJC all have requirements or guidance on the safe handling of hazardous drugs.
3. Improved work practices may help reduce the overall risk of exposure to hazardous drug residue.

Answers: 1. (F); 2. (T); 3. (T)

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The art of precepting: It's not as easy as it looks

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Precepting students and residents can prove very challenging. Many pharmacists have not had formal training in how to teach, how to give feedback, and/or how to deal with difficult learners. With increased needs for experiential training sites around the United States, the demand for pharmacists to serve as preceptors is at an all-time high. In this time of need, it is paramount that schools and colleges of pharmacy not only recruit preceptors but also provide them with quality training to equip them with the tools they will need for their future teaching experiences. Getting ready for a student or resident rotation is much like preparing for a race. It is critical that you prepare (train), provide orientation (starting line), deliver the rotation (running race), and provide a final assessment (finish line). There are many skills required to accomplish these steps and throughout this presentation you will be provided with valuable insight into these skills and how they should be utilized to assure an optimal learning experience.

Learning Objectives:

1. Describe effective teaching strategies to engage students on pharmacy practice experiences.
2. Describe innovative ways to provide orientation and feedback to students during their pharmacy practice experiences.
3. Identify practical solutions to theoretical student-teacher issues through challenging case scenarios.

Self-Assessment Questions: (True or False)

1. Providing a quality orientation is critical to delivery of a successful pharmacy practice experience.
2. It is not necessary to prepare in advance for an introductory pharmacy practice experience.
3. Getting to know your learner will help to prevent potential challenges during a rotation experience.

Answers: 1. (T); 2. (F); 3. (T)

295-1

Early and late-onset sepsis: strategies for diagnosis and treatment

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Neonatal sepsis is a common phenomenon in patients admitted to the NICU. Sepsis is typically separated into early-and late-onset sepsis and these patterns are attributed to different organisms and different treatment strategies. Early onset sepsis is most commonly thought to be associated with group B streptococcus and E coli, prompting treatment with ampicillin and gentamicin in most NICUs. The likelihood of E coli resistant to ampicillin as an etiology increases as gestational age decreases. In neonates ≤ 28 weeks gestation should be considered at risk for ureaplasma infection as well. Diagnosis of infection is confounded by high rates of false negative blood cultures due to low-colony-count sepsis, and the small volume of blood collected for culture. Sample timing for diagnostic strategies is critical and will also be reviewed. Other diagnostic tools have limitations also, and this presentation will address several of these including newer tools such as procalcitonin and PCR. Late onset sepsis may include gram-positive or gram-negative bacteria and antibiotic strategies to treat for these possibilities will be discussed. In addition to antibiotic selection is the need for rapid distribution and administration of antibiotics, especially if hypotension is present. Pharmacodynamic optimization early in the use of commonly used antibiotics such as gentamicin and vancomycin should help with survival and minimizing development of antibiotic resistance. These strategies as well as limitations of dosing handbook recommendations will be discussed. Immunosuppression strategies can also help with sepsis management, and the possible role of this strategy by using dexmedetomidine in neonates will be discussed.

Learning Objectives:

1. Select appropriate antibiotics for bacteria likely to be involved in early- and late-onset sepsis.
2. Utilize optimum pharmacokinetic and pharmacodynamics strategies for dosing gentamicin and vancomycin in neonates.
3. Understand diagnostic strategies for neonatal infection, and describe optimum blood sample selection and collection.

Self-Assessment Questions: (True or False)

1. Preterm infants below 28 weeks are more likely to have E. coli infections resistant to ampicillin than late preterm infants.
2. The optimum time to collect blood for CBC and procalcitonin is within the first hour of life.
3. Routine dosing guidelines from standard dosing handbooks are usually reliable for aminoglycosides and vancomycin.

Answers: 1. (T), 2. (F), 3. (F)

295-2

Management of progressing sepsis in the neonate

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Late-onset sepsis in the neonate results in significant mortality and morbidity. Several adjunctive therapies may improve outcome. Immune globulin is an essential component of the humoral immune response and levels are low in premature neonates. Intravenous immune globulin does not decrease mortality or major disability from neonatal sepsis, and may increase the risk of necrotizing enterocolitis. Neonates have a smaller neutrophil storage pool than older subjects, and immature neutrophils have decreased function. Both may be due to decreased granulocyte colony-stimulating factor concentrations in premature neonates. Administration of recombinant granulocytes colony-stimulating factor increases neutrophil concentrations, but does not impact mortality. Disseminated intravascular coagulation may result from neonatal sepsis. Antithrombin III is a promising potential therapy, although further investigation is required. Hypotension or cardiac dysfunction may result from neonatal sepsis. Fluid replacement is first-line therapy, and norepinephrine may be useful to treat hypotension after volume resuscitation.

Learning Objectives:

1. Recommend the appropriate use of granulocyte colony-stimulating factor and intravenous immune globulin.
2. Identify disseminated intravascular coagulation and evaluate the role of antithrombin III.
3. Define hypotension and recommend management.

Self-Assessment Questions: (True or False)

1. Intravenous immune globulin improves mortality from neonatal sepsis.
2. Disseminated intravascular coagulation may be identified by increased d-dimer, decreased antithrombin III, and laboratory markers of organ dysfunction.
3. Fluid boluses are the first-line therapy for hypotension from neonatal septic shock.

Answers: 1. (F); 2. (T); 3. (T)

296-1

Critical Updates in Pediatrics, Part 1: new pediatric guidelines on community-acquired pneumonia

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Updated guidelines on the treatment of community-acquired pneumonia in pediatric patients were released in 2011. These guidelines reflect shifts in organism susceptibility in the community sector for common pathogens. When determining overall treatment of pediatric patients with community acquired pneumonia, differences must be taken into account, including inpatient versus outpatient, immunized or not, and related co-morbidities. Oral step down therapy is often an option and the related duration of therapy may vary depending on presence of infectious complications and initial presentation.

Learning Objectives:

1. Define community acquired pneumonia and the associated risk factors and etiology in pediatric patients.
2. Review the new pediatric guidelines related to such pneumonias focusing on the pharmacotherapy.
3. Differentiate between inpatient and outpatient therapy in relation to antibiotic choice, route and duration.

Self-Assessment Questions: (True or False)

1. Amoxicillin is the drug of choice for a pediatric patient with community-acquired pneumonia who is not fully immunized.
2. Viral pathogens are the most common cause of community acquired pneumonia in preschool aged children.
3. Ten day courses of antibiotic therapy are acceptable for community acquired pneumonia, even in cases with associated empyema.

Answers: 1. (F); 2. (T); 3. (F)

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Critical updates in pediatrics, pt. 1: guidelines on UTI, pneumonia, and cardiovascular risk

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There is a paucity of treatment guidelines available for disease states in pediatric patients when compared to adult patients. Recently, a new evidence-based guideline was released related to the diagnosis and treatment of pediatric patients, age 2 months to 2 years, with a urinary tract infection. This is important to utilize in order to improve care for the pediatric patient due to their specificity for the population involved and the ever changing antimicrobial resistance patterns identified. Key differences from previous guidelines will be discussed in the program.

Learning Objectives:

1. Compare and contrast the 1999 and 2011 pediatric urinary tract infection clinical practice guidelines focusing on treatment strategies.
2. Determine risk factors that are characteristics of a urinary tract infection in male and female pediatric patients.
3. Develop a pharmacotherapy management plan for pediatric patients with urinary tract infections.

Self-Assessment Questions:

1. (True or False) Pyuria and the presence of at least 50,000 CFU are diagnostic of a UTI in pediatric patients.
2. Which of the following is a risk factor for an UTI in female infants?
 - A. African American race
 - B. Age younger than 6 months
 - C. Duration of fever of 2 days or more
 - D. Presence of another cause of fever
 - E. All of the above
3. (True or False) Intravenous antibiotics are more effective for treatment of UTI than oral antibiotics.

Answers: 1. (T); 2. (C); 3. (F)

296-3

Cardiovascular risk reduction in children and adolescents

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In 2011, the National Heart, Lung, and Blood Institute released guidelines for cardiovascular health and risk reduction in children and adolescents. The guidelines identified certain behaviors and risk factors present during childhood which have been found to accelerate the progression of atherosclerotic cardiovascular disease in adults. Specifically, the identification, assessment and management of obesity, hypertension, and dyslipidemia will be discussed. Although lifestyle modifications play an important role, medications might also be indicated to manage certain risk factors based on the child's age and cardiovascular risk profile.

Learning Objectives:

1. Given a pediatric patient, identify all risk factors associated with the development of cardiovascular disease
2. Identify three new recommendations for the prevention of cardiovascular disease in pediatric patients
3. Given a pediatric patient, recommend a management plan for three risk factors to prevent cardiovascular disease

Self-Assessment Questions:

Please use the following case to answer the questions:

ND is an 11 year old girl who presents to clinic for a well-child visit. She recently started smoking cigarettes. Her BMI was determined to be in the 90th percentile for age, gender and height. Her average blood pressure was 140/90 mmHg and average fasting lipid panel was: TC = 200 mg/dL; LDL = 120 mg/dL; HDL = 40 mg/dL; TG = 200 mg/dL. Her fasting blood glucose is 110 mg/dL.

