UNDERSTANDING THE USABILITY OF PHARMACY DISPENSING COMPUTER SYSTEMS TO PREPARE AND DOCUMENT COMPREHENSIVE MEDICATION REVIEWS

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Purpose: While community pharmacists have been increasingly involved in medication therapy management (MTM) over the past decade, widespread uptake of MTM services continues to be slow. One barrier to the provision of MTM services may be the lack of usability of technology to support MTM services. A number of software programs are currently being used, but no studies have been conducted to determine if they are easy to use and provide the functionality that community pharmacists need. This study will determine the necessary computer system components to efficiently conduct comprehensive medication reviews, identify limitations of current computer systems, and review strategies pharmacists use to overcome those limitations. Methods: Pharmacists employed at pharmacies that conduct at least one comprehensive medication review per month will be recruited for this study through email. One pharmacist from each recruited pharmacy will complete a survey and observation conducted by the principal investigator. The survey assesses various components within the pharmacy dispensing computer system and their usability. During the observation the pharmacist will use the think aloud technique to walk the observer through the typical workflow of preparation and documentation of comprehensive medication reviews. The think aloud process will distil necessary components of a computer dispensing system, limitations of those systems, and identify strategies pharmacists use to efficiently and effectively prepare and document comprehensive medication reviews. Results/Conclusions: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss the advantages and disadvantages of using the think aloud technique to collect data in a community pharmacy

Describe typical usability problems associated with health care technology

Self Assessment Questions:

Which of following best describes a disadvantage of using think aloud protocols in a community pharmacy?

A It allows errors to be recorded in real time

B: It identifies challenges that occur in the workflow

C: It provides objective information

D: It requires pharmacists to verbalize their thoughts out loud

Which of the following is a typical usability problem associated with health care technology?

A Pharmacists may be able to access data from multiple locations

B Pharmacists may have real time access to patient information

C Pharmacists may need to double-enter data

D Pharmacists may be required to use passwords to use the technol

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-696 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFECTS OF ACETAMINOPHEN ON MORTALITY IN SEPSIS

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Purpose: Acetaminophen (APAP) is an antipyretic medication commonly used in septic patients, although its impact on clinical outcomes is unclear. Its exact mechanism of action is unknown. Beyond its use as an antipyretic, APAP has anti-inflammatory properties that may be beneficial in patients with sepsis, which is characterized by systemic inflammatory processes in response to infection. Incidence of sepsis is increasing and mortality remains high; therefore, new interventions are warranted to improve survival. In a recent study, APAP was associated with decreased mortality due to its ability to decrease the biomarker cell-free hemoglobin through the inhibition of hemoprotein-mediated lipid peroxidation. Though this study demonstrated the potential protective effects of APAP in sepsis, it was not powered to explore the effect of APAP on mortality. The objective of our study is to determine if the administration of APAP has mortality benefits in patients with sepsis.

Methods: The Institutional Review Board at Loyola University Medical Center approved this retrospective study. Patients ≥18 years with the diagnosis of sepsis admitted through the emergency department to either the medical or surgical intensive care units between January 1, 2010 and December 31, 2012 were identified using ICD-9 codes. Patients were excluded if they had factors that may not warrant them candidates for APAP, poor prognosis, or severe liver impairments. Total APAP amount administered via any route within 24 hours of diagnosis was collected using electronic medical records. The primary endpoint of this study was 28-day mortality. The secondary endpoints include the following: in-hospital mortality, 90-day mortality, length of hospital stay, ICU length of stay, and ventilator free days. Results/Conclusion: Data collection and analysis are pending and will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the management of sepsis and the interventions that have shown to decrease mortality.

Define cell-free hemoglobin and explain why it may have an important role in determining mortality in septic patients receiving acetaminophen.

Self Assessment Questions:

Which of the following interventions has shown to decrease mortality in the management of sepsis based on the Surviving Sepsis Campaign Guidelines in 2012?

A Early empiric broad spectrum antibiotics

B: Erythropoietin

C: Immunoglobulin

D: Selenium

Based of previous studies, which of the following biomarkers has shown to have a potential association with decreased mortality due to the use of acetaminophen?

A Cell-free hemoglobin

B C-reactive protein

C Lactic acid

D Procalcitonin

Q1 Answer: A Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-300 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT OF A VIRTUAL PHARMACY RESIDENT CONFERENCE

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Purpose: One of the residency requirements, as indicated by the American Society of Health-System Pharmacists (ASHP), is the presentation of a resident project at an annual conference. The country is divided into several regional pharmacy resident conferences and both the VA and private institutions generally send their residents to one of these conferences to present their research. In an effort to improve clinical and professional understanding at all of the facilities within our region, our purpose is to establish a virtual pharmacy resident conference where the methods, results and future steps of Veteran-specific research can be shared on a variety of pharmacy-relevant topics in the areas of ambulatory care, acute care, and administration.

Methods: Educational programs and conferences within the VA are coordinated by the Employee Educational System (EES). After obtaining EES approval, we were assigned an EES representative who would continue to work with us on logistical planning in preparation for the conference. Much of this planning included obtaining ACPE-accreditation, arranging for registration and developing a schedule of presentations. An informational meeting with residency program directors and facility chiefs took place to gauge initial interest in participating in the virtual conference. A timeline of progress is being tracked in order to easily replicate measures to develop a subsequent conference after the inaugural conference takes place this spring.

Preliminary Results: There are 26 pharmacy residents that will be participating in the VISN 11 Virtual Pharmacy Resident Conference. The majority of presentation topics are focused on ambulatory care issues, as expected in a health system that provides the magnitude of outpatien care as the VA. Conclusions: Through implementation of a virtual pharmacy resident conference, we anticipate that the impact of resident research can reach a larger VA audience.

Learning Objectives:

Describe the steps required to obtain ACPE credit for attendance and participation in a real-time presentation.

List at least two benefits of sharing information via a virtual conference.

Self Assessment Questions:

ACPE credit will be awarded to which of the following groups for attending a real-time presentation at the VISN 11 Virtual Pharmacy Resident Conference?

A Pharmacists only

B: Pharmacy technicians and pharmacists

C: Pharmacists only, but they may also obtain ACPE credit by watchi

D: Pharmacy technicians and pharmacists, but they may also obtain

All of the following are potential benefits of sharing information via a virtual conference EXCEPT:

A Increased audience size

B Decreased need to duplicate work between facilities

C Easily accessible from any computer

D Increased opportunities for professional networking

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-697 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

ANTICOAGULATION INDICES IN EXTRACORPOREAL MEMBRANE OXYGENATION PATIENTS

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Purpose: Patients receiving extracorporeal membrane oxygenation (ECMO) are at risk for both bleeding and thrombosis. The goal of anticoagulation is to prevent thrombosis while avoiding excessive bleeding. Heparin is the most common agent used for anticoagulation, however appropriate heparin dosing in the management of ECMO patients is challenging for pharmacokinetic and pharmacodynamic reasons. While numerous protocols exist for managing heparin-based anticoagulation in ECMO patients, few data describe their efficacy in achieving stated goals. Currently a formal anticoagulation protocol specifically for ECMO patients does not exist at The University of Chicago Medicine (UCM). This proposed research is targeted at gathering specific information regarding heparin doses, efficacy, accuracy, and inter-correlations between tests of heparin effect, trends over time, and adverse events. The long term goal is to create a local evidence base to inform a potential protocol for heparin management in adult ECMO patients. Methods: This retrospective, single-center, observational, cohort analysis includes all adult cardiac patients on ECMO at UCM between March 1, 2008 and August 1, 2013. Utilizing electronic medical records, data related to patient characteristics, heparin utilization and monitoring parameters, bleeding, and clotting events will be collected to create an experience base for heparin management in ECMO. The primary outcome measures are percentage of patients with listed activated partial thromboplastin time (aPTT) or activated clotting time (ACT) goal ranges, percentage of time spent in goal ranges, and number of dose titrations to maintain aPTTs or ACTs within goal ranges. Secondary outcomes include indecencies of major bleeding, minor bleeding, thromboembolic events, average heparin dose while on ECMO, and the change in heparin dose related to time on ECMO. A multivariate analysis will be utilized to identify impact of variables on heparin dose to attempt to predict which patients may require greater heparin doses. Results: to be presented Conclusion: to be presented

Learning Objectives:

Describe pharmacokinetic and pharmacodynamic changes that occur with heparin in ECMO patients.

Identify which lab tests may be utilized to measure anticoagulation with heparin in ECMO patients.

Self Assessment Questions:

Which of the following is not one of heparins pharmacokinetic or pharmacodynamic changes in ECMO patients?

A Increased volume of distribution due to additional compartment

B: Increased drug clearance from the ECMO circuit

C: Decreased anticoagulant efficacy due to decreased circulating ant

D: Decreased volume of distribution due to binding and sequestration

Which of the following lab tests may not be utilized to measure anticoagulation with heparin in ECMO patients

A Activated partial thromboplastin time (aPTT)

B Activated clotting time (ACT)

C International normalized ratio (INR)

D Heparin levels

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-301 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

UTILIZING AUTOMATED PHARMACY DASHBOARD FOR MONITORING THE JOINT COMMISSION COMPLIANCE WITH MEDICATION MANAGEMENT STANDARDS

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Purpose: Management of medications in the acute care setting is an intricate and vital process in order to maximize patient health outcomes. The Centers for Medicare and Medicaid Services (CMS) require health-systems to be certified by an accrediting body to receive Medicare reimbursements. CMS has approved for The Joint Commission (TJC) to provide the accreditation to health-care organizations that meet performance measures. A component used by TJC to recognize an organizations commitment to quality of care is medication management standards. Numerous hours are spent verifying compliance with The Joint Commission Medication Management Standards (TJC MMS). Compliance can be established by reviewing each standards elements of performance. One method to verify compliance is through manual audits. Technological advancements give health-systems the opportunity to streamline routine audits and reporting capabilities. Automated dashboards allow pharmacy managers to visualize immediate impact of actions to improve compliance, leading to more efficient processes of quality regulation. The purpose of this project is to create an automated dashboard on TJC MMS to efficiently monitor a community health systems elements of performance progress without heavy utilization of pharmacy staff resources. Methods: Interviews with pharmacists assigned to medication management standards will review current policies and procedures in place with measureable data to incorporate into the automated dashboard. The primary outcome is implementation and completion of a dashboard to monitor the Joint Commission Medication Management Standards compliance. The secondary outcome will be pharmacy manager satisfaction with the dashboard by comparing a pre- and post-implementation survey. IRB approval is not needed due to the quality measurement of this project. Univariate descriptive statistical methods will be assessed where appropriate.

Results/Conclusion: Collection of information is currently in progress. Final results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Recognize the use of automated dashboards to create more efficient processes of quality regulation.

Outline the process for developing and implementing an automated dashboard on The Joint Commission Medication Management Standards.

Self Assessment Questions:

Which organization requires health-systems to be certified by an accrediting body to receive Medicare reimbursements?

A Institute for Safe Medication Practices (ISMP)

B: The Centers for Medicare and Medicaid Services (CMS)

C: The Joint Commission

D: Food & Drug Administration (FDA)

What is the purpose of automated pharmacy dashboards related to TJC MMS?

A Visualize impact of actions to improve compliance

B Prevent the identification and interpretation of key performance inc

C Create increased responsibilities within the pharmacy department

D Understand measurements of quality of care

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-698 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSESSMENT OF A COMMUNITY PHARMACY-BASED EDUCATION PROGRAM AND PHARMACIST INTERVENTION TO OPTIMIZE INSULIN DELIVERY

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Purpose: To determine the number and type of interventions identified by pharmacists and to assess patient satisfaction with their insulin delivery experience following a pharmacist conducted insulin delivery education program. The secondary objective is to evaluate the effectiveness of the Insulin Administration Assessment Tool (I-AAT) in identifying patients that would benefit from pharmacist education and/or intervention. Methods: This was a prospective, survey-based study evaluating the development and implementation of an insulin delivery education program in the community pharmacy. Adults 18 years and older using any type of insulin were recruited for this study. Exclusion criteria included patients using an insulin pump, GLP-1 agonists, amylin analogs, and those who have not filled their insulin since January 1, 2013. At the time of enrollment, participants signed a consent form and completed the Insulin Administration Assessment Tool (I-AAT). This too assessed each participants confidence with administration technique, level of discomfort, adverse reactions, adherence and affordability of their current insulin device. Each subject participated in a one-on-one education session with a pharmacist, who provided education on various types of insulin devices and needle types, demonstrated proper injection technique, and allowed participants to practice injections using various size needles or devices. A pharmacist made interventions as needed, to optimize each patients insulin delivery experience. The number and type of interventions were documented using an intervention record. A short survey, evaluating the same factors as the I-AAT, was administered 4 weeks after pharmacist education to determine the impact on each patients insulin delivery experience, patient knowledge and to assess patient satisfaction with the service provided. Results: The number and type of interventions will be presented and responses to the I-AAT and the telephone post-survey will be analyzed using SPSS software and descriptive analysis. Research is currently in data collection phase, and results and conclusions are pending.

Learning Objectives:

Identify the most common causes for insulin non-adherence among insulin-dependent patients with diabetes.

Select the most appropriate device and needle length for various types of patients.

Self Assessment Questions:

Which of the following is a common cause for a patients non-adherence to insulin therapy?

A Forgetfulness

B: Pain/Discomfort

C: Lack of knowledge about disease-state

D: Mistrust in health care professionals

Which of the following statements is correct regarding insulin delivery in an obese patient with a BMI of 35?

A This patient is not a candidate for a pen device and must use an ir

B This patient is candidate for using a pen device but may only use

C This patient is a candidate for using a pen device and may use the

D This patient is not a candidate for 4mm pen needles but may use t

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-302 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT AND EVALUATION OF A PHARMACIST EDUCATIOI PROGRAM IN PREPARATION FOR OPENING A NEONATAL INTENSIVE CARE UNIT

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Purpose: To create and evaluate an educational competency program for pharmacists in preparation for the opening of a neonatal intensive care unit (NICU) at the University of Wisconsin American Family Childrens Hospital (AFCH). The primary objectives were: to develop pharmacist competencies, increase pharmacist knowledge base in preparation for practicing within the NICU, and determine the teaching methods most appropriate for education in this setting..□□ Methods: Literature reviews and the recommendations of AFCH pharmacists aide in determining the educational topics. Topic content was developed by residents and pharmacy students using a structured outline. Prior to education on each topic, the pharmacists were administered a pre-education competency test to obtain a baseline measurement of their knowledge of the particular topic. Next, education was provided by means of slide-based learning or pharmacist group discussion. Immediately following education, the pharmacists were administered an identical post-test. The pre- and post-test scores were compared to assess if their competence increased. Additionally, three-months after the original education a follow-up assessment will be completed to ascertain subject matter retention, assess pharmacist confidence in thei practice, and the suitability and applicability of the educational material within NICU practice. □□Results/Conclusions: Results will be presented at the Great Lakes Resident Conference.

Learning Objectives:

Describe methods used to identify educational topics most pertinent for NICU pharmacists who already have pediatric pharmacy experience.

Identify educational and teaching strategies that can be used for pharmacist education in preparation for working in a NICU.

Self Assessment Questions:

Based on the presented research, how were NICU related educational topics selected?

A Director of Pharmacy picked topics out of a hat

B: Based on pharmacist recommendations and literature review

C: Resident selected topics based on those most pertinent to adult IC

D: Medical Director told the pharmacy department what the pharmaci

Which of the following are possible strategies for providing pharmacist education?

A Giving pharmacists a collection of book chapters to read on their o

B Peer-led discussions using evidence based medicine and patient c

C Slide-based learning presentations

D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-699 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF A PHARMACIST-DRIVEN WEIGHT MANAGEMENT PROGRAM

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Purpose: Excess weight is a modifiable risk factor directly associated with increased morbidity and mortality. Participation in a health and wellness program provides education-based guidance towards improvec overall health via weight loss initiation and maintenance. Sustained weight loss and corresponding health benefits are possible with regular physical activity, consistent eating patterns and self-monitoring. There is currently no literature available that evaluates the impact of a pharmacis driven weight management program. The purpose of this study is to determine the efficacy of an Interdisciplinary, pharmacist-driven Health and Wellness Program on reductions in weight and waist circumference measurements. Methods: Institutional review board approval was obtained and informed consent was provided by all subjects. This was a single-center, prospective study that included individuals at least 18 years of age with a body mass index (BMI) of 25 or greater. Participants were excluded from the research for age greater than 65 years, limited mobility, history of gastric surgery or use of chronic steroids or weight loss medications within the last three months. It was hypothesized that this program would not result in significant total weight loss or decreasec waist circumference. It was hypothesized that a pharmacist-driven, interdisciplinary program for weight management would result in at least a 10 percent decrease in total weight per participant, as well as a decreased waist circumference. Participants were enrolled in a twelve week Health and Wellness program. Education-based behavioral interventions, regarding food choices and physical activity, were implemented and health metrics for each participant were measured at baseline and at follow-up intervals throughout the program. The primary endpoints were total weight reduction from baseline and a decrease in waist circumference. Secondary outcomes included improvements in blood pressure, total cholesterol, LDL cholesterol, HDL cholesterol, triglycerides, Hemoglobin A1C and overall quality of life. Results and Conclusions: to be presented

Learning Objectives:

Identify dietary and physical fitness recommendations for adult Americans.

Describe the potential benefits of a pharmacist-driven weight management program.

Self Assessment Questions:

According to the 2008 Physical Fitness Guidelines for Americans, adults should receive how many minutes of moderate physical activity per week?

A 75

B: 100

C: 125

D: 150

Which of the following is a potential benefit of a pharmacist-driven weight management program?

A Pharmacists can increase the profitability of their company

B Pharmacists can provide education on disease state management

C Pharmacists can prove they are better than physicians

D Pharmacists can eliminate the need for nutritionists

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-303 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF TIME TO ADMINISTRATION OF ANTIMICROBIALS IN PEDIATRIC PATIENTS

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Purpose: In 2007, the Infectious Diseases Society of America (IDSA) and the Society for Healthcare Epidemiology of America published guidelines for developing hospital based antimicrobial stewardship programs. In these guidelines, the two core strategies for antimicrobial stewardship include prospective audit with intervention and feedback and formulary restriction and preauthorization. Until recently, at Comer Childrens Hospital the use of restricted antimicrobials was solely based on formulary restriction and preauthorization. While this process allowed for prevention of inappropriate prescribing of antimicrobials, it may have negatively affected patient care due to possible increased time from medication ordering to administration. The primary objective of the study was to evaluate time to administration of first dose of commonly prescribed restricted antimicrobials compared to non-restricted ceftriaxone. Secondary objectives included evaluation of time of specific steps from medication ordering to nursing administration (medication ordering to infectious disease (ID) approval, ID approval to order verification, order verification to medication delivery, and medication delivery to administration). Additional secondary objectives included evaluation of time to first dose of commonly prescribed antimicrobials in patients with sepsis and febrile neutropenia and time to first dose of medications already stocked in omnicell. □□Methods: This retrospective cohort study included pediatric patients prescribed at least one dose of the specified antimicrobials from July 2012 to June 2013 at Comer Childrens Hospital. Restricted antimicrobials included vancomycin, ceftazidime, cefepime, piperacillin/tazobactam, and acyclovir, compared to non-restricted ceftriaxone. Patients were excluded if antimicrobials were prescribed during off hours, if first dose of antimicrobial was administered at an outside hospital or clinic, if patient was located in an operating room or emergency department, and if patient was receiving hemodialysis or peritoneal dialysis. All primary and secondary endpoints were evaluated using Students t-test. □□Results: to be presented□□Conclusion: to be presented

Learning Objectives:

Outline the Infectious Diseases Society of America (IDSA) and the Society for Healthcare Epidemiology of America core strategies for developing antimicrobial stewardship programs.

Define the 2012 surviving sepsis guideline recommendations for time to administration of antimicrobials in septic shock.

Self Assessment Questions:

The two core strategies defined by IDSA for antimicrobial stewardship include:

A prospective audit with intervention and feedback

B: formulary restriction and preauthorization

C: antimicrobial approval and reauthorization

D: both a and b

The 2012 surviving sepsis guideline recommends antimicrobials be administered:

A within the first half an hour of recognition of septic shock

B within the first hour of recognition of septic shock

C within the first one and a half hours of recognition of septic shock

D within the first two hours of recognition of septic shock

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-700 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DOSING STRATEGIES IN DIABETIC PATIENTS WITH END STAGE RENAL DISEASE (ESRD) OR ON HEMODIALYSIS (DOSE-HD STUDY

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PURPOSE: The purpose of this study is to assess whether the current recommendation for a 50% dose reduction in insulin for diabetic patients with a glomerular filtration rate (GFR) ≤ 15 mL/min or on hemodialysis (HD) is adequate and whether there remains an increased number of hypoglycemic episodes in this population. Furthermore, appropriate dosing strategies for patients with ESRD will be determined. METHODS In this retrospective cohort study, the number of hypoglycemic episodes that occurred in diabetic patients with GFR ≤15, 16-30, and 31-60 mL/min were assessed. Parameters that were collected included: age, weight, sex, ethnicity, glomerular filtration rate (GFR), capillary blood glucose, insulin dosing, and length of stay. Inclusion criteria included inpatient men and women ≥ 18 years of age with type 2 diabetes mellitus, GFR ≤ 60 mL/min, and a length of stay of ≥ 3 days. Exclusion criteria included patients < 18 years of age, pregnant patients, and the use of intravenous insulin. The average and maximum insulin doses per patient per day were recorded to analyze whether there was a correlation between insulin dose (u/kg) and the rate of hypoglycemia in patients with a GFR ≤15 mL/min or on hemodialysis compared to those with a higher GFR. PRELIMINARY RESULTS: There were no statistical differences in the rate of hypoglycemia or severe hypoglycemia according to age, weight, sex, or race. In a univariate analysis, a statistical difference was found in the rate of hypoglycemia for patients with ERSD (81 events per 141 patients [57%] p=0.001) and on hemodialysis (26 events per 39 patients [67%] p=0.008). CONCLUSIONS: The results of this study reveal that patients with ESRD or on hemodialysis are at an increased risk of experiencing hypoglycemia during their hospital stay.

Learning Objectives:

Recall risk factors that have shown statistical significance in the development of hypoglycemia

State the current recommendation for insulin dose adjustment in patients with renal insufficiency

Self Assessment Questions:

Risk factor(s) for the development of hypoglycemia include the following

A Presence of ESRD or on hemodialysis

B: Increased length of hospital stay

C: African Americans and Hispanic ethnicities

D: Age

Which of the following represents the current recommendation for insulin dose adjustment in patients with renal insufficiency?

A A 25% decrease of total daily dose

B A 50% decrease of total daily dose

C A 75% decrease of total daily dose

D A 90% decrease of total daily dose

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-304 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFICACY AND SAFETY OF INHALED EPOPROSTENOL IN COMPARISON TO INHALED NITRIC OXIDE

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Background: Both inhaled nitric oxide (iNO) and epoprostenol (iEP) have been evaluated for the management of hypoxemia associated with acute respiratory distress syndrome (ARDS) and right ventricular (RV) heart failure. Prospective trials suggest that both agents have comparable efficacy on oxygenation with no effect on systemic hemodynamics. These trials have several limitations, making it difficult to draw definitive conclusions about the relative efficacy and safety of these agents.

Objectives: Evaluate the efficacy and safety of iEP in comparison to iNO in mechanically ventilated patients with ARDS or RV failure Methodology: A propensity-matched, non-inferiority retrospective cohort study will be conducted to evaluate mechanical ventilation-free days between patients receiving iEP therapy and iNO therapy. Patients will be included if they were ≥18 years old, admitted to the intensive care unit with ARDS or acute RV failure, on invasive mechanical ventilation, and received inhaled therapy for ≥1 hour. Patients will be excluded if they received other inhaled vasodilatory therapies or concomitant iNO and iEP. Data collected will include demographics, efficacy outcome data (PaO2/FiO2 ratios, duration of mechanical ventilation, length of ICU and hospital stay), therapy details including ventilation and non-ventilated based strategies for management of hypoxemia, and safety outcomes including hemodynamic parameters, methemoglobin levels, and incidence of rebound hypoxemia. Propensity score will be utilized to match patients to iNO based on predefined set of variables that would influence treatment assignment. Non-inferiority will be concluded if one sided lower boundary of the 95% confidence interval for difference in ventilator-free days between treatments is <1.3 days. Eighty-six patients will be evaluated to provide 80% power (with alpha = 0.05) for assessing the primary outcome, and to account for a 10% non-matching rate. Descriptive statistics and inferential statistics will be used as appropriate. Results and conclusions: To be presented at the Great Lakes Pharmacy Residency Conference

Learning Objectives:

Describe limitations of current literature regarding the use of inhaled epoprostenol for hypoxemia

Identify the advantages of using selective inhaled vasodilators versus intravenous vasodilators for management of hypoxemia

Self Assessment Questions:

Inhaled epoprostenol causes pulmonary vasodilation by activating which enzyme

A Adenylate cyclase
B: Guanylate cyclase
C: Protein kinase
D: Adenosine triphophate synthase

One of the dose limiting side effects of intravenous epoprostenol include

A Hypotension
B Blurred vision
C Liver injury
D Bleeding

Q1 Answer: A Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-305 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PHARMACIST INVOLVEMENT IN AN ACUTE CARE OF THE ELDERLY (ACE) UNIT

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Purpose: The inappropriate use of medications in the elderly population can lead to confusion, falls, and even delirium. This in turn puts their health at an increased risk as well as their mortality rate. A multi-disciplinary approach of elderly patient care in an Acute Care of Elderly (ACE) Unit will work to decrease adverse events, shorten the length of stay, and decrease mortality rates. A pharmacist will be an integral part of this team, overseeing the medication management of the patients as well as making interventions to reduce inappropriate medication dosing and polypharmacy. The primary expected outcome is that there will be an overall decrease in falls on the ACE unit. Methods: A guideline will be set in place outlining potentially inappropriate medications and the appropriate therapeutic alternative based on BEERS criteria. The BEERS criteria are a guide of safer therapeutic alternatives for health professionals. Education of pharmacy and nursing staff on safe medication use in the elderly will be developed in conjunction with the geriatricians. After the guideline and education is in place, all patients in the ACE unit will be monitored prospectively for falls as well as interventions made by pharmacists.

Learning Objectives:

List potentially inappropriate medications frequently used in elderly patient

Recognize treatment alternatives to potentially inappropriate medications based on the BEERS criteria

Self Assessment Questions:

1.Which of the following medications can potentially increase risk of fall in an elderly patient?

A Alprazolam
B: Diazepam
C: Trazodone
D: All of the above

2.Mr. Brown arrives in the ED after another fall. Patient claims he has been feely unsteady lately. The following are a list of his home medications Glyburide 10mg daily Furosemide 20mg daily KCL 20m

A one
B two
C three
D four or more

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-874 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF CHAIR-SIDE PRESCRIPTION DELIVERY AND COUNSELING IN MULTIPLE AMBULATORY CLINICS

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Purpose: An innovative service was developed when an outpatient pharmacy partnered with a neighboring ambulatory oncology clinic to deliver prescription medications to patients during their chemotherapy infusions. This chair-side delivery service was requested by an oncologist and has been successful in helping the outpatient pharmacy increase prescription capture from the oncology clinic. The objectives of this project are to implement the chair-side prescription delivery service in multiple ambulatory oncology clinics and increase outpatient prescription capture from baseline. □□Methods: Collaboration between outpatient pharmacy management and ambulatory oncology clinic staff was required to develop consensus for the new workflow. Five outpatien pharmacies were selected as appropriate sites to target given their staffing capabilities and proximity to oncology clinics. Baseline prescription capture data was collected, and goals for prescription capture increase were determined. The new service was introduced to patients through signs and promotional materials, and the outpatient anc oncology clinic staff was educated on the workflow. Prescription capture data has been re-measured at biweekly intervals.
□□

Results/Conclusions: The prescription capture goals are to initially achieve a 25% increase in total volume of prescriptions from oncology prescribers, maintain this increase, and ultimately achieve a 100% increase. Currently, the service has been implemented at three sites. Over 18 weeks, Pharmacy B has achieved the goal of a 25% increase a weeks 12, 16, and 18. Over six weeks, Pharmacy D has achieved the goal of a 25% increase at weeks 4 and 6. Pharmacy A has yet to achieve their target increase, likely due to a concurrent pharmacy initiative that has been a higher priority. In addition to increasing prescription capture and revenue, other benefits from the chair-side delivery service implementation have been improved communication anc collaboration between the outpatient pharmacy and the clinic staff.

Learning Objectives:

Recognize the benefits of increasing outpatient prescription capture

Identify barriers to implementing a chair-side prescription delivery servic

Self Assessment Questions:

What is a benefit to increasing outpatient prescription capture?

A Decreasing pill burden for patients

B: Increasing wait time for prescriptions

C: Improving financial security of the department

D: Reduced communication between pharmacy and clinic

What is one method to overcome potential barriers to implementation of a chair-side prescription delivery service?

A Exclude oncology clinic staff from updates

B Hire additional pharmacy staff

C Refuse credit/debit card payments

D Train medical assistants to offer service

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-701 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

ANALYSIS OF THE EFFECT OF SIROLIMUS ON STERNAL WOUND INFECTION AFTER MEDIAN STERNOTOMY IN KINDEY AND / OR PANCREAS TRANSPLANTS

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Purpose: Sternal wound infection is a rare, but potentially fatal complication of median sternotomy. Immune-suppression is a potential risk factor for sternal wound infection and an important component of post-transplant medical care. The standard post-transplant maintenance anti-rejection regimen at The Ohio State Wexner Medical Center (OSUWMC) for kidney and/or pancreas transplants utilizes sirolimus in combination with cyclosporine. Sirolimus is unique among the anti-rejection medications because it inhibits fibroblasts, cells responsible for wound repair, and has been implicated in increased wound infection rates after organ transplantation. This study will assess the effect of sirolimus on the incidence of sternal wound infection.□□Methods: A retrospective chart review is being conducted on all patients older than 18-years-of-age who underwent median sternotomy at OSUWMC from 01/01/2002 through 05/31/2013 who previously received a kidney, isolated pancreas, or kidney-pancreas transplant. Patients on sirolimus-free anti-rejection regimens serve as the control group. A regimen is considered sirolimus-free if sirolimus discontinuation occurred at least fourteen days prior to median sternotomy or the regimen never contained sirolimus. The primary outcome is the rate of sternal wound infection in patients on sirolimus-based anti-rejection regimens. Secondary outcomes include thirty day readmission and three-month mortality.□□Results: Results and conclusions are pending and will be presented at the Great Lakes Pharmacy Residency Conference.□□Results: Results and conclusions are pending and will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Recognize risk factors for sternal wound infections in patients who undergo open-heart surgery.

Identify the mechanism underlying sirolimuss role in impaired wound healing.

Self Assessment Questions:

Which of the following statements about sirolimus is correct?

A Sirolimus has a relatively short half-life in comparison to other anti

B: Sirolimus inhibits fibroblast activity leading to impaired wound heal

C: OSUWMC utilizes sirolimus monotherapy to prevent organ rejectic

D: Recent use of sirolimus, or any immunosuppressant, is a relative c

Which of the following has been identified as a risk factor for sternal wound infection?

A Diabetes mellitus

B Time to surgery

C Recent antibiotic use

D Transplant recipient status

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-306 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ARE EXTENDED TREATMENT COURSES OF INTRAVENOUS N-ACETYLCYSTEINE FOR THE TREATMENT OF ACETAMINOPHEN OVERDOSE ASSOCIATED WITH BETTER OUTCOMES?

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Purpose: Intravenous N-acetylcysteine (IV NAC) is the gold standard to reduce the extent of acute liver injury (ALI) following acetaminophen (APAP) overdose. The mechanism for protecting the liver is by maintaining or restoring glutathione levels, or by acting as an alternate substrate for conjugation with the reactive metabolite N acetyl p benzoquinone imine (NAPQI). This results in detoxification of the toxic metabolite. The standard dosing of IV NAC is a 21 hour regimen consisting of a three dose sequence. Controversy exists in the literature regarding the benefit of extending the treatment duration beyond 21 hours due to lack of large randomized controlled trials showing additiona mortality benefit. The purpose of this study is to determine the impact of extended IV NAC regimen (>21hr) compared to the standard regimen (21 hr) in patients with APAP overdose and ALI. □□Methods: This retrospective cohort study will be conducted utilizing the electronic healtl record to identify patients who received IV NAC for APAP overdose at NMH from 2007 to 2013. Patients will be included if they received at least three doses of IV NAC for APAP toxicity and had an APAP level consistent with APAP toxicity according to the Rumack-Matthew nomogram. Primary endpoint will be resolution of transaminitis. Secondary endpoints include in-hospital mortality and transplant-free survival. In-hospital mortality will be defined as death from ALI prior to discharge. Transplant-free survival will be defined as the number of hospital days until transplant. A bivariate analysis will be conducted with Students t-tests or Wilcoxon rank sum test for continuous variables and Chi-square test for nominal values. □ □Results: Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the role of IV NAC for in APAP toxicity

Discuss common sequela following APAP toxicity

Self Assessment Questions:

1.Which metabolite is primarily responsible for the toxicity seen in APAP toxicity?

A N-acetylcysteine

B: N acetyl p enzoquinone imine

C: Paracetamol

D: Glutathione

2.Which of the following is most common following APAP toxicity?

A Myocardial infarction

B Status epilepticus

C Acute liver injury

D Acute renal failure

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-307 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSESSMENT OF ANTIMICROBIAL THERAPY IN ADULT PATIENTS WITH FEBRILE NEUTROPENIA AT CLEVELAND CLINIC

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Febrile neutropenia (FN) is an oncologic emergency associated with significant cost, morbidity, and mortality. Guidelines from the Infectious Diseases Society of America (IDSA) recommend specific antibiotics for empiric treatment of FN and also recommend implementing a critical management pathway to improve outcomes and promote antimicrobial stewardship. Guidelines have been developed at Cleveland Clinic Main Campus (CCMC) to help direct appropriate antimicrobial therapy for patients with FN. This project evaluated adherence to guidelines at this institution, focusing on vancomycin and meropenem use. □This was a retrospective, single center, cross-sectional study. Adult patients who received vancomycin or meropenem as treatment for FN on an oncology floor between May and September 2013 were included. Patients were excluded if they received antibiotics for a confirmed or suspected infection within 7 days prior to presentation. Primary outcomes were the number of vancomycin and meropenem orders initiated in compliance with the CCMC FN guidelines and the number that were de-escalated within 48 hours in the absence of a specific indication. Secondary outcomes were the duration of treatment with vancomycin and meropenem, admission to an Intensive Care Unit (ICU), and in-hospital mortality.□A total of 127 evaluated patients received 177 total vancomycin orders and 58 total meropenem orders over 148 total hospital admissions. Among vancomycin orders, 133 (75%) were initiated in compliance with CCMC guidelines and 111 (67%) were appropriately de-escalated. Among meropenem orders, 22 (38%) were initiated in compliance with CCMC guidelines and 23 (42%) were appropriately de-escalated. Persistent fever was the most common non-guideline indication for initiation. Among all admissions, 32 (21.6%) included an admission to an ICU and the in-hospital mortality rate was 6.1% (N=9). □ Based upon the results of this study there are available opportunities for improving compliance to CCMC FN guidelines for use of vancomycin and meropenem.

Learning Objectives:

Discuss whether or not deviations from published guidelines for the management of febrile neutropenia improve patient outcomes

Classify the use of vancomycin and meropenem according to institutional guidelines for treatment of febrile neutropenia

Self Assessment Questions:

Which of the following statements is true regarding deviations from published guidelines for the treatment of patients with febrile neutropenia?

A Studies have not shown that deviating from guidelines improves cl

B: There is evidence that empiric use of vancomycin in all patients im

C: Delaying antibiotic therapy until culture results are available impro

D: Pooled data from many prospective studies shows that deviating fi

According to the IDSA guidelines, empiric selection of an antibiotic for treatment of febrile neutropenia should be based upon covering for which organism(s)?

A Methicillin-resistant Staphylococcus aureus

B Extended-spectrum β-lactamase producing Gram-negative organis

C Pseudomonas aeruginosa

D Bacteroides fragilis

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-308 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT OF A MEDICATION ASSISTANCE PROGRAM AT THE FRANCISCAN HEALTHY LIVING CENTER

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Background: In the last two decades, prescription drug costs have escalated in the United States. They are the fastest-growing health care expenditure, which makes affording medications an obstacle for the increasing number of patients without prescription drug coverage. Over 45 million patients lack prescription drug coverage and cope by underutilizing medications, cutting back on necessities, or increasing their debt burden. Patient assistance programs (PAP) offer medications at low or no cost to eligible patients who cannot afford medications, but the required paperwork can be time-consuming and tedious. Institutiona patient assistance programs (IPAP) allow health care facilities to receive bulk shipments of medications from a pharmaceutical company such that they may be distributed to patients deemed eligible per mutually agreed upon criteria. The goal of establishing a local medication assistance program (MAP) is to promote medication adherence, improve health outcomes, and prevent recurrent hospitalizations from poorly managed chronic disease states.□□Purpose: To establish a MAP at the Franciscan Healthy Living Center (FHLC) through the utilization of IPAPs and initiation of a pharmacist-led process to facilitate patient access to vital medications.□□Methods: The Franciscan St. Elizabeth Health Institutional Review Board approved this project. Pharmaceutical companies were contacted regarding the availability of IPAPs. One IPAP was pursued due to the FHLCs eligibility. Preparation of the application and prospective program implementation involved collaborating with various hospital departments. Policies and Procedures for the programs operation were written and approved by the Pharmacy Director in preparation for submission of the application. A pharmacist-led service is being developed to facilitate patient application for PAPs when a medication is not available through the local IPAPs.
□□
Results/Conclusions: One IPAP application is currently pending. The framework for a pharmacist-led MAP is currently being developed. Project outcomes will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the process of developing a medication assistance program (MAP).

Identify pharmacist roles in implementing MAPs.

Self Assessment Questions:

Which of the following would be the most useful reference for a pharmacist working on establishing a MAP?

A Facts and Comparisons eAnswers
B: Red Book
C: Centers for Medicare and Medicaid Services Website (www.cms.g
D: RxAssist Website (www.rxassist.org)

One role pharmacists can play in implementing MAPs is:

A Identifying patients who may benefit from medication assistance th
B Entering the pharmacy's address into a PAP application so that m
C Referring all patients expressing difficulty affording medications to
D Dispensing PAP medications shipped for a particular patient to an

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-703 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF AN ALCOHOL WITHDRAWAL GUIDELINE IN THE EMERGENCY DEPARTMENT (ED) TO REDUCE INTENSIVE CARE UNIT (ICU) ADMISSIONS

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Background: Alcohol withdrawal syndromes (AWS) are characterized by a hyper-autonomic state that occurs due to a decrease in the amount of alcohol intake. It is estimated that 24% of adults brought to the Emergency Department (ED) suffer from alcoholism and 21% result in ICU admission secondary to complications from AWS. Management of AWS can often be challenging due to resistance to standard doses of benzodiazepines. Several studies have successfully demonstrated the use of aggressive doses of benzodiazepine and the benefits of adjunctive medications in the management of AWS.The ED at our institution has traditionally used an AWS guideline focused on conservative benzodiazepine doses. This traditional guideline has since been replaced by a more aggressive guideline that promotes the use of higher doses of benzodiazepines and recommends the administration of adjunctive therapies such as phenobarbital, clonidine, and haloperidol.
□□
Objectives: The primary objective is to assess whether a more aggressive treatment guideline will reduce ICU admissions and ICU length of stay. Secondary objectives include intubation rates, length of hospital stay, and total doses of benzodiazepine and adjunctive medications.□□Methods: This study is a retrospective chart review of al patients that received treatment for AWS in the ED from November 01, 2012 to October 31, 2013 and November 01, 2013 to February 28, 2014 Patients under the age of 18 years and those who did not receive treatment for AWS in the ED will be excluded from the study. Outcomes to be evaluated include: benzodiazepine doses (total dose during the first hour of management and total dosage in ED), requirement for ICU admission, ICU length of stay, hospital length of stay, requirement for intubation, and total doses of adjunctive medications received in the ED.
□□
Results/conclusion: Data collection and analysis are pending and will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify the signs and symptoms associated with alcohol withdrawal syndromes (AWS)

Describe the multimodal pharmacotherapy management of AWS

Self Assessment Questions:

All of the following can be used in the management of AWS except:

A Lorazepam
B: Phenobarbital
C: Clonidine
D: Methadone

Clinical presentation of AWS can include which of the following

A Tremors
B Seizures
C Hyperthermia
D All of the above

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-704 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF MEDICATION RECONCILIATION AT A COMPREHENSIVE CANCER CENTER

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Purpose: Medication reconciliation is a national patient safety goal set by The Joint Commission. Lack of a complete medication history heightens the risk of a patient receiving interacting medications or duplicative therapy, especially among patients seeing multiple providers. Hematology/oncology patients are at high risk of drug-drug interactions as they receive complex treatment regimens which often interact with medications prescribed for other comorbidities. This study aims to determine the impact of pharmacy-led medication reconciliation among hematology/oncology patients through an analysis of medication discrepancies. Secondary objectives aim to improve quality of care through identification of drug-drug interactions and provision of pharmacist recommendations for the medication related problems identified.□□Methods: This is a single-center, retrospective study of ambulatory hematology/oncology patients receiving treatment at the University of Michigan Comprehensive Cancer Center. Institutional Review Board approval was obtained prior to study commencement. All patients age 18 and older who fully completed at least one medication reconciliation encounter with a pharmacy student-pharmacist preceptor team between January 1, 2013 and December 31, 2013 were included in the study. The electronic medical record was used to assess the results of the medication reconciliation completed for each patient. Medication discrepancies including those resulting in dose changes, medication additions, herbal product additions, and medication deletions from each patient medication history were collected and analyzed. Drug-drug interactions identified, severity of interaction found, provider notification of findings, and suggested medication related changes will also be assessed. □□Analysis of data is currently ongoing. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Explain the importance of medication reconciliation in the ambulatory hematology/oncology setting.

Identify factors which may place ambulatory hematology/oncology patients at higher risk of medication related problems.

Self Assessment Questions:

Which of the following define(s) the importance of medication reconciliation in the ambulatory hematology/oncology setting?

A Identification of drug interactions with prescription medications, no
B: Coordination of care between multiple providers
C: Identification of therapeutic duplications
D: All of the above

Ambulatory hematology/oncology patients may be at an increased risk for medication related problems due to:

A Taking a large number of medications for hematology/oncology inc
B Less frequent interaction with health care providers than non-onco
C Use of herbal products and supplements which may interact with c
D A & c

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-309 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EPIDEMIOLOGY AND IMPACT OF ANTIRETROVIRAL TOXICITY IN A LARGE URBAN CLINIC

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Purpose: The objective of this study is to quantify and characterize adverse drug event (ADE) occurrence in a human immunodeficiency virus (HIV) clinic population seen by a pharmacy specialist, and to identify risk factors for significant ADE-related outcomes. □Methods: This IRB-approved study will be conducted using a retrospective case-case-control design. Through a retrospective review of electronic medical records. all clinic visits with the HIV pharmacy specialist from August 2009-July 2013 will be screened for the presence of ADEs. Patients ≥ 18 years who visit with the HIV pharmacist and report an ADE during the study period will be included. Data from non-matched patients with clinically significant ADEs (Case 1) will be compared to patients with non-clinically significant ADEs (Case 2), as well as a control arm of non-ADE cases. Clinically significant ADEs were defined as any drug-related events directly resulting in antiretroviral switch or discontinuation, hospital admission for a similar event within 90 days, or loss of viral load suppression within 90 days. Non-clinically significant ADEs were defined as any drug-related events not meeting the above criteria. The control population will consist of randomly selected patients that did not report an ADE during the study period. Case and control patients will be grouped in a 1:1:1 ratio for analysis. Two separate analyses will be conducted using the Chi-square test to evaluate categorical data and the Mann-Whitney U test to evaluate continuous, non-parametric data. The first analysis will compare clinically significant ADE cases to non-ADE cases and the second analysis will compare non-clinically significant ADE cases to non-ADE cases. From these univariate analyses, a multivariate logistic regression analysis will be conducted to compare clinically significant-ADE cases to non-clinically significant ADE cases. □

Results and Conclusions: Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Describe the relationship between antiretroviral toxicity, medication adherence, and antiretroviral efficacy in suppressing the viral load of HIV

Outline previous literature involving the epidemiology of antiretroviral toxicity and the limitations of the classic case-control study design

Self Assessment Questions:

Antiretroviral toxicity directly contributes to poor medication adherence. What minimum percentage of antiretroviral adherence is necessary to suppress the HIV viral load?

A 60%
B: 70%
C: 80%
D: 90%

The majority of available antiretroviral toxicity data is published in what form?

A Rigorously controlled clinical trial results
B Clinical outcomes studies conducted in realistic patient populations
C Case reports/case series involving a specific type of toxicity
D a & c

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-690 -L02-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE IMPACT OF POST-DISCHARGE PHARMACIST TELEPHONE CALLS ON HOSPITAL READMISSIONS IN HIGH-RISK PATIENTS

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Purpose: Medication-related adverse events are pervasive problems after hospital discharge. Available studies show mixed effects of pharmacist-led post-discharge interventions on hospital readmissions. The purpose of the study is to examine the impact of pharmacist-led post-discharge telephone calls on 30-day emergency department (ED) visits and hospital readmissions in high-risk patients. Methods: This is a single-center, prospective study with a historical control, evaluating adult patients at high-risk for readmissions from a single nursing unit identified using the modified Better Outcomes by Optimizing Safe Transition (BOOST) risk assessment tool between the period of December 16, 2013 - June 2014. The study will include patients who meet all three criteria from the modified BOOST risk assessment score which includes: polypharmacy (score = 3), principal diagnosis (score = 3), and prior hospitalization (score > 2). The historical control group will be identified using the same criteria as the intervention group for patients discharged from August 2013 - December 15, 2013. Approximately 112 patients in each group will be evaluated to achieve 80% power with an alpha error rate of 0.05. The intervention group will receive phone calls from a pharmacist within three days of hospital discharge after obtaining informed consent. Baseline demographics (age, gender, race, etc.), discharge diagnosis, insurance status, and total BOOST scores will be collected for both intervention and historical control. Intervention group patients will also have the following data collected: assessment of patients medication knowledge upon reconciliation, identified drug related problems, and patient reported medication adherence. The primary endpoint of the study is 30-day ED visit rates. The secondary endpoints are 30, 60, and 90-day all-cause readmission rates, as well as, 60 and 90-day ED visits. All endpoints wi be compared between the intervention and control groups.

Results: Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Discuss the findings of the previously published literature on pharmacist led post-discharge phone calls on hospital readmissions.

Describe how the BOOST risk assessment tool can be used to identify patients at high-risk for hospital readmissions.

Self Assessment Questions:

Which of the following statements best describes the findings of the previously published literature on pharmacist-led post-discharge phone calls on hospital readmissions?

A A statistically significant reduction in the 30-day hospital readmissi
B: No statistical difference in preventable adverse drug events and 3(
C: Increased patient satisfaction but higher rates in emergency depar
D: Mixed effects on hospital readmissions

Which of the following factors that increase the risk of hospital readmissions are included in the modified BOOST risk assessment tool?

A Polypharmacy, Depression, Age
B Polypharmacy, Prior hospitalizations, Multiple co-morbidities
C Problem medications, Age, Gender
D Ethnicity, Healthy Literacy, Average annual income

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-310 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF A CLINICAL DECISION ALERT SYSTEM DIRECTED TOWARD PHARMACISTS TO IMPROVE TIME TO ANTIMICROBIAL ORDER CHANGES

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Purpose Antimicrobial stewardship is an emerging area of specialty tha is supported by the Infectious Diseases Society of America (IDSA) and the American Society of Health-System Pharmacists (ASHP). Antimicrobial stewardship aims to decrease the development of resistance by decreasing the misuse of antimicrobials, decrease healthcare costs, and decrease adverse drug reactions, as antimicrobials are a leading cause of adverse drug reactions. Clinical decision alert (CDA) systems have been shown to increase the number of interventions pharmacists make regarding antimicrobial selection; however, no study has evaluated the time to antimicrobial order changes when using a CDA system. The objective of this project is to optimize the use of antimicrobials by decreasing the amount of time to antimicrobial order changes through the use of an alert within the health systems electronic health record (EHR) system. Methods This evaluation is exempt from IRB approval because it is a quality assurance evaluation. An active CDA system using an alert aimed toward pharmacists will be implemented into the EHR. The system will notify pharmacists when a microbial culture is reported and a change in antimicrobial management should be considered. The elements for which the CDA system alerts include: positive blood culture results; all cerebrospinal fluid results; and positive sputum, endotracheal tube secretions, and brochoalveolar lavage results. Once the results have been reported for these components, time to initiation, change, or discontinuation of antimicrobial will be compared between pre- and post-implementation of the CDA system. A total of 125 charts will be reviewed for each component both pre- and post-implementation of the CDA system to achieve 80% power to detect a difference in time to antimicrobial order change using a two group t-test with a 0.05 significance level. Results/Conclusions: Analysis of results is ongoing. Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Describe the potential benefits of implementing antimicrobial stewardship programs.

Describe the potential benefits of implementing a clinical decision alert (CDA) system.

Self Assessment Questions:

Which of the following is a potential benefit of implementing an antimicrobial stewardship program?

A Increase healthcare costs
B: Decrease development of antimicrobial resistance
C: Increase adverse drug reactions
D: Decrease pharmacist involvement in patient care

What parameter was assessed pre- and post-implementation of the CDA system?

A Time to antimicrobial order changes
B Number of antimicrobial culture results
C Number of interventions performed by pharmacists
D Cost saving as a result of antimicrobial changes

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-311 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSESSING THE IMPACT OF A GUIDELINE BASED ALCOHOL WITHDRAWAL ORDER SET IN A COMMUNITY TEACHING HOSPITA

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Purpose: An estimated 2 million Americans experience symptoms of alcohol withdrawal each year with 10 to 20% of patients being treated as inpatients. Abrupt cessation of alcohol exposure in patients with alcohol dependence results in brain hyperexcitability because receptors previously inhibited are no longer inhibited. This action results in physiological changes such as diaphoresis, insomnia, tachycardia, anxiety, and tremors. Currently, there is no alcohol withdrawal protocol and order set in use at our facility; however, it has been requested by physicians. The goal of implementing these tools is to standardize treatment of this patient population and ultimately improve patient care. □□

Methods: The alcohol withdrawal protocol and treatment order set will be developed based on guideline practices with the input of the multidisciplinary team members to ensure all aspects of these tools are appropriate. Following approval by the Pharmacy and Therapeutics Committee, applicable staff will be trained in the use of the protocol and order set. The protocol will address the severity of alcohol withdrawal syndrome based on the assessment tool. The corresponding medication regimens will include fixed-schedule and symptom-triggered regimens. Timing of vital signs and appropriate lab values will also be available in the order set for convenience. These tools will be available for use in all adult medical patients with potential alcohol dependence. A post implementation survey will be developed and distributed to staff to evaluate the impact of these tools. □□Results: Data collection and analysis are currently ongoing.□□Conclusion: Will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Review the pathophysiology of alcohol withdrawal.

Identify the signs and symptoms of alcohol withdrawal.

Self Assessment Questions:

Which of the following receptors are most responsible for alcohol withdrawal?

A Gamma-Aminobutyric Acid (GABA)
B: N-Methyl-D-aspartate (NMDA)
C: Serotonin (5-HT)
D: Both A and B

Which of the following are symptoms of Alcohol Withdrawal?