1. Which of the following risk factors associated with the development of cardiovascular disease are present in ND?
 - A. Tobacco exposure, metabolic syndrome, and overweight
 - B. Dyslipidemia, hypertension and obesity
 - C. Tobacco exposure, hypertension, overweight
 - D. Type 2 diabetes mellitus, hypertension, tobacco exposure
2. (True or False) According to the NHLBI guidelines, omega-3 fish oil should be started immediately in ND.
3. ND would like to start something to help her lose weight. According to the NHLBI guidelines, which of the following would be an appropriate treatment plan based on ND's BMI and cardiovascular risk profile?
 - A. Lifestyle modifications only
 - B. Lifestyle modifications + Metformin 1000 mg PO twice daily
 - C. Lifestyle modifications + Orlistat 120 mg PO three times a day

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D. Lifestyle modifications + Sibutramine 5 mg PO daily

Answers: 1. (C); 2. (F); 3. (A)

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Pediatric heart failure: like adult heart failure, only different

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Heart failure is estimated to affect about 5.8 million people in the United States, of which only 12,000 – 35,000 are pediatric patients. There are similarities and differences between adult and pediatric heart failure, with etiology being the most notable difference. The small sample size and heterogeneity of underlying etiologies makes large randomized placebo-controlled clinical trials difficult to conduct in pediatric patients. In spite of this, there are a number of treatment strategies available for management of pediatric heart failure based on clinical experience, extrapolation from adult data, and an increasing attempt to conduct multicenter pediatric trials. Current standard therapies will be reviewed, with a focus on updates since the latest guidelines. Options for future therapies will also be identified.

Learning Objectives:

1. Compare the etiologies of pediatric and adult heart failure.
2. Describe the role of standard therapies in the treatment of pediatric heart failure.
3. Identify potential new therapies in the treatment of pediatric heart failure.

Self-Assessment Questions: (True or False)

1. Congenital heart disease is the most common cause of heart failure in infants.
2. Angiotensin-converting enzyme inhibitors and beta-adrenergic blockers are recommended in all patients with evidence of heart failure.
3. Vasopressin antagonists are a potential future therapy for pediatric heart failure.

Answers: 1. (T); 2. (F); 3. (T)

297-2

New Treatment Options for the Patient with Cystic Fibrosis

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Cystic fibrosis (CF) is an inherited, life-shortening, multi-organ system disease affecting children and an ever-increasing adult population. CF is caused by genetic mutation of the CF transmembrane regulator protein (CFTR) which results in a dysfunctional chloride channel and altered regulation of water and electrolyte transport in exocrine glands throughout the body, particularly in the lungs and gastrointestinal tract. Until recently, CF therapies only targeted control of CF symptoms, disease manifestations, and secondary comorbidities. Ivacaftor is the first CFTR potentiator therapy developed to treat underlying CF disease and is effective as add-on therapy in patients with at least one *G551D-CFTR* mutation. Clinical evidence of safety and efficacy is evaluated, and practical therapeutic and monitoring guidelines are reviewed to guide clinicians in this new drug therapy management for CF patients.

Learning Objectives:

1. Review the therapeutic application of ivacaftor in cystic fibrosis patients with the *G551D-CFTR* gene mutation.
2. Recommend appropriate monitoring parameters for ivacaftor therapy.
3. Identify key medication education points for patients on ivacaftor.

Self-Assessment Questions: (True or False)

1. Ivacaftor is a recommended therapy for cystic fibrosis patients with the *deltaF508-CFTR* gene mutation.
2. Liver function tests should be monitored quarterly during the first year of therapy with ivacaftor.
3. Ivacaftor should be taken on an empty stomach.

Answers: 1. (F); 2. (T). 3. (F)

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Strategies for Success as Faculty – Prospective of a Department Chair

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Becoming a faculty member can be a highly rewarding career. It is a career that creativity is valued, has varied responsibilities with high autonomy, requires continued professional and personal development, has a high quality of life, and is the best job in the world. When looking for candidates for faculty positions, department chairs want people who will be successful based on their personal and professional knowledge, skills, abilities, and attitudes. Basic qualifications include an ASHP accredited PGY1 and PGY2 residencies for non-tenure track positions and a PGY1 residency and rigorous research fellowship of 2-3 years for a tenure track position. Success in the position is based on performance in research and scholarship, teaching, clinical service, service to the college, university, and profession, and collegiality. The search process can be challenging, but with good preparation, interview skills, and developed credentials, the candidate will be successful. Advice is provided on key factors to understand prior and during the interview and during negotiations for a position.

Learning Objectives:

1. Describe two expectations that chairs have for faculty candidates.
2. List the residency requirements for a non-tenure track faculty position.
3. Describe the focus of the interview seminar.

Self-Assessment Questions: (True or False)

1. Two expectations of department chairs are clinical expertise and short-term focus.
2. A minimum of ASHP Accredited PGY1 and PGY2 residencies should be completed by a non-tenure track faculty candidate.
3. The focus of the interview seminar should be on clinical service.

Answers: 1. (F); 2. (T); 3. (F)

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Starting Your Career as a Pharmacy Faculty Member: Opportunities for Faculty Members in Academic Pharmacy

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Academic pharmacy provides opportunities for a fulfilling career through challenging work, as well as opportunities for personal and professional growth, influence on people's lives, and for discovery that creates new knowledge. The environment for an academic pharmacy career has changed in recent years with the greater number of pharmacy colleges and schools and expansion of existing programs. Colleges and schools differ by whether they are at academic medical centers or large comprehensive universities, or whether they are public or private, or research or teaching intensive. Pharmacy education has taken on more of a business-like, customer-oriented approach to its mission. Faculty within colleges may be tenure-track or non-tenure track and may have academic-year or calendar-year appointments. To be successful in either track requires recognition of the attributes of a successful faculty member. Descriptors of key attributes include passion, communication, independence, self-motivation, and work ethic. It is important to develop personal networks to support a career. Other important factors in a career are support from your employer, association with colleagues, opportunities to grow, and adaptability to changing situations. An academic mindset is necessary to make the most of opportunities in an academic career.

Learning Objectives:

1. Identify opportunities for a successful career in academics.
2. Describe the current status of pharmacy education in the US.
3. Describe the attributes of a faculty member that promote career success.

Self-Assessment Questions:

1. Approximately how many PharmD graduates will there be in 2014?
 - A. 6,500
 - B. 8,500
 - C. 10,500
 - D. 13,500
2. The highest number of college of pharmacy faculty members are:
 - A. Basic, translational, and clinical pharmaceutical scientists
 - B. Practice faculty
 - C. Social and administrative pharmacy faculty
3. Which one of the following are considered positive aspects of an academic career?
 - A. Flexible time
 - B. Values creativity
 - C. Travel to meetings

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D. All of the above

Answers: 1. (D); 2. (B); 3. (D)

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300-3

A practitioner's guide to a winning career in patient care, teaching, and scholarship

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A career in academic pharmacy provides a unique opportunity to develop and balance a clinical practice site and teaching responsibilities. Teaching, pharmacy practice, service and scholarship make up the core foundation of a faculty position. The roles and responsibilities of individual faculty members are detailed in one's personal job description. The ability to find balance in these areas is critical for harmony in one's career and personal life. Seeking and establishing mentors is crucial to a successful career and this is evident with the influx of mentoring programs offering guidance in professional development and promotion of faculty members. Networking helps cultivate relationships and opportunities for collaboration in the areas of scholarship. Setting goals and reevaluating them at specific intervals will help faculty members develop their interest, purpose and area(s) of scholarship. Academic pharmacy allows one to educate, engage and empower pharmacy students, medical practitioners, patients and colleagues. This environment creates life-long learners who are actively engaged in the profession.

Learning Objectives:

1. Identify potential benefits and challenges associated with a career in academia.
2. Describe ways to successfully meet obligations to both a school of pharmacy and a practice site.
3. Share strategies to enhance one's professional career in an academic setting.

Self-Assessment Questions:

1. Which of the following responsibilities are integrated into clinical faculty members' job descriptions?
 - A. Teaching
 - B. Service
 - C. Scholarship
 - D. Pharmacy Practice
 - E. All of the above
2. (True or False) Balancing roles between clinical practice sites and schools of pharmacy is key to a successful career.
3. (True or False) Multiple mentors from different backgrounds can assist a faculty member with career development.

Answers: 1. (E); 2. (T); 3. (T)

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301-1

What's Your Definition of Clinical Pharmacy Leadership? Empowering Yourself for Advancement: Clinical Advancement: Establishing Yourself as a Clinical Leader

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Clinical pharmacy leadership is difficult to achieve and presents many challenges for both new and established clinical pharmacists. It can be particularly difficult for new clinical pharmacists to identify these challenges and develop strategies for confronting them early in their careers. This presentation will focus on the challenges clinical pharmacists commonly encounter on the path towards clinical leadership. It will also describe the skills necessary to overcome these challenges and provide examples of clinicians who despite many challenges have advanced to clinical leadership positions.

Learning Objectives:

1. Identify qualities that are common to clinical pharmacy leaders.
2. List potential challenges for new practitioners to advancing clinically.
3. Identify strategies for overcoming common challenges to advancing to clinical leadership roles.