A Fluctuating tachycardia and hypertension
B Delirium
C Seizures
D All of the above

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-705 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE INCIDENCE AND FINANCIAL IMPACT OF MEDICATIONS DISPENSED DESPITE ELECTRONIC MEDICAL RECORD DISCONTINUATION

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Purpose: The primary aim of this study is to determine the incidence of medications dispensed to patients within a healthcare network of affiliated primary care clinics and community pharmacies despite electronic medical record discontinuation by their healthcare providers. A secondary aim is to determine the financial impact resulting from this medication error. □□Methods: In this retrospective cohort study, the electronic medical and pharmacy records of patients who receive care from this healthcare network will be reviewed to identify the incidence of medications dispensed despite discontinuation (MDDD) by healthcare providers. Patients aged 18 years or older within the network who filled a prescription medication from June 2012 to August 2013 will be included in the study. A computer algorithm linked to the electronic medical and pharmacy records will identify all medications that were dispensed during this period and all medications that were electronically discontinued by a healthcare provider. These data points will be cross-referenced to identify MDDD and medications not dispensed following discontinuation (non-MDDD). Descriptive statistics will be used to characterize data and calculate the incidence of MDDD and non-MDDD. Chi-squared tests will be used to compare the incidence of MDDD to non-MDDD. All MDDD will be categorized by pharmacological classification to identify problematic medication categories for future interventions. The wholesale acquisition cost (WAC) will be applied to each MDDD to determine the financial impact of this medication error. By determining the incidence of MDDD, identifying problematic medication categories, and calculating the financial impact of this medication error, this study has the potential to inspire and inform future interventions to reduce MDDD, improve medication safety, and positively impact patient care.□□Results/Conclusions: Results will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Describe the ramifications of a patient filling a prescription after it has been discontinued by a provider.

Recognize factors that contribute to prescriptions being filled after they are discontinued on an electronic health record.

Self Assessment Questions:

According to the National Progress Report on E-Prescribing and Safe-R rankings, how many electronic prescriptions were routed in 2012 by United States office-based physicians?

A 68 million prescriptions
B: 330 million prescriptions
C: 570 million prescriptions
D: 788 million prescriptions

Which of the following factors have contributed to medications being dispensed to patients despite discontinuation on an electronic health record by a physician?

A Rapid implementation of health information technology
B Lack of evidence for potential adverse events
C Poor communication between electronic health records and comm
D Both A & C

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-875 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF A VANCOMYCIN NOMOGRAM FOR THE VETERAN POPULATION

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Purpose Vancomycin nomograms are based on the linear pharmacokinetics of vancomycin, the strong relationship between drug clearance and estimated creatinine clearance, patient weight and targeted trough serum concentrations. Due to the advanced age of the Veteran population and associated renal impairment, it is important to validate the accuracy of a vancomycin nomogram specific to this population. The purpose of this study is to assess the accuracy of a vancomycin dosing nomogram in achieving a target trough serum concentration of 15-20 mg/L in the Veteran population. Methods The timeframe for this prospective quality improvement analysis is October 2013 to February 2014. A vancomycin nomogram was created using dosing related to pharmacokinetics for creatinine clearance and actual body weight in kilograms. Inpatient pharmacists will screen patients to determine eligibility for nomogram use. Exclusion criteria consists of dialysis, acute kidney injury, ICU immediately after surgery, inpatient hospice, greater than one limb amputation or less than 24 hours of vancomycin dosing. Data collected at baseline includes age, gender, serum creatinine, BUN, height, actual body weight, medical service unit, infectious diagnosis, concomitant nephrotoxic medications, and co-morbidities. All data is extracted using the Computerized Patient Record System (CPRS). Once data is collected, the proportion of patients achieving a target vancomycin trough serum concentration of 15-20 mg/L prior to the fourth or fifth dose will be determined. Results and Conclusions Seven of the nine patients meeting eligibility criteria with preliminary results achieved a target trough serum concentration between 15-20 mg/L. The average trough thus far is 17 mg/L. Further results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference in April 2014. Conclusion pending based on final analysis of results.

Learning Objectives:

Review current Infectious Diseases Society of America guideline recommendations for vancomycin dosing.

Discuss pharmacokinetic characteristics in the Veteran population that should be considered when dosing vancomycin.

Self Assessment Questions:

According to the Infectious Diseases Society of America guidelines, which body weight should be used to dose vancomycin?

A Ideal body weight

B: Actual body weight

C: Adjusted body weight

D: Lean body weight

What is the loading dose of vancomycin currently recommended by the Infectious Diseases Society of America guidelines?

A 15 - 20 mg/kg

B 20 - 25 mg/kg

C 25 - 30 mg/kg

D 30 - 35 mg/kg

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-312 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IDENTIFICATION OF RISK FACTORS ASSOCIATED WITH THE DEVELOPMENT OF DAPTOMYCIN NONSUSCEPTIBLE STAPHYLOCOCCUS AUREUS

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Background: Daptomycin is a semisynthetic cyclic lipopeptide antibiotic with activity against Gram-positive organisms including methicillin resistant Staphylococcus aureus (MRSA), glycopeptide intermediate S. aureus (GISA), and vancomycin-resistant enterococci (VRE). Daptomycin is FDA approved for the treatment of skin and soft-tissue infections, bacteremia and right-sided endocarditis caused by methicillin sensitive S. aureus (MSSA) and MRSA. In initial preclinical studies it was demonstrated that in vitro resistance to daptomycin was unlikely to develop. Recently, several case reports have shown the development of daptomycin nonsusceptible S. aureus (DNSSA). However, given the rarity of DNSSA (<1% of Staphylococcus aureus isolates), there is currently limited literature identifying risk factors that lead to the development of DNSSA. Purpose: The current study is a retrospective case-control study to identify the risk factors associated with the development of DNSSA. Methods: Patients with a DNSSA isolate from 1/1/2009 through 9/1/2013 were included in this study. Ten cases will be matched 1:4 to 40 controls of daptomycin susceptible S. aureus isolates by age, site of infection, and date of DNSSA isolation. The following were collected as a potential risk factor for DNSSA development: patient demographics, comorbidities, antibiotic class exposure, daptomycin treatment, vancomycin treatment, previous MRSA isolation, type of infection, length of stay, concomitant medications, recent surgery, patients hospital location, previous ICU admission, previous hospitalization, Charlson comorbidity index score and patient outcome. Results: Ten DNSSA isolate cases were identified, with an average patient age of 68 years. Eight case patients (80%) had been hospitalized within 90 days of admission and 4 (40%) had been admitted to an intensive care unit. The sources of DNSSA isolation were blood (60%), operating room culture (30%) and abscess (10%). Overall case patient mortality was 40%. Complete results to be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify patient characteristics that are risk factors for the development of DNSSA.

Explain the possible mechanisms of nonsusceptibility in DNSSA.

Self Assessment Questions:

Which of the following statements is correct?

A According to CLSI breakpoints a daptomycin MIC of >1 mcg/mL fo

B: The rate of DNSSA has been estimated at 5% of all S. aureus isol

C: A proposed mechanism for the development of DNSSA is decreas

D: None of the above.

Which of the following has been associated with the development of DNSSA?

A Persistent bacteremia despite glycopeptide treatment.

B Prolonged exposure to vancomycin.

C Deeply seated infections with high bacterial loads.

D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-313 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PHARMACY AND INFORMATICS: USING METRICS TO ENHANCE THE SPECIFICITY AND EFFECTIVENESS OF CUSTOM, CLINICAL ALERTS UTILIZED IN CLINICAL SURVEILLANCE SOFTWARE

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Purpose: The purpose of this study was to analyze the correlation of alert specificity within a clinical surveillance program and the number of clinical interventions generated from customizable alerts. An additional goal was to determine areas of revision and pharmacy education within the current, active alerts at St. Elizabeths Hospital.□Methods: Benchmark goals were set to assess active alerts based on internal goals of the pharmacy department at St. Elizabeths Hospital. The total alerts fired and total interventions completed over 6 months were collected using reports. Alerts were categorized as specific, intermediate, or non-specific based on the likelihood of generating one intervention for each alert. "Daily monitoring" was a subsequent category created to exclude alerts for medications being managed by pharmacy on a daily basis(i.e., vancomycin). The percent of total interventions compared to total alerts fired was calculated to see if benchmark goals were achieved. Comparisons of each category were performed to test the hypothesis and determine areas for improvement.□Results: A total of 75 alerts were divided into the above categories and compared to the benchmark goals. 23 alerts were classified as specific, 32 as intermediate, and 11 as non-specific. Nine alerts were categorized as "daily monitoring" and excluded. Of all active alerts, 52% (39/75) reached the benchmark goal. Of the categorized alerts, 60.87% (14/23) of the specific alerts, 50% (16/32) of the intermediate alerts, and 9.09% (1/11) of the non-specific alerts achieved the set goal. □Conclusions: These results indicate that an alert high in specificity is more likely to have a higher clinical impact. The alerts in the intermediate and non-specific categories will be further assessed for the need of revision and pharmacy education.

Learning Objectives:

List the benefits of utilizing clinical surveillance software in an inpatient pharmacy.

Identify how metrics can be used to increase the clinical impact of alerts within clinical surveillance software.

Self Assessment Questions:

What is one of the benefits of utilizing clinical surveillance software in an inpatient pharmacy?

A Decreased efficiency

B: Improved patient care

C: Increased difficulty to measure the impact of clinical services

D: Minimal identification of high risk medications

2.Using metrics to assess the effectiveness of alerts within clinical surveillance software can be useful because:

A Increases identification of areas for pharmacist education

B Decreases identification of alerts in need of revision

C Increases alert fatigue

D Decreases the removal of poorly written alerts

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-706 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE IMPACT OF LOW HEALTH LITERACY LEVEL IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD) AT A COMMUNITY HOSPITAL

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Purpose: Inhaled medications are recommended as first line treatment for chronic obstructive pulmonary disease (COPD) and can reduce exacerbations and hospitalizations. Low health literacy in associated with poor inhaler technique. This study will examine if handouts written specifically for patients with low health literacy are more effective in showing patients how to use their medications when compared to standard education materials.□□Methods: This study has been submitted to the Institutional Review Board for approval. The electronic medical record will be used to identify patients admitted to the hospital with a diagnosis of COPD. The health literacy of participants will be identified using the Rapid Estimate of Adult Literacy in Medicine - Short Form (REALM-SF). Patients scoring <7 on the REALM-SF and on at least one inhaled medication for COPD will be included in the study. Handouts explaining the proper use of common inhalers were developed at an appropriate reading level for individuals with low health literacy. These handouts will be compared against the standard hospital educational material for inhalers. Participants will be randomized to receive either the low health-literacy (LHL) handout or standard educational handout (SEH). Participants will be asked to demonstrate how they use their inhaler at home. Participants will then be provided their pre-assigned handout and given 15 minutes to review. The participant will demonstrate their inhaler technique a second time, based on what they learned from the handout. Correct technique during each demonstration will be evaluated using a standardized checklist. Difference in the mean change in technique score and difference in satisfaction with the two handouts will be analyzed.

Learning Objectives:

State the impact of low health literacy on overall health.

Define the appropriate reading level at which patient information should be written for patients with low health literacy.

Self Assessment Questions:

Low health literacy impacts overall health in which of the following ways.

A Decrease in health care costs.

B: Increase in medication errors.

C: Improved ability to describe how to take medications.

D: Less difficulty in interpreting medication labels.

Written information provided to patient's with low health literacy should be written at or below what grade level?

A 6th grade

B 8th grade

C 10th grade

D 12th grade

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-314 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT AND JUSTIFICATION OF A PHARMACIST-LED ORAL CHEMOTHERAPY MANAGEMENT PROGRAM

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Purpose:□To develop, implement and evaluate the impact of a pharmacist-led oral chemotherapy management program at the University of Wisconsin Carbone Cancer Center (UWCCC).□□Methods:□First, the concept for a pharmacist-led oral chemotherapy management program at the UWCCC will be developed, including pharmacist counseling, medication review, adherence assessment, and adverse effect screening during clinic appointments and follow-up callbacks. To ensure prospective pharmacist review of all oral chemotherapy orders, an innovative multi-step workflow within the electronic medical record will be constructed. Systems for ongoing measurement and documentation of pharmacist patient care activities will be established. □□Second, program will be implemented during 8 week pilot within the gastrointestinal and genitourinary oncology clinic; eligible patients are adults maintained or initiated on oral chemotherapy. Target enrollment is 50 patients. The primary investigator will be responsible for all program activities during the pilot within specified clinics.□□Third, impact of program will be evaluated. The primary outcome measure is the percent change in treatment plan adherence compared to pilot baseline. Adherence will be assessed during clinic appointments and callbacks as percentage of treatment days compliant with prescribed regimen (each day of cycle n=1). Each patient will serve as own control group (adherence at pilot enrollment compared to adherence during pilot). Secondary outcome measures include percent change in patient, provider and nurse satisfaction scores and oral chemotherapy prescription capture rates from pilot baseline. Baseline satisfaction scores and capture rates will be calculated based on data collected between July 2013 and December 2013. In addition, estimated cost avoidance secondary to documented pharmacist clinical interventions will be calculated and incorporated with other outcome measures into business plan for program expansion.
□□
Results/Conclusions: Data collection and evaluation currently being conducted. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify pharmacist services integral to the development of a pharmacist led oral chemotherapy management program

Describe a pharmacist-led strategy to improve adherence to oral chemotherapy treatment regimens

Self Assessment Questions:

Which of the following is pharmacist service integral to the development of a pharmacist-led oral chemotherapy management program?

A Oversight of all oral chemotherapy packaging and dispensing
B: Provision of patient education and adherence assessments
C: Retrospective review of all oral chemotherapy orders
D: Elimination of measurement and documentation of pharmacist pat

Which of the following is a pharmacist-led strategy to increase patient adherence to oral chemotherapy treatment regimens?

A Call patients between clinic appointments to assess adherence, ac
B Avoid discussions of potential barriers to medication adherence to
C Ignore presence of adverse effects or drug interactions as these h
D Offer personal calls daily to remind patients to take oral chemothe

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-315 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

STANDARDIZATION AND EXPANSION OF A MEDICATION HISTORY COLLECTION TRAINING PROGRAM FOR PHARMACY TECHNICIAN

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Purpose: Medication discrepancies commonly occur at transitions of care and can affect up to 70% of patients with about one-third of these having the potential of causing harm to the patient. One of the strategies to identify and resolve these discrepancies is medication reconciliation. The first step in medication reconciliation is the accurate collection of a medication list or medication history detailing all home medications taken before admission. By utilizing pharmacy technicians in this role, pharmacists can be redeployed to direct patient care activities. The objective of this project is to develop a standardized program to train pharmacy technicians in the collection of medication histories in order to expand this service across a fifteen-hospital system. □□Methods: A survey of the Aurora Health Care hospital system was conducted to identify current pharmacy involvement and training received by pharmacy technicians to date. Auroras flagship hospital, Aurora St. Lukes Medical Center, had an existing training program in place. However, this program required additions, changes, and updates to allow it to be successfully implemented at all hospitals in the health care system. Existing training documents were organized into a cohesive online training manual, incorporating updates, hyperlinks, and expansion of several topics. Two new competency tests were developed in addition to the three existing competencies, and these were uploaded to Auroras online training platform. Several checklists were created including steps for the Pharmacy Directors to build a pharmacy technician led medication history service, as well as, training checklists for new and existing medication history pharmacy technicians. Final stages of the training program, experiential training and mock interviews, were also developed. A second survey will be administered to assess the standardization and expansion of the training program. □□Results/Conclusions: Results and conclusions will be presented at Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify the medications that should be included in a best possible medication history.

Recall when most medication discrepancies typically occur.

Self Assessment Questions:

When do most medication discrepancies typically occur?

A During in hospital stay on same floor
B: Outpatient clinic visits
C: During transitions of care
D: During nurse shift changes

Components of a best possible medication history include:

A Complete list of scheduled medications the patient took during the
B Complete list of all home medications taken prior to admission
C Complete list of all medications previous to and during admission
D Complete list of prescription medications taken prior to admission

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-707 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

UTILIZATION OF AN ORAL CHEMOTHERAPY PRESCRIPTION QUEUE IN OUTPATIENT ONCOLOGY PHARMACIES WITHIN A HEALTH-SYSTEM

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Purpose: To demonstrate the importance of an oral chemotherapy order verification system in the electronic health record (EHR) for pharmacists in outpatient oncology pharmacies.□□Methods: Intravenous chemotherapy orders at the Kellogg Cancer Centers at NorthShore University HealthSystem are reviewed by a pharmacist prior to being administered to a patient. However, a uniform process was not in place for oral chemotherapy verification. A queue was developed in the EHR to identify all oral chemotherapy orders placed by oncologists within the health-system. Pharmacists review all new oral chemotherapy orders in the queue for appropriateness, including: indication, drug, dose, directions, and drug interactions. This project has been implemented in three outpatient oncology pharmacies to assess the functionality of the current oral chemotherapy prescription queue. As an extension of the review process, a documentation tool has been created to track the oral chemotherapy orders and interventions made by a pharmacist. These interventions will be quantified, categorized, and evaluated to determine the impact a pharmacist had on patient outcomes.
□□
Results/Conclusion: Data collection and analysis are ongoing. The results and conclusion will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Explain the importance of an oral chemotherapy order verification system to ensure patient safety

Describe the workflow of oral chemotherapy order verification

Self Assessment Questions:

Which of the following is a goal for the oral chemotherapy order verification system?

A To confirm that medications are covered by patient's insurance

B: To identify physicians with the most prescribing errors

C: To ensure that oral chemotherapy orders are complete and accura

D: To increase revenue by mandating that patients fill prescriptions a

Which of the following are the most important parameters to assess when verifying an oral chemotherapy order?

A Date written, number of refills, doctor's DEA, dose

B Indication, drug, dose, directions

C Dose, directions , date written, indication

D Drug, dose, number of refills, doctor's DEA

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-708 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PHARMACIST-DRIVEN MANAGEMENT OF HEART FAILURE MEDICATION TITRATION CLINIC: A RETROSPECTIVE COMPARATIVE STUDY

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Heart failure (HF) is associated with increased hospitalizations, decreased quality of life, mortality, and economic burden. Clinical guidelines recommend angiotensin converting enzyme inhibitors (ACEi) or angiotensin-receptor blockers (ARB) plus beta blockers (BB) titrated to target or maximum tolerated dose in patients with ejection fraction <40%. At UI Health, patients may be managed by general cardiology, but are less likely to be on guideline recommended therapy, when compared to patients managed by the heart failure service. Thus, a HF medication titration clinic lead by a pharmacist was implemented in July 2011 for general cardiology patients. The pharmacist titrates the ACEi, ARB, and BB of referred patients with systolic HF. Upon achieving targe or maximum tolerated doses, patients are discharged to their referring cardiologist. Since the creation of the pharmacist-managed titration clinic, efficacy outcomes are unknown. Findings will identify areas for improvement and potentially validate the value of pharmacy-driven services. This single center retrospective chart review will compare the percentage of patients titrated to maximum tolerated or target dose of each ACEi/ARB and BB by the pharmacist vs. non-referred patients managed by cardiology. Medication regimen at first visit, month 1, 2, 3, 6, 9, 12, and at final visit or 1 year after initial visit will be recorded. Barriers to titration such as missed visits, adherence, or side effects will be documented. Additionally, time to titration, use of secondary agents to treat heart failure, and number of cardiovascular related emergency department visits and hospitalizations will be compared between the two cohorts. Patients > 18 years with systolic HF (as defined with EF < 40%) seen in pharmacist-managed HF medication titration clinic or general cardiology from July 6, 2011 to July 31, 2013 will be included. Data collection and evaluation is presently being performed.

Learning Objectives:

Identify the classes of medications proven to reduce morbidity and mortality in patients with systolic heart failure

Define the role of the pharmacist managed heart failure medication titration clinic

Self Assessment Questions:

What class of medications, which has been shown to reduce morbidity and mortality, is recommended for first line treatment of systolic heart failure?

A Digoxin

B: Direct renin inhibitors

C: Calcium channel blocker (CCB)

D: Angiotensin converting enzyme inhibitors (ACEi)

The role of the pharmacist managed heart failure medication titration clinic includes all the following except:

A Treat diastolic heart failure

B Follow up with patients every 2 weeks until discharge

C Monitor for adverse effects of recommended heart failure therapy

D Optimize heart failure medication therapy of general cardiology ma

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-316 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF DRUG SHORTAGES ON BOWEL RECOVERY IN PATIENTS RECEIVING TOTAL PARENTERAL NUTRITION AFTER EXPLORATORY LAPAROTOMY

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Purpose: Drug shortages have continued to affect healthcare institutions across the United States as product shortages continue to increase. Nearly 20 total parenteral nutrition (TPN) products have been on the product shortage list since the spring of 2010. Since one of the most common causes of post-operative ileus is electrolyte abnormalities TPN product shortages are likely to negatively impact bowel recovery in such patients and result in the need for longer TPN treatment durations. The objective of this study is to evaluate the impact of TPN related drug shortages on bowel recovery in patients receiving TPN after exploratory laparotomy at the Ohio State University Wexner Medical Center (OSUWMC). Methods: A retrospective review will be conducted for patients admitted to OSUWMC who received TPN from January 1, 2006 to September 30, 2013. To be included, patients must have undergone exploratory laparotomy. Data collection will include: age, gender, weight pre-albumin, C-reactive protein, electrolyte laboratories (potassium, magnesium, and phosphate), total daily doses of additional electrolyte replacement given, additional laboratory draws required due to additiona electrolyte replacement, total daily opioid dose in morphine equivalents, TPN caloric components (kcal of lipids, kcal of protein, kcal of dextrose, and kcal total), total number of days from surgery to TPN initiation, total number of days of TPN therapy, number of days to reach TPN goal rate, and whether patient was discharged on TPN. A Charlson Score will be calculated for each patient. Results: Study outcomes remain under investigation, with data collection and evaluation currently being conducted.

Learning Objectives:

List common reasons for sterile injectable medication shortages

Recall the most common causes of prolonged ileus

Self Assessment Questions:

The most common reason for a sterile injectable medication shortage is

A Delays or capacity problems

B: Discontinuation of product

C: Loss of manufacturing site

D: Product quality issues

Which of the following is a common cause of prolonged ileus?

A Electrolyte abnormalities

B Repeated exposure to nut allergens

C Jaundice

D Orthopedic surgery

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-317 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

RETROSPECTIVE COMPARISON OF CEFTRIAXONE VERSUS NAFCILLIN OR CEFAZOLIN FOR METHICILLIN SUSCEPTIBLE STAPHYLOCOCCUS AUREUS BACTEREMIA

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Purpose : Methicillin susceptible Staphylococcus aureus (MSSA) is a major pathogen in community and nosocomial acquired infections and remains a significant cause of complicated infections such as bacteremia, osteomyelitis, and endocarditis. Anti-staphylococcal penicillins and first generation cephalosporins are considered first line therapies, and recent literature have suggested similar clinical efficacy for the treatment of MSSA bacteremia. Ceftriaxone has been prescribed as an alternative agent taking advantage of its long half life and less frequent dosing. With the third generation cephalosporins, there is concern for decreased in vivo gram positive activity potentiating the risk for failure. Although there is a wealth of literature to support the clinical use of ceftriaxone for MSSA bone and joint infections, there are limited and controversial studies evaluating the use of ceftriaxone for MSSA bacteremias. Methods: A retrospective chart review of adult inpatients who received ceftriaxone, nafcillin, or cefazolin for the treatment of MSSA bacteremia between January 2009 and October 2013. All patients 18 years of age or older with documented MSSA bacteremia defined as having one blood culture positive for MSSA and received study antibiotics for at least 48 hours will be included. Patients with polymicrobial bacteremia, previous history of MSSA bacteremia, or received study antibiotics 48 hours prior to admission will be excluded. The primary objective is to compare clinical and microbiological outcomes between ceftriaxone and nafcillin or cefazolin for the treatmen of MSSA bacteremia. Treatment success will be defined as the resolution of clinical signs and symptoms such fever and/or leukocytosis and eradication of bacteremia. Treatment failure will be defined as lack of improvement in clinical signs and symptoms, persistence of bacteremia, findings of a new or recurrent infection, any change in therapy or addition of new antibiotics, or death. Results/Conclusions: Results and conclusion will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify infections where literature has shown ceftriaxone to have similar efficacy compared to the anti-staphylococcal penicillins and first generation cephalosporins

Discuss the clinical and microbiological outcomes of patients with MSSA bacteremias treated with ceftriaxone

Self Assessment Questions:

1.Which of the following agents are considered first line agents for the treatment methicillin susceptible Staphylococcus aureus (MSSA) infections?

A Nafcillin, ceftriaxone

B: Ceftriaxone, clindamycin

C: Clindamycin, cefazolin

D: Cefazolin, nafcillin

What is Ceftriaxone role in treatment of methicillin susceptible Staphylococcus aureus (MSSA) bacteremias

A Ceftriaxone should utilized as a first line agent

B Ceftriaxone should not be utilized

C Ceftriaxone can be utilized cautiously

D Ceftriaxone can be utilized if the patient has an anaphylactic penic

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-318 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

NAFCILLIN VERSUS CEFAZOLIN FOR METHICILLIN-SENSITIVE STAPHYLOCOCCUS AUREUS BACTEREMIA IN A VA POPULATION

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Background Staphylococcus aureus bacteremia (SAB) is a common and serious infection associated with significant morbidity and mortality. Both nafcillin and cefazolin have activity against methicillin-sensitive Staphylococcus aureus (MSSA), and are utilized in the treatment of bacteremia and other endovascular infections caused by this organism. Studies have shown that treatment of MSSA bacteremia with nafcillin or cefazolin improves patient outcomes over treatment with vancomycin. There is limited evidence comparing these beta-lactam antibiotics for the treatment of MSSA, and no studies to date include a VA population. The purpose of this study is to compare the effectiveness of nafcillin versus cefazolin for treatment of MSSA bacteremia. Methodology This study is a retrospective, electronic chart review of subjects 18 years or older, diagnosed with bacteremia due to MSSA who received either nafcillin or cefazolin at JBVAMC between August 1st, 2003, and August 1st, 2013. Subjects will be stratified by definitive therapy and an intention to treat analysis will be performed. Definitive therapy is defined as the initial antibiotic chosen based on culture susceptibilities, received by the subject for at least 96 hours. The primary endpoint will be treatment failure defined as a composite endpoint of 30-day mortality from start of definitive therapy, reinfection or persistence of signs and/or symptoms o infection. Secondary endpoints will include in-hospital mortality, 30-day mortality, time to first negative culture, length of stay from first positive culture and severity of illness.

Learning Objectives:

Explain the current standards and guidelines regarding the use of cefazolin and nafcillin in the treatment of Staphylococcus aureus bacteremia

Discuss the similarities and differences of nafcillin and cefazolin in regards to dosing, pharmacokinetics, and adverse drug reactions

Self Assessment Questions:

Which of the following medication(s) are preferred for treatment of methicillin-sensitive Staphylococcus aureus (MSSA) bacteremia?

A Cefazolin
B: Nafcillin
C: Vancomycin
D: A and B

Nafcillin and cefazolin differ in which of the following categories:

A Cost
B Adverse drug events
C Ease of administration
D All of the above

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-709 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF AN INSULIN PROTOCOL TO REDUCE HYPOGLYCEMIC EVENTS AND IMPROVE SAFETY

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Purpose: To evaluate the effectiveness of a collaborative practice insulin protocol used in an ambulatory clinic to reduce the rate of hypoglycemic events among patients with diabetes mellitus. Methods A community pharmacy-based diabetes center has established a collaborative practice insulin protocol with primary care physicians and endocrinologists in the southern Indiana region. Therapy changes are made according to the patients self-monitoring of blood glucose (SMBG) results. This study is a retrospective data collection evaluating a sample size of 90 patients. The primary endpoint is the proportion of severe hypoglycemic events (<50mg/dL) in the intervention group compared to the control group. Secondary endpoints will include the mean blood glucose and mean A1C with associated standard deviations and the proportion of total hypoglycemic events less than 70m/dL for each cohort. Descriptive and inferential statistics will be utilized to evaluate the primary and secondary endpoints. A student t-test will be used to evaluate the primary endpoint and an ANOVA will be used to assess any contributing factors to the primary and secondary endpoints. The study protocol was submitted to the Purdue University Institutional Review Board and approved with exempt status for human research subjects.

Results: Results to be presented at the 2014 Great Lakes Pharmacy Resident Conference in West Lafayette, Indiana. Conclusions: Although data analysis is not complete, initial review suggests that use of a standardized protocol decreases the incidence of severe hypoglycemic events (<50mg/dL).

Learning Objectives:

Identify the primary reasons both physicians and patients delay initiation of insulin therapy

Explain the use of a standardized insulin protocol related to the proportion of severe hypoglycemic events (<50mg/dL) in insulin-dependent patients with diabetes mellitus

Self Assessment Questions:

Which of the following reasons cause physicians and patients to delay the initiation of insulin therapy?

A Patient compliance, fear of hypoglycemia, and health risks of hypo
B: Cost
C: Increased risk of edema, heart failure, and heart arrhythmias
D: Patient's fear of needles and/or syringes

Which of the following statements is true regarding the use of a standardized insulin protocol among patients with diabetes mellitus?

A Increase in the total number of severe hypoglycemic events
B Increase in adverse events
C Reduction of the total number of severe hypoglycemic events
D Reduction of insulin therapy duration

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-876 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

RETROSPECTIVE ANALYSIS OF MORTALITY, RENAL DYSFUNCTION, AND BLEEDING IN PATIENTS RECEIVING HYDROXYETHYL STARCH (HES) 130/0.4, HETASTARCH, OR ALBUMIN

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Purpose: In June 2013, the FDA issued a Black Box Warning on synthetic colloids resulting from data indicating an increased risk of mortality and renal injury; as well as, excess bleeding incidence in septic patients admitted to the Intensive Care Unit (ICU) and patients undergoing coronary artery bypass graft (CABG) surgery. The purpose of this study is to compare the incidence of mortality, incidence and severity of renal injury and bleeding in septic ICU patients, as well as, patients undergoing CABG surgery who have received hydroxyethyl starch 130/0.4, hetastarch, or albumin. Methods: A computer generated list will provide patients that have received hydroxyethyl starch 130/0.4, hetastrach, or albumin during their inpatient stay as either a septic intensive care unit or post coronary artery bypass graft patient. To determine the incidence of mortality, patient death will be recorded. In order to determine the incidence and severity of kidney injury, Risk, Injury, Failure, Loss, End Stage (RIFLE) criteria classification will be used. For the incidence and severity of bleeding, Thrombolysis in Myocardial Infarction (TIMI) bleeding criteria will be utilized. In addition, patient charts and electronic records will be utilized to evaluate parameters as specified to determine mortality, RIFLE criteria, need for renal replacement therapy, TIMI scale, and other necessary trends of lab values. All data will be de-identified. Prior to initiation of this study, submission for exemption status will be filed to the Western IRB for approval. For statistical analysis, T-tests, chi square, Fischers exact and ANOVA will be utilized as appropriate. This study will take place in a 468 bed community hospital located in Lexington, Kentucky.

Preliminary results: Data collection is currently underway. Results and conclusion to be determined.

Learning Objectives:

Discuss the findings of FDA analysis with regards to synthetic starch products in post-CABG and septic ICU patients.

Define Risk, Injury, Failure, Loss, End Stage (RIFLE) and Thrombolysis in Myocardial Infarction (TIMI) criteria.

Self Assessment Questions:

The FDA reported an increase in what three areas in patients receiving synthetic starch products?

A Mortality, renal dysfunction and hepatic dysfunction

B: ICU LOS, bleeding, cost

C: Mortality, renal dysfunction and bleeding

D: Hospital LOS, hepatic dysfunction and bleeding

What two criteria classifications were used when measuring severity of renal dysfunction and bleeding?

A Thrombolysis in Myocardial Infarction (TIMI) and Risk, Injury, Failu

B Risk, Injury, Failure, Loss, End Stage (RIFLE) and Global Use of S

C Global Use of Strategies to Open Occluded Arteries (GUSTO) and

D Acute Catheterization and Urgent Intervention Triage Strategy (AC

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-877 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF A PHARMACIST-MANAGED VANCOMYCIN DOSING STRATEGY IN HEMODIALYSIS PATIENTS

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Purpose: Hemodialysis patients are at increased risk of developing drug resistant gram positive infections and therefore intravenous vancomycin is frequently used in this group of patients. Standardized dosing and monitoring recommendations for vancomycin are challenging due to variations in volume of distribution, drug clearance and dialysis parameters. Studies have examined dose calculators and various protocols for dosing vancomycin in hemodialysis patients; however clear guidelines for this patient population are still lacking. The purpose of this study is to evaluate the effectiveness of an institutional vancomycin dosing protocol for hemodialysis patients. Methods: In this retrospective study, data from adult inpatients receiving intravenous vancomycin and maintenance hemodialysis concurrently between 08/07/13 and 12/15/13 will be evaluated. Patients under the age of 18, receiving continuous renal replacement therapy, incarcerated or pregnant will be excluded. Manual review of the electronic medical record will be performed to extract patient demographics including age, gender, height, weight, admitting diagnosis, past medical history and any residual renal function. Hemodialysis parameters extracted will include hemodialysis schedule, access type, membrane type, flow rate and duration of session. Infection and vancomycin parameters extracted will include infection type, cultures and sensitivities, goal trough, vancomycin dose and frequency, serum drug concentrations, adjustments to the regimen, treatment success or failure and length of stay. The primary endpoints are adherence to the institutional protocol and achievement of target serum concentrations. Secondary endpoints include achievement of target concentrations following dose adjustment, therapeutic outcomes and safety. Results and Conclusions: Will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe factors contributing to increased risk of infection and use of vancomycin in hemodialysis patients as compared to the general population.

Discuss various methods for dosing and monitoring vancomycin in patients receiving intermittent hemodialysis.

Self Assessment Questions:

Which of the following is (are) a contributing factor(s) for increased risk of infection in hemodialysis patients?

A Impaired immunity

B: Anuria

C: Bacterial virulence

D: Both A and C

Which of the following is an advantage of post-dialytic administration of vancomycin as opposed to intradialytic?

A Larger dose required

B Better prediction of serum concentration that will be achieved

C If in the outpatient setting, decreased amount of time patient must

D Compatible with both low-flux and high-flux hemodialysis.

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-319 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF A PHARMACIST ASSISTED TRANSITION OF CARE PROGRAM IN PATIENTS WITH NEWLY DIAGNOSED VENOUS THROMBOEMBOLISM AT A COMMUNITY HEALTH SYSTEM

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Purpose: Patients who are newly diagnosed with deep venous thromboembolism (DVT) and/or pulmonary embolus (PE) require proper education of new therapy and follow-up as an outpatient, which makes the transition of care from the inpatient to the outpatient setting a high risk situation. To meet discharge standards, help prevent hospital re-admission within 30 days of discharge, and prevent adverse events associated with anticoagulant use, it is important to tailor therapy to the specific needs and resources of the patient. These resources may include the following: determination of insurance coverage, procuremen of medication, patient education about the medication and signs or symptoms of disease progression, and planned outpatient follow-up for the therapy chosen. The objective of this project is to implement a program that facilitates the transition of patients with newly diagnosed DVT and/or PE from the inpatient to the outpatient setting. Methods: A multi-disciplinary taskforce will be assembled to determine the needs of the health system in improving the transition of care for patients with newly diagnosed DVT and/or PE. The taskforce will have representation from hospitalists, hematologists, vascular specialists, emergency department, pharmacists, social workers, and continuity of care department. The implementation of the program will be primarily led by the pharmacists involved. This program is a quality improvement project and does not require IRB approval. Patients will be identified for the program by the pharmacist entering a consult order into the electronic health record system. Once a patient is identified, the pharmacist will assist in determining insurance coverage of medications patient education, and help coordinate outpatient follow-up. Patient satisfaction, prescription procurement, time spent with each patient, DVT/PE re-admission rates, length of stay, and anticoagulation clinic enrollment rates will be collected. Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Identify the role of the pharmacist in the development and implementation of a program that assists with patient transition of care from the inpatient to the outpatient setting for newly diagnosed DVT and/or PE.

Describe the steps taken to implement the transition of care program.

Self Assessment Questions:

Besides medication education, what is another role for pharmacists in transitioning patients from inpatient to outpatient?

A Medication prescriber
B: Transition of care coordinator
C: Medication administrator
D: Financial advisor

Transition of care is defined as:

A Changing health insurance
B Changing healthcare settings
C Changing medications
D Changing nurses at the end of the shift

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-710 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

UTILIZATION OF PERFORMANCE METRICS IN THE STERILE COMPOUNDING ROOM

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Background: Intravenous (IV) workflow systems can enhance the overal safety and efficiency of the sterile compounding room through methods such as bar-code scanning, image capturing, and automation in compounding procedures. Although sterile compounding rooms require highly competent technicians that are proficiently trained in calculations and aseptic technique to ensure safe compounding of high risk medications encountered in this setting, it is challenging to objectively evaluate the performance of technicians staffing in this setting. Currently, the Cleveland Clinic Pharmacy Department relies on media fil tests, direct observations, and anecdotal reporting to evaluate technician performance within the sterile compounding room. In addition, technicians are required to complete annual competencies that assess calculation abilities. While these evaluation techniques provide some value to managers, they are subjective and provide a limited snapshot o overall performance. IV workflow information systems have the ability to track technician performance metrics. The utilization of objective metrics has yet to be studied and has the potential to enhance productivity and safety in the sterile compounding room. Objectives: The primary objective of this study is to evaluate IV workflow performance metrics and develop standards in terms of safety and productivity that will objectively identify technicians that reach expectations. The secondary objective of this study is to compare performance metrics across three chemotherapy compounding rooms on the main campus of the Cleveland Clinic. Methodology: Following the implementation of the IV workflow system, technician performance metrics will be tracked across all three chemotherapy areas at the Cleveland Clinic. Performance metrics that will be analyzed include compounding time, incorrect product scan rate, and dose rejection rate. Results and Conclusions: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the safety risks associated with the syringe pull-back method

Identify metrics that can be utilized by IV workflow information systems to enhance the efficiency and safety of the sterile compounding room

Self Assessment Questions:

Which of the following is an objective metric that can be captured using IV workflow information systems?

A Media fill tests
B: Direct observations
C: Anecdotal reporting
D: Dose rejection rate

Which of the following is a technique utilized by IV workflow systems to replace the syringe pull-back method?

A Bar-code scanning
B Image capturing during compounding
C Automated calculations
D Dose tracking

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-878 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

VALIDATION OF ANTI-XA ASSAY FOR THERAPEUTIC HEPARIN PROTOCOL

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Purpose: Historically, the aPTT (activated partial thromboplastin time) has been used to measure the activity of heparin while a patient is on a heparin continuous infusion. The aPTT is a global clotting assay that reflects intrinsic pathways in the coagulation cascade. Many disease states and some medications can intrinsically alter the aPTT. The antifactor Xa (anti-Xa) assay measures the ability of heparin to inhibit activated coagulation factor X. The primary purpose of this study is to evaluate the time to achieve therapeutic range for anticoagulation on a heparin continuous infusion drip for anti-Xa versus aPTT levels. The secondary outcome will be evaluating length of stay, mortality and percentage of bleeding in patients monitored using anti-Xa versus aPTT Methods: This is a single-center, retrospective, observational, IRB approved study conducted at Baptist Heath Lexington hospital. This study involves a review of electronic and paper medical records of patients who received continuous intravenous unfractionated heparin (UFH), using the in-house standard UFH intravenous protocol, between January 2013 and March 2014. All patients with standard UFH intravenous infusion protocol orders will be identified through a query of the hospital database information system. Patients will be excluded if they are over 18 years of age and/or receiving heparin therapy less than 24 hours. This population is evaluated before and after the implementation of anti-Xa laboratory testing. Population data on age, sex, actual weight, height, indication for UFH, concurrent medications, comorbidity and length of therapy will be collected. In addition, the time to therapeutic coagulation in 6 hour intervals, monitoring tests performed, percentage of patients with therapeutic first level, and bleeding occurrences (determined by diagnosis code linked to patient during hospitalization) will be collected during the retrospective chart review. Results: to be presented. Conclusions: To be presented.

Learning Objectives:

Review the historical significance and limitations of the aPTT for continuous infusion heparin therapy.

Explain the differences between the antifactor Xa verses aPTT for continuous infusion heparin therapy.

Self Assessment Questions:

A prolonged aPTT can be present in which disease state?

A Christmas Disease
B: cancer
C: early stages of DIC
D: hypothyroidism

Which of the following will affect the antifactor Xa laboratory results?

A liver disease
B obesity
C Lupus anticoagulant
D factor XI deficiency

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-320 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

COST-CONSEQUENCE ANALYSIS OF A COMMUNITY PHARMACY RESIDENT

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TITLE: Cost-consequence analysis of a community pharmacy resident.□□PURPOSE: The objective of this case study is to examine whether the value of a pharmacy resident outweighs the cost of maintaining a pharmacy resident and explore patient interest in services offered by a pharmacy resident.□□METHODS: In order to determine the value of a community pharmacy resident to a site that had never previously had a resident, a cost-consequence analysis will be used. The direct and indirect costs to the site of maintaining a pharmacy resident for a period of one year will be examined and compared to the consequences of having a pharmacy resident present at the site. Consequences will be identified based on activities completed by the resident while at the residency site including, but not limited to, number of MTM services performed, number of patients served in anticoagulation and tobacco cessation clinics, prescription volume, number of provider drug information questions answered, and increased utilization of electronic health record by pharmacy services as evidenced by number of templates generated by the resident and number of times those templates are used. Patient interest in receiving services from a pharmacist will also be measured by pre- and post-surveys directed toward asthma patients before and after initiation of a pharmacist-managed asthma care clinic. These surveys will examine patient perception of the care they are currently receiving, whether they feel pharmacists are qualified to provide such services, and what benefits they perceive from pharmacist-managed services. Data will be collected over two months and extrapolated to fit the ten-month time frame of active residency.□□PRELIMINARY RESULTS: At the time of abstract submission, no data has been analyzed.

Learning Objectives:

Discuss the value of a community pharmacy resident

Explain the various costs and consequences of a community pharmacy resident

Self Assessment Questions:

Which of the following represents a valued service of the community pharmacy resident?

A Salary
B: Fringe benefits
C: Providing MTM services
D: Time spent training

Which of the following represents a cost associated with a community pharmacy resident?

A Patient visits in a pharmacist-managed clinic
B Altered workflow in the pharmacy
C Educational presentations given to providers
D Answering drug information questions

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-711 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF THE INCIDENCE OF INFUSION RELATED REACTIONS WITH RAPID INFUSION IN PATIENTS RECEIVING RITUXIMAB FOR ALL INDICATIONS IN AN OUTPATIENT SETTING

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Purpose: Although generally well-tolerated, rituximab, like most other monoclonal antibodies, is known to cause infusion-related reactions. The purpose of this study was to evaluate the safety of rapid infusion in patients receiving rituximab for non-FDA-approved indications compared to those receiving it for FDA-approved indications. Methods: This was a single center, retrospective chart review of patients who received at least one rapid infusion of rituximab from September 2010 through September 2013. Data collected includes demographic data, underlying comorbidities, baseline and pretreatment white blood cell count and lactate dehydrogenase, diagnosis, dates of previous rituximab exposure concomitant antineoplastic regimens, premedications, rituximab dose, infusion rate, infusion related reaction severity according to Common Terminology Criteria for Adverse Events version 4.0, and other adverse drug reactions occurring within 30 days of the last infusion. Results and conclusions to be presented.

Learning Objectives:

Identify approved indications of rituximab for rapid administration

Recognize a rituximab infusion-related reaction

Self Assessment Questions:

Which of the following is an approved indication for rapid administration of rituximab?

A Rheumatoid arthritis

B: Autoimmune hemolytic anemia

C: Untreated diffuse large B-cell lymphoma

D: Hodgkin Lymphoma

Symptoms of rituximab infusion-related reactions

A Do not resolve with slowing or interruption of the infusion

B Occur within 30 – 120 minutes after starting the infusion

C Occur 4 – 24 hrs after starting the infusion

D Are more likely to occur with subsequent infusions

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-879 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

CASE MIX INDEX VS. PHARMACY INTENSITY SCORE: WHICH IS A BETTER INDICATOR OF ACTUAL DRUG SPEND?

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Purpose: There is currently no nationally accepted external benchmark for evaluating the appropriateness of a hospitals drug expense. To make meaningful comparisons over time, information must be standardized to account for differences in volume and acuity. Several metrics are available that attempt to provide this standardization, but there is limited literature to recommend one metric over another. The Ohio State University Wexner Medical Center (OSUWMC) standardizes drug costs per case mix index (CMI) adjusted patient day. CMI is a nationally standardized resource consumption metric that has become an indicator for hospital disease severity. Institution specific CMI is calculated utilizing the national relative weight (RW) of the diagnosis related group (DRG) adjusted for hospital and DRG specific volume. Pharmacy Intensity Weight (PIW) is a metric correlating the percent of drug costs relative to the total expense for a DRG specific admission, and is based on data from over 1000 hospitals across the country. Institution specific Pharmacy Intensity Score (PIS) is calculated utilizing the PIW of the DRG adjusted for hospital and DRG volume. This study evaluates OSUWMC CMI and PIS adjusted patient day to determine which is a stronger predictor of actual drug cost. The results of this study will assist OSUWMC in choosing the most effective metric for monitoring drug expenses over time. Methods: This is a single-center observational study which reviews all patient days from admissions between October 1, 2012 and March 31, 2013. CMI and PIS are evaluated by the Pearson Correlation Coefficient to assess the relationship between CMI-adjusted patient day and medication spend, and PIS-adjusted patient day and medication spend. The difference between these two coefficients is compared to determine which metric is more predictive of actual drug spend at OSUWMC. Results: Results will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Describe the difference between Case Mix Index and Pharmacy Intensity Score

Discuss the ability of each cost metric to predict actual drug spend

Self Assessment Questions:

Case Mix Index is:

A an institution specific acuity metric

B: a pharmacy-specific cost metric

C: calculated by averaging the total hospital reimbursement per patie

D: based on patient length of stay

An advantage to utilizing a standardized adjustment metric rather than comparing actual drug spend over time, is:

A a cost metric may help account for volume and patient complexity

B actual drug spend is more difficult to calculate

C utilizing actual drug spend is only appropriate in complex patient p

D no real advantage exits; hospitals may choose to use a standardiz

Q1 Answer: A Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-712 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFECTS OF MATERNAL MAGNESIUM TREATMENT ON NEONATAL ENTERAL FEEDING TOLERANCE

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Purpose: Determine if a dose-related increase in the incidence of entera feeding intolerance exists in neonates born to mothers who received intravenous magnesium prior to delivery Background: The benefits of enteral feeding in neonates are well-established. It has been observed, anecdotally, in Meriter Hospitals neonatal intensive care unit (NICU) that neonates born to women who were treated with magnesium infusions prior to delivery have increased enteral feeding intolerance. Proposed mechanisms of this feeding intolerance include decreased neonatal intestinal motility, reduced magnesium clearance in neonates given their immature kidney function, and water retention in the neonate at birth resulting in unrealistic weight goals. Methods: This study received Meriter Hospital Institutional Review Board approval. In this single-centered, retrospective, observational study, maternal and neonatal charts from all pregnant women who received intravenous magnesium infusions prior to delivery between July 1, 2012 and July 31, 2013 were reviewed. Neonates born at 24 weeks gestational age or greater who were admitted to the NICU and whose mothers received magnesium infusions prior to delivery were eligible for inclusion. Neonates with independent factors that could lead to feeding intolerance including gastrochisis, significant congenital abnormalities, and neonatal abstinence syndrome were excluded. The primary outcome was the incidence of neonatal enteral feeding intolerance measured by deviations from the NICU standard feeding protocol related to time to initiation of enteral feeds, time to non-trophic feeds, and time to full feeds. Secondary outcomes included change in growth chart percentage from birth to discharge, incidence of necrotizing enterocolitis, change in weight from birth to nadir, time to first stool, urine output, serum creatinine, and APGAR scores. Relative risk of feeding intolerance will be calculated for various cumulative maternal magnesium doses. Results/Conclusions: Data collection and analysis is ongoing. Results and conclusions will be presented at the 2014 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

List three advantages of enteral over parenteral nutrition in neonates.

Describe the proposed mechanisms of neonatal enteral feeding intolerance secondary to maternal magnesium treatment.

Self Assessment Questions:

An advantage of enteral over parenteral nutrition in neonates is:

A Ease of managing electrolyte disturbances
B: Delivery of a concentrated nutritional solution
C: Promotion of gastrointestinal adaption
D: Increased clearance of magnesium

Which of the following is a proposed mechanism of neonatal enteral feeding intolerance secondary to maternal magnesium treatment?

A Impaired nutrient absorption
B Decreased intestinal motility
C Increased gastroesophageal reflux
D Increased fatigue with feeding

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-321 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

SYMPTOM CONTROL FOR ALCOHOL WITHDRAWAL SYNDROME: AN ANALYSIS OF BENZODIAZEPINE USAGE AND TIME TO SYMPTOM CONTROL IN THE CRITICAL CARE SETTING VS. NON-CRITICAL CARE SETTING.

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Background: The benzodiazepine requirement for individuals experiencing alcohol withdrawal syndrome (AWS) varies greatly from patient to patient. Current evidence recommends symptom-triggered benzodiazepine dosing for treatment of AWS; however, patients with severe or resistant AWS may still be undertreated in clinical practice due to apprehension regarding administration of large benzodiazepine doses. Suboptimal treatment can lead to serious complications, including seizures and delirium tremens, further emphasizing the need for institutions to assess the appropriateness of treatment in both the ICU and non-ICU settings. Purpose: The primary objective of this study is to evaluate the effectiveness of the current alcohol withdrawal protocol used at Bronson Methodist Hospital by assessing the usage of benzodiazepines and time to symptom control in patients with AWS in both the critical care and non-critical care settings. Methods: This is a retrospective cohort study conducted at Bronson Methodist Hospital comparing three groups of patients: 1) patients who received benzodiazepines for AWS who were admitted directly to an ICU, 2) patients who received benzodiazepines for AWS who were admitted to a non-ICU, and 3) patients who received benzodiazepines for AWS who were transferred from a non-ICU to an ICU. Patients were included if they received one or more doses of a benzodiazepine for CIWA score >9 between August 2012 and August 2013. Patients were excluded if they were pregnant or <18 years old. The primary outcome measure is time to symptom control, defined as CIWA ≤9 for 24 consecutive hours after the first documented CIWA score >9. Secondary outcomes include mean daily dose of benzodiazepines, mean CIWA score, incidence and median daily dose of adjunctive therapies, hospital and ICU lengths of stay, adverse effects due to benzodiazepines, and mortality.

Results/Conclusions: Data collection and analysis are ongoing. Results and conclusions will be presented at the 2014 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Explain the difference between fixed-schedule and symptom-triggered benzodiazepine dosing, as it relates to the treatment of alcohol withdrawal syndrome.

Identify the possible consequences of undertreating patients with alcoho withdrawal syndrome.

Self Assessment Questions:

Which of the following is a potential consequence of undertreating patients with alcohol withdrawal syndrome?

A Increased risk of hyperglycemia
B: Infertility
C: Progression to delirium tremens
D: Quick resolution of alcohol withdrawal symptoms

Current literature states that which of the following dosing strategies is the most effective for the treatment of alcohol withdrawal syndrome?

A Symptom-triggered benzodiazepine dosing
B Placebo dosing
C Fixed-schedule benzodiazepine dosing
D Oral ethanol dosing

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-322 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DETERMINING CURRENT INSULIN PEN UTILIZATION AND SAFETY PRACTICES IN THE INPATIENT SETTING

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Purpose: The use of insulin pens versus insulin vials in the inpatient setting has continued to be a controversial decision. Insulin pens provide several advantages over vials such as: individual patient labels, a form ready for administration, decreased time to prepare and administer, and reduction in medication waste. However, due to significant reports of more than one patient receiving the same insulin pen along with other reported errors, several organizations have issued alerts to caution users about these safety risks, including the Food and Drug Administration (FDA). Additionally, the Institute of Safe Medication Practices (ISMP) suggests that hospitals should consider transitioning away from insulin pen use in the acute care setting. The primary objective of the study is to survey the processes and practices governing the utilization and safety of insulin pens throughout the United States in the inpatient setting. Methods: This survey was submitted to the Purdue University Institutional Review Board to be determined exempt. The survey was developed based on review of primary literature identifying safety concerns with insulin pen utilization and evaluated by a panel of safety experts from a variety of health care settings. Qualtrics was the survey software utilized. The survey was sent electronically to health care professional subscribers of Institute for Safe Medication Practices. Results: Results from this study will be presented at the Great Lakes Residency Conference. Conclusions: Conclusions to be presented at Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify safety concerns with insulin pen use in an inpatient setting.

Describe current practices of insulin pen use (including distribution, utilization, and storage) in the inpatient setting.

Self Assessment Questions:

Which of the following is a safety concern of using an insulin pen over using an insulin vial?

A Patient convenience

B: Reuse of insulin pen on more than one patient

C: Cost of insulin pen

D: More accurate dosing

Which of the following is a strategy that would mitigate the safety risks associated with insulin pens?

A Place a patient label with barcode on the insulin pen

B Keep insulin pens in the same location as insulin vials

C Allow patients to share insulin pens for cost minimization

D Have every pen on formulary to ensure no patient has to change p

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-880 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF A PHARMACIST DIRECTED MEDICATION THERAPY MANAGEMENT SERVICE FOR ORAL CHEMOTHERAPY PATIENTS IN AN OUTPATIENT CANCER CENTER

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Purpose: Providing patient care services in an ambulatory care setting is an important area of growth for the profession of pharmacy. According to the American Society of Health System Pharmacists the most frequently reported practices for ambulatory care pharmacists are tracking adverse drug reactions, providing written and oral patient education information, and conducting medication management. Pharmacy services in ambulatory care settings have been shown to increase outcomes, patient satisfaction, and cost savings. In the oncology setting, pharmacy services have the potential for significant cost savings due to the inherent cost of care and the risk of chemotherapeutic agents. The American Society of Clinical Oncology recommends that two qualified personnel independently review all prescriptions for cytotoxic therapy. This recommendation is a result of research indicating that error rates with chemotherapy and supportive medication may be as high as 10%. Literature supports the inclusion of a pharmacist within an interdisciplinary oncology program can decrease medication error rates and increase cost savings. Methods: New patients starting on oral chemotherapy will be reviewed by a pharmacist for new medication dosing, renal and hepatic function, pertinent laboratory values, and drug-drug interactions. Problems discovered will be reported to the primary physician for review, and potential changes discussed with the patient care team. One week following initiation of oral chemotherapy, the pharmacist will follow up with a phone call to the patient. During this call the pharmacist will inquire about patient understanding of their medication, patient compliance, and side effects, along with answering all patient questions. Results/Conclusions: Data collection and analysis is currently in progress, and will be reported at the Great Lakes Residency Conference.

Learning Objectives:

Describe the need for pharmacy clinical services in an outpatient cancer center at a community hospital.

Define the impact pharmacists can make in assisting physicians with monitoring oral chemotherapy doses, laboratory values, and drug interactions.

Self Assessment Questions:

The American Society of Health System Pharmacist has found that the most common practices for pharmacists in ambulatory care settings are

A Recommending medications and making dose adjustments for pat

B: Tracking adverse drug reactions, providing patient education, and

C: Counseling patients on dose, administration schedule, and side ef

D: Reviewing medication profiles for drug-drug and drug-disease inte

Why does The American Society of Clinical Oncology recommend that two qualified personnel independently review all prescriptions for cytotoxic therapy?

A Independent review of cytotoxic medications can result in cost sav

B Independent review has been shown to improve patient outcomes.

C Documented error rates for cytotoxic and supportive medications a

D Documented error rates for cytotoxic and supportive medications a

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-713 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

UNIT-SPECIFIC BENCHMARKING TO CONTROL MEDICATION COST: "THE PRESCRIBERS GRADE CARD"

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Purpose To evaluate and monitor the effectiveness of a medication cost instrument for hospital providers Methods This study is a prospective, quasi-experimental design analyzing the effect of medication cost information made available to prescribers and prescribe drug selection. Medication cost information and alternative therapy options will be provided to the medical directors of two general medical floors at Henry Ford Hospital on a weekly basis. Data will be included fo patients 18 years or older that are located on either of the two selected units. Data from pregnant patients or patients with hemophilia factor products administered during the study period will be excluded. Patient data collected will include the following: medication, NDC number, medical record number, admission date, discharge date, date medication is administered, quantity dispensed, and medical unit. The primary objective of this study is to analyze the effect of providing a cost monitoring instrument to medical directors on drug cost per patient day. Secondary objectives include the appropriateness and feasibility of the implementation of this cost instrument on a hospital-wide level. Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Discuss the feasibility of implementing a cost instrument for prescribers hospital wide and in other health systems.

Explain the importance of how taking a proactive approach to reducing medication acquisition may be more impactful than a retrospective approach.

Self Assessment Questions:

A physician asks you which beta blocker will be the most cost effective for a patient with systolic heart failure who does not have prescription insurance. You recommend: Patient information: HR: 67 B

A Carvedilol, because it is indicated in systolic heart failure, it is the
B: Metoprolol tartrate, because it is indicated in systolic heart failure,
C: Bisoprolol Fumarate, because it is indicated in systolic heart failure
D: Metoprolol Succinate ER, because it is indicated in systolic heart f

You have just received microbiologic sensitivities from the lab for a lowe respiratory infection. The gram positive organism you are treating is sensitive to daptomycin, vancomycin, ceftaroline, oxac

A Daptomycin
B Vancomycin
C Ceftaroline
D Ampicillin

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-714 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARATIVE EVALUATION OF PHARMACIST VERSUS PROVIDER MANAGED INPATIENT ANTICOAGULATION AT A VETERANS AFFAIRS MEDICAL CENTER

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Purpose: Although warfarin is a widely used oral anticoagulant, the narrow therapeutic window and potential complications of bleeding continue to require extremely close monitoring of patients on this therapy. The purpose of this project is to retrospectively evaluate the impact of pharmacist versus provider managed anticoagulation in the inpatient setting at the Aleda E. Lutz Veterans Affairs Medical Center (VAMC); including patients residing in the community living center (CLC) and acute care telemetry (ACT) unit. The overall goals of this project are to expand pharmacy services, improve continuity of care and provide the highest standard of healthcare to our Veteran population. Methods: This study is a single-center, retrospective chart review. Inclusion criteria included all Veterans admitted to the Aleda E. Lutz VAMC initiated or continued on warfarin therapy between September 1, 2013 and January 9, 2014. Exclusion criteria included patients who were not candidates fo warfarin therapy. All patients who met criteria were evaluated. Electronic patient charts were accessed retrospectively in the Computerized Patient Record System (CPRS). The Veterans were divided into those currently on warfarin and new starts.The primary outcomes evaluated consisted of time to therapeutic international normalizing ratio (INR) in new warfarin patients, time in therapeutic range (TTR), and adverse drug events (ADE), including bleeding and thrombosis. The clinical outcomes achieved by the new pharmacist managed service were compared to the outcomes achieved by provider managed anticoagulation. Results/Conclusion: Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Define outcomes to assess the value and efficacy of a warfarin management service.

Discuss the potential advantages of pharmacist versus provider management of inpatient warfarin.

Self Assessment Questions:

Which of the following is an appropriate outcome to assess the efficacy of a warfarin management service?

A Percentage of critical INR levels
B: Time in therapeutic range
C: Percentage of bleeding events
D: Time out of therapeutic range

Which of the following represent potential advantages of pharmacist managed inpatient warfarin therapy?

A Longer time to therapeutic INR for new warfarin patients
B Increased thromboembolic event rates
C Greater time in therapeutic range
D Increased frequency of INR monitoring

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-323 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ANALYSIS OF A PHARMACIST DRIVEN TELEPHONE-BASED TOBACCO CESSATION CLINIC

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Purpose: In the United States, 19% of adults currently use tobacco. In the Veteran population, this percent is higher, indicating that tobacco cessation efforts in the Veteran population is critical. The purpose of this study is to evaluate the impact of a pharmacist-driven Tobacco Cessation Clinic on Veterans remaining tobacco free and to assess effectiveness of medications utilized.□□Methods: This study is a retrospective chart review of patients enrolled in the Tobacco Cessation Clinic using the electronic medical records at the William S. Middleton Memorial Veterans Hospital. Primary outcome is the success rate of patients, which is defined as a patient who became tobacco free for at least 6 months while enrolled in the Tobacco Cessation Clinic. Secondary outcomes include most efficacious tobacco cessation regimen, relationship between number of phone calls completed by the pharmacist to the patient versus success rate, number of times enrolled in the clinic prior to reaching 6 months tobacco free, and success rates of patients utilizing the telephone Tobacco Cessation Clinic versus grou visits.□□Preliminary Results: The results of this study are preliminary with 50% of the data collected. The primary outcome of success rate in Veterans enrolled in the Tobacco Cessation Clinic yielded a 56% success rate. Patients enrolled in the group clinic had a 71% success rate. Nicotine patches were the most utilized pharmacological therapy and were successful in 58% of patients while bupropion was successful in 53% of patients utilizing the medication. Patients who were successful in tobacco cessation were followed by the clinic for an average 8.6 months versus 7.5 months in those not successful.
□□
Conclusion: Data collection and analysis are ongoing. Conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify the most efficacious therapy for tobacco cessation.

Identify the health consequences of smoking tobacco.

Self Assessment Questions:

Which of the following is the most effective therapy for tobacco cessation?

A Nicotine patches
B: Counseling combined with pharmacological therapy
C: Counseling
D: Bupropion

How many deaths in the United States are associated with smoking cigarettes?

A 1 in 5
B 1 in 20
C 1 in 50
D 1 in 100

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-324 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARISON OF TWO PIPERACILLIN/TAZOBACTAM INFUSION STRATEGIES ON THE INCIDENCE OF ACUTE KIDNEY INJURY

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Purpose:□Piperacillin/tazobactam is an extended - spectrum penicillin/beta-lactamase inhibitor antibiotic and the drug of choice for many infections. Studies have shown that extended infusion achieves higher pharmacokinetic and pharmacodynamic targets than traditional infusion, thus there has been widespread acceptance of extended infusion strategies. There is data to suggest piperacillin/tazobactam increases the risk of acute kidney injury, but the effect of an extended infusion on this risk is unknown. The objective of this study is to determine the effect of traditional infusion and extended infusion piperacillin/tazobactam on the incidence of acute kidney injury.
□□
Methods:□This is an Institutional Review Board approved, retrospective, cohort study from January 2011 through December 2013 comparing the effect of traditional infusion and extended infusion piperacillin/tazobactam on the risk of acute kidney injury. Patients were identified via billing records. Patients were included if they were 18 years of age or older and treated with piperacillin/tazobactam for at least 48 hours. Exclusion criteria included: patients receiving both piperacillin/tazobactam dosing strategies, chronic dialysis, receipt of dialysis within 48 hours of admission, baseline serum creatinine greater than 2mg/dL, or pregnancy. Data collection included: demographics, concomitant nephrotoxic medications, surgery within 48 hours of admission, intensive care stay, length of time on piperacillin/tazobactam serum creatinine, new dialysis requirement, and mortality. Acute kidney injury was defined as an increase in serum creatinine by 0.3mg/dL or greater than 50 percent from baseline. The primary endpoint was the incidence of acute kidney injury in patients treated with traditional infusion compared to extended infusion of piperacillin/tazobactam. Secondary endpoints evaluate the impact of risk factors for acute kidney injury in each infusion strategy. Patient identifiers were removed prior to data analysis to maintain confidentiality. □□Conclusion: Data analysis in progress; results to be presented

Learning Objectives:

Discuss the currently available literature surrounding the use of an extended-infusion of piperacillin/tazobactam

Describe the significance of detecting a difference in the incidence of acute kidney injury in patients treated with two piperacillin/tazobactam infusion strategies

Self Assessment Questions:

What is the rationale behind using the extended-infusion strategy of piperacillin/tazobactam over the traditional infusion strategy?

A Superior efficacy against Acinetobacter baumanii
B: Greater time above MIC
C: Superior efficacy as empiric therapy for healthcare-associated pne
D: Decreased length of stay in patients with healthcare-associated pr

What is/are the potential mechanism(s) of acute kidney injury caused by piperacillin/tazobactam?

A Acute interstitial nephritis
B Acute tubular necrosis
C Both of the above
D Neither of the above

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-881 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

CULTURE OF CHANGE: IMPLEMENTATION OF PHARMACIST CULTURE REVIEW AND FOLLOW-UP FOR PATIENTS DISCHARGEI FROM EMERGENCY SERVICES

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Purpose Pharmacists play valuable roles in antimicrobial stewardship programs because of their unique clinical knowledge of medications. The American Society of Health-System Pharmacists published guidelines listing essential direct patient care roles for emergency medicine pharmacists (EMPs), including involvement in medication selection and prescribing. The purpose of this study is to develop and implement a pharmacist standard operating procedure for review and follow-up of culture results for patients discharged from the Emergency Services (ES) and to examine the outcomes of EMP involvement in antimicrobial stewardship activities in these patients. Methods Prior to commencement, this study was approved by the Institutional Review Board. Eligible patients include all patients discharged from ES with positive cultures. Patients admitted to the hospital from ES will be excluded from statistical analysis. A standard operating procedure was implemented to establish pharmacist review of all cultures collected from this population and enable pharmacists to change therapy (per protocol) for two sample types: urine and throat swabs. This study will examine differences in clinical outcomes and quality measures between patients before and after pharmacist culture review. Retrospective analysis of patients will be matched to the same time frame as prospective data collection. The data to be collected includes the following: age, sex, antibiotic allergies, culture source, time from positive culture to change in therapy if indicated, number of changes made from empiric therapy, and number of patients readmitted to ES within 96 hours for infection-related concerns. Time from positive culture result to change in therapy will be defined as the time a prescription for alternate therapy was transmitted to the patients preferred pharmacy. Results: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference

Learning Objectives:

Identify appropriate antibiotics for urinary tract infections in non-pregnant females

Describe the unique skills of pharmacists which enable them to assess antibiotic therapy for appropriateness

Self Assessment Questions:

Which of the following is indicated as first line treatment for urinary tract infection in a non-pregnant female with CrCl>60 ml/min and NKDA?

A sulfmethoxazole/trimethoprim 800/160 mg PO BID X 3 days

B: ciprofloxacin 500 mg PO BID X 5 days

C: cefadroxil 1000 mg PO BID X 7-10 days

D: amoxicillin/clavulanate PO 500 mg PO TID X 3-7 days

Which of the following characteristics make pharmacists well-suited to assessing antibiotic therapy for appropriateness?

A Knowledge of antimicrobial spectrum of activity of antibiotics

B Ability to clinically apply cross-reactivity among antibiotics to patie

C Experience communicating with both patients and providers

D All of the above responses make pharmacists well-equipped to as

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-325 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

CREATION OF AN ANTIMICROBIAL STEWARDSHIP OUTREACH PROGRAM

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Purpose Appropriate use of antimicrobials can lead to increased efficacy, decreased adverse events, and potentially decreased antimicrobial resistance Comprehensive antimicrobial stewardship is the best way to ensure the appropriate use of antimicrobials. An antimicrobial stewardship (AMS) team typically consists of an infectious disease pharmacist, physician, and ancillary members from the microbiology laboratory and infection control. Due to the human resource investment needed, antimicrobial stewardship has traditionally been performed by large, academic institutions. It is unclear how community and rural hospitals will meet the need of providing antimicrobial stewardship to their patients due to lack of sufficient personnel with appropriate training. Contracting with an existing AMS program may be one way for smaller institutions to provide AMS services for their patients. Methods For this project the UW Health AMS team began a program to offer AMS services to regional partners in Wisconsin. The services offered include remote reviewing of patients for prospective audit and feedback, creation and enforcement of a list of antimicrobials that require preauthorization for use, implementation of decision support tools, and educational sessions. A potential regional partner was identified and an onsite evaluation of the resources to implement a stewardship program was completed. An assessment with business case was created and presented. Agreement proposal discussions are ongoing. Measurement of days of antimicrobial therapy, total antimicrobial expenditure before and after intervention will be collected. Prescriber and pharmacist surveys of AMS program services will be conducted at baseline and after implementation. Individual outpatient prescriber usage at the regional partner as part of a comprehensive AMS plan, as well as outpatient antimicrobial education will be completed prior to and after implementation of the antimicrobial stewardship program. Results Will be collected and analyzed.

Learning Objectives:

Describe typical barriers to the development of an antimicrobial stewardship program.

Discuss the impact of the antimicrobial stewardship strategy prospective audit and feedback.

Self Assessment Questions:

What are the Infectious Disease Society of America recommended core member(s) of an AMS team?

A Infectious Disease Physician

B: Infectious Disease Pharmacist

C: Infectious Disease Physician and Pharmacist

D: Infectious Disease Physician and Pharmacist, Microbiologist, and

Which of the following is an Infectious Disease Society of America recommended strategy for antimicrobial stewardship?

A Prospective audit and feedback

B Formulary restriction and preauthorization

C Education

D All of the above are recommended strategies

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-326 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSESSMENT OF A MENTAL HEALTH RESIDENTIAL REHABILITATION TREATMENT PROGRAM 'AS NEEDED MEDICATION LIST' IN A VA MEDICAL CENTER

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Statement of the purpose: The Mental Health Residential Rehabilitatio Treatment Program (MH RRTP) at a VA Medical Center implemented ar as needed (PRN) medication list to aid in the treatment of patients with common ailments. The intent is to reduce unnecessary emergent care services and provide more efficient, cost effective care. The primary objective of this study is to assess the utilization of the PRN medication list. Secondary objectives include evaluating the use of emergency services by patients admitted to the MH RRTP pre- and post-implementation of the PRN medication list, and nurse and patient satisfaction with the PRN medication list. Statement of methods used: This retrospective cohort study was approved by the Institutional Review Board and informed consent was obtained from all surveyed subjects when appropriate. The computerized patient record system was used to identify patients who were admitted to the VA Medical Center MH RRTP prior to implementation of the PRN medication list as well as patients admitted post-implementation. The following data was collected age, MH RRTP admit date, MH RRTP discharge date, all emergent care visits with respective chief complaint, medications administered and subsequent hospital admission. Also, the administration totals of each medication used on the PRN medication list was recorded for each patient as applicable. The average number of times the PRN medication list was utilized per patient was calculated along with the number of emergent care visits that occurred pre- and post-implementation. In order to assess user satisfaction, a questionnaire was distributed to MH RRTP staff and residents. Summary of (preliminary) results to support conclusion: No results available at this time. Conclusions reached: This study is currently in progress. Final analysis and results will be presented at the Great Lakes Pharmacy Resident Conference in April 2014.

Learning Objectives:

Define the goal of the as needed medication list.

Identify the medications available through the as needed medication list.

Self Assessment Questions:

What is the goal of the as needed medication list?

A Primarily to decrease the frequency the psychiatrists need to be c
B: Primarily to reduce the number of patients inappropriately using er
C: Primarily to allow patients to choose what medications they need a
D: Primarily to decrease the cost of health care provided to patients.

Which medication can the MH RRTP nurses administer after assessing a patients complaint based on set parameters?

A Oxycodone
B Ciprofloxacin
C Trazodone
D Hydralazine

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-715 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT AND IMPLEMENTATION OF AN AMBULATORY PHARMACIST MEDICATION THERAPY MANAGEMENT PROGRAM FOR BIOLOGIC RESPONSE MODIFYING MEDICATIONS

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Purpose: To develop, implement, and evaluate the impact of a pharmacist-driven medication therapy management program (MTM) for patients receiving biologic response modifying (BRM) medications from UW Health ambulatory pharmacies. Methods: An interdisciplinary team was organized to identify opportunities for process improvement within the prescribing and monitoring of patients receiving BRM therapy at UW Health. Targets included patient adherence, testing for infection reactivation risk, side effect management, and vaccination rates. In collaboration with Unity Health Insurance, a MTM program and documentation system was developed to improve metrics related to these targets. Upon patient enrollment in the program, pharmacy staff assessed the safety of initiating therapy based on tuberculosis and hepatitis B exposure status, and collaborated with providers to order laboratory testing when exposure history could not be verified. Patients received monthly telephone contact from pharmacy staff to promote adherence to therapy, evaluate the safety of continued therapy, aid in side effect management, educate on proper medication administration, and screen for vaccination eligibility. All pharmacy case management was documented within the UW Health electronic medical record, where it could be viewed by healthcare providers from all disciplines. Pharmacists notified and worked collaboratively with providers to address issues related to adherence, safety, and efficacy. Data reporting elements were extracted from the electronic documentation system to evaluate the impact of pharmacist intervention. Specific outcomes were measured and compared to a non-intervention patient cohort 6 months after program implementation and included adherence, time to discontinuation of therapy or change to a non-formulary agent, pneumococcal and influenza vaccination rates, and percentage of patients screened for tuberculosis and hepatitis B prior to initiation of therapy. A patient survey was performed after program implementation to determine patient satisfaction and perceived benefit from program enrollment. Results and Conclusions: To be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Define terms commonly used in the evaluation of patient adherence including medication possession ratio and persistence

Identify pertinent laboratory tests used to evaluate the safety of initiating biologic response modifying medications

Self Assessment Questions:

Which of the following definitions best describes medication persistence

A The summation of days supply of medication refills across an inter
B: The duration of time from initiation to discontinuation of therapy
C: The frequency at which a patient refills their prescription
D: Wile E. Coyote's actions if the Road Runner was a prescription me

Which of the following laboratory tests could be used to assess a required screening for all patients prescribed adalimumab to evaluate their risk of a reactivation infection?

A Quantiferon-TB GOLD
B Influenza PCR
C Urinary blastomycosis antigen
D BK virus quantitative by PCR

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-327 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ECONOMIC IMPACT OF INTENSIVE CARE UNIT (ICU) ADMISSION AND INTUBATION DURING MANAGEMENT OF ACUTE ALCOHOL WITHDRAWAL SYNDROME

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Purpose: Alcohol use and abuse is a significant health concern in the United States. Alcohol withdrawal can occur intentionally in persons trying to abstain or unintentionally after an unexpected admission to the hospital. Complications of alcohol withdrawal syndrome (AWS) include seizures, delirium tremens and Wernickes encephalopathy. In severe cases, management of these conditions may require admission to the intensive care unit (ICU) and intubation for airway protection. To date, few studies have been published on the effect mechanical ventilation has on the treatment course of alcohol withdrawal. This study is being conducted to determine if differences in ICU length of stay, incidence of HAP and VAP and overall cost of ICU admission differ between intubated and non-intubated patients admitted to the Medical/Surgical Intensive Care Unit (MSICU) for management of acute alcohol withdrawal. Methods: This study is observational in design. A search of the electronic medical record database was used to identify patients with ICD9 codes for alcohol withdrawal and orders for intravenous or oral thiamine and folic acid. Patients were included if they were ≥ 18 years old, admitted to the MSICU and had a primary diagnosis of acute alcohol withdrawal. Patients were excluded if they had other serious medical conditions including: septic, cardiogenic or hypovolemic shock; end-stage liver disease; uremia; current benzodiazepine or illicit drug use; or recent trauma. The primary endpoints are ICU length of stay, development of hospital acquired or ventilator associated pneumonia and total cost of ICU stay. Baseline characteristics for study patients will be compared using appropriate statistical tests. A cost-benefit analysis will be conducted between groups. All statistical analysis will assume a level of significance of 0.05. Results: Preliminary results currently pending.

Conclusions: Conclusions currently pending.

Learning Objectives:

Describe manifestations of acute alcohol withdrawal syndrome (AWS).

Identify complications associated with mechanical ventiltaion

Self Assessment Questions:

Which of the following are manifestations of severe alcohol withdrawal?

A Seizures
B: Headache
C: Tachycardia
D: Nausea

All of the following are complications associated with mechanical ventilation EXCEPT:

A Increased length of stay
B Ventilator associated pneumonia
C Acute respiratory distress syndrome
D Pulmonary hypertension

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-328 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT AND IMPLEMENTATION OF A CONSENSUS-BASEI TOOL FOR EVALUATION OF CONTROLLED SUBSTANCE USE PRIOR TO DISPENSING AT HEALTH-SYSTEM COMMUNITY PHARMACIES

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Purpose: The purpose of this project is to create and implement a consensus-based clinical tool to standardize data-gathering, decision-making, and documentation for controlled substance use evaluation prio to dispensing at University of Wisconsin Hospital and Clinics (UWHC) community pharmacies. Methods: A resident-led modified-Delphi consensus exercise was used to create a clinical tool for pharmacy-initiated controlled substance use evaluations. A literature review was conducted to develop an initial list of draft statements, decision points, and recommended actions. Following review by an advisory group comprised of clinical pharmacists and pharmacy managers, items were presented to an expert workgroup via a web-based questionnaire to approve and discuss inclusion in the clinical tool. The expert workgroup included physicians, pharmacists, and other stakeholders. Recommendations receiving a high level of agreement from the workgroup were incorporated into the final draft of the clinical tool endorsed by the advisory group. Educational programming was developed to train pharmacy staff on the clinical tool, with corresponding pre- and post-training competency and confidence assessments. Subsequently, a three month pilot was initiated at multiple UWHC community pharmacies. Any controlled substance dispensed at the pilo pharmacies was eligible for evaluation via the clinical tool. Continuous feedback was obtained from pilot participants via web-based surveys with revisions reviewed by the advisory group. Evaluations and subsequent pharmacist interventions were documented in the pharmacy dispensing software. Results/Conclusions: Collection of pharmacist documentation and intervention rates are ongoing and will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the pharmacist role and responsibilities in evaluating controllec substance use

Identify high-risk factors for controlled substance misuse

Self Assessment Questions:

Which of the following most accurately reflects the pharmacist role in dispensing controlled substances?

A Pharmacists should not dispense to patients with a history of subs
B: Pharmacists have a corresponding responsibility in dispensing cor
C: Pharmacists are obligated to contact law enforcement if abuse is s
D: Pharmacists have no legal obligation to evaluate controlled substa

Which of the following is the most appropriate strategy for managing the risk of controlled substance misuse?

A Decline to dispense based on prescription drug monitoring prograr
B Recommend opioid discontinuation when unauthorized dose incre
C Convert opioid doses to methadone using an equianalgesic dose r
D Recommend a frequency of monitoring that reflects patient risk as

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-716 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

INTERPROFESSIONAL PROCESS IMPROVEMENT TO OPTIMIZE MEDICATION REGIMENS OF PSYCHIATRIC PATIENTS

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Background: Patients admitted for acute psychiatric treatment are at a high risk for readmission within twelve months of discharge. The predictors for readmission in this patient population are uncertain; however medication nonadherence is hypothesized as a significant cause for readmission. Reasons for nonadherence can include medication side effects, complex regimens, cost of therapy and a lack of patients insight into their illness. Presently Meriter Hospital lacks a standardized process to comprehensively review each patients medication regimen to determine potential interventions for improving adherence upon discharge. Purpose: Develop a standardized process that optimizes medication therapy management with the goal of ensuring success with medications after discharge from the hospital. Methods: This was an 8-week prospective, single center, process improvement project occurring on the adult inpatient psychiatry unit. The intervention consisted of pharmacists meeting with patients to review and discuss their medication regimens, and to identify educational needs or barriers to adherence. Patients were excluded if they were discharged to a care facility where medications were managed for them. After discussion with patients, all recommendations were communicated to providers. A summary of each assessment and recommendations made were maintained through electronic pharmacy documentation. Post-discharge phone calls were completed to evaluate continuation of medications after discharge. A pre- and post-intervention survey was utilized to assess process improvement. The primary outcome was to define specific responsibilities of care team members to ensure efficiency of the medication use process. Secondary outcomes included the number of recommendations made and accepted by providers, education provided to patients, documentation of indications on medications, medications requiring prior authorizations, average time spent on interventions and post-discharge phone call findings. Results: During the intervention period, there were 107 admissions to the adult psychiatry unit. Further results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Describe the optimal responsibilities of care team members within the medication use process

Identify strategies to optimize medication regimens and apply to a patient case example

Self Assessment Questions:

What is the optimal responsibility of pharmacists within the medication use process?

A Verifying medication insurance coverage
B: Providing medication education to patients
C: Documenting indications of medications
D: Completing post-discharge phone calls

Which of the following is a strategy for optimizing medication regimens?

A Eliminating multiple medications for the same indication
B Avoiding use of medications requiring prior authorizations
C Not providing patient education on newly started medications
D Providing separate prescriptions for scheduled and as needed me

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-717 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF SYSTEMIC DEXAMETHASONE FOR BRONCHOPULMONARY DYSPLASIA BEFORE AND AFTER GUIDELINE IMPLEMENTATION IN A NEONATAL INTENSIVE CARE UNIT

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PURPOSE: Systemic corticosteroids have been shown to facilitate extubation in ventilator dependent infants as well as decrease the rate of bronchopulmonary dysplasia (BPD). The purpose of this study is to evaluate the efficacy and safety of the current 0.15mg/kg/day 10-day dexamethasone taper compared to the most common 0.5mg/kg/day past taper at Riley Hospital for Children.□□METHODS: A retrospective chart review is being performed at Riley Hospital for Children at IU Health. Prior to beginning data collection, this study was approved by the organizations institutional review board. Study subjects include patients less than 32 weeks gestational age treated with systemic dexamethasone for management of BPD from February 2012 through July 2013. Primary outcomes include efficacy of the current dexamethasone regimen, defined as successful extubation prior to course completion, at least a 20% decrease in mean airway pressure (MAP), or at least a 20% decrease in fraction of inspired oxygen (FiO2). Data will be collected on demographic information, cumulative steroid dose, starting dose, treatment duration, number of systemic steroid courses, and use of inhaled corticosteroids. Additionally, respiratory support parameters such as MAP, FiO2, and duration of intubation or presence of successful extubation will be recorded. The presence of hyperglycemia, hypertension, gastrointestinal perforation or bleeds, or diagnosis of pulmonary hypertension will be noted as well. Patients will be excluded from the study if they are greater than 32 weeks gestational age, receive corticosteroids other than dexamethasone for lung disease, have a diagnosis of lung disease other than BPD, a history of extracorporeal membrane oxygenation (ECMO) for a pulmonary indication, or diagnosis of diaphragmatic hernia.□□RESULTS/CONCLUSIONS: Data collection is currently being conducted and study results and conclusions are pending.

Learning Objectives:

Define bronchopulmonary dysplasia (BPD).

List common adverse events associated with the use of systemic corticosteroids for the prevention of BPD in pre-term, ventilator dependent neonates.

Self Assessment Questions:

Which of the following accurately defines bronchopulmonary dysplasia?

A persistent decrease in pulmonary surfactant
B: persistent tachypnea and significantly decreased lung pliability
C: requirement of oxygen support at 36 weeks GA
D: requirement of oxygen support at 36 weeks GA along with persiste

Which of the following has not been reported as a potential adverse event commonly associated with the use of systemic corticosteroids in neonatal patients?

A hyperglycemia
B hypertrichosis
C hypertension
D GI perforation

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-329 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF A MORPHINE WEANING PROTOCOL IN PEDIATRIC INTENSIVE CARE PATIENTS

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Background: Prolonged use of opioid analgesics can result in physical dependence and withdrawal symptoms. Morphine has been extensively used for analgesia and has a predictive pharmacokinetic profile making it an ideal drug for weaning in opioid dependent pediatric patients. At Children's Hospital of Michigan (CHM), two weaning schedules were in practice: a 10 and 20 day wean. Based on data from a previous study, i was noted that patients were completing the opioid wean faster than the protocol. A new protocol was then created to improve our standard of care and outcomes in patients requiring opiate weans. Purpose: The purpose of this study is to describe the incidence of opioid withdrawal in pediatric patients using a 3-arm morphine weaning protocol. Secondary outcomes will compare the duration of medication therapy, identify patients completing the weaning protocol within allotted time frame, and comparing the cost of therapy and length of ICU stay to previous study patients. Methods: Single center, prospective observational study with retrospective historical controls of PICU patients who received morphine weaning. Data collection is from October 1, 2012 to March 1, 2013. The new protocol consists of three separate arms; a 5 day, 10 day, and 15 day wean. Patients are placed into the appropriate arm based on the number of days on continuous opioid infusion. The separate arms will use an original daily dose (ODD) as the starting point for the patient's wean. The ODD is calculated by adding the continuous infusion morphine from the previous day and the number of bolus doses given in 24 hours and multiplying by two. The 3-arms will use the ODD and decrease the dose based off a percentage and interval change.

Results/Conclusions: Data collection in progress and will be presented a Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Recognize why the pharmacokinetics of morphine are favorable compared to other opiate medications.

Define the signs and symptoms of opiate withdrawal.

Self Assessment Questions:

What is the half-life for oral morphine?

A 4-62 hours

B: 1-10 hours

C: 11-13 hours

D: All of the above

What is/are the signs and symptoms of opioid withdrawal?

A Tremor

B High Blood pressure

C Vomiting

D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-330 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF PHARMACIST TRAINING ON PEDIATRIC PHARMACY SERVICES

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Background: A challenge for many health-system pharmacists is maintaining a foundation of pharmacotherapy knowledge comprehensive enough to meet the demands of a hospital servicing a diverse population. Consequently it is not uncommon for many pharmacists to learn on the job as specific pharmacotherapy issues arise which can result in inconsistencies between pharmacists knowledge and practices. One option for streamlining patient care is to provide formal, standardized training. Purpose: This study aims to support previous studies conclusions by showing an increase in pharmacist confidence and competence following implementation of a pediatric pharmacotherapy training program. In addition, it is designed to observe a change, if any, in the quality of patient care. Methods: This retrospective, observational study was designed to take place over a six month period of time subdivided into three phases: pre-intervention (I), intervention (II), and post-intervention (III). Phase I took place from September to October 2013 and assessed the quality of patient care (measured by pharmacist interventions, medication safety events, and medication timeliness), inpatient pharmacist satisfaction and confidence with providing pediatric pharmacy services (measured via anonymous surveys), pediatric nurse satisfaction of pediatric pharmacy services (also measured via anonymous surveys), and inpatient pharmacist competency (measured via a 25 question, multiple choice test on pediatric pharmacotherapy). Phase II took place from November to December 2013, implemented the pediatric pharmacotherapy training module, and assessed inpatient pediatric competency with the same tes administered in Phase I. Finally, Phase III took place from January to February 2014 and repeated the data collection processes of Phase I. The project received expedited approval from the Sparrow Health System Institutional Review Board. Results/Conclusion: Data collection and analysis are ongoing; final results and conclusions will be presented at the 2014 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recognize the impact of adverse drug events within the pediatric population

List the five phases of continuing professional development

Self Assessment Questions:

According to the United States Food and Drug Administration, what percentage of adverse drug events reported in children less than 18 years old between 2008 and 2012 resulted in a serious injury?

A 6%

B: 22%

C: 64%

D: 80%

According to the American Society of Health-System Pharmacists, whicl of the following options correctly lists the five phases of continuing professional development?

A Self-appraisal, plan development, plan implementation, documenta

B Continuing education, webinars, literature review, small group disc

C Department meetings, institutional meetings, regional meetings, st

D Residency training, continuing education, board specialty certificat

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-882 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

A JOINT COLLABORATION BETWEEN NURSING AND PHARMACY TO IMPROVE MEDICATION-RELATED HCAHPS SCORES

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Background:□Since the implementation of the Affordable Care Act in 2010, hospitals have explored numerous strategies to improve patient satisfaction. Recognizing time limitations as well as other factors, our institution sought for collaborative and practical approaches to increase Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) scores. Pharmacists and nurses have identified opportunities for process improvements to better educate patients on their medications. Furthermore, successful medication education practices have also been associated with other improved patient outcomes in the literature, including increased compliance and decreased readmission rates.□□Purpose:□To improve medication education practices while impacting HCAHPS scores at Mercy Health Muskegon.

□□

Methods:□This study was a retrospective review evaluating the effect of a joint nursing and pharmacy initiative implemented in January 2013. Baseline data, including HCAHPS scores, readmission rates, and pharmacy and nursing staff satisfaction surveys were collected. A protocol was developed and introduced to pilot floors by educating nursing and pharmacy staff. Pharmacists helped nurses to identify which medications were new to patients upon admission. Medication education cards, which included information about indications and side effects in patient-friendly language, were attached to nursing computers. Medications were chosen based on top drugs dispensed on pilot floors. Nurses were responsible for medication education upon the first administration. Nursing prompts, signs in patient rooms, and discharge information encouraged patients to be involved and ask questions about their medications. The primary objective was to evaluate whether an improvement in medication-related HCAHPS scores was observed after project implementation. Secondary outcomes measured staff satisfaction, percent of admitted patients affected, time allocated to project, impact on medication education practice, and change in readmission rates.□□Results/Conclusions:□Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss the impact of implementing a collaborative nursing and pharmacy project to improve medication-related HCAHPS scores.

Identify barriers and other opportunities for improvement when implementing a medication education process improvement project.

Self Assessment Questions:

Which of the following observed outcomes have the potential to affect CMS reimbursement?

A Top-box medication-related HCAHPS scores.

B: Readmission rates.

C: Staff satisfaction scores.

D: A & b.

Which of the following strategies were employed to improve medication-related HCAHPS scores?

A Tasking pharmacists to identify new medications upon verification.

B Tasking pharmacists to provide medication discharge counseling.

C Tasking nurses to provide education ideally prior to first dose of ne

D A & c.

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-718 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF THE ACCURACY OF PRESCRIBED RENAL-DOSE ADJUSTED MEDICATIONS IN AN ACADEMIC MEDICAL CENTER

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Purpose□Results from previous studies have shown poor adherence to renal-dose adjustment guidelines in ambulatory care. The Hoxworth General Medicine Clinic is a Level III National Committee for Quality Assurance (NCQA) certified patient-centered medical home situated in the University of Cincinnati Medical Center. The clinic serves as a practice site for medical residents and nurse practitioners. This study will focus on the education of prescribers in the General Medicine Resident Clinic in an effort to improve dosing of medications in chronic kidney disease patients within the ambulatory care setting.□□The primary endpoint of this study is to measure the incidence of correct renal adjustment of medications pre and post-prescriber education.□□Methods□This single center, observational study will include patients with a creatinine clearance less than 50 mL/min who were prescribed a target medication by a prescriber in the General Resident Medicine Clinic from November 2013 through March 2014. Clinic prescribers will be educated via face-to-face interactions, presentations, online-modules, and written literature. The accuracy of renal-dose adjustments will be analyzed before and after prescriber education. □□Results□Data collection and analysis are on-going.

Learning Objectives:

Review the effect of chronic kidney disease on drug pharmacokinetics

Outline current literature related to compliance with dosing guidelines in patients with chronic kidney disease

Self Assessment Questions:

Chronic kidney disease affects which pharmacokinetic parameters:

A Absorption

B: Distribution

C: Metabolism

D: All of the above

How does chronic kidney disease affect plasma protein binding of acidic drugs?

A Increase

B Decrease

C No effect

D Unknown

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-719 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

CHANGE IN CREATINE PHOSPHOKINASE (CPK) WITH HIGH DOSE DAPTOMYCIN IN A VETERAN POPULATION WITH OSTEOMYELITIS

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Purpose: Osteomyelitis is a deep-seated bone or joint infection that remains one of the most difficult infections to treat. Reduced susceptibility and clinical failures are more commonly observed than ever before, necessitating the use of alternate antibiotics for gram positive bone infections. Daptomycin is a cyclic lipopeptide that has been used in the treatment of gram positive infections. The development of skeletal muscle side effects have been associated with daptomycin use that may manifest as an increase in creatine phosphokinase (CPK) levels, muscle weakness or pain, myositis, or in rare cases, rhabdomyolysis. At the Hines VA, based on some of the literature, a switch was made to the higher dose of daptomycin ≥ 8 mg/kg/day in the hopes of improved efficacy. The primary purpose of this study is to evaluate the safety of high-dose daptomycin (≥ 8 mg/kg) to the standard dose (6 mg/kg) in the treatment of osteomyelitis infections in a veterans population. Methods: A retrospective chart review will compare safety and efficacy of standard dose and high dose daptomycin. The primary outcome of the study is CPK elevation (defined as 5X the upper limit of normal accompanied by muscle pain/weakness or 10X the upper limit of normal without musculoskeletal signs or symptoms) from baseline through daptomycin therapy completion. The secondary outcome of the study will look at clinical resolution of osteomyelitis (based on culture results, CT and MRI scans, WBC, C-reactive protein [CRP], erythrocyte sedimentation rate [ESR] and signs/symptoms of infection). Patients will be included in this study if they had osteomyelitis between January 2008 through October 2013 as documented by imaging or positive bone culture, were treated with daptomycin for the majority of the treatment course, and are ≥ 18 years of age Results and Conclusions: Results are pending and will be presented at the Great Lakes Pharmacy Resident Conference

Learning Objectives:

Identify The most common osteomyelitis pathogens

Identify potential adverse effects associated with daptomycin

Self Assessment Questions:

Which of the following is the most common organism isolated from bone cultures in adults?

A Staphylococcus aureus

B: Haemophilus influenza

C: Escherichia coli

D: Streptococcus pyogenes

Which of the following best describes potential adverse effects associated with daptomycin administration?

A Red Man Syndrome

B Musculoskeletal symptoms

C Seizures

D Peripheral neuropathy

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-883 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE DESIGN, IMPLEMENTATION, AND EVALUATION OF A PHARMACIST-DRIVEN MEDICATION RECONCILIATION PROCESS

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Purpose: With the emergence of pay for performance and the growing interest among government agencies, insurance providers, accrediting organizations, and patient advocacy groups; healthcare providers are continually seeking new methods to improve performance in areas assessed by these quality measures. Recently, considerable attention has been paid to the pharmacists role in improving the numerous quality measures centered on medications, specifically the medication reconciliation process. It has been shown that discrepancies in a patients medication reconciliation at admission may be associated with 50% of discrepancies at discharge. Numerous studies have shown the benefit of a clinical pharmacists intervention in reducing medication reconciliation errors (most commonly addressing discrepancies in strength, dosage form, and frequency of administration). During 2012 Akron General Medical Center (AGMC) implemented a pharmacist-based predischarge medication reconciliation program for patients with a diagnosis of heart failure. In 2013 the medication reconciliation service was expanded to include patient medication education. The objective of this project is assess the impact of the pharmacist-based discharge medication reconciliation and counseling program on 30-day readmission rate and core measure HF1d (medications instructions at discharge) compliance. Methods: This retrospective, single center, nonrandomized cohort study includes patients discharged from AGMC between January 1, 2012 and October 31, 2013. The analysis includes 1398 patients, aged 18 years and older, who were admitted with a primary diagnosis of heart failure. Using electronic medical records, a pharmacist intervention log, and CMS compliance data obtained by the AGMC Quality Department, data collection included primary diagnosis, deidentified patient account numbers, and readmission status. The intervention was pharmacist medication reconciliation or medication reconciliation with discharge counseling. 30-day readmission rates and core measure HF1d (medications instructions at discharge) compliance will be compared between the medication reconciliation, the medication reconciliation plus patient medication education, and standard discharge process groups. Results and Conclusions: To be presented at GLPRC

Learning Objectives:

Explain the role of the pharmacist in providing medication reconciliation and patient education services at hospital discharge

Discuss the impact of the Akron General Medical Center (AGMC) pharmacist-driven medication reconciliation program on core measure scores and readmissions at AGMC

Self Assessment Questions:

Congestive heart failure is a diagnosis which is associated with a(n)

A Decreased risk of 30 day readmission compared to other diagnose

B: Increased risk of 30 day readmission compared to other diagnoses

C: Similar risk of 30 day readmission compared to other diagnoses

D: None of the above. Specific diagnoses are not associated with an

As discuseed, which of the following is not one of the most common discrepancies addressed during the medication reconciliation process

A Strength

B Dosage form

C Frequency of administration

D Reason for use

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-331 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARING THE EFFECTS OF LOW-DOSE VERSUS HIGH-DOSE I STEROIDS IN ACUTE EXACERBATIONS OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE (AECOPD)

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Purpose: Systemic corticosteroids are used in AECOPD and have shown to shorten recovery time, improve lung function, and reduce the risk of early relapse, treatment failure, and length of hospital stay. However, controversy exists on the most appropriate and effective dosage regimen. Due to limited data on specific IV steroid doses in AECOPD, it is necessary to evaluate current AECOPD treatment practices at Saint Joseph East (SJE) by retrospectively observing AECOPD patients treatments and outcomes. The purpose of this study is to compare the effects of low-dose versus high-dose IV steroids in mild, moderate, severe, and very severe AECOPD patients.

Methods: This single-center, retrospective cohort study compares the effects of low-dose versus high-dose IV steroids in mild, moderate, severe, and very severe AECOPD patients. Patients will be categorized using the GOLD criteria. The primary outcome is treatment failure and secondary outcomes are length of hospital and ICU stay, analysis of pulmonologist managed versus internist managed outcomes, and adverse effects from steroids. Patients that were 18 years of age and older with documented results of pulmonary function tests (PFTs) from previous non-AECOPD admissions, and a definitive AECOPD diagnosis during hospital admission that were started on IV steroids are included i this study. Data will be collected on patients admitted between February 2010 and December 2013. Data will be analyzed using the Chi-square test, the students t-test, and the Wilcoxon signed rank test, as appropriate, measuring significance with a p-value of 0.05. Results and Conclusions: Data collection is ongoing. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference in April.

Learning Objectives:

Identify the most commonly used medication classes in AECOPD.

Recall the recommended steroid regimen stated in the most updated GOLD guidelines.

Self Assessment Questions:

What medication classes are most commonly used in AECOPD?

A Bronchodilators, inhaled corticosteroids, and antibiotics

B: Antibiotics, systemic corticosteroids, and bronchodilators

C: Systemic steroids, phosphodiesterase-4 inhibitors, and bronchodil

D: Mucolytic agents, systemic steroids, and vasodilators

What is the recommended steroid regimen per GOLD guidelines in AECOPD?

A Methylprednisolone 125 mg x 1, then prednisolone 30 mg per day

B Methylprednisolone 20 mg every 8 hours for 5 days

C Prednisolone 30-40 mg per day for 10-14 days

D Prednisone 40 mg per day for 5 days

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-332 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSESSMENT OF POST-OPERATIVE PAIN CONTROL VIA ELASTOMERIC PAIN PUMP FOLLOWING CARDIOTHORACIC SURGERY

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Purpose: Proactive pain management with a multimodal strategy is recommended to provide better overall pain control and to reduce the incidence of adverse events. The use of elastomeric pumps in patients undergoing cardiothoracic surgery has previously been associated with reduced post-operative pain scores, opioid utilization, length of stay, and improved overall patient satisfaction scores. The effectiveness of elastomeric pumps in comparison with traditional modalities of pain control has been studied in patients undergoing cardiothoracic surgery; however, conflicting results and small sample sizes are a significant limitation of the existing literature. Therefore, the goal of this study is to assess the effectiveness of using an elastomeric pump in patients undergoing cardiothoracic surgery compared with traditional modalities.

Methods: This multicenter, retrospective cohort analysis will include patients undergoing cardiothoracic surgery from May 2012 through October 2013. All patients who meet inclusion criteria and received an elastomeric pump containing a local anesthetic will be randomly category matched by age to patients who did not receive an elastomeric pump. Baseline characteristics including age, gender, opioid use prior to admission, comorbidities, and procedure will be collected. Post-operative pain control will be assessed for each group through analysis of critical care pain observation tool (CPOT) and visual analog scale (VAS) scores for 96 hours following surgery. Adjunct pain medications administered in the first 96 hours following surgery will also be collected. The incidence of adverse events, including occurrence of respiratory depression requiring rescue opioid antagonist, need for rescue antiemetic, time to first documented bowel movement, and the need for re-intubation will also be assessed. Results/Conclusions: Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Review traditional practices utilized for optimal pain control in patients undergoing cardiothoracic surgery.

Discuss the effectiveness of an elastomeric pump following cardiothoracic surgery compared to traditional methods of pain control.

Self Assessment Questions:

Pain intensity is highest on what days following cardiothoracic surgery?

A Days 1 and 2

B: Days 2 and 3

C: Days 3 and 4

D: Days 4 and 5

Elastomeric pumps provide analgesia by which of the following methods

A Continuous infusion of bupivacaine or ropivacaine intravenously

B Continuous infusion of bupivacaine or ropivacaine at site of incisio

C Continuous infusion of an opioid analgesic at site of incision

D Continuous infusion of bupivacaine or ropivacaine in the epidural s

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-720 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF THE IMPACT OF A PATIENT SCORING TOOL ON INPATIENT HEMATOLOGY/ONCOLOGY PAIN MANAGEMENT IN OPIOID-TOLERANT PATIENTS AT AN ACADEMIC MEDICAL CENTEI

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Purpose: Pain remains largely under-treated in the hematology/oncology population despite pain management guidelines. A recent study of adherence to National Comprehensive Cancer Network (NCCN) pain management guidelines at our institution identified the following predictors for inadequate pain management: opioid tolerance, severe pain on admission, and fewer pain assessments. Based on these results, an electronic patient scoring tool was developed to assist pharmacists in evaluating patients at risk for inadequate pain management. The objective of this study is to determine if implementation of the patient scoring tool will improve analgesia rates in the adult hematology/oncology population.□□Methods: In this retrospective chart review, inpatient data will be collected prior to and following the implementation of an electronic patient scoring tool focused on pain management. A drug utilization review will be performed to identify opioid-tolerant patients (defined as patients taking an equivalent of 60 mg oral morphine per day for a least a week) and these patients will be screened for a pain score greater than 4 on admission. The primary outcome, attainment of analgesia (defined as a pain score less than or equal to 4 or a 50 percent reduction in pain from baseline) at 24 hours after initiation of opioid therapy, will be compared between pre- and post-implementation groups. Secondary endpoints will include mean pain score, time to analgesia, mean frequency of pharmacist interventions, opioid-associated adverse events and percent of patients with regimens adherent to NCCN guidelines. □□Results/Conclusions: This study is still under investigation with final results and conclusions to be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the NCCN guideline recommendations for managing pain in the opioid-tolerant cancer patient.

Identify predicting factors for inadequately managed pain in the hematology/oncology population.

Self Assessment Questions:

The NCCN guidelines recommend a bolus dose of short-acting opioid to be _____ percent of the total opioid equivalent taken in the previous 24 hours.

A 5-7%

B: 10-20%

C: 35-45%

D: 50-70%

Which of following factors were identified as predictors for inadequately managed cancer pain in the hematology/oncology population?