Self-Assessment Questions:

1. (True or False) An important characteristic of a clinical leader is a commitment to the continuous development of clinical knowledge and skill
2. Goals that are set towards developing as a clinical leader should have all of the following characteristics EXCEPT:
 - A. Specific
 - B. Measurable
 - C. Achievable
 - D. Relevant
 - E. Transient
3. (True or False) Finding mentorship, networking with colleagues and setting goals for development are all important components of the clinical leadership process

Answers: 1. (T); 2. (E); 3. (T)

301-2

What's Your Definition of Clinical Pharmacy Leadership? Empowering Yourself for Advancement: Clinical Leadership: Early Steps and Challenges

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Clinical pharmacy leadership is hard to define and may take many forms. For example, clinical pharmacy leaders could be those initiating and developing novel roles for clinical pharmacists, or those that have attained advanced positions in professional societies, or those clinical experts that have contributed to writing clinical practice guidelines. It is particularly challenging for new clinical pharmacists to identify the early steps necessary to advance themselves clinically towards achieving these types of leadership roles. This presentation will define clinical leadership, distinguishing it from other pharmacy leadership positions, and provide new practitioners with information on the initial steps they can take early in their careers towards achieving clinical leadership roles.

Learning Objectives:

1. Define clinical pharmacy leadership
2. Distinguish clinical pharmacy leadership from other pharmacy leadership positions
3. Identify steps new practitioners can take early in their careers towards achieving clinical leadership roles

Self-Assessment Questions:

1. (True or False) A clinical pharmacy leader is committed to the continuous development of their clinical knowledge, the progression of their clinical practice and the overall advancement of clinical pharmacy through professional service and scholarly activity.
2. (True or False) Advancing as a clinical leader requires a focus on two factors only: scholarship and service.
3. (True or False) The main goal of scholarly activity is to fulfill requirements for promotion.

Answers: 1. (T); 2. (F); 3. (F)

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302-1

How to be an author without really trying

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Authorship can be intimidating for new practitioners who are trying to expand their professional presence. Opportunities are often missed and manuscript development and submission pushed back for other daily responsibilities. By thinking outside the box and finding opportunities within the already required daily professional tasks, practitioners can incorporate writing and publication into their schedules. By collaborating with other professionals, selecting realistic projects, and targeting the appropriate audience, new practitioners can simplify the writing process and increase their likelihood of submitting and publishing a manuscript. Importantly, transforming daily tasks into authorship opportunities will minimize barriers such as the perceived lack of time and opportunity for publication.

Learning Objectives:

1. Identify writing opportunities that exist in already defined daily activities.
2. Recognize basic steps in the writing process to overcome seemingly overwhelming barriers.
3. Develop an action plan that will incorporate daily professional responsibilities into realistic authorship opportunities.

Self-Assessment Questions: (True or False)

1. Collaboration with other pharmacists and health care professionals can enhance a manuscript and allow for more timely submission.
2. The target journal should be selected early on so that the manuscript can be written towards a target audience.
3. New practitioners should postpone writing until they have at least 5 years of clinical experience.

Answers: 1. (T); 2. (T); 3. (F)

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302-2

Leaders education – caution learning to lead

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Leadership can be overwhelming initially for new practitioners. Establishing a specific leadership development plan with steps and goals will make becoming an effective leader more achievable. In addition, constructing a leadership network composed of mentors and colleagues can provide guidance and assistance in successfully implementing the development plan. In leadership, experience is an important teacher. The more time young leaders spend honing a variety of skills in low stakes environments and situations, the more calm and confident they will feel and the better they will be able to react to challenging leadership positions.

Learning Objectives:

1. Identify individuals who make can make up a professional network.
2. Develop a stepwise approach to leadership development.
3. Differentiate among the types of leadership opportunities.

Self-Assessment Questions: (True or False)

1. Mentors and colleagues make up your professional network.
2. Leadership through small local organizations is a good way to develop leadership skills.
3. There are both formal and informal modes of leadership.

Answers: 1. (T); 2. (T); 3. (T)

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The secret sauce of professional presence: Make yourself stand out

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Do you make a positive first impression? In this educational session we will discover the secrets of making a good first impression. Professional presence is an enthusiastic blend of poise, self-confidence, control, and style that empowers us to build relationships and take charge of any situation. We will explore the mental frame work and social psychology around how others perceive your verbal and non-verbal cues. The impressions you form of another person during the initial contact is made up both assumptions and facts. You will be able to use these skills to improve your Pharmacy expertise. For example interviewing for a job, patient medication review and presenting research papers. What do you want people to remember about you? We will address body language, manners, and your surroundings to enhance credibility and your ability to build rapport. Presence is not something you are born with; it's not about status or position. It's about How you are and not Who you are. Do you make a positive first impression? Professional presence is an enthusiastic blend of poise, self-confidence, control and style that empowers us to build relationships and take charge of a situation. We will explore the mental framework and social psychology around how others perceive your verbal and not-verbal clues. What do you want people to remember about you?

Learning Objectives:

1. Describe memorable verbal and non-verbal clues
2. List ways to make a positive first impression
3. Explain how social media influences professional presence

Self-Assessment Questions: (True or False)

1. Voice intonation is critical non-verbal clue.
2. When interviewing, you should sit back in your chair and cross your arms.
3. Social Media can be used as a resource for hiring a pharmacy candidate.

Answers: 1. (F); 2. (F); 3. (T)

304-1

So You Wanna be a Preceptor: Old Dog New Tricks

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Patanwala, A

This talk will begin with a discussion of the importance of integrating your precepting activities with other work responsibilities. This will be followed by a discussion of the importance of adequate preparation for students before they arrive at your experiential site. The remainder of the talk will cover tips for effective preceptor-student interactions and the importance of ongoing discussions with the student on expectations, activities, goals and objectives, professionalism and interdisciplinary patient care activities, and formative and summative assessments.

Learning Objectives:

1. Discuss things that can be done by a preceptor prior to the first day of a student's rotation, which will improve the odds of having a successful experience.
2. List at least two handouts that can be given to the student at the beginning of the rotation that will facilitate the learning and evaluation processes.
3. Describe the usefulness of a taxonomical classification system of goals and objectives.

Self-Assessment Questions:

1. Which of the following systems could be used to write hierarchical objectives for students on an experiential rotation:
 - A. Bloom's taxonomy
 - B. Adam's method
 - C. Stuart's hierarchy
 - D. Frisk system
2. Which of the following handouts would be *least* important for the first day of a student's experiential rotation?
 - A. goals and objectives
 - B. expectations of preceptor
 - C. answers to pre-rotation quiz
 - D. list of scheduled activities
3. Which of the following attributes of a student is most likely to hinder a successful rotation experience?
 - A. overall lack of motivation
 - B. fear on the first day of rotation
 - C. inability to answer high-level objectives
 - D. lack of previous rotations at the site

Answers: 1. (A); 2. (C); 3. (A)

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So You Wanna Be a Preceptor: Vital Tips and Tricks to Becoming the Best Preceptor You Can Be: New Dog Old Tricks

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Precepting skills are vital for new practitioners and much of it is learned on the job or gained via experience, sometimes at the expense of students. In this session, some of the important tips and strategies for precepting will be discussed. Practical strategies will be provided so that preceptors can develop an excellent learning environment that will be highly sought after by students. The challenges and opportunities faced by preceptors and methods to overcome them will be evaluated.

Learning Objectives:

1. Discuss appropriate teaching methods in a small group setting.
2. Explain fundamental requirements for an optimal rotation site.
3. Describe time saving strategies for preceptors.

Self-Assessment Questions: (True or False)

1. Students should be repeatedly interrogated regarding random facts on a daily basis.
2. A good orientation and time spent up front during the rotation will save time later.
3. As a preceptor you should pretend to know it all even if you don't.

Answers: 1. (F); 2. (T); 3. (F)

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305-1

What's the vascular access? Which medication?

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Various vascular access devices will be reviewed and classified as intended for peripheral or central venous access. Medication characteristics that influence the most appropriate type of vascular access are discussed, such as pH and osmolarity. This is a basic level presentation.

Learning Objectives:

1. Recognize a vascular access device as temporary or intended for longer term use.
2. Discuss medication characteristics which may influence the type of vascular access selected for a patient.
3. Determine if a specific medication or therapy is appropriate to administer via the available vascular access device.

Self-Assessment Questions: (True or False)

1. An implanted port is a long-term vascular access device.
2. Peripheral vascular access is acceptable for vancomycin 1 gram in 50 mL of 5% dextrose solution.
3. Osmolarity is an important characteristic to consider when selecting a vascular access device.

Answers: 1. (T); 2. (F); 3. (T)

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305-2

Lines, drains, and tubes

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A variety of lines, drains and tubes that the pharmacist may encounter on rounds or in orders and their typical uses will be reviewed. This is a basic level presentation designed to familiarize the pharmacist with lines, drain and tubes commonly used in medical/surgical care.

Learning Objectives:

1. Describe the typical differences between tubes used for gastric feeding and those used for gastric suctioning.
2. List 2 other names that are sometimes used for Jackson-Pratt drains.
3. Describe the typical use of various drains and tubing.