A Age over 75 years

B Renal dysfunction (Creatinine clearance <30mL/min)

C Metastatic Disease

D Opioid Tolerance

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-333 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFECT OF A VANCOMYCIN DOSE-LIMITING POLICY ON INITIAL TROUGHS IN OBESE VERSUS NON-OBESE PATIENTS

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Purpose: Vancomycin dosing may be challenging in patients who are obese and seriously ill. Current consensus guidelines suggest giving a 25-30 mg/kg loading dose of vancomycin based upon actual body weigh in seriously ill patients. In obese patients, this recommendation may result in very large doses and a potentially higher risk of supratherapeutic vancomycin trough levels. Higher trough values are associated with a greater risk of vancomycin-associated nephrotoxicity. A standardized vancomycin dosing policy has been implemented in a community-based health system that limits initial loading and maintenance doses to 3000 mg and 2000 mg, respectively. This study aims to evaluate the appropriateness of implementing a standardized, dose-limiting vancomycin management policy by assessing initial vancomycin troughs in obese versus non-obese patients.□□Methods: This study is designed as a retrospective chart review that will evaluate pharmacist-managed vancomycin dosing before and after implementation of a standardized dose-limiting vancomycin management policy in obese versus non-obese patients. The policy limits loading doses to 3000 mg and maintenance doses (prior to the first serum vancomycin trough concentration) to 2000 mg. Pre-policy data will be collected on patients hospitalized at Parkview Hospital and Parkview Regional Medical Center from 3/1/13 to 9/1/13, while post-policy data collection will begin on patients hospitalized after 11/26/13. The primary endpoint of the study is the indication-specific appropriateness of initial serum vancomycin trough concentrations in obese versus non-obese patients. Secondary endpoints include the incidence of vancomycin-associated nephrotoxicity, mean initial serum trough levels, mean loading and initial maintenance doses, as well as the average total daily dose of vancomycin in each group. Exclusion criteria include pregnant or incarcerated patients, patients whose vancomycin dosing is managed by non-pharmacy practitioners, and any patients on renal replacement therapy. □□Results/Conclusions: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify guideline-recommended vancomycin trough levels for common infections.

List four risk factors for developing nephrotoxicity due to vancomycin therapy.

Self Assessment Questions:

What is the goal serum vancomycin trough concentration range for a patient with pneumonia?

A 10-15 mg/L

B: 10-20 mg/L

C: 12-18 mg/L

D: 15-20 mg/L

Which of the following are risk factors for developing vancomycin-induced nephrotoxicity?

A Advanced age and subtherapeutic trough levels

B Renal insufficiency and age < 65

C Supratherapeutic trough levels and advanced age

D Extended duration of vancomycin therapy and subtherapeutic trou

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-334 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF AN ANTIMICROBIAL CLINICAL DECISION SUPPORT SYSTEM (CDSS) WITHIN A VETERANS AFFAIRS MEDICAL CENTER: PART 2 OF 2

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Purpose: The purpose of this project is to facilitate the implementation of an antimicrobial CDSS into the computerized patient record system of a 170-bed tertiary care teaching facility. The focus of part two of this project is on the implementation process and potential roadblocks, components of effective tool marketing and maintenance, skills necessary to navigate a process improvement project, and the roles of a PGY2 and PGY1 resident collaborating on one project. Methods:

The antimicrobial CDSS, which consists of menus that guide a provider into selecting and ordering appropriate antimicrobial therapy for a suspected diagnosis, will be implemented in the acute care setting with potential to expand to the outpatient clinics. A needs assessment has been distributed to identify factors that may affect prescriber acceptance of CDSS. The menus will be transferred from another VA Medical Center, tailored based on needs assessment results, reviewed for guideline adherence, and adjusted based on local susceptibility patterns The antimicrobial CDSS has currently been approved for testing by the Clinical Informatics Committee and Medical Executive Committee.

Preliminary results: A total of 48 prescribers completed the needs assessment. The most commonly cited benefit of antibiotic order sets include improved quality of antibiotic prescribing, reduced prescribing errors, and improved adherence to clinical practice guidelines. The top recognized barriers of current order sets include clinical scenarios beyond the order set scope, alert fatigue, and lack of education regarding order sets. The success of this clinical informatics project heavily relies upon buy-in from institutional leadership and clinical stakeholders (physicians, nurse practitioners, pharmacists, etc.) as overall acceptance requires a general culture change in antibiotic prescribing. Additional factors of focus in part 2 of this project include extensive provider education, consideration for tool maintenance, and local impact evaluation. Conclusion: Final conclusion will be presented at Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify key components of sustaining a clinical decision support system tool

Identify key health-system personnel to recruit to gain appropriate buy-in for successful implementation of an antimicrobial clinical decision support system

Self Assessment Questions:

Which of the following best describe key components of sustaining a clinical decision support system?

A Gaining support from nursing

B: Marketing the tool by sending a mass email that lists the tool's pur

C: Identifying three or four project owners, including an infectious dise

D: Reviewing tool for accuracy and guideline-adherence every three y

Which of the following best describe key individuals to recruit across a health-system in order to gain appropriate buy-in for an antimicrobial clinical decision support system?

A Nursing and medical media

B Hospitalists and infectious disease physician champion

C Infectious disease physician champion and clinical pharmacists

D Hospitalists, infectious disease physician champion, medical exec

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-335 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF STRATIFIED CORRECTION DOSE INSULIN ON DYSGLYCEMIAS IN HOSPITALIZED DIABETIC ADULTS

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Purpose: Correction dose insulin (CDI), also known as sliding scale insulin, is recommended by the American Diabetes Association (ADA) and the American Association of Clinical Endocrinologists (AACE) to correct hyperglycemia in hospitalized patients. Frequently, CDI is dosed without consideration for diabetes type, or any other surrogates for insulin sensitivity that could influence the blood glucose response to CDI. Since 2010, our institution has recommended a stratified CDI dosing strategy based on protocol defined markers of insulin sensitivity. The objective of this study is to estimate potential benefits of this stratified CDI dosing strategy on outcomes of glycemic control that no study has ever evaluated. Methods: This study has been submitted to the Institutional Review Board for approval. The electronic medical record will be used to identify adult diabetic patients who were admitted to the medicine services at University of Illinois Hospital and Health Sciences System (UIHHSS) between August 2012 and July 2013 and received an order for correction dose insulin (insulin aspart). Data to be collected include medical record number (MRN), demographic data (age sex, date of birth, and ethnicity), reason for admission, date of admission/discharge, past medical history, home and inpatient anti-diabetic medications, insulin dose, corticosteroid use, kidney function, estimated insulin sensitivity (determined by investigator per UIHHSS clinical care guideline), baseline HbA1C, hypoglycemic events, hyperglycemia events, and the type of correction dose insulin ordered. The incidence of hypoglycemia and hyperglycemia will then be compared between groups that received CDI dosing per protocol and those received CDI that were not consistent with their insulin sensitivity. Results: Data collection is ongoing.

Learning Objectives:

Recognize clinical factors affecting insulin sensitivity in diabetic patients.

Select appropriate approach to control blood glucose level for non-critically ill diabetic patients.

Self Assessment Questions:

Which of the following characteristics is/are associated with reduced insulin sensitivity in Type 2 DM patients?

A Obesity

B: Impaired renal function

C: Chronic liver diseases

D: A and C

SC is an 81 years old Hispanic male with a history of DM-II, HTN, stroke CAD, ESRD on hemodialysis admitted to the hospital due to chest pain. His current home diabetes medication is glargine 10 unit

A Low dose scale (for insulin sensitive patients) with goal of pre-mea

B Low dose scale (for insulin sensitive patients) with goal of random

C High dose scale (for insulin resistant patients) with goal of random

D High dose scale (for insulin resistant patients) with goal of pre-mea

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-884 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATING THE EFFECT OF METFORMIN ON INCIDENCE OF LACTIC ACIDOSIS

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Purpose: The purpose of this study is to evaluate the use of metformin i diabetic patients at the Monroe Clinic and to develop recommendations based on patients renal function. Although the FDA continues to recommend elevated serum creatinine as a contraindication to metformin therapy, the drug has been shown to be safe in patients with serum creatinines above the recommended threshold for discontinuatior of therapy. As the benefits of metformin have been well described, it should be continued in patients if the risk of lactic acidosis is negligible.□□Methods: Retrospective chart review of type 2 diabetic patients with a serum creatinine ≥ 1.4 (females) or ≥ 1.5 (males). A cohort of these patients taking metformin was matched with a similar se of diabetic patients not taking metformin, and the incidence of lactic acidosis in these groups was compared. Additionally, type 2 diabetic patients taking metformin were stratified based on their serum creatinine, using the FDA recommended thresholds, and the incidence of lactic acidosis in these groups was compared.□□Outcomes: The primary outcome of this study was to compare the incidence of lactic acidosis among diabetic patients taking metformin and among diabetic patients not taking metformin. Secondary outcomes compared- among diabetic patients taking metformin- incidence of lactic acidosis in patients with serum creatinine ≥ 1.4 (females) / serum creatinine ≥ 1.5 (males) to incidence of lactic acidosis in patients below these serum creatinine thresholds. The current utilization of metformin with respect to serum creatinine at Monroe Clinic was also evaluated.□□Results & Conclusions: Data collection and analysis are currently being conducted final results and conclusions will be presented at Great Lakes Residency Conference.

Learning Objectives:

Define the FDA recommendations regarding discontinuation of metformin with relation to serum creatinine

Discuss alternative thresholds for metformin discontinuation

Self Assessment Questions:

Which of the following serum creatinines is above the FDA recommended threshold for discontinuation in a male patient?

A 1.1
B: 0.8
C: 1.6
D: 1.4

Which of the following criteria has been suggested as a threshold for metformin discontinuation

A Age >65
B eGFR <30ml/min/1.73m^2
C Weight <60 kg
D Both B and C

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-336 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF EMPIRIC ANTIBIOTIC SELECTION FOR THE TREATMENT OF COMMUNITY-ASSOCIATED SKIN AND SOFT-TISSUE INFECTIONS IN THE EMERGENCY DEPARTMENT

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Purpose: There is emerging antibiotic resistance among Staphylococcus aureus, a common causative organism of skin and soft-tissue infections (SSTIs) in community patients. Common practice includes prescribing antibiotics in combination with incision & drainage (I&D). Controversy exists regarding whether antibiotics provide added benefit. At this institution, the current antibiogram does not differentiate cultures among hospital and emergency department (ED) patients. The study objective i to evaluate appropriateness of antibiotic selection used to treat SSTIs fo community patients who presented to the ED and to create an antibiogram of community-associated SSTI organisms to guide empiric antibiotic selection.□□Methods: This is a single center, retrospective chart review to evaluate adult patients who presented to the ED from the community with a SSTI between July 1, 2012 and June 30, 2013. Data collected includes: patient demographics; wound characteristics; wound culture data including site, organism and susceptibilities; interventions in the ED such as I&D and administered antibiotics; discharge antibiotics; and if patients returned to the ED or followed-up in clinic.□□Preliminary Results: Thirty patients were evaluated. Most patients were female (80%) and the average age was 34 (13) years. Most patients had no pre existing co-morbidities (66.7%) or history of SSTIs (66.7%). The most common wound site was axilla (23.3%) and all patients had a wound culture at the time of ED presentation. The most common organism was methicillin-resistant Staphylococcus aureus (50%). A majority of patients received I&D (70%) and were discharged on antibiotics (86.7%) with the most common being clindamycin (46.2%) and sulfamethoxazole-trimethoprim (31%). Discharge antibiotics were mostly susceptible to the wound organism (65.4%).□□Preliminary Conclusions: Data collection is ongoing. Preliminary data suggests antibiotic selection used to treat SSTIs for community patients who presented to the ED was appropriate based on wound organism susceptibility. Final results and conclusions are pending.

Learning Objectives:

Identify common bacterial organisms that cause skin and soft-tissue infections.

Describe therapeutic options to treat a skin and soft-tissue infection in a community patient presenting to the emergency department.

Self Assessment Questions:

Which of the following organisms is a common cause of skin and soft-tissue infections in the community?

A Enterococcus
B: Methicillin-resistant Staphylococcus aureus
C: Methicillin-sensitive Staphylococcus aureus
D: Pseudomonas

What is the mainstay therapy for a cutaneous abscess?

A Watch and wait
B Flush wound with sterile water
C Incision and drainage
D Intravenous antibiotics

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-337 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF THE USE OF LOW-DOSE QUETIAPINE AND THE RISK OF METABOLIC CONSEQUENCES: A RETROSPECTIVE REVIEW

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Purpose: Quetiapine fumarate (Seroquel) is a second-generation (atypical) antipsychotic indicated for the treatment of schizophrenia, bipolar disorder, and as adjunctive therapy for major depressive disorder. Due to the receptor blockade for which quetiapine exerts its effects, this medication is often used at low-doses to treat sleep disorders. Unfortunately, quetiapine has been shown to cause metaboli consequences such as impaired fasting blood glucose, dyslipidemia, hypertension, etc. Since evidence is limited in regards to these risks at low doses, the purpose of this study will be to identify if there are risks o developing metabolic consequences with the use of low-dose quetiapine. Methods: Electronic patient records will be accessed at the Battle Creek VA Medical Center retrospectively. The anticipated study period will cover from June 30, 2012 to September 1, 2013. During initial review, patients prescribed quetiapine will be charted and categorized by dose. Subsequently, patients will be assessed for inclusion and exclusion criteria. Inclusion criteria includes patients 18 years of age or older with a prescription of quetiapine 200mg or less for at least 3 months. Exclusion criteria includes patients less than 18 years of age, prescribed more than 200mg of quetiapine, as well as duration o therapy less than 3 months. Patient medical records will be reviewed to determine the dose of quetiapine, duration of therapy, administration schedule, concomitant antipsychotic use, lipid levels, fasting blood glucose, blood pressure, weight and body mass index, before and after initiation of quetiapine. The primary objective of this study is to evaluate and compare lipid levels, fasting blood glucose, weight, blood pressure, and body mass index before and after initiation of low-dose quetiapine. Secondary objectives will evaluate the administration schedule of quetiapine as well as compare results of patients on concomitant antipsychotics to patients taking only quetiapine. Results: To be presented Conclusion: To be presented

Learning Objectives:

List the metabolic consequences associated with the use of quetiapine

Describe the mechanism(s) by which quetiapine exerts its effects

Self Assessment Questions:

Which of the following side effects does quetiapine cause?

A Sedation
B: Hypertension
C: Impaired fasting blood glucose
D: All of the above

At which receptor does quetiapine have action?

A Phosphodiesterase-5 receptor
B Dopamine Receptor
C Angiotensin-1 receptor
D None of the above

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-885 -L01.-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT, IMPLEMENTATION, AND ASSESSMENT OF A TARGETED FIRST DOSE MEDICATION TEACHING SERVICE

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Background: Improving patient centered care, patient satisfaction, and medication comprehension and adherence are major areas of focus for institutions nationwide. Improving HCAHPS "Communication about Medications" scores has also been identified as a high priority at Froedtert Hospital. While it is well established that providing medication teaching at the point of discharge improves patient outcomes, patients may be overwhelmed with information on the day of discharge. Additionally, although nurses have traditionally performed first dose counseling, there is a significant opportunity for the pharmacist to take greater ownership of medication teaching and move closer to the patient bedside. Purpose: To develop and implement a pharmacy driven targeted first dose medication teaching service for patients or their respective caregivers receiving targeted medications on pilot units. Methods: This was a descriptive, quality improvement 4 week pilot study at a 550 bed academic medical center. The primary outcome of the study was to describe time to first dose medication education completion in relation to first dose administration. Patients who were age 18 years or older, admitted to a targeted unit during the pilot period, and initiated on a targeted medication that was not on their home medication list were included in the pilot study. Hospice and palliative care patients and patients expected to be discharged to a facility were excluded. Targeted units included general medicine, surgical, and cardiology units Pharmacists identified eligible patients during order verification, patient care rounds, and profile review. To ensure quality and consistency, patient friendly medication teaching sheets and scripting were utilized. Teaching was documented in the electronic medical record. Results/Conclusion: The pilot project was conducted in January 2014; results and conclusions will be presented at the 2014 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify patient inclusion criteria for targeted first dose medication teaching.

Recognize the individuals responsible for performing targeted first dose medication teaching.

Self Assessment Questions:

Which of the following was considered a patient inclusion criterion for targeted first dose medication teaching?

A Age less than 18 years
B: Initiation of a targeted medication during admission that was not o
C: Admission to a transplant, neurology, or oncology unit during the p
D: Hospice or palliative care status

Which of the following individuals were responsible for performing targeted first dose medication education?

A Nurse practitioners
B Physician assistants
C Clinical pharmacists
D Medical residents

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-721 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

INTRAVENOUS PENTAMIDINE FOR PNEUMOCYSTIS CARINII/JIROVECI PNEUMONIA (PCP) PROPHYLAXIS IN PEDIATRIC TRANSPLANT PATIENTS

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Purpose: Sulfamethoxazole/trimethoprim (SMX/TMP) is the current gold standard for prophylaxis of PCP in immunocompromised pediatric patients. Currently there are several second line options for prophylaxis but many, including intravenous (IV) pentamidine, have not been proven to be as effective or as safe as SMX/TMP in the pediatric transplant population. There is increasing use of IV pentamidine in the transplant population but there is limited published data to support its efficacy and safety. This study is to determine the efficacy and safety of IV pentamidine in preventing PCP in pediatric transplant patients.Methods: A retrospective chart review was conducted to evaluate all transplant patients less than 18 years of age that received a least one dose of IV pentamidine from January 2010 to July 2013. The primary outcome, pentamidine efficacy was evaluated by the incidence of PCP diagnosis. The secondary outcome, pentamidine safety was evaluated by adverse events leading to pentamidine discontinuation. All data was analyzed using descriptive statistics. Results:All transplant patients at Cincinnati Childrens Hospital Medical Center (CCHMC) who had received IV pentamidine were reviewed and 333 patients met inclusion criteria. The overall incidence of PCP was found to be 0.3% for pediatric transplant patients on pentamidine. Pentamidine was found to be safe and the incidence of adverse events leading to discontinuation was 6.3% with the most common reason being tachycardia 31.8%. Adverse event rates were approximately equal among small bowel, renal and bone marrow transplant populations. No adverse events leading to discontinuation were observed in liver or heart transplant patients.Conclusion:In a three year time span only 1 patient (0.3%) receiving IV pentamidine prophylaxis had a breakthrough PCP infection. Although SMX/TMP is considered first line for PCP prophylaxis, based on the results of this study, IV pentamidine should be considered a safe and effective alternative in pediatric transplant patients.

Learning Objectives:

Describe the patient populations and risk factors for developing PCP infection and current guidelines for treating these populations

Discuss IV pentamidines efficacy and safety as primary PCP prophylaxis in pediatric transplant population

Self Assessment Questions:

JJ a 18 month old female, s/p liver transplant; post-op day (POD) # 3 with normal renal function. Donor CMV + and recipient CMV -. Current medication regimen: Amlodipine, Aspirin, Fluconazole, Lanso

A Corticosteriods
B: Solid-organ transplant
C: Immunosuppressants
D: All of the above

2.Patient JJ is currently starting to increase oral intake and the team asks you what agent should be initiated for PCP prophylaxis:

A Inhaled pentamidine
B Intravenous pentamidine
C Sulfamethoxazole/trimethoprim
D Dapsone

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-338 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

TREATMENT OF ELECTROLYTE DISORDERS IN THE INTENSIVE CARE UNIT: IS INTRAVENOUS THERAPY NECESSARY?

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Purpose: Electrolytes are involved with many metabolic functions throughout the body. Electrolyte disorders are common in the intensive care unit (ICU), and have been associated with increased morbidity and mortality. The treatment of electrolyte disorders can vary from prescriber to prescriber. To minimize practice variability, this four hospital system utilizes a nursing driven intravenous (IV) electrolyte replacement protocol in the ICU. The ICU replacement protocol includes IV potassium chloride and magnesium sulfate and the orders remain active on the patients medication administration report for the nurse to utilize as needed. The purpose of this project is to implement a revised protocol including oral options and track cost savings. Methods:

This chart review is exempt from review by the Institutional Review Board because the primary goal is to assess for quality assurance. Phase 1 will consist of a randomized retrospective chart review of orders placed within the ICU electrolyte replacement protocol from November 1 2012 to November 1, 2013. Orders will be included from all four ICUs within the health system. Of the identified orders, patients will be divided into two categories; oral and non-oral therapy eligible. The eligibility for oral therapy is defined as having a diet ordered that allows medications to be taken by mouth. The non-oral therapy group will include all those whose diet order restricts any administrations by mouth. Phase 2 will consist of implementation and evaluation of a revised protocol that includes oral options for those eligible to take medications by mouth. For each patient in whom the electrolyte protocol is ordered, cost savings and eligibility for oral medications will be evaluated. Descriptive statistics will be used.

Learning Objectives:

Describe the importance of electrolyte replacement

Identify cost savings potential with oral replacement options

Self Assessment Questions:

Which of the following is an advantage of oral electrolyte replacement therapy?

A Cost savings
B: Maximizes use of intravenous lines
C: Increases nurses' burden
D: All patients are eligible

Which patient group would be a suitable candidate for oral electrolyte replacement at this health system?

A Recent cardiovascular surgery patients
B Symptomatic deficiency patients
C Patients experiencing diarrhea
D Medical patients with no malabsorption issues

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-339 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

TREATMENT OF ENTEROCOCCAL URINARY TRACT INFECTIONS (UTIS): IS AMPICILLIN ENOUGH?

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Purpose The objective of this study is to evaluate the effect of a change in laboratory reporting procedures on treatment of enterococcal UTIs in order to identify whether prescribing patterns have trended toward reduction in the use of broad-spectrum antibiotics without negatively impacting patient outcomes. Methods This IRB-approved study is a quasi-experiment, with a single pre-test/post-test design. Patients ≥18 years, hospitalized at Henry Ford Hospital between January 1, 2012 and December 31, 2013, and having a urine culture positive enterococcus species are included in aim 1. Aim 2 utilizes a retrospective cohort design and includes all patients from aim 1 meeting diagnostic criteria for a UTI and whose urinary isolate was identified as vancomycin-resistant enterococcus (VRE) and was their first documented clinical urinary isolate of VRE. Subjects are excluded if they were on hospice during VRE isolation or if no therapy for VRE UTI was received. The primary endpoint is to compare prescribing practices before and after implementation of a change in laboratory reporting of enterococcal urinary isolates. This will be achieved through an interrupted time series analysis evaluating antibiotic usage quarterly in terms of days of therapy (DOTs). The secondary endpoint is to compare treatment outcomes between patients treated for a VRE UTI with an aminopenicillin versus a non--lactam antibiotic. This will be achieved by comparing rates of clinical cure, 30-day retreatment/readmission, and 30-day all-cause mortality. Analyses will be conducted using Chi-square or Fishers exact test to evaluate categorical data as appropriate and the Students t test or Mann-Whitney U test to evaluate continuous, non-parametric data as appropriate. From these univariate analyses, multiple multivariate logistic regression analyses will be conducted to adjust for confounders on outcome of clinical cure. Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Describe the differences between urinary colonization, asymptomatic bacteriuria, and a urinary tract infection

Explain the pharmacokinetic rationale behind using an aminopenicillin to treat enterococcal urinary tract infections

Self Assessment Questions:

A patient presents with a chief complaint of left leg pain. They have no significant past medical history and no other major complaints. In the emergency department, a urinalysis was obtained and show

A This patient meets criteria for a urinary tract infection

B: This patient meets criteria for asymptomatic bacteriuria

C: This patient meets criteria for urinary colonization

D: This patient has no urologic abnormalities

A patient diagnosed with a urinary tract infection has a urine culture that has grown Enterococcus spp., however antibiotic susceptibilities have not yet been reported. Despite having previous urine c

A Aminopenicillin resistance is a different mechanism from vancomy

B Mean (range) MIC90 against vancomycin-resistant E. faecalis and

C Peak urine concentrations after oral administration of high-dose ar

D Ampicillin is safer to use than vancomycin

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-340 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT AND IMPLEMENTATION OF A PHARMACIST RUN TOBACCO CESSATION CLINIC CATERED TOWARDS VETERANS WITH MENTAL HEALTH DIAGNOSES

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Purpose: A strong link between mental illness and tobacco use has been established in previous studies. Notably, mental illness and tobacco use are prevalent among Veterans. Clinical pharmacy specialists within the mental health clinic have the ability to prescribe tobacco cessation therapies outlined by their scope of practice. Currently, there is not a tobacco cessation clinic run in conjunction with the mental health department at this facility. The primary objective of this project is to develop and implement a pharmacist run tobacco cessation clinic for Veterans enrolled in the outpatient mental health pharmacotherapy clinic. Methods: The tobacco cessation clinic will be formed as a subset of the outpatient mental health pharmacotherapy clinic at the Lexington Veterans Affairs Medical Center. Participation in the tobacco cessation clinic will be initiated through self-enrollment or via referral by mental health providers in conjunction with the facilities established referral protocols. Promotion for the tobacco cessation clinic will include written and verbal communication of the available services to both Veterans and mental health providers. The timeline for clinic development will be eight weeks, with a projected opening date of March 1, 2014. The tobacco cessation clinic will consist of a single one-hour group session per week. Each session will include a 30 minute educational presentation on a tobacco cessation-related topic, such as health consequences of nicotine addiction, overview of tobacco cessation therapies, and management of nicotine withdrawal symptoms. The remaining 30 minutes will consist of an informal group discussion and/or individualized counseling, as appropriate. This administrative project is exempt from review by the Institutional Review Board as it does not require data collection or analysis. Results/Conclusions: To be presented at Great Lakes Residency Conference

Learning Objectives:

Review FDA approved pharmacotherapy options for tobacco cessation

Discuss implications of a tobacco cessation clinic catered towards Veterans with mental health diagnoses

Self Assessment Questions:

Which of the following FDA approved pharmacotherapy options for tobacco cessation should be avoided in patients with severe psychiatric illness?

A Nicotine replacement gum

B: Nicotine replacement patch

C: Bupropion (Zyban®)

D: Varenicline (Chantix®)

Which of the following is a true statement?

A A benefit of tobacco cessation is increased heart rate

B A benefit of tobacco cessation is decreased blood pressure

C A disadvantage of tobacco cessation is increased heart rate

D A disadvantage of tobacco cessation is increased blood pressure

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-722 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

OUTCOMES USING PHARMACIST INTERVENTION AND MOLECULAR DIAGNOSTIC TECHNOLOGY ON POSITIVE BLOOD CULTURES IN BACTEREMIC PATIENTS

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Purpose: Rapid identification of infecting organisms coupled with intervention by antimicrobial stewardship pharmacists has been shown to improve clinical outcomes and minimize adverse effects. Nanospheres Verigene Gram-Positive Blood Culture technology is a molecular diagnostic method of rapidly identifying specific gram-positive organisms and antimicrobial resistance determinants directly from positive blood cultures. Current practice encourages the use of initial empiric broad-spectrum therapy. This can lead to adverse events and increased cost when continued unnecessarily after pathogen identification and susceptibility determination. Utilization of pharmacists extensive clinical knowledge of antimicrobial therapy, in addition to rapid diagnostic techniques obviates the need for prolonged use of broad-spectrum antibiotics. The purpose of this study was to determine how pharmacist involvement with the Verigene blood culture reporting process and subsequent antimicrobial therapy recommendations would improve time to optimal therapy, as well as other clinical outcomes.

Methods: Retrospective data in adult inpatients with gram-positive bacteremia at Froedtert Hospital was collected and analyzed. The pre- and post-intervention period occurred between February 1, 2013 and March 31, 2013 and February 1, 2014 and March 31, 2014, respectively Prior to the intervention, the microbiology lab contacted the provider when positive blood cultures were identified. During the post-interventior period, the lab notified a clinical pharmacist upon identification of a positive Verigene result and upon report of sensitivities. The primary outcome assessed was time to optimal antimicrobial therapy after blood culture draw. Secondary outcomes included time to effective antibiotic therapy, length of hospital and ICU stay, microbiologic clearance, 30-day all-cause mortality, and bacteremia-related readmission and recurrence of infection. Results: Results will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Explain how pharmacists drug expertise, in addition to rapid bacterial identification techniques effects patient outcomes

Describe the benefits of using molecular bacterial diagnostic methods and how they can be implemented to positively affect pharmacists clinical practice

Self Assessment Questions:

When pharmacists are utilized on an antimicrobial stewardship team to monitor positive blood cultures and recommend therapy (choose the best answer):

A The length of hospital stay increases
B: The risk of mortality decreases
C: Patient outcomes improve, but cost increases
D: There is no effect on patient outcomes

Pharmacists who use Verigene to identify bacteria (choose the best answer):

A Must wait until sensitivities return to recommend de-escalation of t
B Can provide rapid, accurate antiviral, antibiotic and antifungal reco
C Can safely de-escalate or escalate therapy based on the high spec
D Can determine bacterial resistance mechanisms such as methicilli

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-341 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF A STANDARDIZED ALGORITHM AND INPATIENT PHARMACIST DELEGATION PROTOCOL FOR THE TRANSITION OF INTRAVENOUS TO SUBCUTANEOUS INSULIN

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Purpose: Higher rates of hyperglycemia have been observed when patients are transitioned from IV to SQ insulin without an established protocol. The purpose of this project is to create a standardized IV to SC insulin transition algorithm and pharmacy delegation protocol in order to improve blood glucose control in hospitalized patients for the first 24 hours after discontinuation of the insulin infusion. Methods: A literature review was conducted to identify best practices for IV to SQ insulin transition. This information was used to develop an algorithm with an accompanying pharmacist delegation protocol. Input from key stakeholders, including physicians, pharmacists and nurses, provided direction for algorithm development. The algorithm and delegation protocol were approved by the required institutional bodies. Decision support tools, including an IV to SQ insulin order-set and an electronic documentation progress note template, were developed to facilitate use of the algorithm and delegation protocol. A mandatory computer based training module was created to educate all inpatient pharmacists. This module will also assess algorithm competency and ability to develop IV to SQ insulin transition regimens. Outcome measures and algorithm adherence will be assessed through a retrospective chart review of adult patients managed on an insulin infusion for at least 24 consecutive hours. Primary outcome measures will include percent of blood glucose values in target range and rates of hypoglycemia and hyperglycemia 24 hours post IV insulin transition. Secondary measures will include length of stay post transition, rate of appropriate SQ insulin overlap, algorithm adherence rate and the frequency of physician delegation to pharmacists. Summary of Results: Conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the need for a standardized approach to transition patients from IV to SQ insulin.

Identify factors for consideration when determining a patients IV to SQ insulin transition regimen.

Self Assessment Questions:

Which of the following is a common reason for poor glycemic control post IV to SQ insulin transition?

A Obtaining a diabetes management service consult
B: Lack of appropriate overlap between SQ insulin and the IV insulin
C: Nursing administration error
D: Incorrect rate of the IV insulin infusion

Which of the following factors needs to be considered when determining a patients IV to SQ insulin transition regimen?

A Blood pressure control
B Fasting LDL level
C Gender
D The patient's current nutritional intake

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-342 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IDENTIFICATION AND RESOLUTION OF DRUG THERAPY PROBLEMS THROUGH TELEPHONE FOLLOW-UP AFTER CARE TRANSITIONS

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Purpose: Reimbursement provisions put forth in the Affordable Care Act and current trends of high hospital readmission rates have made care transition interventions vital to the sustainability of hospitals and improvement of patient outcomes. The primary objective of this study is to describe the drug therapy problems (DTPs) identified and resolved by community pharmacists at 3-5 days and at 30 days post-hospital discharge. Secondary aims of this study are to determine if a difference exists in the number of DTPs identified post-hospital stay, post-emergency room visit, and post-hospital procedure, as well as calculate the estimated cost savings associated with pharmacist-resolved DTPs.

Methods: This is a single-site, prospective, descriptive study. Eligible subjects are identified upon the presentation of a written or computer-generated prescription on a hospital-affiliated prescription blank to the community pharmacy. Subjects are included if they provide consent to participate and meet one of the following criteria: discharged from hospital stay of 1 or more nights, discharged from the emergency room, or discharged from a hospital-based procedure. A pharmacist calls study subjects at 3-5 days and at 30 days post-discharge. During each phone call, the pharmacist assesses for DTPs and resolves them via education and/or follow-up with the primary care physician. All DTPs identified are categorized and documented according to a modified classification system described by Cipolle and colleagues. Descriptive statistics will be used to report the DTPs identified and resolved by pharmacists at each intervention, and ANOVA will be used to determine if a difference exists among groups. An algorithm will also be applied to compiled DTPs to determine the cost savings associated with pharmacist interventions.Results/conclusion: Data collection is currently in progress. It is anticipated that this research will demonstrate the significant role community pharmacists can play in optimizing care transitions through drug therapy interventions.

Learning Objectives:

Discuss current statistics involving medication errors and adverse drug reactions that occur during care transitions in the United States.

Describe current and future hospital readmission penalties put forth by the Centers for Medicare and Medicaid (CMS) as a result of provisions in the Affordable Care Act.

Self Assessment Questions:

What percentage of medication errors occur during a transition in care?

A 20%
B: 40%
C: 60%
D: 80%

The Centers for Medicare and Medicaid (CMS) are planning to expand applicable conditions subject to readmission penalties starting in 2015. Which of the following diagnoses will be included as a resul

A Elective total hip arthroplasty
B Acute myocardial infarction
C Acute renal failure
D Skin and subcutaneous tissue infections

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-723 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

POST OPERATIVE PAIN CONTROL USING LIPOSOMAL BUPIVACAINE IN TRANSVERSUS ABDOMINIS PLANE (TAP) BLOCKS

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Purpose: Our institution has experienced an increase in the use of liposomal bupivacaine in place of immediate release anesthetics for a regional anesthesia procedure known as the transversus abdominis plane (TAP) block. The only FDA approved indication for liposomal bupivacaine is single dose infiltration into surgical sites to manage post operative pain, and there is currently a paucity of data to support its use for TAP blocks. The objective of this study is to evaluate the effectiveness of liposomal bupivacaine in the reduction of post operative pain scores and opiate requirements when compared to immediate release anesthetics for TAP block procedures.Methods: This study was conducted as a retrospective, case control study of liposomal bupivacaine for TAP blocks. Patients were considered for inclusion if they received a TAP block from April 2012 to February 2014. Patients were included if they were 18 years or older and received a TAP block less than 8 hours after completion of surgery. Patients were excluded if surgery was experimental, if they received the TAP block greater than 8 hours after completion of surgery, or if they were unable to report at least one verbal pain score for each 24 hour interval. Pain scores, which are measured on a verbal pain scale from 0 to 10 at our institution, were collected for the first 72 hours after surgery. The primary outcome was the difference in mean pain score between groups for each 24 hour interval (up to 72h) after administration of the TAP block. Secondary outcomes included differences between groups for the first 72 hours in total opiate requirements, total doses of non opiate pain medication, total doses of antiemetic agents, and total doses of naloxone.Results: To be presented at the Great Lakes Pharmacy Resident Conference (GLPRC).Conclusion: To be presented at the GLPRC.

Learning Objectives:

Identify the current FDA approved indication for liposomal bupivacaine.

Explain the potential benefits of liposomal bupivacaine over standard, immediate release anesthetics.

Self Assessment Questions:

Liposomal bupivacaine is currently FDA approved for which of the following indications?

A Transversus abdominis plane blocks
B: Local infiltration into surgical site
C: Peripheral nerve block
D: Intrathecal administration for the treatment of headaches

What is the approximate duration of action for liposomal bupivacaine when used for a TAP block according to available literature?

A 8 hours
B 22.5 hours
C 72 hours
D 132 hours

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-343 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSESSMENT OF A PHARMACY-MANAGED WARFARIN DOSING PROTOCOL COMPARING PHARMACIST TO PHYSICIAN DOSING IN AN INSTITUTIONAL SETTING

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Purpose: The objective of this study is to compare pharmacist-managed warfarin and physician-managed warfarin. The primary endpoint is time-to-therapeutic international normalized ratio (INR). Secondary outcomes of the study include incidence of major or minor bleeding, comparison of current practice to clinical guideline recommendations, and costs averted.□Methods: Institutional Review Board approval was obtained prior to the start of the research. A retrospective chart review was completed to assess outcomes in 3 groups: patients who received pharmacist-managed warfarin dosing, patients who received physician-managed warfarin dosing, and patients who received pharmacist-managed warfarin dosing post-implementation of a revised warfarin protocol. Inclusion criteria include warfarin-nave patients with a diagnosis of atrial fibrillation, deep vein thrombosis, or pulmonary embolism who are initiated on warfarin while inpatient. Exclusion criteria include patients managed by cardiologists and cardiothoracic surgeons or have a length of stay on warfarin therapy less than 3 days. Data to be collected are patient demographics; indication for warfarin; physician or pharmacist-dosing; days of supratherapeutic, subtherapeutic, therapeutic INR; days of heparin or enoxaparin use; utilization of reversa agents; incidence of major or minor bleeding; labs pertinent to safety and efficacy; medication interactions; diet; comorbidities; total length of stay; and total days on warfarin while inpatient. The current pharmacist-managed warfarin protocol will be revised following the review of outcomes from this study, new guideline recommendations, and pharmacist and physician feedback. The third study group will consist of patients who received pharmacist-managed warfarin dosing post-implementation. □Results: Data collection in progress. To be presented at Great Lakes Residency Conference.□Conclusion: To be presented at Great Lakes Residency Conference.

Learning Objectives:

Explain which factors can lead to suboptimal management of warfarin therapy in regard to time-to-therapeutic INR.

Identify an appropriate dosing regimen for a warfarin-nave patient based on CHEST guideline recommendations.

Self Assessment Questions:

Which of the following factors can lead to suboptimal management of warfarin?

A Drug Interactions

B: Age

C: Gender

D: All of the above

Based on CHEST recommendations, how long would you bridge a patient with new diagnosis of DVT starting on warfarin therapy?

A Until the INR is greater than or equal to 2

B Until the INR is greater than or equal to 2.5

C 4 days

D None of the above

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-724 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF SINGLE DOSE BASILIXIMAB INDUCTION THERAPY ON THE INCIDENCE OF REJECTION IN RENAL TRANSPLANT PATIENTS

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Purpose: □Selection of induction therapy in renal transplantation should be highly patient specific but guided by institutional policies to ensure standardization of care. Basiliximab is the most commonly used induction agent at the University of Wisconsin Hospital & Clinics and accounts for 3% of the inpatient drug budget. In a bundled payment environment, decreasing utilization of basiliximab represents an opportunity to decrease direct transplant cost and increase margin. While the approved labeling consists of two doses, mechanistically, there may not be rationale for the second dose. Additionally, no studies have demonstrated that induction therapy improves long-term patient or graft survival, particularly in patients at low immunologic risk. During a previous era, one dose of basiliximab was administered to low risk patients with the goal of decreasing drug cost while all other patients received two doses. The purpose of this investigation is to explore the feasibility of identifying a cohort of patients in whom it is appropriate and safe to administer one dose of basiliximab for induction and to compare outcomes between one and two dose patients during that era.
□

Methods: □This is a retrospective chart review of patients who underwent a renal transplant that were discharged between July 2, 2008 and June 30, 2011. Patients were included if they received at least one dose of basiliximab for induction therapy and had one year of follow-up. The primary outcome is to compare rates of biopsy proven cellular and antibody-mediated rejection in patients who received one dose of basiliximab to patients that received two doses. Baseline characteristics will be assessed to ensure similarity between the groups and cox-regression analyses will be utilized to determine risk factors for rejection Secondary outcomes include patient survival, graft loss, and graft function at one year from transplant. □Results/Conclusions: □Data collection and analysis are in progress and will be presented at the Grea Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the Bundled Payment for Care Improvement Initiative and the impact on payment models at UWHC.

Define the incidence of rejection in patients that received one or two doses of basiliximab and identify a sub-set of patients where one dose may be equally safe and effective.

Self Assessment Questions:

Which of the following statements is true about the Bundled Payment fo Care Improvement Initiative?

A Organizations will not be rewarded based on the quality of care the

B: The goal of this program is to align incentives for physicians, hosp

C: The belief is that this model may lead to higher quality of care at a

D: The Bundled Payments Initiative is comprised of five broadly defin

What is the FDA approved dosing regimen for basiliximab induction therapy?

A 20 mg IV on post-operative day 0 and 4

B 40 mg IV on post-operative day 0 and 4

C 20 mg IV on post-operative day 0 and 1

D 40 mg IV on post-operative day 0 and 1

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-344 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

INCIDENCE OF CYTOMEGALOVIRUS AND ACUTE REJECTION IN D+/R- KIDNEY TRANSPLANT PATIENTS ON VALGANCICLOVIR PROPHYLAXIS AFTER MEDICATION DOSE ADJUSTMENTS

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Purpose: The purpose of this project is to compare kidney transplant recipients (KTR) who become leukopenic within the first year post-transplant and determine whether dose adjustments made to cytomegalovirus prophylaxis or immunosuppressant medications (IS) are associated with increased rates of cytomegalovirus disease (CMV-D) and/or acute rejection. Methods: A retrospective chart review was conducted in KTR transplanted between 1/1/2002 and 9/15/2012 who were CMV D+/R-, received valganciclovir prophylaxis, and developed leukopenia (WBC < 3000 cells/mm3). The primary study endpoint was CMV-D as defined by a positive CMV detection assay and CMV-associated symptoms. Secondary outcomes include biopsy-proven acute rejection, graft loss and death within 1 year post-transplant. Results: A total of 172 patients were included in this study fifty-one patients developed leukopenia without a change in valganciclovir or IS and 121 patients developed leukopenia with a subsequent change in either valganciclovir or IS. During the specified time period, only 37 (17.6%) patients did not develop leukopenia. There were no differences in baseline characteristics between groups. The majority of patients received antithymocyte globulin for induction and sirolimus and cyclosporine as maintenance IS. Thirty-two patients developed CMV-D; 23 patients (19%) in the Med Change group and 9 patients (17.6%) in the No Med Change group (p=0.83). There were no significant differences between groups for secondary outcomes. No deaths were attributed to complications of CMV-D or rejection. Of those patients who developed CMV-D, 19% of patients had valganciclovir prophylaxis held and 44% had a sirolimus dose reduction prior to the onset of CMV-D. Conclusion: This study demonstrates that valganciclovir and IS dose adjustments from leukopenia are not associated with increased rates of CMV-D or acute rejection. Observed incidence of leukopenia is high especially with the combination of valganciclovir and sirolimus at our center.

Learning Objectives:

Describe reasons why kidney transplant recipients may become leukopenic after transplant

Identify potential options for CMV prophylaxis in kidney transplant recipients

Self Assessment Questions:

Which of the following are possible contributors to leukopenia after kidney transplantation?

A Sirolimus
B: Valganciclovir
C: Antithymocyte globulin
D: All of the above

What do IDSA guidelines recommend for CMV prophylaxis in kidney transplant recipients?

A Universal prophylaxis
B Preemptive therapy
C Both A and B
D None of the above

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-345 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

MY MEDICATION CHECKLIST - WHAT I SHOULD ASK MY DOCTOR OR PHARMACIST ABOUT MY MEDICATIONS

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Purpose: The objective of this investigation is to develop a patient-specific checklist for hospitalized patients to ask their healthcare providers certain questions about their medications. We will evaluate the impact of this checklist on patients satisfaction and understanding of their medication regimen. Methods: This study, which was approved by the Institutional Review Board, consists of a prospective randomized controlled trial. Patients are eligible if they are at least 18 years of age, on at least one medication, and are admitted to four general medicine units at Henry Ford Hospital. We are excluding subjects with past medical histories of Alzheimers, dementia, and schizophrenia. In addition, patients with terminal illness, severe depression, hospice status and those who do not speak English or are unable to give informed consent are excluded. Eligible subjects are randomly assigned to either the intervention group or the control group in a 1:1 ratio. The intervention consists of an individualized medication checklist that contains a pre-typed list of inpatient medications. For each medication, the patient is prompted to ask the nurse, pharmacist, or physician the following questions: what is this medication for? How should I take this medication? What are some side effects that I need to know? Each enrolled subject is interviewed upon discharge. The interview is executed by using a structured questionnaire that is designed to assess patients knowledge of medications. The primary end point is the patients knowledge of his/her medications as defined by the percentage of correct responses given during the discharge interview. Secondary endpoints include: patients ranking of their hospital stay, patients response to HCAHPS survey questions 16, 17, and 21, and the number of hospital readmissions at 30-days follow up. A chi-square test will be utilized for statistical analysis. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recognize the importance of comprehensive patient education as an essential component of a safe and effective transition of care.

Explain the use of a patient-specific medication checklist in assisting with better understanding of prescribed medications.

Self Assessment Questions:

Which of the following is/are true regarding the importance of comprehensive patient education? (Check all that applies)

A Approximately 10% of recently hospitalized patients have no unde
B: Roughly, 12% of patients will suffer from an adverse drug reactior
C: A patient's misunderstanding has no effect on rate of non-compliai
D: A lack of proper patient education is significantly associated with h

Please select all that applies regarding the study presented

A In this study only patients with at least 10 current medications were
B The discharge interview in this study is only conducted for patients
C This study is designed to evaluate the effectiveness of patient-spe
D Patients with dementia, Alzheimer's disease and any other mental

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-725 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF THE IMPACT OF A CLINICAL PHARMACIST ON AN INPATIENT SUBSTANCE ABUSE AND POSTTRAUMATIC STRESS DISORDER UNIT.

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Purpose: Over the past decade, with the increase in conflict overseas, more veterans are returning home with traumatic experiences, thus leading to an increase in the diagnosis of posttraumatic stress disorder (PTSD). Additionally, as these veterans try to cope with their experiences, some turn to using illicit substances or alcohol to try to distance themselves from the trauma or "self-medicate". While some veterans are able to heal with outpatient treatment, others require more structured inpatient care. The purpose of this study is to evaluate the clinical and financial impact of placing a clinical pharmacist on this inpatient unit to help rectify these deficits in treatment.□Methods: This study is an administrative retrospective chart review. The four week study period will be from October 7 to November 1, 2013 when a pharmacist will be staffing full time on the inpatient substance abuse and PTSD unit at a Veterans Affairs Medical Center. The pharmacist will complete admission and discharge medication reconciliations, teach classes to veterans, assist providers with drug information questions, see patients and recommend treatment, and assist veterans with increasing knowledge of and managing their medications. The pharmacist will enter notes in the computerized patient record system (CPRS) to document all recommendations, interventions, interviews, and questions answered from providers. At the end of the study period, the workload will be evaluated through the use of procedure codes documented in the notes. Financial impact can then be determined based on the number and types of interventions conducted by the pharmacist. This data can be extrapolated to the impact the pharmacist would have over the full calendar year. This will assist in the justification of placing a pharmacist on the unit full time. This project has been approved by the medical center IRB.□Results/Conclusions: To be presented at the Great Lakes Residency Conference.

Learning Objectives:

List barriers veterans may face regarding access to treatment for substance abuse of posttraumatic stress disorder.

Identify the positive effects of a full time pharmacist for an inpatient posttraumatic stress disorder and substance abuse unit.

Self Assessment Questions:

Which of the following is a potential barrier to care for a veteran with PTSD?

A Increased symptom burden

B: Lack of research on appropriate treatments

C: Downplay of importance by medical professionals

D: Failure of the VA to make resources available

What are the proposed benefits to staffing a full time pharmacist on the inpatient unit?

A Increased access to care for the veterans

B Increased financial burden on the medical center

C Increased health literacy among the veterans

D Both A and C are correct

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-726 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

TIME TO ANALGESIA AFTER INTRODUCTION OF INTRANASAL FENTANYL IN THE PREHOSPITAL SETTING

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Purpose: Optimal pain management in the prehospital setting requires an expeditious assessment of pain followed by rapid administration of systemic pain medication while initial resuscitation and transport to the receiving medical facility occurs. The intravenous route allows for rapid relief of pain, but is often associated with increased time to analgesia due to the time required to place an intravenous line. Intranasal administration of fentanyl offers an alternative to the use of intravenous analgesia. The purpose of this study is to determine whether shorter time to analgesia can be achieved by incorporating intranasal fentanyl into the prehospital pain management protocol.□□Methods: Review of current literature involving various strategies for pre-hospital pain management will be performed and utilized to develop a new, pre-hospital pain management protocol incorporating intra-nasal fentanyl into standard practice. Appropriate steps will be taken for protocol approval by the emergency medicine services director and protocol committee. Pharmacist led education will be provided to all emergency medicine services personal prior to protocol implementation. Data regarding time to analgesia before and after protocol implementation will be retrospectively reviewed and evaluated. □□Results: Data collection and analysis is in progress. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss equianalgesic opioid dosage for the medications used in the pain-management protocol

Describe why/how intranasal fentanyl is an appropriate choice for treatment of acute pain

Self Assessment Questions:

What is the equianalgesic opioid dosing of fentanyl : hydromorphone : morphine?

A 0.1 : 10 : 1.5

B: 0.1 : 1.5 : 10

C: 10 : 1 : 1.5

D: 1.5: 1 : 10

Intranasal fentanyl is associated with which of the following:

A increased cost

B decreased effectiveness compared to the IV/IM route

C increased complaints of administration pain

D ease of administration compared to the IV/IM route

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-727 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF THE FEASIBILITY AND SAFETY OF AN INSULIN INFUSION PROTOCOL TARGETING A BLOOD GLUCOSE OF 180-200 MG/DL

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Background: Hyperglycemia is associated with an increase in mortality and risk of infection in critically ill patients. Several studies evaluating the feasibility of maintaining a goal blood glucose (BG) range in an intensive care unit (ICU) demonstrate conflicting results. In critically ill patients, the Society of Critical Care Medicine (SCCM) recommends a BG goal of less than 180 mg/dL and the American Diabetes Association (ADA) recommends a BG goal of 140-180 mg/dL. Our institution utilizes various protocols of continuous insulin infusions as the standard of care in managing hyperglycemia. It is unknown which target BG range is associated with improved feasibility and decreased hypoglycemia.□□Purpose: To compare the feasibility and safety of two insulin infusion protocols targeting blood glucoses of 180-200 mg/dL or 140-180 mg/dL.□□Methods: This was a single-center, retrospective chart review comparing adult patients who received an insulin infusion protocol targeting 140-180 mg/dL versus 180-200 mg/dL between September 2012 and September 2013. Patients who received an insulin infusion for less than four hours were excluded. Electronic medical records were utilized to collect the following data: patient demographics, past medical history of diabetes, concomitant therapy for hyperglycemia hypo- and hyperglycemic events, and time to reach and maintain target BG range. The ability to reach and maintain the target BG range was defined as time to reach target BG level and percent of time spent within the target BG range, respectively. Data was collected until an alternate form of insulin was initiated. The primary outcome was to compare the rate of hypoglycemic events and assess the ability of the insulin infusion protocols to reach and maintain the target BG range.□□Results/Conclusion: Final results and conclusions will be presented at the 2014 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

List the Society of Critical Care Medicine (SCCM) and American Diabetes Association (ADA) blood glucose recommendations for critically ill patients.

Recognize complications associated with hyperglycemia in critically ill patients.

Self Assessment Questions:

SCCM recommends a blood glucose (BG) level less than _____mg/dL in critically ill patients.

A 140

B: 180

C: 150

D: 200

Which of the following is (are) complication(s) associated with hyperglycemia in critically ill patients?

A Increase in mortality

B Increase in risk of infection

C Fluid and electrolyte disturbances

D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-346 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF A ROUNDING CLINICAL PHARMACIST ON MEDICATION ERRORS AND DISCREPANCIES AT HOSPITAL DISCHARGE IN VETERANS WITH HEART FAILURE

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Purpose: Medication reconciliation upon hospital discharge is an integra aspect of inpatient care. Compared to other professionals, numerous investigations suggest that discharge medication reconciliations facilitated by pharmacists contain less medication errors and discrepancies. In addition, rounding with medical treatment teams provides pharmacists a comprehensive perspective of patients individualized therapies and treatment goals. This study was designed to provide evidence that discharge medication reconciliations for Veterans diagnosed with heart failure facilitated by pharmacists involved with medical rounds will contain fewer errors and discrepancies compared to those facilitated by pharmacists who did not round with the medical team. A diagnosis of heart failure was selected as the focus of this project due to the specific guidelines with clearly outlined recommendations for medication use.□Methods: The study population will include Veterans over the age of 17 with a diagnosis of heart failure who were discharged between July 1, 2012 and June 30, 2013. Discharge medication reconciliations facilitated by pharmacist X, who had rounded with the patients treatment team, will be compared to discharge medication reconciliations for Veterans that were discharged from a cardiology team without a rounding pharmacist. Each patients medication profile will be reviewed for the presence of medication errors and discrepancies present at hospital discharge. The total number of errors and discrepancies will be compared between the two study groups as the primary endpoint. Secondary endpoints include analyses of pneumococcal vaccination status, classification medication errors, whether the discrepancies occurred with outpatient medications at hospital admission or with medications that were initiated while inpatient and continued upon discharge, hospital readmission rates and time to first readmission. This project was considered a non-research operations activity per the Research and Development committee and therefore exempt from further review. □Results and Conclusion: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the potential benefits of having clinical pharmacists rounding with medical treatment teams

Discuss common medication errors and discrepancies identified on discharge medication reconciliations

Self Assessment Questions:

What is the national 30-day readmission rate for an individual age 65 or greater with a diagnosis of heart failure?

A 10%

B: 15%

C: 20%

D: 25%

It is estimated that clinically important medication errors occur in what percentage of hospital discharges?

A 20%

B 30%

C 40%

D 50%

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-347 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF PROVIDER EDUCATION AND ORDER-SET AVAILABILITY ON PRAZOSIN THERAPY FOR THE TREATMENT OF PTSD-RELATED SLEEP DISTURBANCES

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Purpose: The incidence of posttraumatic stress disorder (PTSD) is on the rise among both active-duty US military service members and Veterans. Of those suffering from PTSD, nearly 70% suffer from disrupted sleep patterns (i.e. nightmares, distressed awakenings). Current literature demonstrates that prazosin can be effective for PTSD-related sleep disturbances at doses of 1mg-20mg, with mean achieved nighttime doses of 15.6mg and 7mg for males and females respectively. It has been observed anecdotally at the Aleda E. Lutz Veterans Affairs Medical Center (VAMC) that prazosin is consistently started at low doses (1-2mg at bedtime), and often not titrated up to appropriate patient-specific efficacious doses for control of PTSD-related sleep disturbances, nor to literature-based target doses. The purpose of this study is to determine if provider education and availability of a prazosin titration order set increases the average dose of prazosin prescribed by mental health providers for PTSD-related sleep disturbances at the Aleda E. Lutz VAMC. The goal is to demonstrate the difference, if any, between the average doses achieved before and after provider education and order set availability. Methods: A single-center retrospective chart review was performed to assess the impact of mental health provider education and prazosin titration order set availability. Average daily doses used prior to education and order set availability were compared to average daily doses achieved after education and order set availability. Study investigators performed chart reviews on all subjects with an active prescription for prazosin written by mental health providers for the treatment of PTSD-related sleep disturbances dispensed between August 24, 2013 and October 31, 2013, as well as those receiving a new prazosin prescription written by mental health providers for the treatment of PTSD-related sleep disturbances between November 1, 2013 and January 8, 2014. Results/Conclusions: To be presented at the 2014 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the role of prazosin in the treatment of PTSD-related sleep disturbances

Discuss the impact of provider education and prazosin titration order set availability on prescribing habits

Self Assessment Questions:

What hormone is thought to play a large role in PTSD-related sleep disturbances?

A Testosterone
B: Parathyroid hormone
C: Norepinephrine
D: Adrenocorticotropic hormone

Prazosin must be re-titrated after a lapse in therapy lasting __ day(s):

A 1
B 3
C 7
D 14

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-348 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DETERMINING THE IMPACT OF PHARMACIST INVOLVEMENT WITH HIGH READMISSION RISK CHRONIC OBSTRUCTIVE PULMONARY DISEASE PATIENTS IN A COMMUNITY HOSPITAL

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Purpose: This study seeks to determine whether pharmacist driven inpatient intervention will lead to decreased readmission rates in high risk chronic obstructive pulmonary disease (COPD) patients. Methods:

Patients with COPD admitted to the hospital qualified for inclusion if admitted to the hospitalist medical service, medication reconciliation occurred within 48 hours of admission, and the patient was acknowledged as high risk for readmission based on a validated scoring system. A set of unmatched control patients were identified with the same inclusion criteria as the treatment group. Once identified, a pharmacist interviewed the patient and reconciled admission medication regimens. Additionally, pharmacists reviewed the regimen and provided recommendations based on current practice guidelines, as well as pharmacotherapeutic and pharmacoeconomic principles. These recommendations were placed in the patients chart for physician review. Patient education and reinforcement of medication regimens with medication calendars was provided by the pharmacist upon discharge. Data was collected retrospectively on the number and type o recommendations accepted, quantifying discharge versus admission medications, number of corrections to medication reconciliation documents, age, gender, primary diagnosis, and risk for readmission score. All data was recorded without patient identifiers and maintained confidentially. Data collection and analysis are currently in progress. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Explain why there is a need for reduced readmission rates in chronic obstructive pulmonary disease (COPD) patients.

Review the process initiated by pharmacists in an attempt to decrease readmission rates in high risk for readmission COPD patients.

Self Assessment Questions:

Which of the following is correct:

A One core measure initiated by the federal Affordable Care Act (AC
B: As defined by the Centers for Medicare and Medicaid Services (CI
C: Starting in fiscal year 2015, CMS will be monitoring readmission da
D: CMS has currently monitors readmission data for patients who are

Which of the following is correct:

A Recommendations made by pharmacists in this program were divi
B Pharmacists were informed by case managers which patients to s
C Patients included in this program were admitted with a primary dia
D Pharmacists completed admission medication reconciliation within

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-729 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

CLINICAL RELEVANCE OF THE HAS-BLED SCORING TOOL AS A PREDICTOR OF A MAJOR BLEED

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The HAS-BLED scoring tool has been validated to predict a major bleed in atrial fibrillation patients on an oral anticoagulant and/or antiplatelet agent(s). However, the HAS-BLED scoring tool has not been studied in patients on these agents for indications other than atrial fibrillation. The objective of this study is to retrospectively calculate the HAS-BLED score on patients admitted with an intracranial hemorrhage (major bleed while on an oral anticoagulant and/or antiplatelet agent(s) on admission. Our working hypothesis is that these patients will have a calculated HAS BLED score ≥ 3, regardless of indication of the agent(s).□□This is a retrospective, observational, single-center study that was submitted to the Institutional Review Board for approval. Electronic medical records of patients admitted with an intracranial hemorrhage were reviewed to assess if they were on an oral anticoagulant and/or antiplatelet agent(s) on admission. The agents included were warfarin, dabigatran, rivaroxaban, apixaban, aspirin, aspirin/dipyridamole, ticlopidine, clopidogrel, prasugrel, and/or ticagrelor. The pre-specified 350 identified records were further reviewed to calculate the HAS-BLED score and identify the therapeutic indication of agent(s). The risk factors incorporated in the HAS-BLED scoring tool are uncontrolled hypertension, abnormal renal and/or hepatic function, previous stroke, previous bleeding history, labile INR, elderly, and concomitant medications that increase bleeding risk or alcohol use. The risk factors included in this scoring tool were obtained from the admitting progress notes and available laboratory values. The percentage of patients with a HAS-BLED scores ≥3 will be described. The frequency and percentage of patients on an oral anticoagulant and/or antiplatelet agent(s) and their therapeutic indication will be described separately.

Learning Objectives:

Identify the risk factors included in the HAS-BLED scoring tool that will increase a patients risk of a major bleed

Describe the patient population in which the HAS-BLED scoring tool has been validated

Self Assessment Questions:

Which of the following is not a risk factor included in the HAS-BLED scoring tool?

A Previous stroke

B: Abnormal renal function

C: Frequent falls

D: Elderly

Which patient population has the HAS-BLED scoring tool been validated in?

A Atrial fibrillation

B Valve replacement

C Stroke

D Venous thromboembolism

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-728 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARATIVE EFFECTIVENESS OF VENOUS THROMBOEMBOLISM PROPHYLACTIC STRATEGIES FOR AMBULATORY MULTIPLE MYELOMA PATIENTS ON IMMUNOMODULATORY DRUG THERAPY

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Purpose□Patients with multiple myeloma (MM) are at an increased risk for the development of venous thromboembolism (VTE). The risk of VTE further increases when patients with MM are placed on immunomodulatory (IMID) therapy with thalidomide, lenalidomide, or pomalidomide. The National Comprehensive Cancer Network (NCCN) has developed guidelines with pharmacologic thromboprophylaxis (PTP) strategies for reducing the risk of VTE in patients with MM receiving treatment with an IMID drug.□□This study aims to determine the incidence of VTE in patients with MM receiving IMID therapy in the ambulatory setting, to determine if there is a difference in VTE frequency between patients placed on PTP with a low molecular weight heparin (LMWH) agent, warfarin, aspirin, or no PTP, and to investigate compliance with national guidelines for VTE prevention provided by the NCCN guidelines.□□Methods□This is retrospective chart review will include patients with multiple myeloma over 18 years of age receiving IMID therapy between January 2000 and January 2014. Patients receiving pharmacologic treatment for a VTE diagnosed prior to initiation of IMID therapy, patients placed on an IMID agent through a blinded study, and patients without follow-up for at least 6 months after initiation of an IMID will be excluded. Patients will be stratified by placement on a LMWH agent, warfarin, aspirin, or no PTP.□□Results□Data collection and analysis are ongoing.

Learning Objectives:

Identify patients with multiple myeloma on IMID therapy who are at high risk for VTE, according to the NCCN guidelines.

List the recommended options for VTE prophylaxis in patients with multiple myeloma on IMID therapy who are at high risk for VTE, according to the NCCN guidelines.

Self Assessment Questions:

MC is a 40 year old female with multiple myeloma, atrial fibrillation, and a 20 pack-year smoking history. Her medications include oral contraceptive pills and a multivitamin. Today in clinic, she has

A Yes

B: No

C: N/A as this patient has a contraindication for receiving lenalidomid

D: Risk assessment cannot be completed with information provided

What are appropriate VTE prophylaxis options in patients with multiple myeloma on IMID therapy who are at high risk for VTE, according to the NCCN guidelines?

A Low molecular weight heparin (equivalent to Enoxaparin 40 mg on

B Low molecular weight heparin (equivalent to Enoxaparin 40 mg on

C Low molecular weight heparin (equivalent to Enoxaparin 40 mg on

D Aspirin 81-325 mg daily, low molecular weight heparin (equivalent

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-349 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATING THE CLINICAL IMPACT OF A COMPUTERIZED PHYSICIAN ORDER ENTRY (CPOE) SEPSIS BUNDLE ORDER SET

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Purpose: Sepsis accounts for approximately 10 percent of all intensive care unit admissions. The key to reducing sepsis mortality is early recognition of the onset of sepsis and prompt initiation of goal-directed therapy. The objective of this research is to evaluate the impact of an updated CPOE sepsis bundle order set reflective of best practice sepsis treatment on clinical outcomes. Methods: Data will be collected pre-implementation of the evidence-based sepsis order set and post-implementation to allow a comparison of outcomes. Patients included in the study will be identified by a documented positive sepsis screen, indicating the presence of sepsis, severe sepsis, or septic shock. Patien data will be collected from the electronic medical record and maintained without patient identifiers. Data collected will include: patient age, sex, source of infection, ICU length of stay, inpatient medications, time to receive and appropriateness of antibiotics, vital signs, serum lactate levels, complete blood count (CBC) values, and complete metabolic panel (CMP) values. Primary endpoints to be evaluated will be ICU length of stay and percentage of patients who met sepsis bundle treatment goals including serum lactate measurement within three hours, antibiotics given within three hours, cultures drawn before administration of antibiotics, and central venous pressure (CVP) measurement within six hours. Descriptive statistics will be used to summarize outcomes. Conclusions: Data collection is currently ongoing. Outcomes and conclusions will be presented at the time of the Great Lakes Pharmacy Resident conference.

Learning Objectives:

Describe the components of the 3-hour sepsis treatment bundle

Recognize how a pre-built sepsis order set may help improve patient car

Self Assessment Questions:

Which of the following is a correct component of the 3-hour sepsis bundle?

A Measure central venous pressure (CVP)

B: Place a central line for venous access

C: Administer broad spectrum antibiotics based on suspected source

D: Administer 20 ml/kg of crystalloids for hypotension

Which of the following is a benefit to having a pre-built sepsis treatment order set?

A Restricts medications that should be administered to septic patien

B Lists sepsis guideline treatment recommendations in an organized

C Includes only one treatment option for each suspected source of s

D Includes only initial fluid resuscitation orders for patients with seps

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-350 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF EXTENDED INFUSION PIPERACILLIN/TAZOBACTAM: IMPACT OF AN INITIAL LOADING DOSE OVER 30 MINUTES

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Purpose: Increasing bacterial resistance requires antibiotics to be used more efficiently to achieve pharmacodynamic goals. One strategy to maximize probability of attaining this target is to increase the duration of infusion, which prolongs exposure. Monte Carlo simulations have consistently demonstrated that extended infusion (EI) piperacillin/tazobactam has higher probability of achieving >50% time-over-MIC (T>MIC) compared to intermittent infusion (II) strategies. While these appear promising, the studies evaluating clinical outcomes of extended infusion piperacillin/tazobactam have shown conflicting results

A potential variable that has been hypothesized to correlate with infection-related mortality is time to first dose administration. Utilizing dosing strategies such as EI beta-lactams may result in delays in first dose administration due to limited line access and drug incompatibilities Additionally, extending infusions may result in a delayed time to achieving concentrations above organism MIC compared to bolus dosing, although pharmacokinetic studies analyzing this association are lacking. The purpose of this study is to validate the efficacy of this EI dosing regimen by evaluating clinical outcomes in critically ill patients while accounting for first dose administration strategy. Methods: A retrospective chart review analyzed outcomes of piperacillin/tazobactam treatment pre and post implementation of an EI protocol. The study evaluated critically ill patients being treated in the medical, surgical, cardiovascular, or neurology intensive care units. Primary outcome assessed was 30-day all-cause mortality. Secondary outcomes included hospital and ICU length of stay, and time from order verification to administration. The pre-EI period included January 2010 - August 2010. The post-EI group contained two distinct time periods: no first dose bolus (Oct 2010 - June 2011) and first dose bolus (July 2011 - March 2012). Initial bolus doses were given over 30 minutes. All EIs were given over 4 hours. Results/Conclusion: Results and conclusion of the retrospective review will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Review pharmacokinetic studies supporting the use of extended infusior piperacillin/tazobactam.

Identify barriers to achieving successful outcomes when utilizing extended infusion piperacillin/tazobactam.

Self Assessment Questions:

Piperacillin/tazobactam may be given as an extended infusion to better achieve which pharmacokinetic/pharmacodynamic parameter?

A Cmax

B: Time above MIC

C: Auc/mic

D: Cmin

Identifying that time to administration of the first dose of antibiotic as a critical measure for clinical outcomes, what barriers are present which may delay time to administration of extended infusi

A Compatibility issues

B Limited access

C Shorter infusion time drugs administered first

D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-351 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF PHARMACIST DISCHARGE COUNSELING ON MEDICATION ADHERENCE AND HOSPITAL READMISSION RATES

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Purpose: Approximately 20% of all Medicare patients are readmitted to a hospital within one month of being discharged. This led to the development of the Hospital Readmission Reduction Program which requires Centers for Medicare and Medicaid Services (CMS) to penalize hospitals for failing to prevent readmission of patients for the same indications. As a result, there have been increased efforts to develop strategies to potentially improve patient medication adherence in hopes of decreasing hospital readmission rates. The primary objective of this study is to evaluate whether discharge medication reconciliation and counseling by a pharmacist can increase a patients medication adherence and subsequently reduce hospital readmission rates. The secondary objective is to assess and compare the patients medication adherence one to two weeks post-discharge vs. 30-45 days post-discharge using the Morisky Medication Adherence Scale (MMAS) questionnaire as a measure of compliance. Methods: This prospective study included 40 patients with a history of congestive heart failure (CHF) and/or chronic obstructive pulmonary disease (COPD). Over a 45-day recruitment period, patients who consented to participate were separated into two groups: intervention and control. For the intervention group, a pharmacist completed medication reconciliation and provided discharge counseling to the patient prior to discharge. The patients in the control group were discharged via the standard non-pharmacist involved discharge process. Patients in both groups were contacted by telephone for follow-up interviews one to two weeks post-discharge and again at 30-45 days post-discharge. During the first follow-up telephone interview each patients medication compliance was assessed using the MMAS questionnaire which consists of eight questions. During the second follow-up telephone interview each patien was asked whether he/she was readmitted to any hospital within 30 days after discharge and again medication compliance was assessed. Results/Conclusions: Data analysis is currently in progress; results and conclusions will be presented at GLPRC.

Learning Objectives:

Describe the Hospital Readmissions Reduction Program and its purpose

Discuss various strategies that hospitals are implementing to reduce excessive readmissions.

Self Assessment Questions:

What is the disease condition associated with the Medicare readmissions penalties?

A Chronic Obstructive Pulmonary Disease

B: Pneumonia

C: Deep Venous Thrombosis

D: Asthma

Based on current literature, which of the following strategies to reduce readmission rates has been implemented?

A Increase hospital length of stay

B Improve discharge planning

C Increase the number of medications

D Decrease the number of medications

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-352 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

INCREASED VALIDITY AND PROVIDER SATISFACTION OF CUSTOMIZED ALERT ACKNOWLEDGEMENT REASONS FOR OVERRIDDEN MEDICATION-RELATED ALERTS IN A COMPUTERIZED PROVIDER ORDER ENTRY SYSTEM

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Purpose: This study examined the outcome of implementing a customized list of alert acknowledgement reasons for several medicatior related alerts within the University of Michigans (UM) current inpatient computerized provider order entry (CPOE) system. The study looked to compare the technical appropriateness of provider override reasons for drug-drug interaction, dose range, and patient allergy medication alerts and provider satisfaction when using a customized override reason list versus a default override reason list. Methods: The study was a prospective, randomized, crossover study organized into two provider cohorts. Prior to initiation, providers were asked to complete a pre-study survey evaluating their thoughts on providing a reason for overriding a medication alert. Twenty-two providers were randomized equally into either Cohort A: a required, customized override reason list, or Cohort B a required, non-customized override reason list. A minimum of 400 alerts per cohort were collected during each phase. Once target number of orders were achieved for Phase 1, a one-month washout period (i.e. returning to the pre-study configuration) took place. Providers in each cohort were then crossed over to the other cohort and Phase 2 began. Data collection in Phase 2 continued until the target amount of orders with overridden medication alerts were collected. Providers were then be given the same survey at the completion of the study. The primary outcome was the technical appropriateness of alert override selection in the respective groups. Secondary outcomes included descriptive alert and medication order statistics. Results/Conclusion: Data analysis is currently ongoing. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Outline how providers interact with and respond to overridden medication alerts

Describe the implementation of a customized override reason list based on the type of medication alert (e.g. allergy or drug-drug interaction)

Self Assessment Questions:

When evaluating a system that utilizes pre-coded alert override reasons and a system that utilizes only free-text responses, providers:

A Are more likely to enter an override reason when using free-text re

B: Will frequently ignore the pre-coded reason list

C: Are more likely to enter an override reason when using pre-coded

D: Thoroughly document their thought-process each time they utilize

The customized alert override reason list utilized pre-coded reasons that were:

A Filtered to display only if the pre-coded reason corresponded with

B Updated real time containing relevant patient information

C Displayed regardless of the alert type presented

D Removed entirely

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-730 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

USE OF SODIUM OXYCHLOROSENE 0.2% FOR THE TREATMENT OF URINARY TRACT INFECTIONS

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Purpose: Urinary tract infections (UTIs) are common among hospitalized patients and contribute to morbidity and mortality. Broad-spectrum antibiotics are frequently used for treatment of UTIs especially in the setting of multi-drug resistant pathogens. The use of directly instilled antibiotics is appealing as it may decrease the risk of systemic antibiotic exposure while also achieving high concentrations at the site of infection. Sodium oxychlorosene 0.2% is a topical antibiotic with bactericidal activity against a number of gram negative and positive bacteria. It is FDA approved for treatment of localized infections and has previously been studied in interstitial cystitis. The purpose of this study is to determine the clinical and microbiologic success rate of sodium oxychlorosene for UTI treatment. Methods: A retrospective, single-center, observational case control study was performed at Indiana University Methodist Hospital. Patients admitted between January 1, 2008 to August 31, 2013, with positive bacterial urine cultures treated with sodium oxychlorosene were identified using the electronic medical record. Patients treated with antibiotics were matched as the control group based on urine culture organism results. Eligible patients included adults 18 years and older that received treatment doses of sodium oxychlorosene with a positive bacterial urine culture and indwelling foley catheter. Exclusion criteria included doses administered for intraoperative washout or prophylaxis, a known allergy or intolerance, suprapubic cystostomy, or kidney stones. Additionally, quadriplegic, pregnant, trauma patients, surgical patients, and prisoners were excluded. Clinical success was defined as the improvement in signs and symptoms of UTI or a negative urinalysis within 14 days after treatment. Microbiologic cure was defined as eradication of the causative organism in urine cultures when available within 14 days after treatment. Chi square and students t test will be used to assess discrete and continuous variables as appropriate. Results/conclusions: To be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Recognize the spectrum of activity of sodium oxychlorosene 0.2%

Identify the challenges associated with the use of sodium oxychlorosene 0.2% for the treatment of urinary tract infections

Self Assessment Questions:

Sodium oxycholosene has been shown to have activity against which of the following gram negative organisms?

A Mycobacterium tuberculosis
B: Pseudomonas aeruginosa
C: Streptococcus pyogenes
D: Candida albicans

What is a common challenge associated with the use of sodium oxychlorosene for the treatment of urinary tract infections?

A Many undesirable systemic side effects
B Leads to the development of resistant organisms
C Patients must have a foley catheter
D Patients often develop an intolerance or allergic response after its

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-353 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

THIOTEPA/CYCLOPHOSPHAMIDE VS TOTAL BODY IRRADIATION/CYCLOPHOSPHAMIDE IN HEMATOPOIETIC CELL TRANSPLANTATION

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Purpose: Thiotepa (TT) is an alkylating agent that is well described in the treatment of solid tumors as well as in combination with other agents for hematopoietic cell transplant (HCT). TTs myelosuppression has lead to its classification as a myeloablative agent and its more favorable regimen related toxicities have lead to its incorporation into several conditioning regimens. At high doses, extrahematological toxicities may manifest as mucocitis of the GI tract or in the skin, liver and central nervous system. Total body irradiation (TBI) in combination with cyclophosphamide (CY) has been shown to be a longstanding and successful conditioning regimen. Despite its successes, TBI is associated with the development of severe tissue damage, interstitial pneumonitis, cataracts, veno-occlusive disease, and an increased risk of acute graft-versus-host disease (GVHD). TBI-related toxicities increase with patient age and its use is often associated with secondary malignancies. Non-radiation conditioning regimens are desirable in patients who are either not fit enough to receive TBI or in patients who are at high risk of relapse possibly requiring radiation in the future. The combination of TT/CY may provide a successful alternative myeloablative regimen to TBI/CY while possibly reducing transplant morbidity through decreased risk of acute GVHD and tissue damage. Methods: This is a retrospective analysis of an established database of patients at the Indiana University Health Simon Cancer Center from January 1, 2005 to August 1, 2013 who received TT/CY or TBI/CY prior to hematopoietic cell transplant. Patients were included if they carried the diagnosis of Acute Myeloid Leukemia, Myelodysplastic Syndrome or Lymphoma and had sufficient renal, cardiac, pulmonary and hepatic function testing per SOP for HCT. Patients with Multiple Myeloma were excluded from this study. Results/Conclusions: Data collection and analysis is currently ongoing. Final results and conclusions of this study will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss the overall survival and toxicities of thiotepa with cyclophosphamide vs total body irradiation with cyclophosphamide

Define the role of thiotepa in a myeloablative bone marrow transplant conditioning regimen

Self Assessment Questions:

Thiotepa is a(n) _____ agent and carries which major toxicity:

A alkylating agent; myelosuppression
B: alkylating agent; neuropathy
C: anthracycline; fatigue
D: topoisomerase inhibitor; myelosuppression

The non-myelosuppressive toxicity of thiotepa is:

A a. diarrhea
B b. headache
C c. mucositis
D d. constipation

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-354 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF A VANCOMYCIN DOSE CALCULATOR ON TARGET LEVELS IN HOSPITALIZED HEMODIALYSIS PATIENTS

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Purpose: The AZ Brugge Vancomycin Dose Calculator (VDC) was created to predict accurate vancomycin dosing in hemodialysis patients. The VDC was validated at a single outpatient dialysis center in Belgium and determines a vancomycin dose based on patient weight, current vancomycin serum level, and the number of days to the next dialysis session. Efficacy of the VDC has not been evaluated in hospitalized hemodialysis patients. Sparrow Hospital began using the VDC, along with a 20 mg/kg vancomycin loading dose, for their inpatient hemodialysis patients in May 2012. This retrospective review aims to determine the effectiveness of a 20 mg/kg loading dose and the VDC in achieving target vancomycin levels.□Methods: Sparrow Hospital patients who were 18 years or older, on hemodialysis, and received at least one dose of vancomycin while inpatient qualified for inclusion in this study. The Pre-Calculator group includes subjects admitted January-December 2011 and the Calculator group includes subjects admitted December 2012-August 2013, reflective of time periods before and after the addition of the VDC to the hospitals dosing protocol. Initial power analyses determined the need for 115 subjects in each group. Initial vancomycin serum levels will evaluate the efficacy of the 20 mg/kg loading dose and all additional vancomycin levels during the same admission will be used to evaluate the VDC. The two groups will be compared to assess differences in percentage of patients dosed per protocol, percentage of vancomycin levels <10 mcg/ml (efficacy measure), percentage of vancomycin levels >20 mcg/ml (safety measure), and percentage of vancomycin levels within the goal range of 15-20 mcg/ml. In the Calculator group, correlation of number of days between initial vancomycin dose and next hemodialysis session and initial trough level will also be assessed.□Results/Conclusions: To be presented at Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe vancomycin pharmacokinetics in hemodialysis patients

Discuss the applicability of a vancomycin dose calculator for hospitalized hemodialysis patients

Self Assessment Questions:

Which of the following statements is correct about vancomycin?

A The trough level best predicts vancomycin activity against S. aureu
B: Low-flux hemodialysis membranes remove more vancomycin than
C: Vancomycin serum levels undergo a recovery phase post-dialysis
D: The target AUC/MIC ratio for vancomycin is <400

Which of the following is a limitation of the AZ Brugge Vancomycin Dose Calculator (VDC)?

A The input of five different variables before dose calculation
B It was developed using vancomycin doses administered during dia
C Applicability to inpatient hemodialysis units only
D A hospital subscription is required for use

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-355 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PRESCRIPTIONS AND PERCEPTIONS AFTER THE IMPLEMENTATION OF A TOBACCO FREE CAMPUS

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Purpose: A midwestern university and academic medical center initiated a tobacco free campus policy on July 1st, 2013. The primary objective of this study is to analyze the number of over the counter and prescription filled at this campus for the treatment of tobacco dependence before and after the implementation of the tobacco free policy. The secondary objectives are to study the institutions employees and students perceptions of the tobacco free campus policy and motivation to abstain from tobacco after the implementation of the policy.□□Methods: This study is approved by the UIC Institutional Review Board. It is a single-center non-randomized comparative design prospective cohort study. Data was collected through both surveys and prescription information from the campus pharmacies. The survey will be sent out via email with intent to capture the entire campus including students and employees. The survey addresses the following: use of campus pharmacies for prescription or over the counter product purchasing, impression of the effectiveness and safety of tobacco treatment medications, the impact of the new policy, and quitting tobacco. In addition, general questions will be asked to differentiate whether the participant is a student or employee of the institution, whether or not they are a tobacco user, and if they are a tobacco user, quantify the exposure of tobacco use in years and amount per day. Electronic cigarette use is also assessed in the survey.□□Purchase ordering reports for tobacco dependence treatment OTC products and prescription medications including nicotine gum, patch, lozenges, inhaler, nasal spray and varenicline were collected from seven campus pharmacies and assessed for increases in product ordering after the implementation of the campus policy. Data from the study will be analyzed using descriptive statistical analysis and the chi square test.□□Results: Pending.

Learning Objectives:

Explain how the UIC tobacco free policy affects the sales of tobacco dependence treatment products at UIC pharmacies.

State at least two possible perspectives of the UIC employees and students on the UIC tobacco free policy.

Self Assessment Questions:

Which of the following medications for treating tobacco dependence is available over the counter?

A Varenicline
B: Nicotine patch
C: Nicotine inhaler
D: Nicotine nasal spray

Tobacco free campus policies often include all of the following except:

A Cigarettes
B Electronic Cigarettes
C Hookah
D Nicotine Replacement Inhalers

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-731 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION AND EVALUATION OF THE EFFICACY AND SAFETY OF HIGH-DOSE, EXTENDED INTERVAL AMINOGLYCOSIDE ADMINISTRATION IN CHILDREN

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Purpose: Once daily dosing of aminoglycoside antibiotics has been evaluated demonstrating similar efficacy and less risk of toxicity when compared to conventional dosing. Aminoglycoside antibiotics have unique pharmacodynamic properties including a post-antibiotic effect and concentration-dependent killing that suggest less frequent administration of larger doses can maximize bactericidal activity. Safety concerns include ototoxicity and nephrotoxicity which may be decreased with extended interval dosing due to saturable uptake mechanisms within the renal cortex and inner ear. Currently, no guidelines have been established for standard dosing or monitoring of extended interval dosing of aminoglycosides in children. The purpose of this project is to implement and evaluate the efficacy and safety of a high-dose extended interval aminoglycoside administration protocol in children at ProMedica Toledo Childrens Hospital. Methods: This prospective, single-center analysis includes children five years of age and older who are prescribed an aminoglycoside antibiotic using the high-dose extended interval protocol after February 2014. Patients with suspected or confirmed infections due to susceptible gram negative bacteria will be included. Patients are excluded if there is abnormal renal function, hemodynamic instability or critical illness, pre-existing hearing impairment, meningitis, endocarditis, CNS infections, or osteomyelitis. Patients that have severe burns, ascites, aminoglycoside use for surgical prophylaxis, enterococcal infections where aminoglycosides are used for synergy, those receiving concomitant ototoxins, have ophthalmological infections, or history of an allergy or hypersensitivity to aminoglycoside antibiotics will also be excluded. The primary objective is to evaluate the efficacy of the high-dose extended interval aminoglycoside dosing protocol by analysis of patient outcomes and therapeutic response. Secondary objectives include a safety analysis for occurrence of nephrotoxicity, ototoxicity, and adverse drug reactions. Various in-service educational sessions regarding the new aminoglycoside administration protocol will be provided to all staff affected. Results and Conclusions: Results and conclusions to be presented at Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Explain the properties of aminoglycoside antibiotics that facilitate the use of high-dose extended interval dosing.

Describe appropriate monitoring guidelines for patients receiving high-dose extended interval aminoglycoside antibiotics.

Self Assessment Questions:

What is the mechanism of action of aminoglycoside antibiotics?

A A. Inhibits bacterial cell wall synthesis by blocking glycopeptide p
B: B. Interferes with bacterial protein synthesis by binding to 30S an
C: C. Binds to components of the cell membrane of susceptible orga
D: D. Inhibits RNA-dependent protein synthesis at the chain elongat

Important monitoring parameters for aminoglycoside antibiotics include which of the following

A Serum electrolytes
B Liver function tests
C Serum creatinine and BUN
D Reticulocytes

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-356 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFICACY AND SAFETY OF A CHANGE IN DOSING WEIGHT FOR ANTITHYMOCYTE GLOBULIN

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Introduction: Using total body weight (TBW) to calculate antithymocyte globulin (ATG) dosing often results in higher patient doses, and may increase risk for infection and malignancy as well as cost. However, lower doses of ATG may be associated with higher incidence of rejection and graft loss. We examined dosing of ATG for induction based on ideal body weight (IBW) instead of TBW. We hypothesize that this change will provide similar clinical efficacy and safety compared with TBW dosing, while also providing a significant cost savings. Methods: 320 patients received a kidney transplant at our institution between July 2008 and August 2013. 145 patients met inclusion criteria (29 IBW, 116 TBW). The primary outcome was incidence of biopsy-proven acute rejection at six months. Secondary outcomes included six-month graft and patient survival, total lymphocyte count, infectious complications, transplant admission length of stay, and 30-day readmission rates.

Results: Patients receiving IBW dosing of ATG had a higher incidence of biopsy-proven acute rejection at six months compared with those receiving TBW dosing (20.7% vs. 7.8%; p=0.04). No differences were seen in graft (96.6% vs. 95.5%; p= 1.0) or patient survival (100% vs. 96.6%; p=0.6) at six months. Additionally, no difference was seen in transplant admission length of stay or total lymphocyte count. A cost savings of more than 20% was realized for IBW dosing of ATG.

Conclusions: Initial analysis suggests that while cost is reduced, IBW dosing of ATG for induction may be associated with a higher incidence of early acute rejection. This does not result in increased rates of graft loss or patient death at six months. Costs associated with treating rejection may, however, reduce the cost savings for IBW dosing. Follow up of these patients continues so that we can determine if IBW dosing o ATG impacts longer-term graft function and patient survival.

Learning Objectives:

Describe the mechanism of action, pharmacokinetic properties and adverse effect profile of antithymocyte globulin

Recognize the role of antithymocyte globulin as induction therapy in kidney transplantation

Self Assessment Questions:

Which of the following statements is correct?

A ATG has a large volume of distribution
B: ATG may cause a significant decrease in platelet count
C: ATG is a monoclonal antibody with activity only against CD3
D: Pharmacologic effects of ATG will last for approximately 30 days

Which of the following goals of therapy are associated with antithymocyte globulin?

A Prevent early acute rejection and early graft loss
B Prevent early acute rejection and chronic rejection
C Prevent early graft loss and chronic rejection
D Prevent delayed graft function and early acute rejection

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-357 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

CHARACTERIZATION OF SERUM TROUGH VANCOMYCIN CONCENTRATIONS AND OUTCOMES ACHIEVED BY A NEONATAL DOSING NOMOGRAM

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Purpose: Although vancomycin is an antibiotic commonly used in neonatal intensive care units, there is a lack of consensus concerning the preferred dosing regimen for the neonatal population. The primary outcome of this study is to characterize the serum vancomycin trough concentrations obtained in patients in the neonatal intensive care unit at an urban, academic hospital when using a post-conceptional age based nomogram. We hypothesize that a wide range of vancomycin concentrations will be obtained with the current nomogram. Secondary endpoints of this study are outcomes of patients based on clinical and safety measures. Methods: This is a retrospective chart review study that was submitted to the Institutional Review Board and approved. The hospitals electronic medical record system and pharmacys database wil be used to identify neonates who received vancomycin based on the specified nomogram between July 2011 and September 2013. Data collected will include demographic information (e.g., race, gender, weight, gestational age, postnatal age), details of the vancomycin regimen (e.g., indication, dose, interval, trough concentrations, start and stop dates), measures of clinical efficacy (e.g., culture results, white blood cell count, c-reactive protein, presence of a central line, surgical history) and safety (e.g., serum creatinine, urine output, concomitant nephrotoxic medications). All data will be recorded without patient identifiers and maintained confidentially. Descriptive statistics will be applied to assess the vancomycin trough concentrations that are achieved. Statistical analysis will also be applied to secondary outcomes to assess a potential association between (1) vancomycin trough concentration and clinical outcomes (2) vancomycin trough concentration and safety outcomes. Results: Pending

Learning Objectives:

Describe strategies for dosing vancomycin in neonates

Discuss factors that need to be considered when determining target vancomycin trough concentrations

Self Assessment Questions:

The ideal method for dosing vancomycin in neonates is

A Weight based

B: Based on gestational age

C: Based on serum creatinine

D: The ideal method for dosing vancomycin in neonates is not clearly

The target trough concentraton for vancomycin in neonatal sepsis is

A 5-10 mcg/mL

B 10-15 mcg/mL

C 15-20 mcg/mL

D The target vancomycin trough concentration in neonatal sepsis is

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-358 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PHARMACY RESIDENCY PRECEPTOR DEVELOPMENT PROGRAM

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Preceptorship is an integral part of clinical pharmacy and requires incorporating various teaching methods into daily practice. The American Society of Health-System Pharmacists (ASHP) Accreditation Standards establish requirements for pharmacist preceptors. Minimal data exists with instruction for preceptor development tailored to a specific pharmacy residency program. The objective of this project is to assess implementation of a five-year, site-specific preceptor development program and serve as a reference to new residency programs or established programs looking to enhance preceptor skills. An anonymous questionnaire was submitted to 99 clinical pharmacists, including current and potential pharmacy residency preceptors. Collected data and existing literature is being utilized to create and implement preceptor development workshops. Plans will be in place to carry out development workshops over the course of five years. Various methods of workshop presentation include live lectures, online modules, group discussions, question and answer sessions with an expert panel, and self-assessment forms. Initial follow-up assessments will evaluate success and indicate areas for improvement with subsequent workshops. The questionnaire response rate was 38.4%. Just under half of the responders were current preceptors. Nineteen percent of non-preceptors indicated interest in precepting. Based on results, preceptor development workshop topics will include: Utilizing ResiTrak for Evaluation, Creating a Rotation Syllabus, Discussing Expectations, Resident Teaching Preparation, Creating Evaluation Tools, Precepting Multiple Learners, Changing Teaching Methods to Fit Learning Styles, Working with Different Attitudes and Providing Constructive Feedback, Using Technology, Prioritizing Time to Precept, Identifying Clinical Site Learning Experiences, and Teaching in Small Groups. Barriers to precepting were varying schedules, lack of time, and lack of experience. Site-specific pharmacy residency preceptor development can be created based on direct questionnaire feedback. The success of the development program is to be determined with follow-up assessment of initial workshops and will be used to complete a five-year plan.

Learning Objectives:

Identify potential deficits in or barriers to precepting pharmacy residents and list survey questions that can be used to assess areas to target through training.

State various resources to use and methods of delivery for creation and presentation of preceptor development workshops.

Self Assessment Questions:

Which of the following would be important to account for when planning a pharmacy residency preceptor development program?

A Size of the residency program

B: Funds available to provide preceptor development

C: Readiness of preceptors to participate in development

D: Specified strengths and weaknesses of institution preceptors

What are potential perceived barriers to precepting pharmacy residents?

A Varying schedule

B Lack of support

C Time management

D Both A and C

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-732 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF SEROTONIN SYNDROME WITH CONCURRENT USE OF LINEZOLID, SSRIS, AND SNRIS

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Purpose: Serotonin syndrome is defined as a developed toxicity secondary to excessive serotonin levels in the central nervous system and periphery and manifests clinically as mental status abnormalities, autonomic system hyperreactivity, and changes in neuromuscular function. As commonly prescribed medications, selective serotonin reuptake inhibitors (SSRIs) and serotonin-norepinephrine reuptake inhibitors (SNRIs) may pose a risk for serotonin syndrome if concurrent antibiotic therapy with linezolid is required. Data surrounding the incidence of serotonin syndrome with the concurrent use of linezolid with SSRIs and/or SNRIs has been controversial, with published data both supporting and refuting the current FDA recommendation to avoid concurrent use of these agents. The purpose of this study is to further evaluate the incidence of serotonin syndrome in patients concurrently treated with linezolid and either a SSRI or SNRI at a tertiary academic medical center.□□Methods: This retrospective chart review will aim to assess the incidence of serotonin syndrome in patients at a tertiary academic medical center who received documented, concurrent doses of linezolid and a SSRI or SNRI during the inpatient stay. The incidence of serotonin syndrome will be defined by an explicit diagnosis listed in the patient chart or by following the Hunter Serotonin Toxicity Criteria, which assesses the incidence of clonus, agitation, diaphoresis, tremor, hyperreflexia, hypertonia, and fever. In addition, the incidence of each independent measure of the Hunter criteria will be assessed. Data on patient demographics, length of treatment overlap, doses of agents, hemodynamic data, and use of additional serotonergic agents will also be collected and analyzed.□□Results/Conclusions: Data collection is currently in progress. Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Define how serotonin syndrome is diagnosed based on the Hunter Serotonin Toxicity Criteria

State the proposed FDA washout period for SSRIs/SNRIs prior to the use of linezolid

Self Assessment Questions:

The most important clinical symptom implicated in the diagnosis of serotonin syndrome is:

A Agitation

B: Confusion

C: Hyperthermia

D: Clonus

According to the FDA MedWatch Safety Alert, patients taking most SSRIs/SNRIs should have a washout period of how many weeks prior to starting linezolid in non-emergent situations?

A 2 weeks

B 1 week

C 4 weeks

D 8 weeks

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-733 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF THROMBOPROPHYLAXIS IN PATIENTS UNDERGOING TOTAL HIP AND KNEE ARTHROPLASTY AT A COMMUNITY TEACHING HOSPITAL

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Background:□The most recent guidelines for thromboprophylaxis post orthopedic surgery are not specific as to which pharmacologic agent and duration is best. The American College of Chest Physicians (ACCP) recommends up to 35 days of prophylaxis using one of eight available agents. Slight emphasis is given to low molecular weight heparins. The American Academy of Orthopedic Surgeons (AAOS) does not recommend one specific agent over another and leaves the choice of duration up to physician and patient discussion. The purpose of this study is to assess the utilization and outcomes of thromboprophylaxis agents used post-operatively in total hip and knee arthroplasty patients at a community teaching hospital. □□Methods: □In this prospective, single-center, observational cohort study, we followed patients post total hip or knee arthroplasty after being initiated on pharmacologic thromboprohylaxis between November 18 and December 18, 2013. Patients were enrolled if they received elective or emergent total hip or knee arthroplasty. Patients were excluded if they were pregnant, younger than 18 years of age, discharged to a facility other than home, did not have a working phone, or had a language barrier without a delegated caregiver. Patient consent was received on post-operative day two. Bi-weekly follow-up phone calls were conducted for the first month after the procedure then monthly for two additional months, for a total of four follow-up phone calls. Prior to discharge, each patient was provided a questionnaire that aided in identifying endpoints during each follow-up. The primary endpoint was venous thromboembolism post procedure. Secondary endpoints were selection of thromboprophylaxis agent, major and minor bleeding events, and hospital readmission rate.□□Results/Conclusions:□Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the differences between the ACCP and AAOS guidelines for thromboprophylaxis post orthopedic surgery.

List the agents that can be used for thromboprophylaxis post-orthopedic surgery.

Self Assessment Questions:

Which medication was added to ACCP's list of recommended agents to use as thromboprophylaxis post orthopedic surgery that was previously only recommended by AAOS?

A Warfarin

B: Low-molecular weight heparin

C: Aspirin

D: Fondaparinux

What is the INR goal listed in ACCP guidelines for patients on warfarin for total hip or knee arthroplasty?

A 1.5 to 2

B 2 to 3

C less than or equal to 2

D 2.5 to 3.5

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-359 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF A LOWER THERAPEUTIC GOAL HEPARIN NOMOGRAM

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Background: Heparins use as an anticoagulant has been successfully studied in various patient populations, including venous thromboembolism and acute coronary syndrome. Patients with recent stroke, surgery, have a left ventricular assist device (LVAD) or on extracorporeal membrane oxygenation (ECMO) are at increased risk of bleeding and thus utilizing a lower heparin dose with a lower activated partial thromboplastin time (aPTT) goal may be advantageous for these patients. However, traditional heparin dosing regimens, including weight based nomograms have not been well studied in these populations. Cleveland Clinics Heparin Stroke Nomogram (CCHSN) was developed to target a lower aPTT goal (0.2-0.5 IU/mL anti-Xa) utilizing an initial heparin infusion of 12 units/kg/hour without an initial bolus or intra-therapy boluses for subtherapeutic aPTT values.□□Objective: Evaluate the percentage of patients who achieve therapeutic aPTT within 24 hours of initiation of the CCHSN, determine adherence to the protocol, amount of time patients are subtherapeutic, supratherapeutic, and therapeutic during heparin administration, and incidence of bleeding.□□Methodology: A non-interventional, retrospective chart review will be conducted to evaluate the safety and efficacy of the CCHSN. Patients will be identified by an EPIC query of patients initiated on the CCHSN and received at least 24 hours of heparin between June 2011 and July 2013. Patients will be excluded if they have a prolonged aPTT at baseline, if heparin is monitored using anti-Xa or activated clotting time levels, or were on a different heparin nomogram in the previous 24 hours. Patients will be divided into two groups of 50 patients each: patients with an intracranial process (ischemic stroke, hemorrhagic stroke, or intracranial tumor), or patients without an intracranial process (surgical patients, ECMO, or patients requiring a lower anticoagulation goal). Each group will be analyzed separately using descriptive statistics. □□Results and Conclusions: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review the pharmacodynamic and pharmacokinetic properties of hepari

Discuss appropriate monitoring parameters of heparin

Self Assessment Questions:

When should an aPTT be checked after a heparin dose adjustment?

A 2 hours

B: 3 hours

C: 6 hours

D: 12 hours

Reaching a therapeutic aPTT within what time frame has been associated with decreased thromboembolic events?

A 24 hours

B 48 hours

C 72 hours

D 96 hours

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-360 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EMPIRIC DOSING OF VANCOMYCIN IN PATIENTS WITH CEREBRAL PALSY

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PURPOSE: Patients with cerebral palsy (CP) have decreased muscle mass due to impaired motor function. As a result, serum creatinine is often low which may lead to overestimation of renal function in patients with CP. Vancomycin is primarily eliminated through the kidneys and monitored with trough serum concentrations for efficacy and safety. It is hypothesized that initial vancomycin dosing per institutional protocol results in supratherapeutic trough serum concentrations in patients with CP. □□METHODS: Pediatric patients admitted from January 1, 2012 to December 31, 2013 who received 3 to 12 doses of vancomycin and had a trough serum concentration drawn were identified retrospectively. Patients were stratified into those with a diagnosis of CP or matched control. Patients with CP and matched controls were further separated into two groups: those with a target vancomycin trough of 8-15mcg/mL or 15-20mcg/mL. The primary objective of this study was to evaluate initial vancomycin trough serum concentrations in patients with CP. The secondary objective was to evaluate acute kidney injury associated with vancomycin. Acute kidney injury was defined per the RIFLE criteria or requirement of renal replacement therapy. Statistical testing was performed with significance level of $p<0.05$.□□RESULTS: Eight patients in both the CP group and match-control group were reviewed. Demographic characteristics across groups were similar, however, subjects with CP had higher baseline creatinine clearance (222.5mL/mir vs. 119mL/min,p=0.003). There is no significant difference in vancomycin serum concentration in subjects in the match-control group vs. CP group with trough goals of 8-15mcg/mL (13.8mcg/mL vs. 16.5mcg/mL, p=0.798) or 15-20mcg/mL (12.75mcg/mL vs. 18.7mcg/mL p=0.18). There was not a significant difference in incidence of acute kidney injury (0 vs. 1, p=1).□□CONCLUSIONS: Patients with CP and matched controls treated with vancomycin per institutional protocol have similar initial vancomycin trough concentrations. No difference in incidence of acute kidney injury was found.

Learning Objectives:

Describe the metabolism and clearance of vancomycin.

Explain why renal function may be overestimated in patients with cerebral palsy.

Self Assessment Questions:

Vancomycin is mainly eliminated via which pathway?

A Metabolized in the liver and excreted in the urine

B: Excreted as unchanged drug in the urine

C: Excreted unchanged in the bile

D: Nonenzymatic degradation in the bloodstream

Renal function may be commonly overestimated in patients with cerebra palsy due to:

A High incidence of upper urinary tract dysfunction

B High incidence of neurogenic bladder

C Decreased body mass index

D Decreased muscle mass

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-361 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

MICAFUNGIN PEDIATRIC WEIGHT-BASED DOSING FOR PROPHYLAXIS AND TREATMENT OF INVASIVE FUNGAL INFECTIONS

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Purpose: Micafungin, an echinocandin, has been shown to be a safe and effective alternative for systemic fungal infections in the pediatric population. The objectives of this study are to determine weight-based doses of micafungin used for both prophylaxis and treatment of invasive fungal infections at this pediatric institution and to evaluate the efficacy of such dosing in comparison to the published literature. □□Methods: A literature review and a retrospective medication use evaluation were performed. Prospective monitoring of pediatric patients receiving micafungin will be used to determine the weight-based dosing relative to patient age, weight, and indication for use, and to assess the efficacy of such dosing practices. An electronic medical record will identify pediatric patients with at least one administered dose of micafungin for either prophylaxis or treatment of a fungal infection. The following data may be collected: age, weight, ordered dose, dates of administration, number of doses administered, and adverse reactions to the medication. If available, fungal culture and susceptibilities, diagnostic imaging, dose changes, other antifungal drugs administered, and patient comorbidities may be recorded. Provider documentation may be utilized to determine the indication for use and immune status of the patient. Basic descriptive statistics of weight-based doses will be utilized. □□Preliminary results: A retrospective medication use evaluation was completed to determine baseline dosing practices at this pediatric institution. Thirty-nine patients (average age 7.9 years) received at least one dose of micafungin from January 1 to July 30, 2013. A total of 98 micafungin orders were included, consisting of 1283 administered doses. The average daily dose administered, regardless of indication, was 4.8 mg/kg/day (range 1.2-8.0 mg/kg/day).□□Conclusions: Conclusions reported will be based on prospective monitoring of pediatric weight-based micafungin doses in relation to age, weight, and indication as well as the outcomes of such dosing practices at this pediatric institution.

Learning Objectives:

Recognize the impact of age, weight, and indication on dosing of micafungin for pediatric patients.

Identify patient populations in which micafungin is used as prophylaxis for fungal infections.

Self Assessment Questions:

Which of the following statements is correct?

A There is no difference in dosing micafungin between a toddler and
B: As a pediatric patient ages, the required dose of micafungin increa
C: Initial micafungin dosing is highest for neonatal patients.
D: There are insufficient data to determine the correct pediatric dose

Which of the following statements is correct?

A Micafungin is used commonly in pediatric bone marrow transplant
B Micafungin has no safety advantages over azoles for fungal proph
C Micafungin is not an optimal choice for fungal prophylaxis in pediat
D Micafungin prophylactic dosing is the same for HIV-exposed and n

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-362 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

RETROSPECTIVE ANALYSIS OF TREATMENT FAILURE WITH ATORVASTATIN AS A RESULT OF A LARGE SCALE FORMULARY CHANGE FROM ROSUVASTATIN TO ATORVASTATIN.

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Purpose: Several large multicenter trials of statin therapy have shown consistent reductions in mortality and prevention of myocardial infarctions and strokes. Despite the proven benefit of LDL reduction, lipid management in clinical practice is often suboptimal, with only one third to one half of all patients achieving recommended cholesterol levels on lipid lowering therapy.□Health care organizations are increasingly using formulary conversions in order to lower drug costs and maximize limited pharmacy resources. The formulary at HVAMC recently changed, requiring a large-scale conversion of patients receiving rosuvastatin therapy to an equivalent dose of atorvastatin. The number of patients successfully treated with rosuvastatin who then later failed to meet their lipid goals while receiving atorvastatin is currently unknown, as well as the number and severity of adverse events as a result of this formulary conversion. □□Methods: A retrospective chart review was performed on all LDL levels in patients receiving atorvastatin therapy due to the formulary conversion from rosuvastatin to atorvastatin at the Huntington VAMC. The number of patients not at their LDL goal, as a result of atorvastatin therapy, was determined. Furthermore, adverse events due to atorvastatin therapy such as increased liver enzymes, myopathy, and increased CPK were identified and analyzed. □□Results: Data is currently being collected and analyzed. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss recent changes to lipid guidelines and appropriate use of statins

Identify potential benefits and risks with large scale formulary conversions

Self Assessment Questions:

Based on the new 2013 ACC/AHA Treatment of Blood Cholesterol Guidelines, what is the target LDL- value for patients with diabetes?