Self-Assessment Questions: (True or False)

1. A Salem or Sump tube is an appropriate choice for gastric feeding over 10 to 14 days.
2. Grenade drain is a term sometimes applied to Jackson-Pratt drains.
3. Pigtail drains are specifically designed for use as nephrostomy tubes.

Answers: 1. (F); 2. (T); 3. (F)

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305-3

Why a PIC isn't a PICC

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Interpretation of the chest radiograph report related to vascular access will be reviewed. The key to central placement versus peripheral placement will be discussed. The importance of reading the chest radiograph report will be emphasized since a verbal report that a patient has a "PIC" (peripherally placed catheter) does not confirm that it is a PICC (peripherally placed central catheter).

Learning Objectives:

1. Interpret the chest radiograph report of vascular access tip location and identify it as central or peripheral placement.
2. Discuss the key to a vascular access being a "central" line.
3. List 2 terms associated with "central" location of the vascular access tip.

Self-Assessment Questions: (True or False)

1. A PICC line terminating in the brachiocephalic vein is considered a central line.
2. Vascular access devices terminating in the lower third of the superior vena cava are peripheral.
3. The upper portion of the right atrium is acceptable placement for a central venous catheter.

Answers: 1. (F); 2. (F); 3. (T)

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Ensuring your future: developing a new practice or expanding a current one.

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With the fast pace changes in healthcare, it is easy to view this as “doom and gloom” time rather than seeing the fantastic opportunities for little L leaders (every pharmacist) to develop either new clinical practices or expand their current practice. This presentation assisted young practitioners to identify the opportunities in their practice sites. Using visioning the participants designed how this opportunity could actually function. The audience then learned how to use a vision to assess the feasibility and garner the needed support to take advantage of the opportunity. Once the opportunity is maximized it must be sustained so techniques to do so will culminated this presentation

Learning Objectives:

1. Describe what a Little L leader is and contrast with a Big L leader.
2. Evaluate unmet medication use needs as possible new or expanded practice opportunities and develop a service vision.
3. Describe the process to assess the feasibility, garner the needed support, implement and ensure the continuation of the newly developed practice.

Self-Assessment Questions (True or False)

1. All little L leaders will become Big L leaders with experience.
2. A service vision is the same as the Joint Commission core measures.
3. All pharmacists already have a Brand.

Answers: 1. (F); 2. (F); 3. (T)

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308-1

Colistin Dosing and Toxicity: Beans versus Bugs!

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Colistin has undergone a resurgence in clinical practice due to the lack of options to treat extensively-drug resistant Gram-negative organisms. This increased use has been accompanied by an explosion of new literature describing colistin pharmacokinetics, pharmacodynamics, dosing, and toxicity. Despite these developments, the best strategies to optimize colistin for efficacy and safety are controversial. A critical appraisal of the recent literature regarding colistin safety and efficacy is presented.

Learning Objectives:

1. Describe colistin's pharmacology and characteristics
2. Discuss the difficult balance between dosing colistin for efficacy and nephrotoxicity
3. Apply recent literature on colistin dosing and nephrotoxicity to the care of an individual patient

Self-Assessment Questions:

1. Colistin nephrotoxicity is dose related.
2. Package insert doses of colistin may be inadequate for some organisms reported as susceptible.
3. All patients on colistin should receive antioxidants to prevent nephrotoxicity.

Answers: 1. (T); 2. (T); 3. (F)

308-2

Are Carbapenems Always the Drug of Choice for Extended Spectrum Beta-Lactamase (ESBL) Producers?

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Infections due to ESBL producing enterobacteriaceae are a significant cause of morbidity and mortality. Limited early evidence suggested that treatment with extended spectrum cephalosporins (ESC) or beta-lactam beta-lactamase inhibitor (BLBLI) combinations were associated with increase failure rates in infections due to ESBL producers which led to carbapenems becoming the treatment of choice for these infections. Predictably, increased carbapenem usage lead to an increased incidence of carbapenem resistant Gram-negative bacilli where therapy is extremely limited. Two recent retrospective analyses suggest a potential role for ESC and BLBLI for the treatment of ESBL BSI which could lead to a carbapenem sparing effect.

Learning Objectives:

1. Describe why b-lactams might be inferior *in vivo* for the treatment of ESBL infections despite *in vitro* susceptibility.
2. Discuss recent literature regarding non-carbapenem b-lactams for ESBL bloodstream infections
3. List scenarios where non-carbapenem antibiotics might be reasonable choice for the treatment of ESBL bloodstream infections.

Self-Assessment Questions: (True or False)

1. The inoculum effect refers to an *in vitro* phenomenon where cephalosporins, and to a lesser degree beta-lactam beta-lactamase inhibitors display reduced susceptibility when a higher concentration of organisms are present.
2. Recent evidence suggests that non-carbapenem antibiotics are equivalent to carbapenems for all patients with ESBL BSI.
3. A patient who is not responding to empiric therapy with an extended spectrum cephalosporin should be continued on the agent if his/her ESBL bloodstream infection is susceptible to it.

Answers: 1. (T); 2. (F); 3. (F)

309-1

New oral anticoagulants: A balancing act between safety and efficacy: Comparing anticoagulation reversibility practices between warfarin, dabigatran, and rivaroxaban

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The existing (warfarin) and new oral anticoagulants (dabigatran, and rivaroxaban) require healthcare systems to have a systematic means of oversight for management of these patients if they present to healthcare systems bleeding or are inpatients within our healthcare systems insofar as reversing therapeutic misadventure upon this existing agent (warfarin) and the new oral anticoagulants (NOACs), dabigatran and rivaroxaban. Current recommendations for reversal of warfarin reflect a change towards the use of prothrombin complex concentrates (PCCs). Although there is no established antidote for patients who are bleeding or require emergent surgery reflected in the package inserts of the respective NOACs there is a need for practical guidance regarding the clinical approach reflecting the use of existing PCCs and possible novel reversal agents (antibodies selective to targeted anticoagulant drug).

Learning Objectives:

1. Compare anticoagulation reversibility practices between warfarin, dabigatran, and rivaroxaban.

Self-Assessment Questions: (True or False)

1. Currently, based upon the respective FDA approved labeling/package insert of the NOACs, there is no pharmacologic means of reversal of these agents.
2. Currently, based upon evidence-based outcome trials published in the medical literature, there exists a body of evidence giving practical guidance to our clinical approach to management of patients who may present to our healthcare systems (or who may be an inpatient) bleeding upon the NOACs.
3. Currently, based upon new published suggestions, the management strategy for patients bleeding upon warfarin therapy will require us to “re-think” our approach to the management of such patients relative to our previous strategies used for such patients.

Answers: 1. (T); 2. (T); 3. (T)

309-2

New oral anticoagulants: A balancing act between safety and efficacy: Safety and efficacy analysis of new oral anticoagulants versus warfarin

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Recently, two novel oral anticoagulants have been approved by the FDA to reduce the rate of stroke or systemic embolism in patients with non-valvular atrial fibrillation. These agents offer significant advantages over warfarin such as predictable pharmacokinetics, lack of monitoring, and reduced rates of intracranial and life threatening bleeding. Related to rate of stroke and systemic embolism, dabigatran has been found to be superior to warfarin while rivaroxaban is non-inferior to warfarin. Although these agents are attractive alternatives to warfarin, they present new challenges such as cost, renal dose adjustment and drug interactions. Warfarin will remain a commonly used agent due to the number of approved indications.

Learning Objectives:

1. Describe stroke prevention data in patients with non-valvular atrial fibrillation treated with warfarin, dabigatran, or rivaroxaban.
2. Describe safety data comparing the bleeding risk between warfarin, dabigatran, and rivaroxaban.

Self-Assessment Questions: (select the one correct answer)

1. Which of the following statements best describes the outcomes of the RE-LY trial comparing dabigatran to warfarin?
 - A. Both doses of dabigatran (110 mg, 150 mg) are non-inferior to warfarin for prevention of stroke/systemic embolism.
 - B. Dabigatran 110 mg is superior to warfarin for prevention of stroke/systemic embolism.
 - C. Both doses of dabigatran (110 mg, 150 mg) are superior to warfarin for prevention of stroke/systemic embolism.
 - D. Dabigatran 150 mg is superior to warfarin for prevention of stroke/systemic embolism.
2. (True or False) Both dabigatran and rivaroxaban increase the risk of gastrointestinal bleeding compared to warfarin.
3. (True or False) In the ROCKET AF trial comparing rivaroxaban to warfarin, rivaroxaban was found to be superior to warfarin in reducing the risk of stroke/systemic embolism.

Answers: 1. (D); 2. (T); 3. (F)

309-3

Optimal Management of New Oral Anticoagulants During Transitions Between the Inpatient and Outpatient Setting

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New oral anticoagulants are now available and may prove to be an important advancement in treating patients with various thromboembolic disorders. While these drugs have been heavily promoted as being 'easier to use' than warfarin, unfractionated heparin, and low-molecular-weight heparin, initial clinical experience has demonstrated the need for precision in determining appropriate candidates for the new oral anticoagulants. Transitions between inpatient and outpatient settings present challenges, especially when anticoagulants are involved in the therapeutic plan. This session will use a case-based format to discuss various considerations involved in ensuring that patients on new oral anticoagulants safely transition between inpatient and outpatient settings.