A <70mg/dL
B: <100mg/dL
C: <130mg/dL
D: No target LDL goal recommended

Which of the following is a benefit of large scale formulary conversions?

A Maximize Limited Pharmacy Resources
B Higher Drug Costs
C Increased patient adherence to medication regimen
D Decreased patient adherence to medication regimen

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-363 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSESSING ADHERENCE AND PERSISTENCE OF ANGIOTENSIN CONVERTING ENZYME INHIBITORS AND ANGIOTENSIN RECEPTOR BLOCKERS IN ADULT PATIENTS WITH TYPE 2 DIABETES

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Patients with type 2 diabetes and pre-diabetes often have concomitant hypertension. Current guidelines recommend patients with diabetes and hypertension be treated with an angiotensin converting enzyme (ACE) inhibitor or an angiotensin receptor blocker (ARB). Use of these medications has been shown to reduce macrovascular and microvascular complications in this patient population. Medication adherence describes if patients take their medications as prescribed. Medication persistence describes the duration a patient remains on a medication.□□The purpose of this study is to evaluate the prescribing patterns, adherence, and persistence of ACE inhibitors and ARBs in patients with type 2 diabetes. This is a retrospective descriptive study in adult patients with type 2 diabetes. Adult patients with type 2 diabetes and enrollment in the Clinics affiliated health plan continuously from 2000-2013 will be included in the cohort. The study will describe patient characteristics at the time of initial prescribing of ACE inhibitor or ARB, including characteristics of duration of diabetes and renal function. These data will be extracted electronically from the electronic health record. Adherence and persistence to ACE inhibitors or ARBs will be measured by calculating yearly medication possession ratios (MPR) from pharmacy claims data. □□Preliminary results□Pending.□Preliminary conclusions□Pending.

Learning Objectives:

Describe the potential benefits of ACE inhibitors and ARBs in patients with diabetes.

Describe how to calculate a medication possession ratio.

Self Assessment Questions:

The benefits of ACE inhibitors or ARBs in patients with diabetes include:

A Decrease in microvascular complications
B: Decrease in macrovascular complications
C: Improvement in glycemic control
D: A and B

Medication possession ratio is calculated by dividing the days supplied of medication by:

A Number of pills supplied
B Number of fills in observation period
C Number of days in observation period
D Number of years in observation period

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-364 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATING PHARMACIST INTERVENTIONS IN LEUCOVORIN DOSING FOR METHOTREXATE TOXICITY WITH AN INTENSIFIED MONITORING PROGRAM

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Purpose: Methotrexate (MTX) is one of the most highly utilized chemotherapy agents and, when given in high doses, can be lethal unless reversed by leucovorin rescue initiated within 42 hours. Without proper leucovorin rescue, the patient can suffer from life-threatening MTX toxicities such as myelosuppression, thrombocytopenia, renal tubular necrosis, and severe mucositis. The need for individualized and timely leucovorin rescue is imperative given the narrow therapeutic index and high variability of MTX excretion in patients. This study aims to address the concern for timely and optimal response of leucovorin dosing with methotrexate levels by assessing the process prior to and after the implementation of an Intensified Monitoring Program.□□Methods: In a retrospective review, study patients will include those who have received methotrexate for a malignancy in doses greater than or equal to 1 gram/m2 at Rush University Medical Center from December 2010 and August 2011, and December 2012 and August 2013. Patients will be matched by the underlying malignancy and methotrexate dose utilized. The primary outcome of this study is to assess the timeliness of response by the pharmacist after receiving the methotrexate level result. Secondary outcomes include assessment of optimal dosing compared to the leucovorin dosing algorithm, the time of the Resident On-Call intervention (ROCI), and the elapsed time between the methotrexate level result to intervention (TMRI) will be collected and assessed. Interventions and timeliness of response will be assessed by evaluating the Pharmacy Resident On-Call Report (OCR) and I-Vents, an electronic internal communication system between pharmacists, in comparison to the lab result system in the electronic medical record system. This study has been approved by the Institutional Review Board.□□Results/Conclusion: Data collection and analysis are currently in progress. Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Review the clinical presentation of methotrexate toxicity in the absence of proper leucovorin rescue

Describe the pharmacist interventions for leucovorin dosing for methotrexate toxicity after an implementation of an intensified monitoring program

Self Assessment Questions:

Methotrexate toxicity in the absence of proper leucovorin rescue includes:

A Myelosuppression
B: Severe mucositis
C: Skin discoloration
D: Both A and B

What is the mechanism of action of leucovorin rescue for methotrexate toxicity?

A Chelates divalent ions, preventing free radical formation
B Binds with acrolein to form a stable nontoxic product to be excreted
C Provides an exogenous source of folinic acid to healthy cells
D Increases the stability of FdUMP-thymidylate synthase complex

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-365 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

SUSTAINED VIROLOGIC RESPONSES AND SAFETY OF TRIPLE ANTIVIRAL THERAPIES FOR THE TREATMENT OF HEPATITIS C IN A VETERAN POPULATION.

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Purpose: The addition of direct-acting antivirals (boceprevir or telaprevir to pegylated interferon and ribavirin for the treatment of chronic hepatitis C genotype 1 has been proven to improve sustained virologic responses compared with pegylated interferon and ribavirin dual therapy. These agents have also led to tolerability issues and increased rates of hematologic adverse effects. These complications can lead to antiviral dose reductions and/or supportive care with increased healthcare costs. The objective of this study is to evaluate efficacy and safety parameters of triple antiviral therapy in veterans treated in routine practice.□□Methods: This study has been submitted to the Institutional Review Board for approval. A retrospective chart review will be performed on all patients who have been treated for hepatitis C with triple antiviral therapy after September 1st, 2011. Patients will be included in the study if they have a documented diagnosis of HCV genotype 1, and were initiated with pegylated interferon/ribavirin and boceprevir or telaprevir treatment. The following data will be collected: patient age, weight, viral load, complete blood count with differential, documented antiviral dose reductions, prescribed colony-stimulating factors, administration of blood transfusions, and incidence of hospital admissions. All data will be recorded without patient identifiers to maintain confidentiality. The primary outcome of this study is the rate of achieving sustained viral response, defined as aviremia 24 weeks after completion of antiviral therapy. Secondary outcomes are rates of adverse events and need for dose reductions and/or other interventions. Data collected will be benchmarked against the National Veterans Affairs hepatitis C outcomes.□□Results/Conclusion: Data collection and analysis is ongoing and will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the pharmacological treatment options for patients with hepatitis C genotype 1

Identify toxicities and healthcare costs associated with triple antiviral regimens containing pegylated interferon, ribavirin, and boceprevir or telaprevir

Self Assessment Questions:

Which of the following is true regarding triple antiviral therapy for the treatment of chronic hepatitis C?

A In addition to interferon and ribavirin, boceprevir or telaprevir are tr
B: The treatment duration for boceprevir or telaprevir-containing triple
C: First-generation NS3/4A protease inhibitors have a high barrier to
D: Regimens containing newly approved direct-acting antivirals (sime

Which of the following is a toxicity associated with pegylated interferon, ribavirin, and protease inhibitor triple antiviral therapy?

A GI upset
B Anemia
C Depression
D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-366 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DIAZEPAM USE IN ALCOHOL DETOXIFICATION: A RETROSPECTIVE REVIEW OF THREE TREATMENT STRATEGIES AT A VETERANS AFFAIRS MEDICAL CENTER

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Hospital admission solely for the purpose of alcohol detoxification is a frequent occurrence within the Veterans Affairs system. Benzodiazepines, specifically diazepam, are often used to reduce withdrawal symptoms and prevent severe complications of withdrawal including seizures and delirium tremens (DTs). There are several different strategies for the use of diazepam during the detoxification process. The objective of this study is to identify differences in average cumulative dose of diazepam and length of hospital stay for patients receiving one of three treatment strategies. The results of this study will be used in the development of a standardized alcohol detoxification protocol for this facility. In this retrospective study, patients will be identified using the Veterans Health Information System and Technology Architecture (VISTA) system and will be included if they received diazepam for the purpose of alcohol detoxification between April 2012 and April 2013. Data will be collected via chart review of the Computerized Patient Record System (CPRS). Patients will be sorted into three treatment cohorts: (1) patients treated with a single loading dose of diazepam, (2) patients treated with a scheduled diazepam taper (3) patients treated with diazepam only as needed for withdrawal symptoms. The primary outcomes will be the average cumulative dose of diazepam received over the course of detoxification, the average daily dose of diazepam, and the average length of hospital stay. Secondary outcomes will include the rate of hospital readmission within three months of treatment and the percentage of patients with documented seizures or DTs during treatment. Differences in prescribing patterns between physicians in the medicine, psychiatry, and emergency departments will also be described. Statistical analysis will be performed using ANOVA analysis. This study has been approved by the facility Institutional Review Board (IRB).

Learning Objectives:

Discuss the utility of benzodiazepines in the management of alcohol detoxification.

Describe observed differences between three diazepam-based alcohol detoxification strategies.

Self Assessment Questions:

Which of the following is the most life-threatening symptom of alcohol withdrawal?

A Seizures
B: Hypertension
C: Delirium tremens
D: Respiratory depression

Current evidence suggests which of the following is true regarding the use of a symptom-based alcohol withdrawal protocol?

A Implementation requires minimal nursing resources
B Duration of treatment is increased
C Patients often require an increased quantity of medication
D There is a reduced risk of over-sedation

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-734 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

UTILIZATION OF A PATIENT MONITORING PROGRAM TO IMPROVE PATIENT SAFETY IN A COMMUNITY TEACHING HOSPITAL

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Purpose:The role of pharmacists has evolved and requires extensive patient monitoring. The volume of patients and the constant stream of laboratory results are a challenge for the hospital pharmacist. There are several patient monitoring programs available to help improve patient safety. Mount Sinai Hospital implemented a patient monitoring program which continuously monitors inpatient laboratory and medication data, and identifies potential real-time issues. The program interfaces with the hospitals electronic medical record, receives pertinent lab data, and filters it in terms of real-time alerts that the site can tailor to their specifications. The alerts that were tailored to our institution include anticoagulation, antimicrobial stewardship and electrolyte imbalances. The end goal of this program is to assist pharmacists in identifying patients at risk for adverse events and create opportunities for pharmacists to intervene. The purpose of this study was to improve patient safety by facilitating the availability of real time laboratory data.□Methods:The study is a prospective review of interventions done by the pharmacists after the implementation of the patient monitoring program. Prior to implementation, a survey was conducted to determine which real-time alerts would be valuable to the pharmacists. Based on the survey results, certain alerts were deemed appropriate. Training sessions for all pharmacists were then conducted. The patient monitoring program was turned on and a threshold for each alert was specified for our institution. Each pharmacist was expected to respond to these alerts throughout their shift. The time to resolution of the alert as well as the course of action carried out by the pharmacist will be analyzed to determine if patient safety was enhanced.

□

Results/Conclusions:This data is currently being analyzed. The results will indicate which alert was most valuable in improving patient safety. The results and conclusions will be presented at the Great Lakes Conference.

Learning Objectives:

State the purpose of the patient monitoring program

Identify how the patient monitoring program improved patient safety

Self Assessment Questions:

The goal of the patient monitoring program is to help

A Alert the physician on what labs to order

B: Alert the pharmacist about patients at potential risk of harm

C: Inform the pharmacy technician on what medications to fill

D: Generate drug interaction reports

How do the alerts from the patient monitoring program contribute to patient care

A Help enhance patient safety

B Increase medication compliance

C Decrease lab errors

D Monitor drug administration times

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-886 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE IMPACT OF A VANCOMYCIN THERAPEUTIC INTERCHANGE PROTOCOL ON COSTS AND LENGTH OF STAY AS SURROGATE MARKERS FOR CLINICAL EFFICACY AND SAFETY

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Purpose: In 2012, Norton Healthcare implemented a formulary restriction on linezolid and daptomycin after an internal MUE demonstrated significant opportunity to optimize utilization. The formulary restriction included a therapeutic interchange (TI) allowing pharmacists to substitute linezolid or daptomycin with vancomycin in situations where one of five TI exclusion criteria is not met. In the first six months after implementation, the pharmacy budget for linezolid, daptomycin, and vancomycin was reduced by $754,000. However, some literature suggests that higher costs of the linezolid and daptomycin are offset by shorter lengths of stay and overall lower costs, although data has yielded conflicting results. The purpose of this study is to evaluate the impact of Norton Healthcares TI protocol on cost and length of stay. □□Methods: A retrospective chart review was conducted at Norton Healthcare. Eligible patients included adults aged ≥ 18 years, who were admitted to one of four Norton Healthcare adult hospitals and received ≥ 24 hours of intravenous vancomycin, daptomycin, or intravenous/oral linezolid for any indication. The control group consisted of patients admitted before protocol implementation, between October 2011 and March 2012. The study group consisted of patients admitted after protocol implementation, between October 2012 and March 2013. The primary endpoint was average total cost per admission between the control group and the study group. The secondary end points included length of hospital stay, total pharmacy cost, and inpatient mortality rate.

□□

Results and Conclusion: Data collection currently in progress. Results and conclusions will be presented at the 2014 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Explain the importance of reserving daptomycin and linezolid for situations where vancomycin may not be appropriate

Describe limitations in the application of previous studies that compare daptomycin and linezolid to vancomycin

Self Assessment Questions:

Which of the following are potential complications associated with inappropriate use of daptomycin/linezolid?

A Reduced microbial susceptibility to daptomycin and linezolid

B: Decreased toxicity

C: Increased cost

D: A & c

Which of the following is a challenge with interpretation and application of previous studies comparing vancomycin to daptomycin/linezolid?

A Studies are powered to show superiority

B Studies are prospective and randomized

C Studies use non-standardized dosing and monitoring of vancomyc

D Studies have large sample sizes

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-367 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF A COLISTIN LOADING DOSE, HIGH-DOSE MAINTENANCE REGIMEN ON THE TREATMENT OF MULTIDRUG RESISTANT PNEUMONIA IN THE INTENSIVE CARE UNIT

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Purpose: The emergence of multi-drug resistant (MDR) gram-negative pathogens and concomitant lack of novel antibiotics have led to an increase in the use of colistin. Despite over fifty years of experience with colistin, the optimal intravenous (IV) dosing regimen is still unknown. Results of pharmacokinetic studies suggest that critically ill patients may require a loading dose and higher maintenance doses to obtain necessary concentrations. Based on this evidence, a guideline for IV colistin including a 5 mg/kg loading dose and high-dose maintenance regimen was implemented on September 1, 2012 at The Ohio State University Wexner Medical Center (OSUWMC). The purpose of this study was to determine if a colistin loading dose and high-dose regimen increases the rate of clinical cure in ICU patients with MDR gram-negative pneumonia. Methods: A single-center, retrospective cohort study was completed to compare clinical cure pre- and post-implementation of a colistin loading dose, high-dose maintenance regimen. Patients were eligible for inclusion if they were admitted to a medical or surgical ICU between April 1, 2009 and February 28, 2014 and were treated for MDR gram-negative pneumonia with IV colistin. Additionally, patients must have received IV colistin for greater than 48 hours within 72 hours of culture obtainment. Exclusion criteria included age less than 18 or greater than 89 years, pregnancy, and incarceration. The primary outcome was clinical cure defined as improvement of all signs and symptoms caused by the infection (i.e. resolution of WBC, fever, respiratory status). Secondary outcomes included mortality, attributable mortality, duration of mechanical ventilation, ICU and hospital length of stay, infection-related length of stay, hospital and infection-related cost, and acute renal injury based on RIFLE criteria. Results/Conclusions: Data collection and evaluation are currently being conducted. Preliminary results will be presented.

Learning Objectives:

Explain recent trends resulting in increased use of colistin for treatment of gram-negative multidrug resistant infections.

Describe limitations associated with the use of colistin in the treatment gram-negative multidrug resistant pneumonia and potential strategies to optimize colistin therapy.

Self Assessment Questions:

Which of the following have contributed to the increased use of colistin:

A Increased development of newer antibiotics

B: Increasing numbers of multidrug resistant infections

C: Newer formulations of colistin with less toxicity

D: Drug shortages

Which strategy has been proposed to overcome colistins long-half life in critically-ill patients:

A Use of inhaled colistin in addition to intravenous colistin

B Administration of a loading dose

C Use of combination therapy

D Administrating colistin as an extended-infusion over four hours

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-368 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFECT OF LATE FLUID BALANCE ON CLINICAL OUTCOMES IN CRITICALLY ILL SURGICAL AND TRAUMA PATIENTS

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Management of post-operative fluid balance continues to be controversial in critically ill patients. While the importance of adequate fluid resuscitation has been demonstrated, emerging data in trauma, surgical and acute lung injury patients suggest that a positive fluid balance is associated with increased morbidity and mortality. Currently there is no literature to guide late fluid management in trauma or acute care surgical patients. The objective of this study is to determine the impact of late fluid balance management after initial adequate fluid resuscitation on in-hospital mortality for critically ill surgical and trauma patients. A single-center retrospective cohort study comparing patients with conservative versus liberal fluid management at day 7 will be performed. Mechanically ventilated patients between the ages of 18 and 89 admitted to the Surgical Intensive Care Unit (SICU) at The Ohio State University Wexner Medical Center (OSUWMC) between Novembe 1, 2011 and October 1, 2013 who underwent a surgical procedure within 24 hours preceding or following SICU admission will eligible for evaluation. Patients must have adequate initial fluid resuscitation, defined as urine output ≥0.5ml/kg/hr for the initial 12 hour post-operative period, in order to be included. Exclusion criteria include incarceration, pregnancy, SICU length of stay <7 days or admission to any of the following services: Neurosurgery, Neurovascular, Burn, Ear/Nose/Throat Peripheral Vascular Surgery, Oral Maxillofacial Surgery or Post-partum OB. A multivariable logistic regression model will be used to compare in-hospital mortality between patients with liberal versus conservative fluid balance at 7 days. Conservative fluid balance is defined as ≤5L positive, whereas liberal fluid balance is used to describe patients >5L positive. Secondary outcomes to be assessed include fluid balance at 3 and 7 days, total duration of mechanical ventilation, ICU and hospital length of stay, and total hospital and ICU cost. Data collection and evaluation are currently being conducted.

Learning Objectives:

Review current literature evaluating fluid resuscitation and management

Discuss concerns with positive fluid balance and potential impact on clinical outcomes

Self Assessment Questions:

The importance of adequate initial fluid resuscitation has been repeatedly demonstrated the following patient population:

A Diabetes mellitus

B: Liver failure

C: Septic shock

D: Hematologic malignancy

Which of the following is a proposed consequence of positive fluid balance?

A Hyperglycemia

B Venous thromboembolism

C Prolonged duration of mechanical ventilation

D Shorter ICU length of stay

Q1 Answer: C Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-735 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

HEMORRHAGE ASSOCIATED WITH ANTICOAGULATION MEDICATION THERAPY: EVALUATING OPPORTUNITIES TO IMPROVE PATIENT OUTCOMES

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Background: The reported rate of hemorrhage associated with anticoagulation exposure at Froedtert hospital has steadily increased over the last three years. An analysis of the hemorrhage rates reported between the 4th quarter of 2011 to the 3rd quarter of 2012 suggests that the observed trend is likely multifactorial. Purpose: The purpose of this project is to identify factors contributing to the higher reported rates of hemorrhage associated with anticoagulation exposure and implement interventions to decrease their rates. Methods: This was a single cente retrospective chart review of patients who were hospitalized between 01/01/2013 and 03/31/2013. Patients were included if they were at least 18 years of age, received one or more doses of any anticoagulant, and had an ICD-9 billing code indicating an acute bleed. Patient charts were assessed for multiple variables including: type and dose of anticoagulant, indication for anticoagulation, type and severity of hemorrhage, and risk of hemorrhage based on HAS-BLED criteria. Results: One hundred and six patients met the inclusion criteria and were evaluated. Twenty-seven patients (25%) experienced an acute bleed unrelated to anticoagulation, while 39 (37%) and 40 (38%) patients had a non-serious and serious bleed, respectively. In patients who experienced a non-serious bleed, 26 (67%) received prophylactic doses of anticoagulation as compared to 14 (35%) of patients experiencing a serious bleed. Patients who experienced a serious bleed were more likely to be receiving multiple anticoagulants and have a HAS-BLED score of three or higher compared to patients who experienced a non-serious bleed. Conclusion: The increase in the reported rate of hemorrhage associated with anticoagulation exposure is likely multifactorial. This chart review of 106 patients suggests there may be several opportunities to decrease the reported rate of hemorrhage including refinement of the documentation process, modification of the coding process, and reassessment clinical practice related to anticoagulation therapy.

Learning Objectives:

Recognize the clinical utility of the HAS BLED scoring tool in assessing bleed risk in patients exposed to anticoagulation

Identify potential interventions that may reduce the reported rate hemorrhage in patients exposed to anticoagulation

Self Assessment Questions:

Which of the following criteria does the HAS BLED scoring tool assess?

A Blood Pressure

B: Renal and Hepatic function

C: Concomitant use of anti-platelet therapies

D: All of the above

Patients exposed to a treatment dose of anticoagulation were less likely to experience a serious bleed?

A True

B False

C Na

D Na

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-887 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

SURVIVAL ANALYSIS OF CANCER CHEMOTHERAPY PATIENTS BY INSURANCE CATEGORY

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Purpose: Breast, lung, and colon cancers account for significant morbidity and mortality in patients nationwide. Chemotherapy can slow disease progression and decrease tumor burden; however, therapy is often expensive, creating barriers to care. As healthcare in the United States is changing due to the passage of the Affordable Care Act, insurance status will likely change for many patients. The purpose of this study is to compare survival of cancer chemotherapy patients stratified by insurance category to determine if any disparities exist.□□Methods: This study has been approved by the Marshall University Institutional Review Board. In this retrospective study, patients were identified using the Edwards Comprehensive Cancer Center registry containing data from 1995-2012. Patients with breast cancer, lung cancer, and colon cancer that received chemotherapy were included in the analysis. Complete data included sex, age, American Joint Committee on Cancer (AJCC) stage, vital status, and radiation or surgery received. Patients were stratified into five groups: Medicaid, Medicare, Medicare with supplement, private insurance, and cash paying/uninsured. A multivariate analysis was conducted within each cancer type. The primary outcome of median overall survival was assessed for each insurance category within each cancer type. Secondary outcomes included two and five year survival. □□Results: To be presented at the Great Lakes Pharmacy Residency Conference.□Conclusions: To be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify differences in median overall survival of patients with different insurance groups within breast, lung, and colon cancers.

Discuss potential implications of increasing health insurance coverage for uninsured patients.

Self Assessment Questions:

Per the SEER Database estimations for 2013, how many patients in tota were diagnosed with breast, lung, and colon cancers in the United States?

A 249,600

B: 480,100

C: 603,350

D: 754,900

What percentage of Americans were uninsured in 2012 per United States Census data?

A 6.5%

B 13.6%

C 15.4%

D 19.8%

Q1 Answer: C Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-736 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF PHARMACIST PROVIDED DISCHARGE MEDICATION RECONCILIATION AND EDUCATION ON MEDICATION RELATED PATIENT SATISFACTION SCORES AND PRESCRIPTION CAPTURE RATE: A SINGLE CENTER REVIEW

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Purpose: Recent legislative changes in healthcare have emphasized the quality of care provided to patients and highlighted the importance of improved transitions of care. Nationally, evidence has reported at least one error in 50-75% of all discharge medication lists. The primary objective of this project is to improve discharge medication list accuracy via pharmacist provided medication reconciliation and education. Secondary objectives include describing the impact of pharmacist provided discharge medication education on medication related Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) scores, readmission rates, prescription capture rates, and evaluating the financial impact. Methods: This project has been considered quality improvement and thus exempt from review by the Institutional Review Board. Patients discharged from the general interna medicine unit of a tertiary care hospital will be the pilot population for this project. The initial phase focused on describing current practices and identifying opportunities for improvement. Baseline prescription capture rate and medication related HCAHPS scores for patients discharged from the intervention unit were determined from historic data. As current hospital metrics do not evaluate the accuracy of discharge medication lists, a four week prospective review was performed to identify baseline accuracy. The next phase will involve an eight week pilot of discharge medication reconciliation and education performed by a pharmacist or pharmacist extender. Prior to discharge, a pharmacist or pharmacist extender will review medication therapy, provide recommendations to prescribers as necessary, perform patient education, and offer to fill the patients discharge prescriptions with the onsite outpatient pharmacy. Measures of success include improvement in the accuracy of discharge medication lists, prescription capture rate and medication related HCAHPS scores. Results/Conclusion: Results and conclusion will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Describe baseline discharge medication list accuracy and the most common drug therapy opportunities identified

Discuss barriers identified to the implementation of a pharmacist-led discharge medication reconciliation and education program

Self Assessment Questions:

Identify the most frequent drug therapy opportunity found on patient discharge medication lists prior to the pharmacy associates completion of medication reconciliation:

A Duplication of therapy
B: Medication omission
C: Drug-drug interaction
D: Incorrect dose

Which of the following represents the most significant barrier to pharmacist involvement in discharge medication reconciliation and education at Ministry Saint Josephs Hospital?

A Lack of physician acceptance
B Lack of nursing acceptance
C Suboptimal interdisciplinary communication
D Resistance from patients

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-737 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

OPTIMIZATION OF DRUG-DRUG INTERACTION ALERTS RECEIVED BY PHARMACISTS WITHIN AN ELECTRONIC HEALTH RECORD

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Purpose: As hospitals increasingly rely on their electronic health record to provide medication related clinical decision support, healthcare providers are being exposed to a growing number of alerts. When health care provides are exposed to many alerts, the majority of which they override, they can begin to experience "alert fatigue" and may potentially bypass a truly important alert. It has been reported that drug-drug interaction alerts are overridden a large majority of the time (in excess of 90% according to some studies). The primary objective of this study is to enumerate and categorize the drug-drug interaction alerts that pharmacists receive at the Indiana University Health System, safely eliminate alerts that are deemed unnecessary, and develop a system to continuously monitor the alerts pharmacists receive. Methods: This is a retrospective study of all drug-drug interaction alerts with a MULTUM severity classification of "major" or "contraindicated" that were displayed to pharmacists at Indiana University Health from January 1st-December 31st 2013. The drug-drug interaction pair, the facility it occurred at, the override reason, and the severity will all be extracted from the health systems electronic health record. Once identified, the drug-drug pairs with the largest number of evokes and those with high override rates will be brought to a panel comprised of clinical pharmacists/managers to determine the clinical importance of each alert and whether or not the alert can be suppressed without impacting patient care. A follow-up report will be run to determine if there has been an overall change in global override rates. Results/Conclusions: Data collection and analysis are currently being conducted. Final results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe alert fatigue and the impact that it can have on a healthcare system.

Discuss methods that hospitals can use to safely decrease their alert burden.

Self Assessment Questions:

How often, on average, are drug-drug interaction alerts overridden?

A 30%
B: 50%
C: 70%
D: 90%

Which of the following is a method hospitals can use to safely reduce alert burden?

A Eliminate duplicate alerts
B Turn off all alerts
C Set all alerts to be interruptiv
D Include all severity categories of alerts

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-888 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARISON AND ALIGNMENT OF AN ACADEMIC MEDICAL CENTERS STRATEGIC GOALS WITH PHARMACY PRACTICE MODEL (PPM) RECOMMENDATIONS

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Purpose: Healthcare reform is a high priority for hospitals nationwide requiring changes in pharmacy practice, including the redesign of pharmacist and technician roles and the increased use of technology to meet productivity and medication safety goals. ASHPs PPMI encourages pharmacy departments to evaluate their own practice mode to determine if their resources are properly used to support institutional sustainability and patient care. This research project will compare and align an academic medical centers pharmacy practice model to help meet ASHPs PPMI recommendations while continuing to serve its mission.□□Methods: This research project was deemed exempt from IRB review. A gap analysis was performed to compare the current model with PPMI recommendations utilizing ASHPs Hospital Self-Assessment tool. Gaps were prioritized by the Departments Pharmacy Practice Model Steering Committee (PPMSC) to determine potential areas where the Departments strategic goals should be focused. The PPMSC then identified potential solutions to narrow the gaps utilizing a modified Nominal Group Technique. Solutions were categorized by leve of impact and feasibility (high/low), with the high impact / high feasibility solutions being considered priority solutions. Priority solutions were assigned to work groups to develop implementation plans consisting of these components: resources needed, including staff, equipment, finances, and training requirements. The work groups devised structured plans which addressed the value of the service, including a SWOT analysis, and provided an action plan containing metrics for evaluating the outcome of the plan. Once completed, implementation plans were communicated to stakeholders and employees to allow for feedback and revision before moving into the implementation phase. The final impact of the plans will be documented through assessment of the outcome metrics for implemented programs.□□Results and Conclusions: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference

Learning Objectives:

Explain how an organization might compare and align its pharmacy practice model with PPM recommendations.

Describe the solutions UMHS prioritized for narrowing gaps in its pharmacy practice model.

Self Assessment Questions:

Which situation was given priority during the gap assessment when comparing UMHSs pharmacy practice model to PPM recommendations'

A Services/resource utilization that exist in most areas/situations (50
B: Services/resource utilization that exist only in some areas/situatior
C: Services/resource utilization that do not exist (0%)
D: Services/resource utilization that exist in all areas/situations (100%

Which of the following was one of the top five priorities the PPMSC identified?

A Implement a pharmacogenomics program
B Require that all pharmacists be residency-trained
C Implement a bedside medication delivery service
D Implement a discharge counseling service

Q1 Answer: C Q2 Answer: D

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Activity Type: Knowledge-based Contact Hours: 0.5

INVESTIGATION OF PHARMACIST EVALUATION AND INTERVENTION TO OPTIMIZE THE APPROPRIATENESS OF DUAL ANTIPLATELET THERAPY IN PATIENTS WITH ACUTE CORONARY SYNDROME OR NON-CARDIOEMBOLIC ISCHEMIC STROKE

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Purpose:□Dual antiplatelet therapy (DAPT) is accepted by all major cardiology societies as the preferred pharmacological approach for the prevention of stent thrombosis after stent implantation for the treatment of acute coronary syndrome (ACS). The recommended DAPT treatmen duration is 12 months, with evidence lacking to support longer-term use. Additionally, DAPT is sometimes initiated for secondary prevention of non-cardioembolic ischemic stroke. However, CHEST guidelines recommend single antiplatelet therapy over a DAPT approach. The objective of this study is to develop and implement a process to evaluate and optimize the therapeutic appropriateness of DAPT at a Veterans Affairs (VA) medical center.□□Methods:□This study was approved by the institutional review board prior to commencement. The VA computerized record system was used to identify 517 patients with active prescription orders for aspirin and clopidogrel. Chart review was performed on these patients to identify those on DAPT with a documented diagnosis of non-cardioembolic ischemic stroke or coronary artery disease. Patients were excluded from this study if on DAPT for any other indication (i.e. peripheral artery disease, atrial fibrillation, etc.) or if one or more of the following were present: coronary stent placemen or coronary artery bypass grafting within the previous 12 months, a history of stent thrombosis, or a complex anatomy of stent placement. For all eligible patients identified as potentially receiving inappropriate DAPT (on DAPT greater than 12 months), a progress note recommending DAPT de-escalation was placed in the electronic medica record. Retrospective review of the medical record was conducted to determine the percentage of DAPT de-escalation recommendations accepted.□□Results/Conclusions:□There are no results to date for this project. However, final results and a discussion of conclusions reached will be presented at the Great Lakes Pharmacy Resident Conference in April 2014.

Learning Objectives:

Define the CHEST guidelines recommended treatment duration of DAPT for acute coronary syndrome patients with bare-metal stent placement, drug-eluting stent placement, or no stent placement.

Recognize complex anatomy criteria of stent placement that would exclude acute coronary syndrome patients on DAPT from consideration for de-escalation to aspirin monotherapy after 12 months of DAPT.

Self Assessment Questions:

Which of the following types of stent placement and minimum duration c DAPT are matched correctly?

A Sirolimus drug-eluting stent (DES), 1 month
B: No stent placement, 3 months
C: Bare-metal stent (BMS), 3 months
D: Paclitaxel drug-eluting stent (DES), 6 months

According to the study protocol, which of the following acute coronary syndrome patients currently on DAPT would be an appropriate candidate for de-escalation to aspirin monotherapy?

A 72 year old female with BMS placed 11 months ago
B 63 year old male with ACS event 8 months ago with no PCI or ste
C 68 year old male with multiple paclitaxel DES placed 14 months ag
D 56 year old male with sirolimus DES placed 23 months ago

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-369 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSESSMENT OF VENTILATOR-ASSOCIATED EVENTS PRE AND POST IMPLEMENTATION OF CHLORHEXIDINE MOUTHWASH PROPHYLAXIS IN THE SURGICAL INTENSIVE CARE UNIT

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Background:□In July 2013, the Centers for Disease Control (CDC) and Prevention published updated guidelines that address Ventilator-Associated Event (VAE) surveillance for infectious complications. The new VAE guidelines have been developed to streamline the surveillance process and provide a more objective approach for evaluating mechanically ventilated adult patients. Many studies demonstrate the benefits of oral chlorhexidine in mechanically-ventilated patients. However, the 2005 Infectious Disease Society of America Guidelines for hospital-acquired, ventilator and healthcare-associated pneumonia do not recommend routine use until more data becomes available. Unlike many of the previous studies that focus on the clinical pulmonary infections score as it relates to outcomes, the new VAE guideline algorithm provides an alternative method of assessing VAE rates.□□Purpose:□The purpose of this study is to assess the rates of ventilator-associated events in the Surgical Intensive Care Unit (SICU) pre and post chlorhexidine mouthwash implementation.□□Methods:□This is a retrospective, single-center study evaluating ventilator-associated events in a SICU using the updated CDC guideline definition for Ventilator Associated Events. The Surgical Intensive Care Unit at The Ohio State University Wexner Medical Center is a 44-bed unit. A total of 647 patients with bronchoalveolar lavage (BAL) cultures in the SICU from 1/1/09 through 2/28/11 will be screened and stratified based on whether or not they received prophylactic chlorhexidine mouthwash. Two distinct patient groups will be identified. The first group will be composed of patients who did not receive chlorhexidine mouthwash between 1/1/2009 and 12/31/2009. The second group will include those patients that received prophylaxis chlorhexidine mouthwash between 3/1/2010 and 2/28/2011. The rates of ventilator-associated events, which include ventilator-associated condition (VAC), infection-related ventilator-associated complication (IVAC), possible or probable ventilator associated pneumonia, will be compared pre and post chlorhexidine mouthwash implementation using Fishers Exact Test.□□Results: Data collection is ongoing□□Conclusions: Pending Investigation

Learning Objectives:

Recognize the risk and benefits of mechanical ventilation in SICU patients.

Discuss the role of chlorhexidine mouthwash in mechanically ventilated SICU patients and the need for standardization.

Self Assessment Questions:

Which of the following is a serious complication associated with mechanically ventilated SICU patients?

A Hospital acquired pneumonia

B: Aspiration

C: Ventilator-associated pneumonia

D: Hypercapnia

What is the dose and frequency of chlorhexidine mouthwash in mechanically ventilated SICU patients?

A 2.0%, 15 mL 2 times weekly

B 0.12%, 15 mL 2 times daily

C 0.12%, 45 mL 2 times daily

D 2.0%, 30 mL 1 time daily

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-370 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF PHARMACISTS INTERVENTION ON INPATIENT ANTIRETROVIRAL THERAPY-RELATED MEDICATION ERRORS IN HIV-INFECTED PATIENTS

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Statement of Purpose:□This study was undertaken to identify medication errors in the prescribing of antiretroviral therapy (ART) to HIV infected inpatients and to assess the impact of daily chart review and intervention by an HIV trained clinical pharmacist on the severity of medication errors.□□Statement of Methods Used:□HIV-infected patients of at least 18 years of age admitted to Indiana University Health Methodist Hospital and prescribed antiretroviral medications between April 1st 2009 and April 30th 2013 were assessed. Incarcerated patients laboring women, and newly diagnosed patients initiating combination antiretroviral therapy as inpatients were excluded from the study. Demographic data, CD4 T-cell count, viral load, current antiretroviral regimen, opportunistic infection (OI) prophylaxis regimen, months since HIV diagnosis, months on current outpatient ART, and concomitant medications ordered while inpatient were collected retrospectively. ART and OI prophylaxis medication errors were defined as a dosing error, omission, prescribing error, lack of dose adjustment (renal or hepatic), use of contraindicated drug-drug combination, discharge error or other error. The severity associated with each error was categorized using the NCC MERP Index for Categorizing Medication Errors. Severity of ART and OI prophylaxis error was compared between patients from before and after initiation of HIV specialized clinical pharmacist profile review in 2011.□□Summary of (Preliminary) Results to Support Conclusion:□Data analysis is ongoing. Final results will be presented.

Learning Objectives:

Identify the common types of antiretroviral therapy-related medication errors that can occur when an HIV-infected patient is admitted to a hospital.

Describe the risks associated with inpatient ART medication errors.

Self Assessment Questions:

Which of the following is a common type of medication error that occurs in HIV-infected patients admitted to a hospital?

A Drug omission.

B: Drug interaction.

C: Incorrect dose.

D: All of the above.

Which of the following could result from inpatient ART medication errors

A Reduced ART exposure resulting in the development of viral resist

B Improved patient compliance to ART regimen.

C Drug-drug interaction leading to increased exposure and toxicity.

D Both A and C.

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-691 -L02-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE EFFICACY OF ONCE WEEKLY DAPSONE DOSING FOR PCP PROPHYLAXIS POST-TRANSPLANTATION

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PURPOSE: Pneumocystis jiroveci pneumonia, previously P. carinii pneumonia (PCP) remains an important pathogen and opportunistic infection among solid organ transplant recipients. Current practice guidelines recommend trimethoprim-sulfamethoxazole (TMP-SMZ) as the drug of choice for prophylaxis against PCP. However, some patients require use of an alternative agent. Dapsone is often used as a second line agent for PCP prophylaxis and is typically dosed at 50-100mg once daily. In 2005, the University of Kentucky (UK) Transplant Center implemented a novel dosing regimen of once weekly dapsone dosing of 100mg as an alternative for patients with contraindications or intolerability of TMP-SMZ. The purpose of this study is to compare the efficacy of once weekly dapsone dosing to TMP-SMZ in preventing PCP post-transplantation. □□METHODS: A single-center, case-control, retrospective chart review of adults who received kidney or liver transplants at the study institution from January 2005-December 2012 will be conducted. Patients who received combined organ transplants in addition to those on alternative dapsone dosing regimens or PCP prophylaxis agents will be excluded. Study participants will be matched based on age at time of transplant, primary diagnosis, and gender. Primary endpoint assessed will be the diagnosis of PCP at 6 and 12 months post-transplant. Secondary endpoints include: diagnosis of other breakthrough infections, hospitalization at 6 and 12 months post-transplant, hospital length of stay, intensive care unit admission, and requirement of mechanical ventilation. Categorical data will be analyzed using the Chi-square or Fishers exact test while a students t or Mann Whitney U test will analyze continuous variables with an alpha significance level of 5%.□□RESULTS/CONCLUSION: 246 patients (123 cases; 123 controls) were included in the final data analysis. 164 (66%) patients were kidney transplant recipients while the remaining 82 (34%) patients received liver transplants. Final results and conclusion are pending completion of data collection.

Learning Objectives:

Discuss current guideline recommendations and alternative regimens fo PCP Prophylaxis

Explain the role of dapsone in PCP prophylaxis in solid organ transplant recipients

Self Assessment Questions:

All of the following are side effects that may require switching a patient from TMP-SMZ to dapsone except:

A Increased serum creatinine

B: Hypokalemia

C: Bone marrow suppression

D: Rash

The use of dapsone is contraindicated in what patient population?

A Sickle cell anemia

B Stage IV heart failure

C G6PD deficiency

D End-stage renal disease

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-371 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

JUSTIFICATION AND IMPLEMENTATION OF AN AMBULATORY ONCOLOGY PHARMACY PRACTICE

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The purpose of this project is to identify opportunities to enhance patient care by expanding ambulatory oncology pharmacy services in the University of Wisconsin Hospital and Clinics (UWHC) Carbone Cancer Center and to develop a business plan for justification of the addition of oncology pharmacists to these clinics.□□Literature search and gap analyses of current UWHC oncology services have been performed. Combining this information with input from oncology pharmacists and clinic personnel, opportunities to expand supportive care will be targeted and protocols established to define the pharmacist role within the clinic. □□

Early data collection led to three initial target areas. First, anticoagulation, as a retrospective review of warfarin management within the Carbone Cancer Center displayed a time-in-therapeutic-range below 60% versus greater than 80% for UWHC pharmacist-run anticoagulation clinics. The second target area will be bone marrow transplant (BMT). Initial focus in BMT clinic will be twofold: optimizing patient education (as BMT medication education is currently presented post-procedure to patients in a less-than-ideal state for comprehension or retention) and expediting planned BMT admissions (due to retrospective data showing mean time from admission to initiation of chemotherapy to be greater than 9 hours at UWHC). Finally, based on a review of UWHC 30-day hospital readmission reports in which oncology patients accounted for the highest proportion of such readmissions (20.5%), largely due to uncontrolled side effects of therapy, the final target will be symptom management. Additionally, these focus areas align well with intervention data compiled from PGY2 oncology resident clinic experiences in which symptom management, dose conversion, and patient education were the most frequent areas in which pharmacists intervened (28.2%, 15.2% and 13.0%, respectively).□□Based on this data, previous literature, and input from current oncology personnel, the main areas of initial pharmacist focus will be symptom management, anticoagulation, and patient education.

Learning Objectives:

Discuss the benefits of incorporating pharmacists into outpatient oncology clinics that have been shown in the literature as well as those initially targeted in this project

Identify the strategies utilized to justify the return on investment of the addition of a pharmacist

Self Assessment Questions:

Which of the following is one of the initial target areas for the proposed clinic pharmacist position?

A Pharmacist-run anemia clinic

B: Improved anticoagulation management of clinic patients

C: Implementation of a dose rounding protocol

D: Pharmacist chemotherapy order entry

Which of the following served as the greatest barrier to implementation of this project?

A Support from clinic staff

B Financing for an additional pharmacist

C Lack of pharmacists trained to fill the position

D Lack of potential benefit of the addition of a pharmacist to the clini

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-740 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EMERGENCY DEPARTMENT PHARMACISTS IMPROVING THE MANAGEMENT OF ACUTE EXACERBATION OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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Purpose: Acute exacerbation of chronic obstructive pulmonary disease (AECOPD) accounts for 1.5 million emergency department (ED) visits in the United States per year. The American Society of Health-Systems Pharmacist states that pharmacists responsibilities in the ED include performing consults, recommending appropriate pharmacotherapy, patient counseling and documentation of interventions. Guidelines for the treatment for AECOPD recommend the administration of bronchodilators and systemic steroids. If patients present with symptoms suggestive of infection, antibiotic administration is also recommended. Likewise, proper inhaler use should be evaluated and reinforced. Preliminary data from our hospitals ED demonstrate that only 48% of patients with AECOPD were appropriately managed according to these guidelines. Additionally, there was an opportunity to assess inhaler technique, provide inhaler education and increase the number of prescriptions filled by the hospitals outpatient pharmacy at discharge from the ED. The purpose of this study was to improve management of AECOPD in the ED, provide inhaler education and increase the hospitals capture of ED discharge prescriptions. Methods: Patients 18 years and older who presented to the ED with a history of COPD and a chief complaint of shortness of breath were included in the study. A prospective quasi-experimental observational study was employed to assess the impact of an ED pharmacists role in improving AECOPD treatment in the ED and upon discharge from the ED. Pharmacists were responsible for assessing AECOPD therapy for appropriateness, assessing and educating patients on their inhaler use and contacting the outpatient pharmacy when a patient needed a prescription filled. Data was collected to assess the appropriateness of AECOPD therapy, the number of patients who underwent inhaler teaching and the number of patients who had their medications filled by the outpatient pharmacy. Results: Data and conclusions will be presented at the Great Lakes Residency Conference

Learning Objectives:

Identify opportunities to improve the treatment of AECOPD in the ED

Define potential roles for the ED pharmacist to impact the management of COPD in the ED

Self Assessment Questions:

Which of the following statements is true?

A All patients with AECOPD should receive antimicrobial therapy.

B: Use of steroids is not recommended in the treatment of AECOPD

C: In patients with AECOPD, antibiotics should be preserved for patie

D: There is no place in therapy for antibiotics in the management of A

According to ASHP guidelines, ED pharmacists should be performing al of the following responsibilities except:

A Taking verbal orders

B Providing documentation of interventions

C Patient counseling

D Recommending interventions to improve the medical managemen

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-741 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ANTIBIOTIC COST SAVINGS ASSOCIATED WITH COST VISIBILITY IN THE ELECTRONIC MEDICAL RECORD

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Purpose: Medication costs can contribute significantly to the cost of healthcare. "Create the Future Now" (CFN) at The Ohio State University Wexner Medical Center (OSUWMC) is a recent initiative with the overarching goal of developing new programs to create a more efficient, value-driven medical center. Currently, there is no literature evaluating the impact of a passive antibiotic cost visibility tool on antibiotic prescribing. As part of the CFN initiative, we developed an observational study to evaluate the impact of a cost visibility tool that displays relative antibiotic cost upon order entry into the OSUWMC electronic medical record. This study will evaluate the impact of antibiotic cost visibility using antibiotic cost per 1000 patient days adjusted for case mix index during three timeframes: pre-CFN (November 2011 to October 2012), post-CFN (November 2012-May 2013) and post-cost visibility tool implementation (June 2013-December 2013). Methods: We will conduct a segmented regression analysis of interrupted time series data to evaluate the impact of an antibiotic cost visibility tool in the OSUWMC electronic medical record. Antibiotic administrations and cost will be identified using the OSUWMC Antimicrobial Datamart, a database aggregating historical antimicrobial use information. Monthly cost of the statin drug class, a group unaffected by the CFN initiative and cost visibility tool, will be used as a "comparator" group. The cost visibility too is posted on the OSUWMC intranet and the number of views will be evaluated. Subgroup analyses will be performed by hospital service and unit utilizing the same methodology. Results: Results and conclusions are pending and will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the process of developing and implementing a passive educational tool to enhance awareness of antibiotic cost

Discuss the impact of an antibiotic cost visibility tool on antibiotic prescribing

Self Assessment Questions:

When evaluating current literature, what type of intervention has demonstrated the most consistent success?

A Active cost visibility interventions

B: Passive cost visibility interventions

C: Neither intervention has been successful

D: Both interventions have demonstrated equal success

When assessing the impact of an antibiotic cost visibility tool on antibiotic prescribing, which of the following could potentially confound the data:

A Seasonality

B Patient Severity Scores

C Contract price changes

D All of the above

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-742 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

PRIMARY PREVENTION IN WOMEN WITH PERI-PARTUM RISK FACTORS FOR CARDIOVASCULAR DISEASE: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Purpose: Cardiovascular disease (CVD) is the leading cause of morbidity and mortality for women in the United States, however, significant gender bias exists with regard to awareness and treatment. This became increasingly evident from findings of the 2006 American Heart Association womens health questionnaire. Launched to assess womens perceptions of their greatest health risks, over half of women surveyed identified CVD as the leading cause of death for women, however the majority answered that breast cancer was their greatest health concern. Gaps in perception have become significant barriers to early identification and treatment of women. Gestational diabetes (GD) and pre-eclampsia/eclampsia are two key gender differences that predispose women to developing diabetes mellitus, ischemic heart disease or chronic hypertension later in life, thereby increasing their risk for developing CVD. The aim of this study is to identify effective primary prevention strategies for women with peri-partum risk factors for CVD.□Methods: A meta-analysis and systematic review of literature wil be conducted to identify effective primary preventions strategies in women with peri-partum risk factors for CVD. The article search strategy will include a comprehensive search in Medline using the following search terms: pre-eclampsia, eclampsia, gestational diabetes, primary prevention, women and cardiovascular disease. Studies included will be randomized control studies, cohorts, case-control, cross sectional and case studies. Additional studies will be sought by reviewing the reference lists of eligible studies. Criteria defined by Juni et al will be used to evaluate the methodological quality of included randomized control trials and a modified New-castle Ottawa scale will be used to assess the quality of the cohorts. Two reviewers will evaluate the eligibility of each study in duplicate and will work independently. RevMan software will be utilized for data extraction within individual studies.□Preliminary results and conclusion: to be presented.

Learning Objectives:

Identify gaps in understanding of cardiovascular disease prevention in women with peri-partum risk factors.

Describe evidence-based treatments for the primary prevention of cardiovascular disease in women with gestational diabetes and/or eclampsia.

Self Assessment Questions:

Which of the following is a risk factor for CVD in women but not men?

A Smoking
B: Eclampsia
C: Obesity
D: Hypertension

Which of the following interventions has been shown with a high level of evidence to prevent CVD in women with eclampsia or GD?

A Aspirin
B Lisinopril
C Hydrochlorothiazide
D Lifestyle Modifications

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-372 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE RELATIONSHIP BETWEEN OBESITY AND TREATMENT OUTCOMES IN PNEUMONIA, SKIN AND SOFT TISSUE INFECTION, AND URINARY TRACT INFECTION

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Obesity has been documented as a risk factor for increased susceptibility to several types of infections. Increased adiposity induces a pro-inflammatory state which leads to altered immune cell function and impaired immune response. Few studies have examined treatment outcomes for infections in the overweight and/or obese population. The purpose of our study is to analyze treatment outcomes for pneumonia, skin and soft tissue infection, and urinary tract infection in overweight and obese patients to identify whether increasing body mass index (BMI impacts antibiotic exposures. The study protocol has been approved by our affiliated institutional review boards. This is a non-interventional, retrospective cohort study of patients treated at a large community research and teaching hospital in metropolitan Detroit. We are evaluating infection outcomes in patients in different BMI categories (BMI of 25-29.9 kg/m2 is overweight, 30-39.9 kg/m2 is obese, and 40 kg/m2 or greater is severely obese). We have identified 112 patients who meet inclusion criteria, of which 50% are male and the average age is 65 years old. Data collection has been fully completed on 27 patients, of which 4 (15%) have chronic kidney disease, 12 (44%) have diabetes, 2 (7%) have asthma and 7 (26%) have COPD. Primary outcomes include inpatient and 30-day all-cause mortality, inpatient length of stay, infection resolution, and readmission. Patient demographics and clinical characteristics will be evaluated using univariate analysis. For primary outcome analysis, multiple logistic regression will be applied, with the two main variables being BMI (independent) and treatment outcome (dependent). This study may provide insight into antimicrobial dosing fo infections in this patient population.

Learning Objectives:

Recognize the impact of obesity on the immune response to infection.

Describe the pharmacokinetics and pharmacodynamics of antimicrobial agents in obese patients.

Self Assessment Questions:

Which of the following statements regarding the immune response in obese patients is correct?

A Obesity has been shown to promote thymic aging and decrease T
B: White adipose tissue in obese patients produces excess amounts
C: A and B
D: Obese patients display enhanced absorption of vaccines which inc

Which of the following is true regarding antimicrobial pharmacokinetics in obese patients?