Learning Objectives:

1. Describe at least two considerations for determining if a patient being discharged from the hospital is an appropriate candidate for one of the new oral anticoagulants.
2. Explain the importance of patient education in ensuring patient safety for patients leaving the hospital with a prescription for one of the new oral anticoagulants.
3. Describe at least two critical factors for developing an anticoagulation therapy management plan for a patient on one of the new oral anticoagulants who is admitted to the hospital for an elective surgical procedure.

Self-Assessment Questions: (True or False)

1. The new oral anticoagulants are an appropriate choice for patients with a history of medication noncompliance.
2. There is no way to determine if the anticoagulant effect of the new oral anticoagulants has worn off for patients who need to undergo a surgical procedure.
3. It is just as important to educate patients being discharged on the new oral anticoagulants about their therapy as it is to educate patients being discharged on warfarin.

Answers: 1. (F); 2. (F); 3. (T)

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310-1

Pharmacoeconomic analyses

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Pharmacoeconomic studies incorporate clinical outcomes and the direct and indirect costs associated with medication therapy. Pharmacoeconomic studies can be applied to a number of pharmacy practice settings including: individual/group decision-making, guideline development, justification of pharmacy services, and formulary management. There are four common types of pharmacoeconomic study: cost-minimization analysis, cost-benefit analysis, cost-effectiveness analysis, and cost-utility analysis. A cost-utility analysis of dabigatran compared to warfarin for stroke prevention in atrial fibrillation found that dabigatran was not cost-effective for the base case scenario; this study will be used to illustrate the learning objectives.

Learning Objectives:

1. Interpret key components of commonly encountered study designs.
2. Assess the biostatistical methods used in commonly encountered study designs.
3. Evaluate a piece of drug literature for appropriateness, strengths, limitations, and impact on practice.

Self-Assessment Questions:

1. What type of outcomes do you expect will be provided in this article? [Cost-effectiveness of dabigatran for stroke prophylaxis in atrial fibrillation]
 - A. Equivalent outcomes among treatments will be assumed; the favored treatment will have minimal cost.
 - B. Outcomes will be converted to dollars; the favored treatment will have minimal cost.
 - C. Outcomes will be measured in natural units; the favored treatment will have the best marginal effectiveness ratio.
 - D. Outcomes will be assess both length and quality of life; the favored treatment will have the lowest cost per QALY.
2. (True or False) The biostatistical methods used in this article were appropriate. [Cost-effectiveness of dabigatran for stroke prophylaxis in atrial fibrillation]
3. Which of the following was a limitation of this article? [Cost-effectiveness of dabigatran for stroke prophylaxis in atrial fibrillation]
 - A. Discounting was not discussed
 - B. Drug therapy specifics were not always provided
 - C. Perspective not defined
 - D. Sensitivity analysis not provided

Answers: 1. (C); 2. (F); 3. (B)

310-2

**Drug Literature Evaluation: Beyond the Randomized, Controlled Clinical Trial
Meta-Analyses**

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Evaluating a meta-analysis is often a struggle for pharmacists in every practice. The succinct analysis of the meta-analysis “Dabigatran association with higher risk of acute coronary events: meta-analysis of noninferiority randomized controlled trials” will be presented in this session. Additional resources for pharmacists evaluating meta-analyses will also be presented, with an emphasis on describing the biostatistics methods commonly encountered.

Learning Objectives:

1. Interpret key components of commonly encountered study designs.
2. Assess the biostatistical methods used in commonly encountered study designs.
3. Evaluate a piece of drug literature for appropriateness, strengths, limitations, and impact on practice.

Self-Assessment Questions:

1. (True or False) A fixed effects model is a more conservative approach at analyzing heterogeneity than the random effects model.
2. (True or False) Funnel plots visually represent sample sizes and treatment effects.
3. Continuous data (e.g., a reduction in A1C) would be best converted into what type of common metric?
 - A. Effect size
 - B. Odds Ratio
 - C. Hazards Ratio
 - D. All of the above

Answers: 1. (F); 2. (F); 3. (A)

310-3

**Drug Literature Evaluation: Beyond the Randomized, Controlled Clinical Trial
Noninferiority Trials**

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Noninferiority trials can be a stumbling block for pharmacists in every practice. The succinct analysis of the noninferiority trial “Dabigatran versus Warfarin in Patients with Atrial Fibrillation” will be presented in this session. Additional resources for pharmacists evaluating noninferiority trials will also be presented, with a focus on the Consolidated Standards of Reporting Trials (CONSORT) extension for reporting of noninferiority trials.

Learning Objectives:

1. Interpret key components of commonly encountered study designs.
2. Assess the biostatistical methods used in commonly encountered study designs.
3. Evaluate a piece of drug literature for appropriateness, strengths, limitations, and impact on practice.

Self-Assessment Questions:

1. An intention-to-treat analysis is recommended for noninferiority trials.
2. It is appropriate to base a noninferiority margin on the findings of a meta-analysis.
3. Dabigatran demonstrated noninferiority to warfarin.

Answers: 1. (T); 2. (T); 3. (T)

311-1

Pain management in the critically ill

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Patanwala, A.

Radosevich, J.

This presentation uses cases with embedded multiple choice questions as an active learning strategy for discussing pain management in the intensive care unit. The important distinction between analog-sedation and sedato-analgesia will be discussed both for its importance in the care of the critically ill patient and for its importance with respect to interpretation of research trials involving combinations of sedatives and analgesics. The remainder of the talk will be devoted to the assessment and pharmacological management of pain in critically ill patients.

Learning Objectives:

1. Describe the implications of using an analgo-sedation versus a sedato-analgesia approach when caring for a critically ill opioid tolerant patient
2. Compare and contrast the various opioids when used in critically ill patients
3. Discuss pharmacological options that have opioid-sparing activity

Self-Assessment Questions:

1. Which of the following statements is true regarding a trial of ventilated patients that compared a no sedation regimen (analgesia-based regimen with minimal sedation prn) to a sedative-based regimen with prn analgesia?
 - A. The length of stay was higher in the no sedation group (i.e., the analgesia-based regimen)
 - B. The length of stay was lower in the no sedation group (i.e., the analgesia-based regimen)
 - C. The incidence of delirium was the same in both the no sedation and the sedation groups
 - D. The number of healthcare workers needed to care for patients was similar in both groups
2. In the only randomized controlled trial that compared IV infusions of midazolam to IV infusions of a combined midazolam + fentanyl, what was the result?
 - A. Fewer daily dose adjustments in the midazolam only group
 - B. Drug costs were significantly less in the midazolam only group
 - C. Significantly less ventilator asynchrony in the combined group
 - D. Significantly less time to sedation in the combined group
3. Which of the following conditions is most likely to be responsive to an opioid tapering strategy?
 - A. Opioid tolerance
 - B. Subtherapeutic opioid doses
 - C. Opioid-induced hyperalgesia

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D. Inadequate pain control

Answers: 1. (B); 2. (C); 3. (C)

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311-2

Pain Management in the critically ill: Pain Management in the Emergency Department

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Pain is the most common complaint of patients presenting to the emergency department, many of whom may be critically ill. However, there are no guidelines for the dosing and selection of analgesics for the treatment of pain in this setting. There is great variability in patient response to analgesics often leading to pain that is inappropriately managed. In addition, there are logistical barriers to care that need to be overcome. In this session, pharmacists will be provided with important evidence and practical information on which to base the selection and dosing of opioids to optimize care in this setting.

Learning Objectives:

1. Discuss appropriate strategies for pain assessment in the emergency department.
2. Explain the selection and dosing of opioids for pain in the emergency department.
3. Describe methods to optimize pain management during the transition from the emergency department to the intensive care unit.

Self-Assessment Questions: (True or False)

1. Fentanyl has a more rapid onset of analgesia compared to morphine.
2. Obese patients should receive a dose of morphine proportional to their weight.
3. Morphine should be avoided in patients who have renal failure.

Answers: 1. (T); 2. (F); 3. (T)

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Pain Management in the critically ill: Integrative pain management

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Pain management is common in critically ill patients. Patients in the emergency department (ED) and intensive care unit (ICU) present unique pain management challenges. The pharmacist can be an integral member of any interdisciplinary team focused on pain management. During this session, several patient cases, relating to both the ED and ICU will be presented to the audience. Audience members will be given an opportunity to apply pain management techniques and treatment principles discussed in the earlier sessions by responding to questions posed by the panel after each case. The panel will respond to the audience's responses and reveal the management for each case.

Learning Objectives:

1. Apply the correct techniques and treatment principles to given patient cases.
2. Explain the selection and dosing of opioids for pain in critically ill patients.
3. Describe methods to optimize pain management in critically ill patients.

Self-Assessment Questions: (True or False)

1. Concentrating fentanyl drips for fluid over loaded patients can improve fluid balance.
2. Weight based dosing of morphine is recommended for all critically ill patients.
3. Fentanyl patches should routinely be used to treat pain in critically ill patients.