A Obese patients may experience a higher Cmax and increased abs
B The volume of distribution (Vd) of most lipophilic drugs increases i
C Obesity results in a baseline general decrease in renal clearance
D All antimicrobial agents require more frequent dosing in obese pat

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-373 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF A PHARMACIST DRIVEN INSULIN EDUCATION PROGRAM ON INTERNAL MEDICINE RESIDENT KNOWLEDGE

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Background: Diabetes mellitus (DM) affects over 25 million people in the United States. Insulin is the treatment of choice for management of type 1 DM, and an option for initial therapy in type 2 DM.With the rise in DM, physician knowledge of insulin regimens will continue to grow in importance. Pharmacists have long been involved as educators in medical resident training programs, although data evaluating the outcomes is limited. Purpose: This study will assess the knowledge of Internal Medicine residents on insulin pharmacokinetics, and insulin and syringe prescribing before and after an educational session provided by a pharmacist. Methods: Medical residents will be given a multiple choice pre-test. The pre-test will assess their knowledge of insulin pharmacokinetics and of prescribing insulin and syringes, and comfort level with insulin pharmacokinetics and writing insulin prescriptions. Following the pre-test, during the first week of rotation, the pharmacist will provide a group educational session reviewing insulin pharmacokinetics and correct prescribing of insulin and syringes to residents. A post-test will be given immediately after session to assess if the education improved insulin regimen knowledge, it will then be repeated during the last week of the rotation to assess retention of knowledge. This process will be repeated for four consecutive months so all residents on the clinic rotation can be included. Descriptive analysis will be conducted to evaluate the objectives. A paired difference test will be used to assess if a statistical difference exists between the pre-test and each of the post-tests. Results/Conclusion: This study is under investigation with results and conclusions to be presented as Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recognize the importance of correct insulin prescribing to improving patient safety and glycemic control.

Discuss the pharmacists role in the education of Internal Medicine residents.

Self Assessment Questions:

Nearly fifty percent of medical errors made by first year medical residents as due to:

A Deficits in clinical knowledge

B: Lack of access to medical references

C: Lack of access to other healthcare professionals

D: Time constraints

Involving pharmacist as teachers of medical residents leads to improvement in which of the following:

A Resident knowledge

B Resident collaboration with pharmacists

C Resident efficiency in ordering medications

D A and B

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-374 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

12 VS. 24 HOUR METHOTREXATE INFUSION AND ASSOCIATED NEPHROTOXICITY IN PATIENTS RECEIVING HYPER CVAD.

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Purpose: High dose methotrexate (MTX) is a component of the Hyper-CVAD treatment protocol and is a standard of care for adult Acute Lymphoblastic Leukemia (ALL) and highly aggressive lymphomas. Administration of MTX has been associated with acute kidney injury (AKI), and occurs more frequently with higher doses and shorter infusions. There is a lack of data looking at the optimal infusion duration October 2012, University Hospital changed from 24 hour infusions of 1000 mg/m2 MTX to 12 hour infusions. Initial laboratory assessments did not show increased MTX accumulation, increase incidence of MTX associated side effects, or reduced response rates. The primary aim of this study is to compare the rates of MTX associated AKI in patients who received 12 and 24 hour infusions. Methods: Patients with highly aggressive lymphomas or acute ALL who received Hyper CVAD protocol treated at University Hospital with at least a baseline and one post MTX administration serum creatinine (SCr) value were included in the study. Patients were excluded from the study if at baseline they had renal dysfunction (SCr > 1.5) or if they have Ph+ disease. Patients from each group were matched based on primary diagnosis, height, age, weight, gender, and baseline SCr. Methotrexate induced AKI is defined as an increase in SCr of greater than 0.5 mg/dL or 50% increase from baseline. Secondary outcomes include progression free survival (PFS), overall rate of survival, and readmission rates. Results: Data collection and result analysis is ongoing. Final results and conclusions of patients included in this study will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Recognize the risks associated with methotrexate induced nephrotoxicity to the patient and the health system.

Explain the possible advantages of administering methotrexate over 12 hour rather than 24 hours during Hyper CVAD treatment.

Self Assessment Questions:

Which of the following are renally cleared?

A Methotrexate parent compound

B: 7-hydroxy-methotrexate

C: 2,4-diamino N10-methypteroic acid

D: All of the above

Kantarjian et al. reported a rate of combined renal and hepatic toxicities as 2% with which of the following regimens?

A 2 hour bolus, followed by 24 hour infusion of methotrexate

B 2 hour bolus, followed by 22 hour infusion of methotrexate

C 2 hour bolus, followed by 12 hour infusion of methotrexate

D No bolus, followed by 24 hour infusion of methotrexate

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-375 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF THE EFFICACY OF MAINTENANCE VITAMIN D REGIMENS AMONG ELDERLY VETERANS

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Purpose: Anecdotally, it has been noted that patients at Hines VA repleted with treatment doses of ergocalciferol 50,000 IU weekly become vitamin D insufficient on maintenance dosing regimens over time. Patients at Hines VA are often put on one of three different regimens for vitamin D maintenance therapy: ergocalciferol 50,000 IU monthly, cholecalciferol 2,000 IU daily, or cholecalciferol 1,000 IU daily, based on literature and physician preference. The purpose of this study is to compare the percent of patients who fail each of the three specified maintenance vitamin D regimens in order to evaluate the efficacy of these regimens on maintaining therapeutic 25-hydroxyvitamin D (25OHD) levels over time. Methods: This study is a retrospective chart review of Hines VA patients age 65 years or older started on one of three maintenance vitamin D regimens (ergocalciferol 50,000 IU monthly, cholecalciferol 1,000 IU daily, or cholecalciferol 2,000 IU daily) between March 2012 and September 2013. Patients will be included if they had previously received treatment with weekly ergocalciferol and had a documented plasma 25OHD level ≥30 ng/mL. The primary outcome is to compare the percent of patients in each group whose plasma 25OHD level falls below 30 ng/mL. Secondary outcomes will include evaluation of serum calcium, ionized calcium, albumin, parathyroid hormone, and phosphorus levels in order to assess the safety of each maintenance regimen. Patient weight will be assessed to evaluate the correlation between weight and 25OHD levels. A subgroup analysis on patient compliance will be performed by collecting refill data and calculating the medication possession ratio. Results: Data collection currently in progress Conclusion: To be presented

Learning Objectives:

Describe the potential benefits of vitamin D repletion in the elderly population

Identify commonly used vitamin D maintenance dosing regimens

Self Assessment Questions:

Which of the following is a potential health benefit of adequate vitamin D levels?

A Decreased risk of renal failure

B: Decreased risk of fracture

C: Decreased risk of pancreatitis

D: Decreased risk of liver failure

Which of the following is a commonly used maintenance vitamin D dosing regimen?

A 10,000 IU ergocalciferol weekly

B 50,000 IU ergocalciferol weekly

C 500 IU cholecalciferol daily

D 2,000 IU cholecalciferol daily

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-376 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ESTABLISHMENT OF COMMUNITY PHARMACY IMMUNIZATION SERVICES AND PHARMACIST IMPACT ON ADULT VACCINATION RATE

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Background: Adult vaccination rates remain below public health goals. Despite the wide availability of effective vaccines, many adults are still adversely affected by vaccine-preventable diseases. Pharmacists can play a significant role in improving vaccination rates through advocacy, patient education, facilitation of immunization practice, and vaccine administration. Froedtert and the Medical College of Wisconsin has set strategic goals to improve vaccination rates. Pharmacists practicing in ambulatory clinics and retail pharmacies at Froedtert are well positioned to assist in achieving vaccination goals. The health-system has ten retai pharmacy locations; however, only one is currently offering immunizatio services. Additionally, there is no process in place to bill Medicare Par D for herpes zoster which significantly impacts the ability to offer this vaccine. Purpose: The purpose of this project is to improve overall vaccination rates and increase the availability of vaccines, specifically herpes zoster, through pharmacist participation in immunization screening, ordering and administration in the ambulatory and retail settings. Methods: This is a prospective, interventional pilot project implemented in three community pharmacies and one ambulatory clinic. Interventions include pharmacist-prescriber collaborative practices for ordering and administering of vaccines, establishment of vaccination services at Froedtert community pharmacies, and standardized immunization screening and documentation. Pharmacists will document immunization recommendations with a standard note type in the electronic medical record and recommend appropriate vaccinations to be administered at clinic appointments. Vaccine administration in the community pharmacies will begin as a pilot project targeting the herpes zoster vaccine. The primary outcome of the project will be adult vaccination rate for herpes zoster. Additional outcomes measured will be number of patients screened by pharmacists, number of vaccines administered in the community pharmacies, number of vaccines recommended but declined, and a financial impact analysis. Results and Conclusion: Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the process of implementing immunization services and collaborative practice agreements that allow pharmacist to prescribe anc administer vaccines

Discuss the unique challenges and benefits of community pharmacy vaccine administration.

Self Assessment Questions:

Which of the following statements is true?

A The herpes zoster vaccine is covered by Medicare Part B

B: The herpes zoster vaccine is covered by all private insurance plan

C: The herpes zoster vaccine is covered for all patients over age 50

D: The herpes zoster vaccine is covered by all Medicare Part D plans

The APhA Pharmacy-Based Immunization Delivery training program requires how many hours of live instruction?

A 12

B 8

C 20

D 3

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-743 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFECTIVENESS OF A COMMUNITY PHARMACIST-PROVIDED WEIGHT MANAGEMENT PROGRAM

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Purpose: To determine the effects of a community pharmacist-provided weight management program on patient weight, waist circumference, and body mass index. Secondary objectives include identifying the number and nature of medications potentially contributing to weight gain in patients entering into a weight management program and changes in patient cholesterol, blood glucose, and blood pressure after participation in a weight management program. Methods: A 12-week pharmacist-provided weight management program will be implemented at three supermarket pharmacies. Study participants will be identified during annual employee wellness screenings. Inclusion criteria: associate or spouse with company-provided insurance, at least 18 years of age, non-pregnant, and body mass index greater than or equal to 25.0 kg/m2. Subjects will meet bi-weekly with a pharmacist for a total of seven visits. Each consultation will include targeted education on selected topics including goal setting, reading nutrition labels, and meal planning. Additionally, waist circumference and weight will be measured during each consultation. Pharmacists will perform a targeted medication review during the second visit to track and intervene on medications known to contribute to weight gain. Blood pressure, total cholesterol, high-density lipoprotein, and random blood glucose will be measured at baseline and at 12 weeks. Descriptive statistics will be used to assess changes in the patient population from baseline after participation in the weight management intervention. Summary of (preliminary) results: Study participants have been identified and are currently being enrolled in the program. Conclusions: As the emphasis of healthcare shifts towards wellness and prevention, community pharmacists should develop and provide programs for those areas of healthcare. Weight management is an integral component of patient wellness, and community pharmacists are well positioned to provide unique weight management programs due to their accessibility, medication expertise, and strong patient relationships.

Learning Objectives:

Identify the strengths of a weight management program in the community pharmacy.

Describe the essential components of a pharmacist-provided weight management program.

Self Assessment Questions:

Which of the following is a strength of a weight management program in the community pharmacy setting?

A Pharmacists are a trusted drug-information resource

B: Pharmacist overlap is required to meet with patients

C: Community pharmacists are inaccessible to patients

D: Community pharmacies have a large patient base

Which essential component of a pharmacist-provided weight management program is likely to be unique compared to commercialized weight management programs?

A Targeted medication review

B Selected educational topics for discussion

C Low-calorie diet

D One-on-one consultations

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-377 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF A NEW AUTOMATED DISPENSING CABINET RESTOCKING SYSTEM: A PILOT STUDY

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Purpose: The purpose of this project is to evaluate the use of enhanced inventory control functionality to improve automated dispensing cabinet (ADC) inventory management. Methods: Two interventional groups and one historical control were included in the pilot study. Each intervention group consisted of six ADCs that tested enhanced inventory management functionality. The two intervention groups were determined based on baseline number of daily stock-outs, geographic location, nursing unit level of care, and patient census. The intervention in the first group consisted of a dynamic inventory control software which adjusted inventory standards based on historical utilization. Inventory capacity was assigned for each medication in each available ADC pocket size to support the dynamic inventory platform. The second intervention group consisted of a critical low inventory alert system which triggered an immediate restock request when inventory levels dropped below a pre-defined threshold. Pharmacy staff workflow adjustments were determined to support both intervention groups. Following the separate implementation of each platform, dynamic inventory and critical low alert system were applied concurrently to all twelve ADCs. Baseline data were collected for three months prior to implementation. Post-intervention data were collected for two weeks following a one week transition period that allowed for workflow adjustments. Data were collected using automated decision support software and self-report from technical staff. Outcome measures included number of daily stock outs, turn-around time for restocking, inventory turns, on-hand inventory value, and number of phone calls received by pharmacy staff related to stock-outs.

Summary of results: Results will be presented at the Great Lakes Pharmacy Residency Conference. Conclusions: Conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe current ADC inventory management practices.

Describe the advantages and disadvantages of dynamic restock inventory levels and critical low alerts.

Self Assessment Questions:

Applying peak utilization to determine inventory standards would be most appropriate for which type of medication?

A High use, low variability

B: High use, high variability

C: Low use, low variability

D: High cost

Which of the following is a goal of utilizing critical low alert software?

A Decreased FTE requirements

B Decreased inventory carrying costs

C Decreased stock-outs

D Decreased capital requirements

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-744 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

OPTIMIZING THE TRANSITION OF CARE TO OUTPATIENT PARENTERAL ANTIMICROBIAL THERAPY

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Purpose: The focus of this project is on identifying patients who were discharged from the hospital on Outpatient Parenteral Antimicrobial Therapy (OPAT) without an Infectious Diseases (ID) consult, and the clinical outcomes of these patients. The objective is to develop and implement new policies and procedures for patients being discharged or OPAT with the overall goal to optimize antimicrobial therapy and monitoring plans, minimize adverse effects and complications, decrease hospital readmissions, and enhance patient satisfaction. Methods: This study is a retrospective review of patient medical records at Froedtert Hospital. Patients were identified if they were discharged from the hospital on parenteral antimicrobials without an ID consult. The timeframe of the collected data was between September 2012 and September 2013. Patients identified as being discharged on OPAT without an ID consult and who received follow up by Froedtert Hospital after discharge were further evaluated by individual chart review to gather information about safety, efficacy, and optimal regimen choices, in addition to clinical outcomes of these patients. Results: The initial review revealed 350 of the 978 patient discharged on OPAT did not receive an ID consult before discharge. The most common antimicrobials prescribed were vancomycin (31%), cephalosporins (26%), and carbapenems (22%). Data collection and evaluation are currently being conducted. The results of this study will be presented at the Great Lakes Conference. Conclusion: This project will provide a site specific assessment of recent OPAT courses and the clinical outcomes. Results of the data analysis will be used to propose a policy and procedure for hospitalized patients discharged on OPAT and will help determine what necessary requirements need to be included in the policy; one of which may include requiring a mandatory ID consult prior to discharge.

Learning Objectives:

Describe the potential interventions that can be made by an ID consult.

Discuss the potential problems patients can have being discharged on OPAT who may not necessarily need extended IV therapy.

Self Assessment Questions:

What were the most commonly prescribed antimicrobials for patients discharged on OPAT at Froedtert Hospital?

A Vancomycin

B: Cephalosporins

C: Carbapenems

D: Penicillins

What was the most common service line prescribing OPAT without an ID consult?

A Transplant Surgery

B Orthopedics

C Internal Medicine

D Hospitalists

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-378 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF ANTIMICROBIAL SURGICAL PROPHYLAXIS REGIMEN CHOICE ON LEFT VENTRICULAR ASSIST DEVICE-RELATED INFECTIONS

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Purpose: In patients undergoing implantation of a left ventricular assist device (LVAD), infection remains a major complication associated with increased morbidity and mortality. However, there is a lack of consensus on optimal antimicrobial surgical prophylaxis for this population. The objective of this study is to determine if there is a difference in device-related post-operative infections in patients who received a cefepime-based surgical prophylaxis regimen versus those who received a cefazolin-based regimen. Methods: Patients who were admitted for implantation of a LVAD between April 2009 and October 2013 were screened for inclusion in this retrospective study. Patients were stratified into 2 groups based on whether they received cefepime o cefazolin pre-operatively. Device-related infection was defined as positive culture with involvement of the pump/cannula, surgical site, driveline, pump pocket, endocarditis, mediastinitis, or bacteremia that required treatment with antimicrobials. A secondary objective was to determine if pre-operative antimicrobial surgical prophylaxis doses were given in accordance with Surgical Care Improvement Project (SCIP) guidelines with respect to timing of doses prior to surgery. Results: To date, 14 patients in the cefepime group and 6 patients in the cefazolin group have been evaluated. Baseline demographics between the groups were similar. Preliminary data showed no significant difference in infection rates between the groups at 30 days (7% vs. 17%, p= 0.52) and 90 days (7% vs. 17%, p= 0.25) post-implantation. In regards to timing of pre-operative doses, preliminary data showed 64% of patients in the cefepime group and 17% of patients in the cefazolin group were given pre-operative antimicrobial prophylaxis doses outside of the timeframe stated in the SCIP guidelines. Conclusions: In patients undergoing implantation of LVADs, the number of device-related infections is similar in patients who received either cefepime or cefazolin for surgical prophylaxis. Timing of antimicrobial doses prior to surgery is an area for improvement.

Learning Objectives:

Identify risk factors for infection associated with implantation of left ventricular assist devices.

State the recommended timeframe for administering pre-operative antimicrobials for surgical prophylaxis.

Self Assessment Questions:

Which of the following is a risk factor for infection associated with implantation of a left ventricular assist device?

A Delayed sternal closure

B: Extended mechanical ventilation

C: Re-dosing of prophylactic antimicrobials during surgery

D: Advanced heart failure

What is the recommended timeframe for administration of pre-operative antimicrobials for surgical prophylaxis?

A Cefepime: within 120 minutes prior to incision

B Vancomycin: within 180 minutes prior to incision

C Cefazolin: within 60 minutes prior to incision

D Vancomycin administered after the first incision

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-745 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATING HEALTHCARE PROFESSIONALS PERCEPTIONS REGARDING INADVERTENT DISPENSING OF DISCONTINUED MEDICATIONS

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Background: A study conducted at Harvard Vanguard Medical Associates assessed the frequency of pharmacies dispensing discontinued medications. The investigators found that 1.5% of medications that were electronically discontinued were still dispensed at the pharmacy during a 12-month follow-up and 34% of these met criteria for higher risk for potential adverse events. The phenomenon of dispensing of discontinued medications has been documented, but the reason for why these errors occur is not yet known. Statement of Purpose: To identify healthcare professionals perceptions of their responsibilities associated with dispensing of discontinued medications. Secondary objectives are to evaluate the misconceptions regarding use of electronic medical records and to assess the perception of healthcare professionals on patient awareness of discontinued medication. Methods: This is a prospective, survey-based study. The survey will assess participants' perceptions, knowledge and understanding of discontinuing medications and e-prescribing. Participants will include outpatient prescribers and pharmacists practicing within the health system. Potential study participants will be recruited through e-mail blasts sent to healthcare professionals on the health system's list serves. The e-mail blast will include a link to the survey with a brief description of the study objectives. The survey engine, Qualtrics, will be utilized to collect responses. Participants will be sent the survey at the beginning of week 1 with a deadline of 8 weeks to respond. Reminders will be sent periodically throughout the 8 weeks. The survey will capture basic demographic information about each participant and responses will remain anonymous. Survey questions will be primarily formatted using a Lickert scale. Data collection will be completed within two months from start date and data analysis will occur thereafter. Results: This project is currently in the phase of data collection. Conclusion: This project will determine the misconceptions regarding dispensing of discontinued medications and electronic prescribing and provide insight into necessary education for prescribers and pharmacists.

Learning Objectives:

Discuss possible reasons for inadvertent dispensing of discontinued medications at the pharmacy.

Identify areas for improving communication between prescribers and pharmacies regarding discontinued medications.

Self Assessment Questions:

If a discontinued medication is dispensed from the pharmacy, what is the result?

A Increased cost

B: Increased potential for adverse reactions

C: Increased risk for drug-drug interactions

D: All of the above

What are the possible ways to notify a pharmacy of a discontinued medication?

A Educating the patient

B Calling the pharmacy

C Discontinuing the medication in the EMR

D Both A and B

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-889 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

ANALYSIS OF CLINICAL AND ECONOMICAL OUTCOMES OF FIDAXOMICIN USE FOR CLOSTRIDIUM DIFFICILE INFECTIONS

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Purpose: Clostridium difficile infections (CDI) result in considerable morbidity and mortality. With more than 336,000 CDI cases reported in 2009 and the emergence of the hypervirulent NAP1/BI/027 C. difficile strain, there is great incentive to identify effective antimicrobial treatmen options. Fidaxomicin is a novel agent with bactericidal activity against C difficile, and its use may help achieve CDI resolution and prevent recurrence. The purpose of this study is to examine the use of fidaxomicin at the St. Vincent Indianapolis hospital and to assess the clinical and economical benefits its use provides. Methods: This retrospective matched cohort study evaluated patients with CDI who received fidaxomicin or vancomycin from March 2012-October 2013. Each adult participant who had received fidaxomicin was matched and compared to two participants who had received vancomycin. Potential participants were excluded if they had received either medication for less than two days and/or were pregnant during their hospital stay. The primary objective was clinical efficacy, defined by a composite of findings including cure or clinical improvement of CDI at discharge and no record of death nor readmission to a St. Vincent Health hospital thirty days post discharge. Secondary objectives included length of total hospital stay; length of hospital stay after initiation of CDI treatment; number of readmissions; number of readmissions related to CDI; adverse events that led to the discontinuation of therapy; amount of either fidaxomicin or vancomycin given during the treatment course; presence/development of CDI sequelae (such as ileus, toxic megacolon etc.); actual variable direct hospital cost; and actual total hospital cost. Results/Conclusion: Final results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify risk factors associated with the development of Clostridium difficile infections.

Describe the treatment options for initial episode Clostridium difficile infections currently recommended by clinical treatment guidelines.

Self Assessment Questions:

Which of the following characteristics may put patients at higher risk for the development of a Clostridium difficile infection?

A Advanced age

B: Exposure to antimicrobial agents

C: Stomach acid suppression

D: All of the above are risk factors for the development of CDI

Which of the following is not a guideline-recommended treatment option for an initial episode of a Clostridium difficile infection?

A Oral metronidazole

B Intravenous metronidazole

C Oral fidaxomicin

D Oral vancomycin

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-379 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

RATE-LIMITING STEPS IN DOOR-TO-TPA TIMES IN ACUTE ISCHEMIC STROKE

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Purpose: Tissue plasminogen activator (tPA) is the only therapy shown to improve outcomes in patients with acute ischemic stroke. The NINDS and ECASS III trials, among others, showed improved clinical outcomes for those who met inclusion criteria and presented within a time window of up to 4.5 hours. Additional studies have revealed further benefits when tPA is administered at even earlier time points. This has prompted the American Heart Association to set a goal of achieving a door-to-needle time of 60 minutes or less in at least 50% of eligible patients presenting with acute ischemic stroke. There are a variety of pre-hospital barriers such as modality of transport or recognition of stroke symptoms that prevent patients from being quickly evaluated for tPA administration. Additionally, there are several obstacles within the Emergency Department (ED) setting that have the potential to delay therapy. The purpose of this study was to analyze the barriers that delay tPA administration beyond 60 minutes within the ED of an academic medical center. Methods: A retrospective chart review was conducted from the time period of February 2011 to October 2013. Patients were included if they were admitted through the ED with a diagnosis of acute ischemic stroke and received tPA. Pertinent information recorded included: patient demographics, modality of transport, NIHSS prior to tPA administration, last known "normal", time of stroke alert page, hospital arrival time, lab draw and results time, and neurology arrival time. Data were analyzed using Wilcoxon Rank Sum Test or Students t-test for continuous data, chi-squared analysis or Fishers exact test for categorical variables, and a multivariate analysis using logistic regression were utilized to determine the impact of each factor. Results/Conclusions: Results and conclusions to be presented at Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Explain the role of tissue plasminogen activator (tPA) in ischemic stroke as discussed in the most recent guidelines and pertinent clinical trials.

Review the barriers to tPA administration prior to hospital arrival and in the Emergency Department (ED).

Self Assessment Questions:

Based on the results of the ECASS III trial, which of the following would exclude the patient from receiving tPA within the 3-4.5hour window?

A Age of 90

B: Platelets of 150,000

C: Use of aspirin

D: NIHSS Score of 15

Which of the following are potential in-hospital delays to tPA administration?

A Delay in stroke team activation

B CT scanner availability

C Transportation to the ED

D Both A and B

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-380 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARISON OF DIABETES MANAGEMENT BY PHARMACISTS TO USUAL CARE IN A VETERANS AFFAIRS MEDICAL CENTER: PART 1 OF 2

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Purpose: Although studies have determined that collaboration with a pharmacist leads to increased HbA1c lowering, there is little information regarding independent management of Type 2 Diabetes Mellitus (T2DM) by a pharmacist compared to a primary care provider (PCP). The objective of this study is to assess the management of T2DM by pharmacists versus usual care in a Veterans Affairs Medical Center.

Methods: Institutional Review Board approval has been granted. This study is a retrospective chart review comparing patients in selected primary care clinics whose diabetes is managed by the PCP to those patients who are referred to and managed independently by clinical pharmacists. A target of 400 patients will be identified via the computerized patient record system at the point of initiation of insulin or a third oral antihyperglycemic agent between January 2010 and December 2012. Data will be collected for one year from the date of initiation of the aforementioned therapies. The primary outcome is reduction in HgbA1c. Secondary outcomes include time to goal HbA1c, time at goal HbA1c, percentage of patients achieving HbA1c less than seven percent, percentage of patients achieving HbA1c less than nine percent, number of hypoglycemic and hyperglycemic events that require hospitalization, and medication adherence. Summary of Preliminary Results: Preliminary results of 125 patients reveal well-balanced baseline characteristics between the two groups. The majority of patients are white males with an average age of 60 years. Average HgbA1c reduction in the PCP group is -1.61% versus -1.47% in the pharmacist group. In the PCP group, 19% of patients achieved goal HgbA1c <7% compared with 27% in the pharmacist group.

Conclusions: To be presented at Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe long-term complications of diabetes mellitus.

Identify barriers to follow-up by physicians.

Self Assessment Questions:

Which of the following is a long-term complication of untreated diabetes mellitus?

A Osteoporosis

B: Nephropathy

C: Iron-deficiency anemia

D: Cirrhosis

Which of the following is/are barriers encountered by primary care providers in the management of diabetes?

A Long appointment times

B Familiarity with antihyperglycemic medications

C Infrequent patient visits

D Lack of applicable guidelines

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-381 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE IMPACT OF AN IMMUNIZATION NEEDS ASSESSMENT TOOL IN A COMMUNITY PHARMACY SETTING ON ADULT NON-INFLUENZA IMMUNIZATION RATES

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Purpose: To: 1) Evaluate the impact of an adult immunization needs assessment on adult vaccination rates, and 2) Assess the experience of the pharmacy staff with the implementation of an immunization needs assessment into daily workflow.□□Methods: Using The Advisory Committee on Immunization Practices current recommendations, an Adult Immunization Needs Assessment (AINA) was created to be utilized in the community pharmacy setting. Twenty-nine community pharmacy locations within a large, national grocery store chain were randomized to either usual care or to use the AINA over the study period. While dropping off prescriptions at intervention pharmacies, adult patients were asked a series of questions based on the AINA to identify potential vaccination needs. Identified needs were discussed with the patient during prescription pick-up. The pharmacist completed a short questionnaire regarding the interaction with the patient and subsequent vaccines administered. The number of non-influenza immunizations administered over a three month period will be compared to the number of immunizations administered during the same time frame in 2012-2013. Percent increase for each group from 2012 to 2013 will be compared. Additionally, pharmacy associates participating in the intervention will be asked to complete a survey regarding their experience with the implementation of the AINA into workflow. Parametric and nonparametric analysis will be used as appropriate. This study was approved by Purdue University Institutional Review Board.□□Results: To date, 1322 AINAs were returned with a total of 233 vaccines administered in the intervention group. Final results will be presented at the 2014 Great Lakes Conference in West Lafayette, Indiana.□□Conclusions: The results of this study will identify if the use of an adult immunization needs assessment is an effective method for increasing immunization rates. In addition, the methods used to incorporate this tool into daily workflow will be evaluated.

Learning Objectives:

Identify the need for health care professionals to educate adults regarding appropriate vaccinations.

Describe the methods community pharmacists can utilize to impact adul vaccination rates.

Self Assessment Questions:

What percentage of eligible adults have received the herpes zoster vaccination as of 2011?

A 30.6%

B: 15.8%

C: 42.4%

D: 7.9%

Which of the following best summarizes the ideal role of a community pharmacist in increasing adult vaccinations?

A Educate and offer

B Educate and recommend

C Recommend and offer

D Educate, recommend and offer

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-746 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

AN EVALUATION OF SHARED MEDICAL APPOINTMENTS AND THEIR EFFECTS ON ACHIEVING DIABETES MELLITUS GOALS IN A VETERAN POPULATION

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Purpose: Diabetes is a chronic disease whose epidemic proportions and management complexity threaten to overrun the acute-care oriented healthcare system. A method to increase healthcare provider access and maximize efficiency is the Shared Medical Appointment (SMA). SMAs are one of the approaches being implemented at VHA primary care sites to increase patient access, education, and support. The purpose of this study was to assess whether the diabetes SMA at the Adam Benjamin, Jr. (ABJ) Community-Based Outpatient Clinic (CBOC) is an effective and efficient practice model for achieving improvements in glycemic control. The primary endpoint will compare hemoglobin A1c (HbA1c) change from baseline to endpoint: SMA intervention group versus control group. This study will evaluate areas where other studies indicated gaps in data, provide insight into areas of improvement for the current ABJ SMA format, and provide valuable information for other programs looking to initiate SMAs.□Methods: This study will be a retrospective, electronic chart review of patients recognized as potential participants for SMAs at the ABJ-CBOC. Data will be collected from January 1, 2011-September 30, 2013 to allow for assessment of baseline and follow-up parameters. Patient lists for study inclusion will be generated from the Computerized Patient Record System (CPRS). Patients will be followed up to six months after SMA discharge, or until the last SMA in which a patient participated. The control group will be matched according to location, age, and glycemic control. The control group will have never attended a SMA at ABJ but may have received regular care from their primary care provider, clinical pharmacy specialist (CPS), and/or endocrinologist.□Results to Support Conclusion: Pending data collection□Conclusions Reached: Pending data collection

Learning Objectives:

Describe the standard SMA format.

Review the role of SMAs in the management of diabetes.

Self Assessment Questions:

Which of the following healthcare discipline(s) can participate in a SMA?

A Nurse Practitioner

B: Dietician

C: Clinical Pharmacy Specialist

D: All of the above

Which of the following is a way in which SMAs improve quality of care fo diabetic patients?

A Increasing wait time

B Increasing costs

C Increasing access to care

D Increasing provider work load

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-382 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFECT OF CONVERSION FROM INSULIN ASPART VIALS TO INSULIN ASPART PENS ON HBA1C IN VETERANS WITH TYPE 2 DIABETES

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Purpose: Diabetes is one of the leading causes of morbidity and mortality in the United States. Treatment guidelines recommend a glycosylated hemoglobin (HbA1c) goal of less than 7% in patients with type 2 diabetes to reduce rates of complications such as neuropathy, nephropathy, and retinopathy. Previously published data regarding insulin pen formulations have shown a beneficial effect on adherence, adverse events, and healthcare costs. However, there is limited data showing benefit on clinical outcomes such as lowering HbA1c. The purpose of this study is to determine the change in HbA1c 123 months after conversion from insulin aspart vials to insulin aspart pens.

Methods: This is a retrospective chart review of patients diagnosed with type 2 diabetes who were converted from insulin aspart vials to insulin aspart pens between November 2009 and November 2013. A list of patients who had orders placed for both insulin aspart vials and insulin aspart pens during this time frame will be generated. The first 169 patients who meet inclusion criteria will be included in order to detect a difference in change of HbA1c of 0.5% with 90% power and alpha= 0.05 Patient charts will be reviewed for the following information: date of conversion from insulin aspart vial to insulin aspart pen, HbA1c within the 3 months preceding conversion and 63, 123, and 243 months after conversion, diabetic medications initiated 63, 123, and 243 months post conversion, medications newly initiated post conversion with potential to effect serum glucose, and patient demographics including age, gender, height, weight, and comorbidities. Patient participation in diabetes education and MOVE classes offered at the Edward Hines, Jr. VA Hospital and involvement of clinical pharmacists in the patients diabetes management will also be collected. Results/Conclusions: Data collection in progress. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recall the clinical implications of targeting HbA1c goals in patients with type 2 diabetes.

Identify the advantages of using insulin pen formulations versus insulin vials/syringes.

Self Assessment Questions:

Achieving a patients HbA1c goal has been associated with all of the following except:

A Reduction in neuropathy
B: Reduction in hypoglycemic events
C: Reduction in nephropathy
D: Reduction in retinopathy

Which of the following are advantages of converting a patient to insulin pens?

A Improved adherence to insulin regimen
B Increased rates of hypoglycemia
C Reduction in overall healthcare costs
D Both A and C

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-383 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF AN AUTOMATED SYSTEM FOR BATCHING AND COMPOUNDING RECORDS

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Purpose: Despite the wide range of commercially available products available for purchase by hospital pharmacies, it is necessary for pharmacies to compound and prepare batches of products on site. Per Illinois state law, compounding of medications occurs when a medicatio is not commercially available and has been deemed medically necessary. Compounding includes the preparation of drugs or devices ir anticipation of receiving prescription drug orders based on routine, regularly observed dispensing patterns, which is also known as "batching." NorthShore University HealthSystem (NorthShore) maintains paper records of all compounded and batched medications fo compliance with regulatory requirements. NorthShores electronic health record (EHR) vendor has a module that will allow technicians to barcode scan all compound ingredients and store records electronically. Implementing an automated system for maintaining these records will allow for easier retrieval of this information in case of recalls and increased utility for other initiatives. This is the first step of a multi-step path toward meeting organizational goals and regulatory requirements concerning billing of products. Methods: All compounding records and lists of products routinely batched were compiled and transcribed into a database in preparation for input into the EHR. This database will be reviewed for accuracy and completeness by pharmacy management and built in the EHR by a pharmacy analyst. Testing, troubleshooting, and reporting will be completed and redesign of the current workflow and work areas will be completed. All updates to labeling and procedures as a result of this project will be in agreement with all regulatory requirements and guidelines. Training and implementation of the updated workflow will be completed at each of the four hospital sites. Success will be measured by the number of compounding recipes available for use by technicians at the completion of the project. Results/Conclusion: Implementation of the project is ongoing. Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Identify the challenges of translating from free-text compounding recipes to a database of discrete fields.

Describe strategies used to ensure a smooth transition to the new workflow and procedures through implementation and training.

Self Assessment Questions:

Which of the following pieces of information about a compounded item needs to be retrievable but is not required on the product label?

A Name of the product
B: Expiration date
C: Ingredient lot numbers
D: Product lot number

When is it allowable for pharmacies to batch prepare a medication?

A To increase revenue by selling to other pharmacies
B To give the technicians a weekend off
C In anticipation of receiving prescription drug orders based on routi
D None of the above

Q1 Answer: C Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-694 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFICACY OF BACLOFEN IN THE TREATMENT OF ACUTE ALCOHOL WITHDRAWAL

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Purpose: Acute alcohol withdrawal is a common cause of morbidity among hospitalized patients. The standard of care for treating alcohol withdrawal is benzodiazepines with variable dosing based on symptoms However, using benzodiazepines at high doses can lead to prolonged hospitalization and increased morbidity. Baclofen is a gamma-aminobutryic acid - B receptor agonist that may assist in treating alcohol withdrawal. There have been a limited number studies that show favorable outcomes when combining baclofen with benzodiazepines. The objective of this study is to determine the effect of baclofen on the total dose of lorazepam required for the treatment of acute alcohol withdrawal. Methods: This is an Institutional Review Board approved retrospective, cohort study from January 2012 to December 2013 comparing the effect of baclofen to no baclofen on the total dose of lorazepam required for acute alcohol withdrawal. Patients were included if they were 18 years of age or older and received treatment with lorazepam via the Clinical Institute Withdrawal Assessment of Alcohol revised scale (CIWA-Ar) for a documented diagnosis of acute alcohol withdrawal. Data collection included demographic information, lorazepam usage, baclofen usage, alternate sedative usage, length of time on the ventilator, critical care and hospital length of stay. Patients were divided into two groups for analysis: patients receiving baclofen and lorazepam via the CIWA-Ar scale and patients receiving only lorazepam via the CIWA-Ar scale. The primary endpoint is the total amount of lorazepam received during hospitalization. Secondary outcomes include an analysis of the length of hospital stay, time in the intensive care unit, and length of time on the ventilator. Patient identifiers were removed prior to data analysis to maintain patient confidentiality.

Results & Conclusions: Data analysis in progress, to be presented at the Great Lakes Pharmacy Resident Conference

Learning Objectives:

Describe treatment options for patients experiencing acute alcohol withdrawal

Discuss current literature involving baclofen in the treatment of acute alcohol withdrawal

Self Assessment Questions:

At what score should treatment for acute alcohol withdrawal be initiated based on the CIWA-Ar scale?

A 5 or greater
B: 10 or greater
C: 15 or greater
D: 20 or greater

Based on available literature, what dose of baclofen is utilized in the treatment of acute alcohol withdrawal?

A 5 mg by mouth three times daily
B 10 mg by mouth three times daily
C 15 mg by mouth three times daily
D 20 mg by mouth three times daily

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-384 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT OF A PROTOCOL FOR THE MANAGEMENT OF BLEEDING EVENTS WHILE TAKING NEW ORAL ANTICOAGULANTS

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Purpose: While the use of new oral anticoagulant (NOAC) agents such as dabigatran, rivaroxaban, and apixaban continues to expand, the available clinical data regarding the optimal way to manage major bleeding events on these agents is limited. The objective of this project is to draft, implement, and assess the impact of an evidence-based standardized protocol for the emergent reversal of bleeding in patients taking dabigatran, rivaroxaban, or apixaban. Methods: An outline of useful coagulation tests, appropriate blood products and doses, and drug-specific management options was compiled based on an in-depth literature review. A protocol proposal was created based on this data and system-wide availability of laboratory tests and products. Key stakeholders in the areas of emergency medicine, critical care, hematology, laboratory medicine, and pharmacy were involved in reviewing the proposal and formulating a finalized version, including guidance for management of both major and minor bleeding events for each individual drug. Retrospective cases of bleeding events in patients taking NOACs have been identified and characterized. These cases will be compared to future events that are managed using the Aurora Health Care NOAC Bleeding Management Protocol. Results/Conclusions: Data is currently being collected. Results will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify which laboratory tests are most useful for measuring presence o dabigatran, rivaroxaban, and apixaban.

Select an appropriate agent and dose to control a major bleed in a patient taking a new oral anticoagulant.

Self Assessment Questions:

Which of the following agents is effectively eliminated from the body using hemodialysis?

A Dabigatran
B: Rivaroxaban
C: Apixaban
D: All of the above

Elevation in this laboratory value is sensitive for the presence of rivaroxaban:

A International Normalized Ratio
B Prothrombin time
C Thrombin time
D Fibrinogen activity

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-385 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PHARMACIST INITIATED DEPRESSION SCREENING IN PATIENTS WITH DIABETES IN THE PATIENT-CENTERED MEDICAL HOME

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Purpose: Despite high comorbidity of depression and diabetes, many patients remain undiagnosed with depression and untreated. Identification and treatment of depression are important not only to decrease depressive symptoms, but also to improve diabetes outcomes since depression is associated with increased rates of hyperglycemia, decreased adherence with medication, and increased complications of diabetes. Patients are often referred for clinical pharmacy services due to poor rates of glycemic control, but it is difficult for the pharmacist to assist when depression may be an underlying cause of this issue. This quality improvement project aims to assess impact of pharmacist initiated depression screening. Methods: Adult patients with diabetes currently not being treated for depression with a pharmacy visit during a 4 month time period beginning in fall 2013 and extending to winter 2014 will be administered the PHQ2 screening tool. Pharmacists will use a standardized script to introduce screening to the patient. Screening results, regardless of the score, will be included in the patients visit note. If the patient answers yes to either of the PHQ2 questions, the pharmacist will indicate this in the routing note to the physician for further diagnostic evaluation. The pharmacist will also recommend treatment options in case the physician wishes to use pharmacologic treatment. The following data will be collected for each patient: age, race, most recent hemoglobin A1c, and current diabetic pharmacologic treatment. The percentage of patients utilizing pharmacy services who are referred to their physician for further depression evaluation as well as the rate of acceptance of pharmacists recommendations for pharmacologic treatment when pharmacologic treatment is used will be evaluated. The results of this project will allow clinics to determine if routine depression screening of patients with diabetes should be a part of pharmacy clinic visits. This project is currently ongoing. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Explain the rate of comorbidity of depression in patients with diabetes

Describe the impact of depression on outcomes of diabetes

Self Assessment Questions:

Which of the following is true regarding the comorbidity of depression and diabetes?

A Over 50% of patients with diabetes have depression

B: Of patients who have diabetes and depression, it is estimated dep

C: About 66% of patients with diabetes and depression are not treate

D: None of the above

In patients who have diabetes, which of the following outcomes is depression associated with?

A Increased hyperglycemia

B Decreased medication adherence

C Increased rates of complications

D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-386 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATING THE QUALITY OF PHARMACY RESIDENCY PROJECTS PRESENTED AT REGIONAL RESIDENCY CONFERENCES

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Purpose: The American Society of Health-System Pharmacists (ASHP) 1991 vision statement described the obligation for pharmacists to participate in clinical research in order to improve patient care and generate new scientific knowledge. In order to satisfy this mission, the ASHP requires all residents in an accredited residency program to complete a year-long research project that demonstrates effective project management skills. With 3,537 positions available in ASHP-accredited residencies in 2013, the opportunity for residents to participate in quality research has never been greater. However, no literature has been published that describes the quality of pharmacy residency research projects. The purpose of this investigation is to describe the projects presented at regional residency conferences in terms of study topic and study design and determine characteristics associated with high-quality residency projects. Methods: The study is a retrospective cohort analysis of pharmacy resident research projects from the six regional pharmacy residency conferences in 2013. A sample of abstracts listed in the conference booklets was included. The primary analysis will be the determination of a quality score for abstracts presented at regional pharmacy residency conferences in 2013. The novel quality score is modified from the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) and TREND (Transparent Reporting of Evaluations with Nonrandomized Designs) statements, internationally-recognized consensus guidelines for quality research reporting. Descriptive statistics will be used for analysis. Chi-squared or Fishers exact tests will be performed to detect differences in categorical data as appropriate. Results/Conclusion: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss the importance of pharmacists participating in clinical research projects

Describe published literature evaluating pharmacy resident research abstracts.

Self Assessment Questions:

According to ASHP, which of the following are reasons that pharmacists should participate in research?

A Improve patient care

B: Generate new scientific knowledge

C: Secure the future success of the profession

D: All of the above

According to the most recent studies, approximately what percentage of pharmacy residents research abstracts are published as full-length articles?

A 5%

B 15%

C 25%

D 35%

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-747 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

ADVERSE DRUG EVENTS ASSOCIATED WITH THE USE OF BENZODIAZEPINES AND/OR OPIOIDS IN THE NEONATAL INTENSIVE CARE UNIT

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Purpose: Benzodiazepines and/or opioids are used to relieve acute pain and agitation in infants. However, the use of benzodiazepines and opioids in the neonatal intensive care unit is controversial due to limited safety and efficacy data. The purpose of this study is to review current practice for treating pain and agitation, as well as identify the incidence and severity of adverse drug events (ADEs) associated with benzodiazepine and/or opioid use. Methods: A retrospective chart review was performed over a 12 month period that included infants who received at least one dose of an oral or intermittent intravenous benzodiazepine and/or opioid. Infants were stratified into groups based on medication(s) received. ADEs were identified in infants that presented with any neurological, cardiovascular, or respiratory effects after the administration of a benzodiazepine and/or opioid. The Naranjo Probability Rating and Severity Scale was used to classify associations and severities between the administration of a benzodiazepine and/or opioid to the occurrence of ADEs. Results: To date, 43 infants have been retrospectively identified: 23% of infants received benzodiazepines 44% opioids, and 33% both. Mean gestational age of the infants was 32 6.7 weeks. Median postnatal age prior to medication administration was 4 days (0.5-91 days). ADEs were documented in 21 (48.8%) of the infants with probability ratings as follows: 4 doubtful, 17 possible, 0 probable and 0 definite. The severity of ADEs included 9 mild, 9 moderate, 0 severe and 3 lethal. There was no statistically significant difference in the number of ADEs between the groups: benzodiazepine vs. opioid (p= 1.00), benzodiazepine vs. both (p= 0.41), opioid vs. both (p= 0.30). Conclusion: The administration of benzodiazepines and/or opioids was associated with ADEs in the neonatal intensive care unit.

Learning Objectives:

Recognize how infants express pain and agitation in the neonatal intensive care unit

Identify the most commonly recorded adverse drug events in infants upon administration of benzodiazepines and/or opioids

Self Assessment Questions:

Pain and agitation in an infant manifests as which of the following?

A Moaning or crying minimally with painful stimuli

B: Weak grasp reflex and decreased muscle tone

C: Excessive arching, kicking, and high-pitched crying

D: Minimal expression with stimuli

Which of the following adverse drug events is likely to be associated with the administration of benzodiazepines and/or opioids in the neonatal population?

A Feeding intolerance

B Hypotension

C Flaccid tone

D Vertigo

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-890 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPROVEMENT IN GUIDELINE-BASED ANTIBIOTIC UTILIZATION IN THE MANAGEMENT OF FEBRILE NEUTROPENIA:

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Purpose: Febrile neutropenia is a prevalent admitting diagnosis with high clinical and economic burden. The estimated mean length of stay is 8.6 days, mean hospitalization costs exceed $18,000, and inpatient fatality rates reach 16%. Patients receiving chemotherapy are at risk for invasive infections and fever is often the earliest indicator. Consensus guidelines recommend risk assessment in neutropenic patients to guide therapy and need for hospitalization. In addition, they provide guidance on initiation and discontinuation of antimicrobials. Anecdotally at our institution we see deviance from consensus guidelines with no form of risk assessment, empiric addition and prolonged use of vancomycin without indication, and empiric broadening of antimicrobials despite clinical change. The purpose of this study is to evaluate current adherence to Infectious Diseases Society of America (IDSA) febrile neutropenia guidelines. Methods: This study is a DMAIC project that uses a stepwise process to solve problems by identifying and addressing root causes. A DMAIC project is often utilized for quality and safety improvement initiatives and includes defining, analyzing, measuring, improving, and controlling an identified issue. The primary endpoint of this study is percent adherence to IDSA febrile neutropenia guidelines. Adherence will be calculated using a composite endpoint including correct definition of febrile neutropenia, risk assessment prior to antimicrobial initiation, initiation of gram-negative coverage, initiation of vancomycin, discontinuation of vancomycin, addition of antifungal coverage, and utilization of G-CSF. The secondary endpoint is overall antibiotic exposure and drug-related adverse events. The electronic data warehouse within our institution was utilized to obtain data over 6 months for patients who were admitted with a diagnosis of febrile neutropenia (ANC <1,000 cells/mm3 plus fever of 101.4F or higher). Results/Conclusions: Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference. The results of this multi-disciplinary study will be used for an institution-wide process improvement intervention.

Learning Objectives:

Discuss the purpose of a DMAIC project and describe the role of a pharmacist within a DMAIC project

Identify the need for improvement in febrile neutropenia management within academic institutions

Self Assessment Questions:

The following components comprise a DMAIC project:

A Define, Measure, Analyze, Improve, Control

B: Discuss, Measure, Analyze, Improvise, Control

C: Discuss, Measure, Analyze, Improve, Control

D: Define, Map, Analyze, Improve, Control

Which of the following is correct about febrile neutropenia?

A Recent data suggests institutions follow IDSA guidelines very clos

B It is often the earliest sign of infection in patients who recently rece

C Vancomycin utilization has dramatically decreased in recent years

D Antifungal coverage should be initiated upon presentation

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-388 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PREVALENCE OF PATIENT SELF-CARE ERRORS ASSOCIATED WITH OVER-THE-COUNTER (OTC) CALCIUM SUPPLEMENTS

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Purpose: Patients with bone disease are commonly prescribed bisphosphonate therapy to slow the progression of bone loss. Over-the-counter (OTC) calcium supplements are also recommended to maintain bone integrity. There is limited data reporting the prevalence of supplement dosing and administration errors. The objectives of this study are to determine the prevalence of patients receiving prescription bisphosphonates who supplement with OTC calcium and the associated self-care errors including choice of calcium salt, dose and administration habits. □□Methods: A prospective, survey-based study will be conducted in three community grocery store pharmacies. Females 19 years of age and older receiving prescription oral bisphosphonates will be asked to complete an anonymous survey at the pharmacy pick-up window. The 11 question survey composed of multiple choice, polar, and write-in questions, will assess participants choice of the type of calcium they consume, the daily dose, and administration habits. A portion of the survey will refer participants to a table listing the calcium content of common foods to determine the amount of calcium intake from dietary sources. Eligible participants will be asked to complete the survey before leaving the pharmacy. If the individual is not present, her representative will be asked to deliver the survey to the participant and return it within one week by a self-addressed stamped envelope. Surveys will be administered for a period of 12 weeks. Data gathered from participant surveys will be analyzed using descriptive statistics and SPSS software.□□Results: Data collection is in progress.□□Conclusions: It is anticipated that data gathered from this research will demonstrate the increased prevalence of OTC calcium-related drug therapy problems associated with self-care errors. This research will support the need for pharmacists to proactively query and counsel patients regarding OTC calcium supplement use to resolve drug therapy problems resulting from self-care errors.

Learning Objectives:

Identify potential patient self-care errors associated with OTC calcium supplements.

Describe the recommended daily allowance of calcium in patients of various age groups.

Self Assessment Questions:

All of the following are potential patient self-care errors associated with OTC calcium supplement use EXCEPT:

A Concurrent administration with food

B: Supplement dose

C: Supplement formulation

D: Size of supplement

What is the recommended daily allowance of calcium for a 52 year old female with osteoporosis who takes alendronate 70mg tablets once weekly?

A 1,000 mg

B 1,200 mg

C 1,200 mg

D 1,500 mg

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-748 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

DAPTOMYCIN VERSUS VANCOMYCIN FOR METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS BACTEREMIA WITH VANCOMYCIN MINIMUM INHIBITORY CONCENTRATION OF 2MCG/ML IN PATIENTS WITH END STAGE RENAL DISEASE

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Purpose: Methicillin-resistant Staphylococcus aureus (MRSA) is a common cause of bacteremia among patients with end stage renal disease (ESRD). Optimal treatment remains a concern particularly in the setting of decreased susceptibility to vancomycin. Considering decreased vancomycin clearance in this population, vancomycin exposure may adequately achieve the area under the concentration-time curve to minimum inhibitory concentration (MIC) target (i.e. >400), which has been associated with optimal anti-MRSA activity and improved patient outcomes. The objective of this study is to compare outcomes among patients with ESRD treated with vancomycin and daptomycin for MRSA bacteremia with vancomycin MICs = 2mCg/mL. □□Methods: This retrospective study was approved by the institutional review board. Patients with MRSA bacteremia and a vancomycin MIC = 2mCg/mL over a 7-year period at the Detroit Medical Center were identified via the electronic medical record. Adult patients meeting the following criteria were included: ESRD requiring hemodialysis, MRSA susceptible to study agent, use of study agent for greater than 72 hours, and a known source of MRSA bacteremia. Patients were excluded if they received treatment with an alternative agent (including comparator) as monotherapy for > 72 hours prior to study agent initiation, if bacteremia was secondary to pneumonia, or if the source of bacteremia was controlled prior to starting therapy.□□Baseline clinical characteristics collected include antimicrobial regimen, hemodialysis schedule, comorbidities, source, and microbiology. □□The primary outcome was clinical success, defined as resolution of clinical signs and symptoms of infection and clearance of bacteremia. Secondary outcomes included duration of bacteremia, duration of admission, 30-day readmission, 30-day mortality, and adverse effects attributable to study agents. □□Results: To date, 37 of the 126 patients receiving treatment between 1/1/2011-12/31/2013 have been included. □□Conclusion: Final results and conclusions will be presented at the 2014 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss the literature associated with decreased vancomycin success in the treatment of MRSA bacteremia when vancomycin MIC > 1 mCg/mL.