Answers: 1. (T); 2. (F); 3. (F)

312-1

Therapeutic Dilemmas in PK/PD, Pneumonia and Multi-Drug Resistance: Crossroads Between ID and ICU

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Optimizing empiric antibiotics in the critically ill patient population is essential to ensuring the best outcome. Sparse data exists regarding the pharmacokinetic and pharmacodynamic goals of antibiotic in these patients, including the most common empiric antibiotics, beta-lactams and vancomycin. An appreciation of the pharmacokinetic changes in the critically ill and the subsequent impact on the pharmacodynamics will allow clinicians to create antibiotic regimens with the highest likelihood of treatment success.

Learning Objective:

Identify antibiotic pharmacokinetic differences in critically ill patients and the development of dosing regimens to meet pharmacodynamic goals.

Self-Assessment Questions: (True or False)

1. The biggest pharmacokinetic difference between critically ill patients and healthy volunteers is adsorption.
2. Patients not meeting pharmacodynamic goals when treated with beta-lactams experience higher rate of treatment failure and mortality.
3. A vancomycin AUC/MIC ratio of 400 has been shown to be associated with clinical success in large randomized trials.

Answers: 1. (F); 2. (T); 3. (F)

312-2

Treatment and Risk Factors of Multidrug-Resistant Gram-Negative Pathogens

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Multidrug-resistance among gram-negative organisms increases patient morbidity and mortality and limits treatment options. Extended-spectrum beta-lactamases (ESBLs) and carbapenemases have a high prevalence among *Enterobacteriaceae* in many institutions. Understanding the available data will allow clinicians to optimize antibiotic regimens in the critically ill infected with these organisms.

Learning Objectives:

1. Discuss the impact of multidrug-resistant (MDR) gram-negative pathogens in the hospital.
2. Describe the epidemiology of multidrug-resistant (MDR) gram-negative pathogens.
3. Formulate treatment options for extended-spectrum beta-lactamases (ESBLs) and carbapenemases.

Self-Assessment Questions: (True or False)

1. Multi-drug resistance among gram-negative pathogens is associated with decreased mortality.
2. ESBLs, particularly of the CTX-M type, can be isolated in patients coming from the community.
3. Improved treatment outcomes of infections caused by KPC-producing *Enterobacteriaceae* can be expected with combination antimicrobial treatment.

Answers: 1. (F); 2. (T); 3. (T)

312-3

Therapeutic Dilemmas in PK/PD, Pneumonia and Multi-Drug Resistance: Crossroads Between ID and ICU: Early Antifungal for Critically Ill Patients

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Invasive candidiasis (IC) in critically ill patients is common and associated with significant morbidity and mortality. There is also suggestion that delays in the initiation of appropriate antifungal therapy may worsen outcomes. However, current microbiological assays do not provide timely diagnosis of IC. As such, early antifungal therapy should be initiated in patients at high risk for the development of IC. The use of early antifungal should target patients with disease states that are associated with an increase incidence of IC, such as recurrent gastrointestinal perforation, or those with composite risk factors from validated clinical prediction rules for IC. For those patients who warrant early antifungal therapy, echinocandins should be reserved for those who are neutropenic, hemodynamically unstable, or previously exposed to triazole antifungal therapies. High dose fluconazole continue to provide adequate coverage for >90% of *Candida* species.

Learning Objectives:

1. Evaluate the role and rationale of early antifungal therapy in critically ill patients.
2. Identify patients at high risk for the development of invasive candidiasis.
3. Discuss fluconazole versus echinocandin as early antifungal therapeutic choices.

Self-Assessment Questions: (True or False)

1. Initiation of early antifungals should be dependent on the results from rapid serum assays such as β -D-glucan.
2. The incidence of IC in all critically ill patients is greater than 10%.
3. Fluconazole provides adequate coverage for greater than 90% of *Candida* species.

Answers: 1. (F); 2. (F); 3. (T)

312-4

Therapeutic Dilemmas in PK/PD, Pneumonia and Multi-Drug Resistance: Crossroads Between ID and ICU

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Recent literature suggests that the widely accepted guidelines for nosocomial pneumonia are not without limitation. The definition and risk factors associated with healthcare-acquired pneumonia (HCAP) are of particular concern. An appreciation of risk factor assessment and an introduction to proposed clinical assessment scoring tools for HCAP and ventilator-associated pneumonia are highlighted for consideration.

Learning Objectives:

1. Evaluate pneumonia classification nomenclature and the potential impact on treatment decisions.
2. Discuss risk factors for nosocomial pneumonia.
3. Give examples of risk factor assessment tools for appropriate pneumonia identification and treatment.

Self-Assessment Questions: (True or False)

1. The 2005 American Thoracic Society/Infectious Diseases Society of America Guidelines for the Management of Adults with Hospital-acquired, Ventilator-associated, and Healthcare-associated Pneumonia definition of immunosuppressed includes diabetes mellitus.
2. The accepted definition of HCAP is consistently applied in the literature and clinical practice.
3. An ideal risk assessment score would identify those at risk for pneumonia with a weighted approach to individual patient factors.

Answers: 1. (F); 2. (F); 3. (T)

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313-1

Drug-induced diseases: DRESS

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Pharmacists can be instrumental in recognizing drug rash with eosinophilia and systemic symptoms (DRESS). Although diagnostic criteria for DRESS have evolved over the last several decades, several clinical and laboratory features can assist in delineating DRESS from other severe cutaneous adverse reactions. Advances in treating and predicting this reaction are emerging as the role of viral reactivation and genomics are becoming more evident. By rapidly identifying the most likely culprit, pharmacists can assist with alleviating the disease progression. Further, patient education can play a significant role in minimizing the chance for future reactions and promoting early recognition if DRESS recurs.

Learning Objectives:

1. Differentiate DRESS from other severe cutaneous adverse reactions such as Stevens-Johnson syndrome.
2. Evaluate a patient's drug regimen to identify to most likely cause of DRESS.
3. Develop a treatment plan to manage DRESS.

Self-Assessment Questions:

1. (True or False) The typical onset of DRESS is delayed compared to other common severe cutaneous adverse reactions.
2. Which of the following classes of medications is most commonly associated with DRESS?
 - A. anticoagulants
 - B. ACE-inhibitors
 - C. antiepileptic drugs
3. (True or False) The mainstay of therapy for DRESS includes removing the offending agent and considering corticosteroids.

Answers: 1. (T); 2. (C); 3. (T)

313-2

Central pontine myelinolysis

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Central pontine myelinolysis (CPM) is a serious complication resulting from the misuse of saline-containing intravenous fluids during the treatment of hyponatremia. CPM most often occurs after misuse of hypertonic rather than isotonic saline solutions. Signs and symptoms of CPM include aphasia, quadriparesis, and the “locked-in” syndrome among others. Low baseline serum sodium, long duration of hyponatremia, and the rate at which hyponatremia is corrected are the primary risk factors for development of CPM. Determining the rate at which to run hypertonic saline to safely correct hyponatremia without putting patients at risk for CPM is often difficult. Actual serum sodium correction often exceeds the value predicted when using common equations, making routine serum sodium monitoring a necessity. Relowering serum sodium using desmopressin and 5% dextrose in water after increasing the serum sodium too rapidly is a potential way to prevent or reverse the effects of CPM.

Learning Objectives:

1. Recognize one drug that can cause CPM if used inappropriately.
2. List the primary preventable risk factor for the development of CPM.
3. Describe the best known treatment for CPM.

Self-Assessment Questions: (True or False)

1. 3% saline infusions cannot cause CPM.
2. Rate of serum sodium correction is the primary preventable risk factor for CPM.
3. Desmopressin is useful in the treatment of CPM.

Answers: 1. (F); 2. (T); 3. (T).

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313-3

Linezolid and drug-induced disease

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Linezolid is commonly used in the treatment of many gram positive infections, particularly those which harbor multi-drug resistant organisms. Post marketing data has revealed a significant adverse effect profile with the use of linezolid, notably serotonin syndrome when combined with other serotonergic active drugs. Recognizing serotonin syndrome and the drugs which are able to elicit this response is critical in the clinical setting. Clinicians should be able to formulate a treatment plan given a patient experiencing this drug-induced disorder.

Learning Objectives:

1. Recognize when a patient is suffering from serotonin syndrome.
2. Evaluate patients' drug regimens to discover the most likely combinations causing serotonin syndrome.
3. Prevent or reduce the likelihood of serotonin syndrome recurring in patients or occurring in other patients.
4. Develop a treatment plan to manage serotonin syndrome.

Self Assessment Questions: (True or False)

1. Linezolid can cause serotonin syndrome when used as monotherapy.
2. Serotonin syndrome is often easily recognized by most practitioners.
3. The first step in managing serotonin syndrome with linezolid is decreasing the dose.

Answers: 1. (F); 2. (F); 3. (F)

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313-4

How to recognize and treat drug induced thrombotic microangiopathies

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Thrombotic microangiopathy (TMA) is an umbrella term representing thrombotic thrombocytopenia purpura and hemolytic uremic syndrome. This disease is manifested through thrombocytopenia, schistocytosis, elevated LDH, decreased haptoglobin, decreased renal function, confusion and abdominal distress. Pathologically this is an autoimmune disorder targeted against ADAMTS13, resulting in the secretion of unusually large vonWillebrand factor and the generation of arterial clots. Multiple drug classes have been associated with this disorder; notably: calcineurin inhibitors, thienopyridines, mitomycin C, and quinine. The treatment of choice for TMA is plasma exchange; second line treatment with rituximab has yielded favorable results. This presentation will focus on the diagnosis and evidence for treatment with plasma exchange and rituximab.

Learning Objectives

1. Recognize when a patient is suffering from a thrombotic microangiopathy (TMA).
2. Evaluate the patient's drug regimen to discover the most likely medication causing the TMA.
3. Develop a treatment plan to treat the TMA.

Self-Assessment Questions:

PC is a 72-year-old male suffering from nocturnal leg cramps. His neighbor recommends quinine for this problem. PC purchases 100 quinine tablets off amazon.com for \$19.44. After a week of taking the quinine PC's leg cramps have resolved, however he has been unable to eat or drink due to abdominal pain and vomiting for the last two days. PC's wife notes that he is confused and having difficulty finding words and immediately takes him to the emergency department.

In the emergency department the following workup is completed:

- PC's medications are reviewed

Aspirin 81 mg daily	Fluticasone/Salmeterol 250/ 50 mg BID	Hydrochlorothiazide 25 mg daily
Metoprolol 25 mg BID	Quinine 1 tablet daily	Simvastatin 20 mg qhs

- CT imaging of the head is done
- A peripheral smear is reviewed
- Labs are compared from his last visit with his PCP

WBC (cells/mm³)	Hgb (g/dL)	Platelets (cells/mm³)
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Sept 15 th	6.5	14	200
Sept 29 th	4	10.4	6
	LDH (IU/L)	Serum Creatinine (mg/dL)	Haptoglobin (mg/dL)
Sept 15 th	200	0.7	56
Sept 29 th	600	2	9

1. What is potentially wrong with patient PC?
 - A. Stroke
 - B. Dehydration
 - C. Thrombotic microangiopathy
 - D. Acute kidney failure
2. Which of the medications that PC is currently taking is the most likely culprit of the TMA?
 - A. Quinine
 - B. Fluticasone/ Salmeterol
 - C. Metoprolol
 - D. Aspirin
3. What would be the best first option of treatment for this patient?
 - A. Rituximab for 4 doses
 - B. Therapeutic plasma exchange daily until resolution of thrombocytopenia
 - C. Splenectomy
 - D. Start prednisone

Answers: 1. (C); 2. (A); 3. (B)

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318-1

Drug shortages: Survival tactics for the perfect storm

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Drug shortages have increased over the past decade, with significant implications for patient care. Effective management of medication shortages is essential for patient safety and involves many stakeholders. A structured process is recommended to address shortage identification, assessment, action planning, communication, implementation of changes, and resolution. The current state of shortages will be discussed, along with examples of safe management.

Learning Objectives:

1. Describe the current status of drug shortages in the US and implications for patient safety.
2. Outline a six-step framework for safe management of drug shortages.
3. Explain how appropriate management of shortages can avoid patient harm.

Self-Assessment Questions:

1. Which of the following are examples of patient safety and clinical implications of drug shortages?
 - a. Medication errors, leading to increased length of hospital stay
 - b. Delay in treatment
 - c. Use of second line medication therapy
 - d. All of the above
2. A framework for managing drug shortages is described by the following steps:
 - a. Identification, outsourcing, cost avoidance, restrictions, withholding information
 - b. Identification, collaboration, alternative therapy, compounding, communication
 - c. Identification, assessment, action plan, communication, implementation, resolution
 - d. Identification, hoarding, grey market purchasing, allocation to favorite doctors
3. (True or False) Management of shortages is simple and pharmacy is the only department involved.

Answers: 1. (d); 2 (c); 3. (F)

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319-1

Help, I Can't Afford My Drugs! Emerging Opportunities in Caring for Indigent Patients

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An overview of recent pharmaceutical inflation trends is presented, as well as factors that impact national pharmaceutical expenditures. Several potential cost reduction efforts, targeted to organizations that provide indigent care, are presented. An overview of patient assistance programs (PAP) will be provided, in addition to several obstacles to address when initiating a new PAP program. Emphasis will be placed on the value of accessing 340B pharmaceutical pricing, and strategies for trending quarterly price fluctuations.

Learning Objectives:

1. Identify how US pharmaceutical cost inflation rates have compared against general inflation rates.
2. Give examples of the challenges that must be addressed in regards to effectively providing a robust patient assistance program, and describe metrics to determine organizational value.
3. Explain the benefits of the 340B program in relation to controlling drug costs, as well as recommended methods to maximize the benefit to your organization.

Self-Assessment Questions:

1. (True or False) From 2005 to 2009, the annual percentage change in retail prices, for brand-name drugs, was less than the general inflation rate (CPI-U).
2. Organizational challenges to be addressed for an effective PAP program include the following:
 - A. Identification of physician champions
 - B. Patient social security number availability
 - C. Patient incentive in safety net settings
 - D. All of the above
3. (True or False) 340B penny drug prices should be trended every calendar quarter.

Answers: 1. (F); 2. (D); 3. (T)

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319-2

Help, I can't afford my drugs! Charity care programs and patient assistance programs – best practices

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Patients who are uninsured or underinsured are usually employed, but typically in low-wage jobs. Underinsured patients may find themselves with high-deductible, catastrophic health plans that require them to pay a substantial amount of money (often thousands of dollars) before their benefits kick in; other plans have very small maximum-coverage caps for medications that may cost hundreds or thousands of dollars. This session will examine programs available to uninsured and underinsured patients, both through the charity care programs of safety-net hospitals and the assistance programs offered by pharmaceutical manufacturers.

Learning Objectives:

1. Describe the charity care programs offered by safety-net hospitals.
2. List considerations in setting co-pays or dispensing fees at an outpatient pharmacy of a safety-net hospital.
3. Recommend techniques for pharmacy staff and other departments' staff to assist patients in accessing their medications.

Self-Assessment Questions:

1. Options for helping an uninsured patient afford his medications are as follows:
 - A. Offer a cheaper alternative to the prescriber
 - B. Assist the patient in signing up for the pharmaceutical manufacturers' free drug programs
 - C. Evaluating the patient's medication regimen for therapeutic duplications or other unnecessary medications
 - D. Recommending that s/he sign up for Medicare Part D or Medicaid
 - E. All of the above
2. (True or False) Pharmaceutical manufacturers' free-drug programs are only available to patients with incomes of 200% of the federal poverty level or less.
3. Which of the following is not typically required when applying for free-drug programs?
 - A. Proof of income
 - B. Household size
 - C. List of household expenses
 - D. Proof of lack of insurance coverage

Answers: 1. (E); 2. (F); 3. (C)

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Help, I Can't Afford My Drugs! Emerging Opportunities in Caring for Indigent Patients

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Safety net providers are constantly trying to balance their mission to serve the growing number of indigent patients with the fiscal realities of having to stretch and conserve their limited resources. This presentation will describe how the Federal 340B drug discount program and patient assistance programs (PAPs) can help safety net providers meet the pressing pharmacy needs of their indigent patients. The presentation will also discuss the legal and financial risks in indigent pharmacy care and strategies for minimizing those risks.

Learning Objectives:

1. Provide an overview of emerging issues and challenges in providing pharmacy care to indigent patients.
2. Describe two programs that hospitals can use to access affordable drugs for indigent patients: the 340B drug discount program and patient assistance programs (PAPs).
3. Discuss relevant legal and financial risks and considerations.

Self-Assessment Question:

1. To minimize legal risk of waiving copayments and deductibles, a hospital should:
 - A. routinely waive for all patients
 - B. waive when it seems like the patient might need it
 - C. waive only when the patient meets the carefully developed financial qualifications in the hospital's policy for waiver of copayments
 - D. all of the above

Answer: 1. (C)

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Driving quality and outcomes with CMS data

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A new initiative by the CMS launched recently is the Partnership for Patients. It is a multidimensional program focusing on ten different patient safety areas. Our Critical Access Hospital asked the pharmacy department to take on Adverse Drug Events (ADE). In order to do this, we needed to determine how we wanted to define ADEs, which ones to track, and what to do with the data we collected. This presentation walks through this process to date and where we are going with it between now and 2013.

Learning Objectives:

1. Define CMS Partnership for Patients.
2. Define Adverse Drug Events.
3. Define the NCC MERP Index.

Self-Assessment Questions:

1. The CMS Partnership for Patients aims to reduce preventable hospital-acquired conditions by 40% and reduce readmissions by 20% by 2013.
2. Adverse Drug Event is an injury to a patient resulting from the use of a drug.
3. NCC MERP Index is National Coordinating Council for Medication Error Reporting and Prevention Index for categorizing medication errors.

Answers: 1. (T); 2. (T); 3. (T)

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320-2

Tapping into your external resources...

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Many hospitals are either facing financial challenges in the present and will face financial challenges in the future, due to changing reimbursement scales and models. Discovering alternative sources of funding may assist with maintaining or expanding pharmacy services within a facility. Pharmacists must expand their knowledge of funding sources, as well as their resources for opportunity identification and assistance. The alternative funding resources in one critical access hospital will be discussed in order to demonstrate the application of the information presented.

Learning Objectives:

1. Identify alternative opportunities and resources for funding clinical programs and services.
2. Learn how to justify resources and investments using non-pharmacy uses of equipment.
3. Evaluate applicability of alternative opportunities and resources for funding in his/her own clinical environment.

Self-Assessment Questions: (True or False)

1. State associations may receive grant funding that can be utilized in hospitals and clinics within the state.
2. Telemedicine equipment purchased with a grant to provide patients in remote locations throughout the state with day-time access to physician specialists in urban areas may also be used for remote pharmacy medication accuracy checking in the evening hours.
3. Grants are for capital purchases only and do not include leasing of equipment.

Answers: 1. (T); 2. (T); 3. (F)

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320-3

How does HRSA & PSPC fit into PPMI?

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The Health Resources and Service Administration (HRSA) gathered best practice sites from around the United States 6 years ago to create a Change Package for improving patient safety and bringing clinical pharmacy services to underserved patients. The Patient Safety and Clinical Pharmacy Collaborative (PSPC), now in its fifth year, has expanded to over 200 sites, impacting thousands of patients. An example of how one site has implemented this collaborative will be described and its relationship with the PPMI will be discussed.

Learning Objectives:

1. Describe HRSA's role in safety net organizations and its part in the Patient Safety and Clinical Pharmacy Services Collaborative.
2. Explain how a health care facility can become part of the PSPC.
3. Describe the benefits part of the PSPC and how it connects to the goals of the PPMI.

Self-Assessment Questions: (True or False)

1. HRSA created PSPC this past year.
2. PSPC has already shown positive outcomes of clinical pharmacy being involved with patient care.
3. Many of the PSPC change package elements are also found in the PPMI.

Answers: 1. (F); 2. (T); 3. (T)

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321-1

Positioning remotely delivered pharmacist care in small and rural settings

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CMS, accreditation organizations and state boards of pharmacy continue to focus on medication order review by a pharmacist prior to the medication being administered to the patient to ensure safety. Hospitals continue to be challenged to provide prospective pharmacist review of orders due to limited pharmacy hours of operation and having pharmacy staff that is being re-allocated for training and implementation on meaningful use technologies. To address this situation, remote pharmacy services provide a cost effective and practical alternative to ensure a pharmacist's prospective clinical review of orders. As remote medication order processing services have evolved, there are various remote models available for hospitals to evaluate. This session educates the audience on the remote order processing models used today; evaluating how to position each model to meet the pharmacy's needs, while meeting regulatory and state board compliance requirements; which vary state to state.

Learning Objectives:

1. Develop how to determine when remote pharmacy services could be an alternative in your setting.
2. Explain how to develop a guidelines checklist to weigh remote pharmacy service alternative delivery models.
3. Identify problematic areas and develop action plan for success.

Self-Assessment Questions: (True or False)

1. A hospital does not need 24-hour pharmacy coverage if they are not accredited by the Joint Commission.
2. Providing a method to generate documented shift change communication should be a factor to consider of a remote pharmacy service provider.
3. A pharmacist can remotely process orders for any state provided they have a pharmacist license in their home state residence.

Answers: 1. (F); 2. (T); 3. (F)

322-1

Update on the Joint Commission Hospital Standards and National Patient Safety Goals for 2012 for Small and Rural Hospitals

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Compliance with medication related standards continues to be a top priority for hospitals who wish to build a foundation of medication safety as well as ensure compliance with Joint Commission and CMS requirements. Small and rural hospital requirements are for the most part as stringent as those in place for larger hospitals, but often resources to comply with these requirements are fewer. This presentation will highlight key changes to the medication standards for 2012 and anticipated for 2013. Challenging standards will be discussed as well as practical ways to address these standards. Topics of interest to this specialty audience will be addressed, including a process for training those non-pharmacists who are charged with the responsibility of medication order review in the absence of a pharmacist.

Learning Objectives:

1. Describe 3 significant changes or potential changes to the medication management standards and NPSG
2. Identify the top 6 most cited standards or NPSGs on survey relating to challenging medication management standards
3. Describe at least 1 strategy for compliance with the each of the challenging standards
4. Describe the CMS requirements for nurse initiated standing orders and 30 minute rule revisions
5. Describe 2 best practice strategies each or reducing risk with High Alert and LASA medications

Self Assessment Questions:

1. MM.03.01.01 is the most scored medication management standard because:
 - A. Surveyors find many examples where medications are not stored securely
 - B. Surveyors find examples of refrigerator logs with missing temperatures
 - C. There are many requirements that are part of MM.03.01.01
 - D. A and C
 - E. All of the above
2. Which of the following strategies should be followed to support compliance with medication preprinted orders:
 - A. They should be reviewed yearly
 - B. They should not be used in the hospital
 - C. They should be reviewed at a frequency defined by hospital policy
 - D. They should not include non-formulary medications

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E.C and D

3. Compliance with MM.05.01.01 can be supported by which of the following actions:
- A. Pharmacist review of a medication order prior to dispensing or administration
 - B. Controlling access to medications to limit use prior to pharmacist review of the medication order
 - C. Review of medications removed from automated dispensing devices prior to pharmacist review through the override process
 - D. Review of the medication order by an appropriately-trained individual when the pharmacy is closed
 - E. All of the above

Answers: 1. (D); 2. (C); 3. (E)

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Medication Reconciliation

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Medication reconciliation starts with a timely and well prepared medication history. Small hospitals will find it a challenge to do this with just a pharmacist and have it continue to be timely. Using pharmacists, when available, and nursing during the off shifts it can be accomplished with the pharmacist carrying out the reconciliation on arrival each morning. Automation helps, support of the physicians, adding benefit for medical specialties like surgeons will help to advance the process, supporting the Emergency Department will help advance the process, but proving that the pharmacists are the right individuals to conduct the histories and reconciliation is the key to pharmacist led processes.

This can be extended to outpatient departments, different patient groups, and clinics.

323-2

Hospital Self-Assessment Preliminary Report – Small and Critical Access Hospitals

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The ASHP Pharmacy Practice Model Initiative (PPMI) Hospital Self-Assessment (HSA) is a tool designed to assist hospitals and health-systems with practice model change. It helps to identify and prioritize potential changes to coincide with PPMI recommendations. As of September 2012, 734 hospitals had completed the HSA. Of these, 120 were 50 beds or less including 56 critical access hospitals. Using these data, common areas of strength and weakness are identified amongst all hospitals regardless of size. Additionally, areas where the small or critical access hospitals differ significantly from the average response are identified.

Learning Objectives:

1. Describe the purpose and content of the HSA .
2. Identify unique challenges for small and critical access hospitals from the HSA preliminary results.

Self-Assessment Questions: (True or False)

1. The HSA is a tool for institutions to assess their own practice and compare to PPMI recommendations.
2. HSA preliminary results indicate that implementation of certain PPMI recommendations will be particularly challenging at small and critical access hospitals.

Answers: 1. (T); 2. (T)

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323-3

PPMI initiatives in small and rural hospitals: Success stories that move the profession forward

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The Pharmacy Practice Model Initiative includes continuity of care as an initiative to provide for a safe and seamless transition of patients. One of the most problem prone transition medications is warfarin, along with other anticoagulants. A model of transitioning patients from inpatient anticoagulation to an outpatient setting is described which functions to foster the safe and seamless treatment of these patients. Successful treatment of these patients in the inpatient and outpatient settings is managed by the inpatient pharmacy staff.

Learning Objectives:

1. Describe methods to transfer inpatient warfarin monitoring from an inpatient to outpatient settings for an individual patient.
2. Describe a pharmacist role in a collaborative practice setting for anticoagulation management.
3. List the benefits of the consistencies of a pharmacist managed program of inpatient and outpatient warfarin management.

Self-Assessment Questions: (True or False)

1. Pharmacists can manage warfarin and other anticoagulant therapies in both inpatient and outpatient settings.
2. Pharmacist managed anticoagulation therapies are beneficial for patient transfers from inpatient to outpatient.
3. Physicians are usually reluctant to delegate the responsibility of anticoagulation monitoring.

Answers: 1. (T); 2. (T); 3. (F)

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Don't forget the chronic problems: dm, htn, and copd update for small and rural practice

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Often times, chronic medical problems get overlooked, and pharmacists do not maintain their knowledge of chronic disease states when practicing in the acute care setting. This is likely because much attention is focused on the acute situation, and chronic issues are viewed as secondary in nature. Recent updates have been made or will be made to the guidelines for the management of diabetes mellitus, COPD, and hypertension. An update for these disease states is presented to summarize recent changes or expected changes for their management.

Learning Objectives:

1. Summarize recent updates to clinical practice guidelines for the management of diabetes, chronic obstructive pulmonary disease (COPD), and hypertension.
2. Explain practical tips for management of diabetes, COPD, and hypertension in the small and/or rural acute care setting.
3. Explain strategies for medication management in the small and/or rural acute care setting for the management of diabetes, COPD, and hypertension.

Self-Assessment Questions: (True or False)

1. Early insulin therapy is not recommended for Type 2 diabetic patients presenting with persistent hyperglycemic symptoms and/or ketonuria.
2. Levalbuterol provides no advantage to albuterol in regards to outcomes or adverse events in the management of COPD exacerbations.
3. Less aggressive targets for blood pressure control in patients 80 and older are expected to be a part of the new JNC 8 guidelines for the management of hypertension.

Answers: 1. (F); 2. (T); 3. (T)