Explain the association between the area under the vancomycin concentration-time curve to MIC and outcomes in patients with ESRD and MRSA infections.

Self Assessment Questions:

Based on current literature regarding MRSA bacteremia, which of the following is associated with vancomycin MICs > 1 mCg/mL?

A Increased clinical success

B: Decreased clinical success

C: No difference in clinical success

D: There is no data available correlating vancomycin MIC to clinical o

Which vancomycin pharmacokinetic/pharmacodynamic parameter has been shown to best correlate with clinical outcomes in the treatment of MRSA pneumonia and bacteremia?

A Peak concentration to MIC

B Time concentration remains above MIC

C Auc/mic

D Trough concentration

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-387 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF CONVERSION TO LONG-ACTING OPIOIDS AND METHADONE ON OVERALL MORPHINE EQUIVALENTS, PATIENT-REPORTED PAIN SCORES, AND OVERALL MEDICATION COST IN THE TREATMENT OF CHRONIC NONMALIGNANT PAIN

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Purpose: Within the past year, the Veterans Affairs (VA) Healthcare System of Ohio enacted a new policy that states it is preferred for chronic nonmalignant pain patients to only utilize long-acting opioids or methadone. The pharmacokinetic profile of long-acting opioids and methadone allows for less peak and trough effect when compared to short-acting opioids. As the VA Healthcare System of Ohio recently enacted its new initiative concerning chronic pain management, our practice site will provide valuable information. Methods:This retrospective analysis reviewed patients that were converted from a chronic, short-acting opioid used alone or in combination with a long-acting opioid or methadone to a long-acting opioid or methadone between 10/1/2012 and 8/31/2013. To assess the primary objective, tota morphine equivalents prior to and 3 months following conversion to a long-acting opioid or methadone alone will be collected using standardized opioid conversions. To assess secondary objectives, patient-reported pain scores and cost of opioid therapy prior to and 3 months following conversion will be collected using pricing information from the facility's primary wholesaler, Mckesson. Results: Data collection is nearly finished. Preliminary results are as follows: Mean change in morphine equivalents: - 12.05mg Mean change in patient-reported pain score (scale 1 to 10): - 0.08 Mean change in monthly cost of opioid therapy: + $16.90 Conclusion: Pending final results.

Learning Objectives:

Explain the pharmacology of commonly-used opioid medications

Name the opioid medication that is dosed similarly to long-acting opioids but does not fall under this categorizaton

Self Assessment Questions:

Which of the following medications is not classified as a long-acting opioid but is dosed similarly?

A Oxycodone immediate release

B: Morphine immediate release

C: Morphine extended release

D: Methadone

Which of the following medications acts on the N-methyl-D-aspartate (NMDA) receptor in addition to the mu opioid receptor?

A Methadone

B Oxycodone

C Fentanyl

D Morphine

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-389 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF THE USE OF TARGET SPECIFIC ORAL ANTICOAGULANTS AND ANALYSIS OF PRESCRIBING HABITS IN PATIENTS WITH ATRIAL FIBRILLATION

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Background Atrial fibrillation (AF) affects 2.5 million patients in the United States. Traditionally, dose-adjusted vitamin K antagonist therapy has been used to prevent the occurrence of stroke in patients with AF. However, newly developed target specific oral anticoagulants (TSOACs) have been shown to produce more predictable anticoagulant effects, require no monitoring of anticoagulation status, and have demonstrated improvement in patient outcomes compared to warfarin. Current prescribing habits for patients with AF within the UW Health system are not known. Purpose The purpose of this project is to evaluate the use of TSOACs compared to warfarin or no anticoagulation in patients with non-valvular AF at UW Health. Objectives Project objectives are to perform a retrospective, single-center, non-randomized study of newly diagnosed patients with non-valvular AF at UW Health and to develop support tools to facilitate the selection of anticoagulants in this population. Methods Adult patients with non-valvular AF diagnosed between July 1, 2012 and June 30, 2013 were included in this study. Data collection included patient demographics, co-morbid conditions, and prescriber service line. Patients stroke and bleeding risks were calculated from the gathered data. The appropriateness of selected AF therapy was evaluated as a main outcome, in addition to the incidence of stroke and major bleeding. To facilitate the safe and appropriate use of anticoagulants in this population, an evidence based guideline was created. Guideline development included a thorough review of available literature, integration of accepted risk-factor evaluation schemes, and the creation of a flowchart to assist with the selection of available agents. A workgroup of clinical pharmacists was created to review the guideline and to develop additional electronic decision support tools to implement guideline recommendations. The results from this study remain under investigation, with data collection and evaluation currently being conducted.

Learning Objectives:

Identify barriers to the use of target-specific oral anticoagulants in patients with non-valvular atrial fibrillation

Describe ways to increase knowledge among prescribers and facilitate evidence-based prescribing of the target specific oral anticoagulants

Self Assessment Questions:

What are some safety concerns to take into account when using the target-specific oral anticoagulants?

A Age

B: Creatinine Clearance

C: History of GI Bleed

D: A, B, and C

What risk assessment score can be used to calculate the annual stroke risk of a patient with AF?

A Hemorr2hages

B Chads2

C CHA2DS2VASc

D B and C

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-390 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFICACY OF PHARMACIST-OPERATED CLINICS IN REACHING DIABETES MELLITUS AND HYPERLIPIDEMIA TREATMENT GOALS: A QUALITY IMPROVEMENT ANALYSIS IN A VETERAN POPULATIOI

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Purpose: Clinical Pharmacy Specialists (CPS) at VA Illiana Health Care System play a unique role within patient aligned care teams (PACT) to independently manage chronic disease states. Previous literature indicates that pharmacist-driven services are valuable and effective in producing positive outcomes for patients.The primary objective of this quality improvement analysis was to determine the efficacy of PACT CPS in producing a significant LDL and A1C reduction in veterans enrolled in PACT Disease State Management (DSM) clinics.□□Methods This analysis was approved as a quality improvement project by a local review committee. A retrospective quality improvement chart review was performed to retrieve data. Study subjects acted as their own controls. Efficacy of pharmacist intervention was determined by change in A1C and LDL from baseline to measurement time of primary endpoints. Demographic data collected included: sex, age, race, weight, and diagnosis of diabetes mellitus or hyperlipidemia. Classes of medications used, total cholesterol (TC), LDL, HDL, TG, and A1C were also collected in conjunction with Framingham risk score, treatment goals, and time frame of clinic enrollment, if available. All data remained confidential throughout the process of this analysis.The primary endpoint for dyslipidemia patients was a change from baseline LDL to first LDL drawn between six and nine months after enrollment. For diabetic patients, the primary endpoint assessed was a change from baseline A1C to first A1C drawn between nine and twelve months after enrollment. Secondary outcomes included change from baseline clinic enrollment in HDL, TG, and TC to the first values within six to nine months after enrollment. Percent reduction in efficacy endpoints was calculated by the primary author.□□Results: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify the role of PACT CPS within VA Illiana Health Care System

Discuss the effect of PACT CPS on the management of diabetes and hyperlipidemia treatment goals within VA Illiana Health Care System

Self Assessment Questions:

What percentage of veterans have the diagnosis of diabetes mellitus compared with about 8% of the general US population with diabetes mellitus?

A 10%

B: 15%

C: 20%

D: 25%

What permits a PACT CPS the ability to prescribe, adjust medications, and provide therapeutic interventions within VA clinics?

A Comprehensive protocols

B A “scope of practice”

C Collaborative practice with prescribing physicians

D VA regulations

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-749 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

SEDATION AND ANTIPSYCHOTIC USE IN A NEUROSCIENCE ICU

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Purpose: Previous studies have suggested a role for dexmedetomidine in reducing the incidence of intensive care (ICU) delirium in both the medical and surgical patient population. However, little data exists on dexmedetomidine and delirium in the neuroscience ICU population. Assessing delirium in neuroscience patients present particular challenges as the assessment may be limited by underlying neurologic dysfunction. Therefore, the objective of this study is to evaluate the frequency of antipsychotic use in neurocritically ill patients sedated with dexmedetomidine and propofol in the ICU. □□Methods: This is a retrospective cohort study of patients receiving sedation that were admitted to the neuroscience intensive care unit (NSICU) at Rush University Medical Center from January 1, 2010 through September 1, 2013. Patients were included if they received sedation for >24 hours and if they were ≥ 18 years of age. Exclusion criteria included the use of antipsychotics as outpatients, a diagnosis of status epilepticus or alcoho withdrawal on admission, procedural sedation, or the use of multiple sedative infusions for >24 hours. Patients who received dexmedetomidine were matched to patients receiving standard sedation with propofol based on indication for admission. The primary outcome evaluated in this study was the use of atypical antipsychotics between patients sedated with dexmedetomidine versus propofol. Secondary outcomes included hospital and ICU length of stay, time to extubation, duration of sedation and hospital mortality.□□Results/Conclusion: Data collection is ongoing and results will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review the current guideline recommendations for implementing sedation in the ICU

Describe the theoretical role for dexmedetomidine in reducing delirium ir ICU patients

Self Assessment Questions:

The 2013 Pain, Agitation and Delirium guidelines conclude that:

A In mechanically ventilated adult ICU patients at risk of developing

B: Dexmedetomidine should be given as prophylaxis to prevent deliri

C: Dexmedetomidine has no role in reducing delirium

D: In mechanically ventilated adult ICU patients at risk of developing

Dexmedetomidine theoretically may reduce delirium by:

A Enhancing GABA

B Limiting effect on GABA

C Enhancing anticholinergic activity

D Increasing benzodiazepine use

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-391 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFECT OF THE IMPLEMENTATION OF THE PASERO OPIOID-INDUCED SEDATION SCALE ON NALOXONE USE

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Purpose There are many side effects to opioid use, the most life-threatening of which, respiratory depression, can be reversed using an opioid antagonist, such as naloxone. The Joint Commission states one approach to minimize the incidence of opioid-induced respiratory depression is to employ a validated sedation assessment tool, such as the Pasero Opioid-induced Sedation Scale (POSS). The purpose of this study is to assess the impact of the implementation of the POSS on the incidence of naloxone use in patients receiving hydromorphone. Methods: This multi-center IRB-approved study, performed in conjunction with the Indianapolis Coalition for Patient Safety (ICPS), hypothesizes that implementation of a validated opioid sedation scale will improve patient safety and outcomes through a reduction in the incidence of respiratory depression. It involves the implementation of the POSS at Eskenazi Health, as well as a retrospective chart review looking at naloxone use relative to hydromorphone administration at six ICPS sites. Implementation of the POSS occurred prior to the chart review, entailed amendment of a hospital policy and addition of the POSS to charting systems, and required extensive interdisciplinary education. The chart review will be conducted in two phases, consisting of a three-month period before and after the implementation of the POSS, and will include adult patients who received hydromorphone in peri-operative and inpatient areas. Patients will be excluded if naloxone was given for diagnostic or non-opioid indications. Primary endpoints will be the percentage of patients receiving naloxone after receipt of at least one dose of hydromorphone and the rate of naloxone use events per 1000 patient days. Secondary endpoints will be the percentage of patients who are over-sedated or transferred to a higher level of care and changes in patient specific use of hydromorphone. Results may help optimize current sedation monitoring practices in area hospitals. Results: Preliminary results will be reviewed.

Learning Objectives:

Review background information related to opioid-induced respiratory depression

Describe the rationale for using the Pasero Opioid-Induced Sedation Scale

Self Assessment Questions:

Which of the following is cited as a risk factor for opioid-induced oversedation?

A Age > 55 years old

B: Being opioid naïve

C: Concomitant use of an SSRI

D: A and B

The Pasero Opioid-Induced Sedation Scale is unique because it:

A Focuses on parameters of anxiety and agitation

B Has a nursing intervention linked with each scale degree

C Has validity and reliability outside of a critical care setting

D B and C

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-891 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARISON OF THIRTY DAY OUTCOMES IN POST-PERCUTANEOUS CORONARY INTERVENTION (PCI) IN PATIENTS RECEIVING DIFFERENT P2Y12 INHIBITORS

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PCI in the setting of myocardial infarction improves patient outcomes when compared to medical management. When used in combination with aspirin, P2Y12-receptor antagonists have been shown to reduce the risk of myocardial infarction (MI), ischemic death, or stroke versus aspirin alone. Prasugrel and ticagrelor have been proved to significantly reduce the composite risk of death from cardiovascular causes, nonfatal MI, and nonfatal stroke versus clopidogrel in the setting of PCI in the TRITON-TIMI 38 trial and the PLATO trial, respectively. Prasugrel conferred a higher risk of major and life-threatening bleeding versus clopidogrel, but ticagrelor did not result in an increased risk of bleeding. To date, no trials have compared outcomes of all three P2Y12 inhibitors Additionally, no trials have compared 600mg loading doses of clopidogrel to prasugrel in the setting of PCI. Purpose: The primary objective of this study is to compare thirty-day rates of readmission due to acute coronary syndromes between the three P2Y12-receptor antagonists. Secondary endpoints will include need for repeat revascularization, type of acute coronary syndrome, and incidence of major or minor bleeding. Methods: This study is a single-center retrospective chart review of patients >18 years of age admitted to Indiana University Health Methodist Hospital between Dec 1, 2012 and Nov 8, 2013 with diagnoses of chronic stable angina, unstable angina, non-ST elevation myocardial infarction, or ST-elevation myocardial infarction that underwent PCI. Results and conclusions: in progress.

Learning Objectives:

Recall the efficacy and safety outcomes of the TRITON TIMI-38 and PLATO trials

Identify factors to consider when selecting a P2Y12-receptor antagonist for dual antiplatelet therapy after PCI

Self Assessment Questions:

Which of the following advantages does treatment with ticagrelor offer when compared to clopidogrel in ACS patient undergoing PCI?

A increased safety in asthma patients

B: reversible platelet inhibition

C: decreased risk of bleeding

D: available platelet activity testing

In which of the following patients is prasugrel contraindicated?

A A 73 year old patient with a history of cerebrovascular accident

B A 49 year old patient taking omeprazole 20mg twice daily

C A 65 year old patient with uncontrolled asthma

D A 58 year old patient on clopidogrel with new onset acute coronary

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-392 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

INFLUENCE OF COLISTIN DOSE ON CLINICAL AND MICROBIOLOGIC OUTCOMES IN PATIENTS WITH GRAM-NEGATIVI BACTEREMIA

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Background: There is increasing prevalence of severe multidrug resistant (MDR) nosocomial infections, which accounts for increased morbidity and mortality. MDR gram negative (GN) isolates are frequently treated with colistin. Unfortunately, there are very limited pharmacokinetic (PK) and pharmacodynamic data available to guide appropriate dosage. Based on recent PK studies, current colistin dosing regimens may result in prolonged time to reaching therapeutic concentrations, leading to suboptimal and delayed effective treatment. In addition, several studies have demonstrated an association between increased colistin dose and improved outcomes. However, the specific dose at which these outcomes are observed is unknown, thus warranting further investigation. □□Methods: This study is a retrospective chart review to evaluate whether high dose colistin improves clinical and microbiologic outcomes in critically-ill patients with carbapenem-resistan GN bacteremia. The primary objective is to determine if high dose colistin therapy independently predicts clinical improvement at day 7 of therapy. The secondary outcomes of this study include microbiologic outcomes, clinical cure, global cure, ICU/hospital length of stay, as well as 7- and 28-day mortality. In addition, safety outcomes will focus on incidence of nephrotoxicity associated with high dose colistin therapy. Adult patients who received intravenous colistin for at least 72 hours for treatment of a carbapenem-resistant GN bloodstream infection will be included. Patients will be excluded if they had polymicrobial bacteremia or received colistin for less than 72 hours. Classification and regression tree analysis will be used to determine the distinction between high and low dose colistin therapy. Data describing patient demographics, baseline characteristics, antibiotic regimen, mortality, clinical response, and length of stay will be collected. Nominal data will be assessed with chi-square or Fishers exact test and continuous data with Students t-test or Mann Whitney U test, as appropriate.□□Results and Conclusions: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify the mechanism of action and pharmacokinetics of colistin

Outline research design and methods

Self Assessment Questions:

What are the colistin Css,avg and AUC0-24h targets, respectively?

A 2.5 mg/L/60 mg*h/L

B: 3.5 mg/L/65 mg*h/L

C: 4.5 mg/L/70 mg*h/L

D: 5.5 mg/L/80 mg*h/L

Which of the following statements is correct?

A Significant morbidity and mortality are not associated with gram-ne

B Current colistin dosing regimens may result in prolonged time to re

C Decreasing the dose of colistin independently predicts day-7 micro

D The ideal dose of colistin been established.

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-393 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF VANCOMYCIN STEADY STATE TROUGH POST IMPLEMENTATION OF AN AGGRESSIVE DOSING REGIMEN

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Purpose: The Infectious Diseases Society of America (IDSA) recommend targeting vancomycin trough concentrations of 15-20 mg/L to potentially optimize patient outcomes. Data collected from The Ohio State University Wexner Medical Center (OSUWMC) in October of 2012 revealed that only 30% of patients who received vancomycin were within the desired trough range of 15-20 mg/L without a loading dose and 15 mg/kg maintenance dose. A subsequent study demonstrated that 22% of patients who received a 20 mg/kg loading dose followed by a 15 mg/kg maintenance dose were within the desired trough range. These data led to the implementation of an aggressive vancomycin regimen consisting of a 25 mg/kg loading dose and 20 mg/kg maintenance dose. The primary objective of this study was to evaluate the percentage of patients who achieved a steady state vancomycin trough of 15-20 mg/L after implementation of an aggressive dosing regimen and to compare results to the previous studies. Methods: All patients who received a vancomycin loading dose of 25 mg/kg, subsequent 20 mg/kg maintenance doses and had a steady state level between November 1st 2013 and November 15th, 2013 were included in the study. Patients <18 or >89 years of age, prisoners, and pregnant females were excluded from the study. Pertinent data were retrospectively obtained from OSUWMCs electronic record, pharmacy, and microbiology databases. Variables analyzed included age, sex, dosing weight, ideal body weight, serum creatinine, creatinine clearance, vancomycin regimen, trough, site of infection, organism, and hospital length of stay. Results: Final results and conclusions are pending and will be presented at the Great Lakes Pharmacy Residency Conference. A descriptive analysis will be conducted.

Learning Objectives:

Discuss the rationale for utilizing a loading dose in patients treated with vancomycin

Explain the rationale for targeting vancomycin trough levels of 15-20 mg/L

Self Assessment Questions:

Why are loading doses of vancomycin recommended in seriously ill patients?

A To achieve rapid therapeutic concentrations

B: Loading doses have been shown to increase survival in the seriou

C: Adverse effects are not correlated with larger doses

D: Loading doses are not recommended

Which of the following statements are true about vancomycin monitoring

A Vancomycin peaks should be monitored to avoid nephrotoxicity

B Ototoxicity correlates with serum vancomycin trough levels

C Vancomycin trough levels should be drawn prior to the fourth dose

D Vancomycin troughs are easily predictable in most patients

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-394 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE EFFECT OF NEUROMUSCULAR BLOCKER ADMINISTRATION IN SEPTIC PATIENTS WITH RESPIRATORY FAILURE

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Background/ Purpose□The management of mechanically ventilated (MV) patients often occurs in the emergency department (ED), but little is known on how best to manage these patients post-intubation in this setting. An unexpected finding was seen in a pilot study of MV patients at Detroit Receiving Hospital ED, where there was a non-significant trend towards lower mortality with the use of short-term neuromuscular blockers (NMB) post-intubation, with septic patients driving this benefit. This trend is possibly associated with NMBs ability to mitigate the oxygen supply-demand mismatch by preventing patient-ventilator dyssynchrony, minimizing the work of breathing, and improving oxygenation. □□The objective of this retrospective case-control study is to assess the association of post-intubation short-term NMB administration on mortality, in-hospital complications, and length of stay in patients with sepsis and respiratory failure.□□Methodology□This is a retrospective cohort study of patients seen at Detroit Medical Center EDs with ICD-9 diagnosis codes of sepsis, septic shock and MV from January 2008 to December 2012. Patients were excluded if they were < 18 years old or made palliative care within 48 hours of admission. Patients were divided into two groups: those who received NMB and no NMB post-intubation. Short-term use of a NMB post-intubation was defined as administration within 12 hours of intubation and for no longer than 12 hours; vecuronium and rocuronium were the NMBs used in this study. □□Demographics, clinical history, and admission diagnosis were recorded. From the patients ED admission, initial vital signs, laboratory data, and medications were collected. The primary outcome is all-cause in-hospital mortality. Secondary outcomes are number of ventilator days, ICU length of stay and occurrence of pressure ulcerations in the first 72 hours of admission.□□Results□Results to be presented at the Great Lakes Residency Conference.□□Conclusion□Conclusions to be presented at the Great Lakes Residency Conference.

Learning Objectives:

Describe the use of neuromuscular blockers in mechanically ventilated septic patients.

Identify adverse effects associated with the use of neuromuscular blockers.

Self Assessment Questions:

At the Detroit Medical Center, about what percentage of septic patients receive a neuromuscular blocker post-intubation?

A 10%
B: 20%
C: 35%
D: 50%

Which of the following are complications associated with the use of neuromuscular blockers?

A Prolonged muscle weakness
B Pressure ulcerations
C Stress in a patient who isn't properly sedated
D All of the above

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-395 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ANTIBACTERIAL CONSUMPTION AND INCIDENCE OF RESISTANT ORGANISM TRANSMISSION AT AN ACADEMIC MEDICAL CENTER

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Purpose□□Proliferation of antimicrobial resistance often occurs as a function of de novo resistant organism emergence or transmission of resistant species. Published data has shown a correlation between antimicrobial consumption and de novo emergence of resistant bacterial species. The Centers for Disease Control and Prevention (CDC) National Healthcare Safety Network (NHSN) has started collecting antimicrobial consumption data through the the Antimicrobial Use and Resistance (AUR) module. The AUR module allows for patient level quantification of antimicrobial consumption stratified by medication, inpatient location, and route of administration. Horizontal transmissions of resistant organisms from patient-to-patient may result from the density of inpatients at many institutions, shared staff and equipment, and inappropriate hand hygiene by healthcare workers. This study will investigate the association between antimicrobial consumption and horizontal resistant organism transmission at a tertiary medical center.□□Methods□□This is a retrospective database review at a single academic medical center from January 2012 through December 2013. The CDC AUR module will be utilized to collect data on antimicrobial consumption and to stratify this data by location of antimicrobial usage. This study will focus on patients admitted to either a hematology/oncology inpatient floor or the medical intensive care unit. Data regarding presence of vancomycin resistant Enterococcus (VRE) species, strain types, and transmissions will be collected and quantified. Strain types will be assessed by pulsed field gel electrophoresis, and transmissions will be assessed by bed traces of patients with temporally and geographically related strain types. Data regarding healthcare worker hand hygiene will be quantified with floor audit data. Our primary endpoint will be to evaluate the likelihood of a transmission event occurring given specific rates of antimicrobial usage and hand hygiene practices.□□Results/Conclusions□□Data collection and analysis is still in progress. Results and conclusions of this study will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Describe recent trends in antimicrobial use at hospitals nationwide.

Discuss how the CDC AUR module differs from other methods for antimicrobial consumption measurement.

Self Assessment Questions:

Which of the following is true regarding trends in antibacterial use?

A Overall use of antibacterial drugs has increased over time, primari
B: Overall use of antibacterial drugs has decreased over time, but the
C: Overall use of antibacterial drugs has increased over time, includir
D: At least 70% of antimicrobial use in hospitals is necessary and app

Which of the following is true regarding the CDC AUR module?

A The AUR collects data based on Defined Daily Doses (DDDs).
B Data from the AUR may be stratified by patient location or route of
C The AUR does not offer any benefits towards institutional antimicro
D AUR data may be submitted either by manual or electronic data en

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-750 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFECT OF ACUTE HEART FAILURE EXACERBATIONS ON WARFARIN THERAPY

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Purpose: The primary objective of this project is to assess the effect of heart failure exacerbations on warfarin therapy with the goal of improving dosing of warfarin in patients with heart failure at St. Elizabeth Healthcare. Methods: This study was granted exempt status by the St. Elizabeth Healthcare Institutional Review Board. Patients will be identified via retrospective chart review. Inclusion criteria include all patients admitted to St. Elizabeth with principal ICD-9 code of heart failure and who are also a patient of a St. Elizabeth Pharmacy Anticoagulation Clinic. Patients will be excluded from review if in the week prior to admission, new medications known to have major drug-drug interactions with warfarin were initiated. This list includes amiodarone, cimetidine, ciprofloxacin, clarithromycin, clofibrate, erythromycin, fluconazole, fluvoxamine, gemfibrozil, isoniazid, itraconazole, ketoconazole, methimazole, metronidazole, phenytoin, propafenone, propylthiouracil, tamoxifen, thyroid hormones, trimethoprim/sulfamethoxazole, and zafirlukast. Data will be reviewed from August 2012-August 2013 to produce an approximate sample size of 100 patients. Data collected will evaluate percent change in weekly warfarin dose, supratherapeutic INR (defined as ≥ 0.5 increase from value of maximum INR goal); for supratherapeutic INRs, time taken to return to at least upper limit of therapeutic range, and if available, BNP levels and New York Heart Association Functional Classifcation.

Results/Conclusions: Final results and conclusions will be presented at Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Recognize the association between atrial fibrillation and heart failure.

Review proposed theories for a drug-disease state interaction with warfarin and heart failure.

Self Assessment Questions:

What precentage of New York Heart Association class IV patients also have atrial fibrillation?

A 5%

B: 10%

C: 20%

D: 50%

Which of the follow represent a proposed theory for a drug-disease state interaction with warfarin and heart failure?

A Hepatic congestion and dysfunction

B Antibiotic drug interactions

C Increased vitamin K intake

D Increased physical activity

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-396 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

APPROPRIATE USE OF THROMBOPROPHYLAXIS AND THE EFFECT ON HOSPITAL RETURN VISITS DUE TO VENOUS THROMBOEMBOLISM

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Purpose: Venous thromboembolism (VTE) including deep vein thrombosis (DVT) and pulmonary embolism (PE) are life-threatening conditions associated with acutely ill hospitalized and surgical patients. A strong correlation between surgery, especially orthopedic surgery, and developing a VTE has previously been established. Recent studies show that the incidence of VTE in general medical patients is as high as 10.5% to 14.9% if not treated with appropriate thromboprophylaxis. However, evidence has shown that general medical patients at high risk of VTE receive appropriate thromboprophylaxis approximately 33% of the time. This conveys although there is data to support the use of anticoagulation in general medical patients, appropriate thromboprophylaxis is still underused. The purpose of this study is to determine effect of appropriate thromboprophylaxis and its effect on VTE return visits when compared to inappropriate thromboprophylaxis. Methods: This is a retrospective, case-controlled study comparing patients that received appropriate versus inappropriate thromboprophylaxis and the effect on return visits due to VTE within 30 days of discharge. This study included general medical patients at least 40 years of age and surgical patients at least 18 years of age hospitalized for a minimum of three days. Orthopedic surgical patients hospitalized for less than 3 days were also included. Patients were assessed for VTE risk and classified as low, moderate, or high risk. Patients at moderate to high risk who received pharmacological prophylaxis for at least 80% of their hospitalization (unless contraindicated then received mechanical prophylaxis) were classified as appropriate. Patients at low risk of VTE who received no pharmacological prophylaxis were classified as appropriate. The primary outcome of this study is to determine the difference in return visits due to VTE in patients receiving appropriate versus inappropriate thromboprophylaxis. Results/Conclusion: Data is currently being collected. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify appropriate prophylaxis regimens for preventing return visits due to VTE in general medical and surgical patients.

Classify patients as low, moderate, or high risk of venous thromboembolism and determine whether pharmacological prophylaxis is warranted

Self Assessment Questions:

Which of the following patients would automatically be classified as high risk of VTE?

A Bmi > 30

B: History of a pulmonary embolism

C: > 40 years of age

D: A patient in remission from cancer

Which of the following is an appropriate regimen for a patient at high risk of VTE?

A No contraindication to pharmacological prophylaxis and placed on

B No prophylaxis

C Enoxaparin 40 mg subcutaneously daily

D Heparin 5000 units subcutaneously daily

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-397 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

BISPHOSPHONATES AND THE RISK OF CLOSTRIDIUM DIFFICILE INFECTION (CDI)

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Purpose: Clostridium difficile infection (CDI) has increased in incidence and severity in recent years, and is most commonly associated with antibiotic use. Recent studies have suggested a higher risk of CDI with non-antimicrobial exposure. Preliminary evaluation of the FDA Adverse Effect Reporting System (FAERS) database has shown a disproportionately high number of CDI reports of alendronate. With no literature currently exploring this potential cause, further evaluation of a potential link is warranted. This study will analyze the possible association between bisphosphonate use and CDI by examining the risk of infection among subjects exposed to bisphosphonates. Methods: This is a single-center, retrospective, case-control study of hospitalized patients between 1/1/07 and 12/31/12 at the University of Illinois Health Hospital & Health Sciences System. Patients included in the study were adults greater than 18 years of age who were admitted at UIH and tested for CDI via polymerase chain reaction or enzyme immunoassay, with or without bisphosphonate therapy upon admission. Only patients considered adherent to their osteoporosis medication for a minimum of 3 months were considered exposed. Those receiving bisphosphonates and with a documentation of non-adherence to their osteoporosis agent as stated within their medical chart were excluded. Data collected during this study was analyzed using descriptive statistics. To assess differences in the rates of CDI among patients exposed or not exposed to bisphosphonates, an odds-ratio was estimated. Logistic regression was used to determine the association between bisphosphonate use and CDI, with adjustments for systemic antimicrobial use, CDI antibiotic, age and proton pump inhibitor use. A $\chi 2$ test will be used to determine differences between categorical data and a t-test will assess differences in continuous data. All statistical analyses were performed by using SPSS (SPSS Inc., Chicago, IL).

Learning Objectives:

Describe traditional and non-traditional risk factors for Clostridium difficile infection (CDI).

Review the role that bisphosphonates may play in increasing the risk of developing CDI.

Self Assessment Questions:

Approximately __ of patients acquiring community-associated Clostridium difficile infection have had no previous antimicrobial based on retrospective studies.

A 10%

B: 20%

C: 30%

D: 40%

Systemic antimicrobial exposure is a known risk factor for C. difficile infection. A proposed mechanism involves:

A Inhibition of ALL enteric pathogens

B Inhibition of colonization resistance

C Alterations in gastrointestinal pH

D Attenuation of host immune response

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-892 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF STERILE PRODUCT PRACTICES TO IMPROVE REGULATORY COMPLIANCE & PATIENT SAFETY

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Purpose: The purpose of this project is to assess practices related to sterile product preparation and storage across the UW Health system and implement changes to improve patient safety and increase compliance with best practice recommendations. Methods: A literature search was conducted to determine best practices for sterile compounding preparation and handling. A gap analysis was performed at multiple compounding locations across the UW Health enterprise to identify areas of non-compliance with best practices. Recommendations to achieve compliance were defined to address each identified gap. A steering committee of key stakeholders prioritized and categorized these recommendations into three distinct groups based on patient safety and operational feasibility. High priority recommendations were implemented and evaluated for operational and financial impact. Recommendations with significant resource requirements were assessed or piloted to determine the optimal solution to achieve compliance. Data collection included labor, equipment, inventory, waste, and quality control testing supplies. Future implementation plans will be determined for recommendations with low priority. A summative report will include observations from gap analyses, data from project interventions and recommendations for future actions. Results: To be presented Conclusions: To be presented

Learning Objectives:

Describe the importance of maintaining standardized processes and procedures to ensure the quality of compounded sterile products.

Discuss operational and financial considerations when making interventions to increase compliance with best practices for sterile product preparation and storage.

Self Assessment Questions:

Which of the following statements is correct?

A It is important to maintain standardized processes and procedures

B: Operating costs should be considered more important than compc

C: Purchasing a software program to maintain documentation of qual

D: The only solution to impact the quality of compounded sterile prod

What operational and financial elements must be considered when making interventions to increase compliance with best practices for sterile product preparation and storage?

A Labor resources

B Drug waste

C Geographic location of hospital

D Both A & B

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-893 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

CHEMOTHERAPY DOSE-ROUNDING AND PROJECTED COST SAVINGS AT A VA MEDICAL CENTER.

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Purpose: In 2010, the National Cancer Institute estimated the total medical cost of cancer to be $124.6 billion, with this number expected only to increase in the coming years with the unremitting introduction of new antineoplastic agents. One of the proposed foundations contributing to the enormous cost of cancer treatment is the process by which drug doses are calculated and parenteral products are prepared. Because most antineoplastic agents are supplied in single-dose vials, a large portion of unused medication is discarded after every intravenous preparation. Many healthcare institutions around the country have adopted a strategy of dose-rounding to control medication costs of chemotherapy without impacting efficacy and safety of treatment. The purpose of this study was to determine the cost savings associated with dose-rounding of various antineoplastic agents administered to veterans on the oncology service at the Huntington Veterans Affairs Medical Center (HVAMC). The goal was to determine what percentage of common chemotherapy medications are eligible for the dose-rounding process and calculate subsequent cost savings. Methods: A retrospective study was conducted at HVAMC comparing cost of previously administered chemotherapy to the adjusted cost utilizing the dose-rounding process. Charts were reviewed for intravenous chemotherapy administered between 9/12/2010 and 10/12/2013. The cost of the administered dose was calculated using both the current average wholesale price (AWP) and the average sale price (ASP)+6%. Available vial sizes of the antineoplastic agents were then used to determine if the calculated dose could have been rounded within 5% to the nearest vial size to avoid wastage of partial vials during preparation. The primary endpoint of the study was to determine the cost savings from unused medication vials of those chemotherapy regimens that were appropriate for dose-rounding. Results: Data is currently being collected and analyzed. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe how the variability of patient-specific characteristics supports the use of the dose-rounding process

Identify which antineoplastic agents are able to be included in the dose-rounding process and those which should be excluded

Self Assessment Questions:

Which of the following chemotherapy medications is calculated using a patients creatinine clearance?

A Carboplatin

B: Paclitaxel

C: Vinorelbine

D: All of the above are dosed using creatinine clearance

What chemotherapy agents should be administered to the patient as the exact calculated dose?

A Chemotherapy used in metastatic cancers

B Chemotherapy given intrathecally

C Chemotherapy supplied via infusion pumps

D Chemotherapy that has significant cardiac or pulmonary side effec

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-398 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARISON OF FIXED VERSUS PATIENT-SPECIFIC DOSING OF VANCOMYCIN FOR PATIENTS RECEIVING INTERMITTENT HEMODIALYSIS

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Purpose: There is limited literature to provide evidence-based guidance for dosing vancomycin for patients receiving intermittent hemodialysis. The goal of this study is to determine whether a fixed dose (1 gram) or a patient-specific dose based on pharmacokinetic parameters can consistently achieve therapeutic vancomycin serum levels post hemodialysis. Methods: This is a retrospective review that has been accepted for exemption by the Institutional Review Board (IRB). Patient charts and hospital electronic records will be used to identify patients who meet the following inclusion criteria: patients 18 years of age or older diagnosed with end-stage renal disease (ESRD) receiving intermittent hemodialysis, vancomycin levels drawn before hemodialysis and a course of hemodialysis that runs between three to four hours. Exclusion criteria for this review include patients receiving continuous renal replacement therapy, peritoneal dialysis, or non-intermittent hemodialysis, diagnosis of acute renal failure (ARF), vancomycin levels drawn post hemodialysis, treatment of cellulitis, or a course of hemodialysis less than three hours or greater than four hours. Fifty one patient encounters managed by each protocol will be reviewed. Data collected from patients will include age, weight, height, body mass index (BMI), length of hemodialysis course, average daily urine output, numbe of drawn vancomycin levels, vital signs, and results of blood cultures. Upon completion of data collection, the data will be analyzed for clinical and statistical differences. Results/Conclusion: In progress and will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Recognize factors that significantly affect vancomycin levels in patients receiving hemodialysis.

Identify different timing strategies for the administration of vancomycin during hemodialysis.

Self Assessment Questions:

Which of the following parameters for hemodialysis patients will not affect the measured vancomycin serum level?

A Residual Renal Function

B: Redistribution Phase

C: Mode of Dialysis

D: Auc/mic > 400

According to the literature, high flux-membrance dialysis machines remove what percentage of the vancomycin dose per hour?

A 10%

B 2.5%

C 25%

D 15%

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-399 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSESSING PATIENT INTEREST IN DEVELOPING AN INCENTIVE PROGRAM FOR PATIENTS WITH DIABETES

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Purpose: The goal of this study is to determine what elements would be required to formulate an effective incentive-based program to improve patient adherence. The two primary objectives are to (1) identify incentives that could potentially motivate patients toward treatment adherence and (2) identify the behavior and/or treatment goal that an incentive would impact.□□Methods: The study will include a four page survey to be completed by patients during the course of their appointment. The survey will include (1) background information, (2) health goals, (3) medication use behavior, (4) medication use attitudes, (5) patient scenarios to assess interest in different types of incentive programs, and (6) motivational incentives. The study will be restricted to patients who are English and/or Spanish speaking, currently being treated for diabetes, and currently being managed at one urban and one suburban ambulatory care clinic. All patients who present in person for an appointment to either clinic will be included in the study. Patients who are unable to read or write in English and/or Spanish and unable to complete the survey independently will be excluded from the study. The patient will be provided the survey during a period of waiting either before, during, or after an appointment. Once the patient receives the survey, a study investigator will provide brief instructions to the patient. The investigator will also inform the patients that participation in the survey is voluntary before leaving the patient to complete the survey independently. After completion, patients will place their survey into a collection box. □□Results: Research in progress. Approximately 600 patients will be eligible to participate in the study and it is anticipated that about 50% of the patients will complete the survey. □□Conclusion: Research in progress. The results will hopefully provide insight into the patients opinions and preferences concerning an incentive-based program.

Learning Objectives:

Define the 3 main factors that influence medication adherence.

Describe the health belief model and its role in developing an incentive program.

Self Assessment Questions:

Andys mother had her right foot amputated shortly after starting insulin therapy. Andy has just been told by his doctor that he needs to start using insulin, but Andy is hesitant because of his mothe

A Human Factor
B: Regimen Factor
C: Illness Factor
D: Emotional Factor

Which of the following are used to determine an individuals perception o their condition?

A Perceived benefit of preventative action
B Perceived seriousness
C Perceived threat
D Perceived barriers of preventative action

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-400 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

A LOOK AT ANTIBIOTIC DE-ESCALATION AT A 411 BED COMMUNITY HOSPITAL WITHOUT AN ANTIMICROBIAL STEWARDSHIP TEAM

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Background: Appropriate antibiotic prescribing is a continuously growing area in health care. Not only is inappropriate antibiotic use a burden on health care in the form of cost, there is also increased antibiotic resistance. Compounding the problem of decreased antibiotic efficacy is the lack of antibiotic agents and novel classes in the pipeline. While there are many studies looking at the need for antimicrobial stewardship teams (AST) in large teaching hospitals, there are few looking at community hospitals. □Purpose: The primary objective of this study was to evaluate the time to de-escalation or antibiotic change from initial empiric antibiotic treatment and the appropriateness of the antibiotic change. □Methods: This is a retrospective cohort study conducted at Allegiance Health Hospital that analyzed the initial empiric antibiotic treatment, baseline lab values and diagnostic test, day 4 baseline lab values and diagnostic test, cultures, and the number of days until de-escalation/antibiotic change. Inclusion criteria were inpatients receiving two or more days of a board spectrum, expensive, or a high risk drugs such as vancomycin and aminoglycosides. Antibiotic between October 2013 and December 2013. Exclusion criteria were patients receiving antibiotics for surgery prophylaxis, pregnant, or <18 years old. Secondary outcomes include hospital and ICU length of stay, average number of antibiotics patients received before and after antibiotic change, number of appropriate de-escalation in relation to positive culture and sensitivity and appropriate labs, mean length of time patient was in the hospital compared to results of culture and sensitivity, Potential savings of money with appropriate de-escalation, and rates of C. difficile.□Results/Conclusions: Data analysis is ongoing. Results and conclusions will be presented at the 2014 Great Lake Pharmacy Resident conference.

Learning Objectives:

Identify the possible consequences of unnecessary prolonged antibiotic treatment

Recall how many new antibiotic classes have been developed in the last 40 years

Self Assessment Questions:

What is one consequence of unnecessary prolonged antibiotic treatment?

A Improved mortality
B: A decline in antibiotic resistance
C: Increased rate of C. difficile
D: Decreased health care costs

How many new antibiotic classes have been created in the last 40 years

A 16
B 2
C 9
D 5

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-751 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EXAMINING THE IMPACT OF A STANDARDIZED INSULIN ORDER SET IN POST-ORTHOPEDIC SURGICAL PATIENTS WITH DIABETES MELLITUS COMPARED TO HISTORIC CONTROLS

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Purpose: An estimated one-third of patients will experience hyperglycemia while hospitalized. Post-operative hyperglycemia has been associated with an increased risk of 30-day post-operative infectious complications and longer hospital stays. The American Association of Clinical Endocrinologists (AACE) and American Diabetes Association (ADA) Guidelines recommend a basal/bolus regimen and discontinuation of oral agents for inpatient glucose control. Use of protocols and order sets are important tools in managing inpatient diabetes. A diabetes management order set exists at Advocate Lutheran General Hospital (ALGH), but is underutilized. In an effort to improve post-operative glycemic control, a multidisciplinary diabetes management team including a pharmacist, pharmacy resident, endocrinologist, medical resident, and advanced practice nurse, was formed at ALGH. The purpose of this study is to assess whether utilization of a standardized order set by a multidisciplinary team will improve glycemic control in post-surgical, non-ICU patients. □□Methods: In the prospective component, adult patients scheduled for orthopedic surgery between December 1, 2013 and February 14, 2014 with pre-existing diabetes that are under the care of Doctors of the North Shore Physicians Group will be included. An interdisciplinary diabetes management team will utilize existing Diabetes Management and Hypoglycemia Treatment and Prevention Order Sets at ALGH and make adjustments based on blood glucose levels, clinical and nutritional status. The results of the prospective study will be compared to a retrospective chart review of post-surgical patients with diabetes to assess the impact of the diabetes management team and standardized order sets. The primary endpoint is the percent of subjects with well-controlled blood glucose, defined as 70-140 mg/dL (fasting) and 70-180 mg/dL (random), during hospitalization. Secondary endpoints include length of stay, incidence of infection and readmission within 60 days. □□

Results: Results will be presented at Great Lakes Pharmacy Resident Conference. □□Conclusion: The results of the study will be used to guide institution practice for glycemic management.

Learning Objectives:

Recall AACE/ADA recommended blood glucose goals for hospitalized non-ICU patients

Identify an appropriate insulin regimen for inpatient glycemic management

Self Assessment Questions:

AACE/ADA recommends which target premeal blood glucose for a hospitalized non-ICU patient treated with insulin?

A <180 mg/dL
B: <110 mg/dL
C: <140 mg/dL
D: <210 mg/dL

Which of the following insulin regimens is recommended for a hospitalized post-surgical non-ICU patient?

A Basal and bolus insulin scheduled in addition to correction factor
B Basal insulin scheduled in addition to as needed bolus
C Basal and bolus insulin as needed in addition to oral antidiabetic a
D Bolus insulin as needed in addition to oral antidiabetic agents

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-401 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF A TELEPHONE INSULIN TITRATION CLINIC ON CHANGE IN A1C AT THE HUNTINGTON VETERANS AFFAIRS MEDICAL CENTER (HVAMC) PHARMACY DIABETES CLINIC.

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Purpose: Diabetes is the seventh leading cause of death in the US today, and a leading cause of cardiovascular disorders, end stage renal disease, blindness, hospitalizations, and amputations. Patients are often started on oral therapies initially, but many patients eventually require transition to insulin therapy to improve their diabetic control. When insulin is finally initiated, patients require frequent monitoring and titration to achieve glycemic control. The purpose of the telephone insulin titration clinic at the HVAMC is to more closely follow patients by phone to review home glucose readings and provide guidance on insulin titration. The purpose of this study is to evaluate changes in A1c to see if improved diabetic control can be seen after more frequent follow-up is provided. □□Methods: A retrospective chart review was conducted from 08/01/12-01/24/13 to compare change in A1c without involvement of the telephone insulin titration clinic. Patients were seen initially at the pharmacy diabetes clinic to review A1c, glucose, and anti-diabetic medications, and again for a follow up visit 4-8 weeks later to review home glucose readings and change medications as necessary. The patients returned again at 12 weeks to assess change in A1c and need for further medication changes. With the telephone clinic, patients were seen for initial and follow-up visits, but also had two week follow- up telephone calls to provide insulin titration based on home glucose readings. The insulin titration protocol used:□□Average FBG 130-180 mg/dlincrease PM insulin by 2 units□Average FBG >180 mg/dlincrease PM insulin by 4 units□If hypoglycemia with glucose <70 mg/dl, insulin was reduced by 10% or 4 units □ □The same inclusion and exclusion criterion was required for all charts reviewed. □□Results: Data is currently being collected and analyzed. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss why oral anti-diabetic agents often fail to achieve recommended glycemic goals defined by the ADA.

Identify specific patients whom initial therapy with insulin should be considered before oral anti-diabetic medications.

Self Assessment Questions:

Which of the following is a criteria for the diagnosis of diabetes?

A An A1c of 6.0%
B: Two-hour plasma glucose < 200mg/dl during an oral glucose tolera
C: Fasting plasma glucose ≥ 126mg/dl
D: A random plasma glucose < 150mg/dl

Which of the following oral pharmacological agents are preferred as first line therapy if not contraindicated?

A Acarbose
B Metformin
C Glipizide
D Glyburide

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-402 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF A PHARMACIST-NURSE MANAGED ANTICOAGULATION SERVICE PROTOCOL FOLLOWING TOTAL HIP OR KNEE ARTHROPLASTY WITH A NARROW INR GOAL

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Purpose: The American Academy of Orthopedic Surgeons and American College of Chest Physician guidelines recommend anticoagulation following total hip and knee surgery due to the high risk for venous thromboembolism (VTE). Warfarin is a convenient option since it can be taken by mouth and reversed if needed, but requires close monitoring due to a narrow therapeutic index. The objective of this study is to compare time in therapeutic range and percentage of INRs within goal by a pharmacist-nurse managed anticoagulation service versus usual care with an INR goal of 2-2.5.□□Methods: A retrospective analysis will be performed on patients who underwent total hip or knee arthroplasty and were managed by a pharmacist-nurse run anticoagulation service. This group will be compared to patients whose anticoagulation was overseen by their orthopedic provider. The following data will be collected: patient age, gender, ethnicity, type of surgery, length of hospital stay, outpatient INR measurements, interacting medications, adverse events within 5 weeks of surgery, and history of bleeding disorder, liver disease, or VTE. Demographic information will be reviewed for homogeneity. The percentage of INR values and time within goal range of 2 to 2.5 will be analyzed between comparator groups. Incidence of reported adverse events related to major bleeding and VTE will be assessed. In addition, measures of anticoagulation control and INR characteristics will be evaluated. All recorded data will be de-identified and stored in a secure electronic format. This study has been approved by the Clinical Research Steering Committee and Institutional Review Board.□□Results/Conclusions: Results and conclusion to be presented at Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Review differences between AAOS and CHEST guidelines for VTE prophylaxis in patients following total hip or knee arthroplasty

Identify challenges to achieving goal INR values in total knee or hip arthroplasty patients

Self Assessment Questions:

The most recent AAOS and CHEST guidelines recommend which of the following durations for anticoagulation following hip or knee arthroplasty?

A Both recommend anticoagulation for 6 weeks

B: AAOS: Decided between patient and provider; CHEST: 35 days

C: AAOS: 2-6 weeks; CHEST: At least 10-14 days and up to 35 days

D: AAOS: Decided between patient and provider; CHEST: at least 10

Which of the following best reflect the challenges to achieving therapeutic INR values following knee and hip arthroplasty?

A Short duration of treatment

B Risk of bleeding may be perceived as higher than the risk of throm

C INR values of less than 2 have been well validated for VTE prophy

D A & b

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-403 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

TREATMENT WITH HYPERTONIC SALINE ALTERNATING WITH MANNITOL IN TREATMENT OF NEUROLOGIC EMERGENCIES

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Neurosurgery at the University of Illinois Hospital and Health-Sciences System uses alternating 23.4% NaCl and 20% mannitol solutions to trea cerebral edema and elevated intracranial pressure (ICP). These therapies pull fluid from the CNS into the systemic vasculature and relieve pressure on the brain, which is associated with poor neurologic outcomes. Each of these two therapies may be equally efficacious in lowering ICP as monotherapy. There is a paucity of any literature regarding the use of alternating regimens. This study describes our experience with such a regimen. The primary outcome is the mean decrease in ICP from baseline opening pressure within the first 24 hours of therapy which will be described for each of the three treatment arms described below. Secondary outcomes include time to discontinuation of therapy due to abnormal laboratory parameters, incidence of kidney injury, and length of ICU stay.□□A retrospective chart review performed includes all patients admitted to the NSICU between 2008-2013 who received 23.4% NaCl or 20% mannitol scheduled for at least 24 hours. Exclusion criteria include patients receiving only as needed dosing and those with continuous infusions of hypertonic saline. Patients were divided into three treatment arms: 23.4% NaCl only, 20% mannitol only, or patients on an alternating regimen. Data collected includes time to lowest ICP, mean decrease in ICP, duration and frequency of therapy, time to discontinuation of therapy due to abnormal laboratory parameters, incidence of kidney injury associated with therapy, length of ICU stay, and discharge disposition. Data was compared between the three treatment arms to assess primary and secondary outcomes.□□Data collection and analysis are on-going.

Learning Objectives:

State the theory behind alternating 23.4% NaCl and 20% mannitol in treating elevated intracranial pressure

Identify the differences in rates of key adverse effects from osmotherapy experienced between treatment groups

Self Assessment Questions:

Which of the following are rationales behind using an alternating osmotherapy regimen to treat elevated ICP?

A Patients will be less likely to experience abnormal laboratory value

B: Patients are at lower risk of developing tolerance to an agent by lir

C: Both of the above

D: None of the above

Patients in the alternating osmotherapy group were more likely to experience:

A Hypernatremia more quickly than 23.4% alone

B Elevated osmolar gap more quickly than 20% mannitol alone

C Higher lengths of stay compared to monotherapy

D None of the above

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-404 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

INCIDENCE OF ACUTE GRAFT VERSUS HOST DISEASE WITH BRAND VERSUS GENERIC TACROLIMUS

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Objective: Following allogeneic hematopoietic cell transplant (HCT) patients are at risk for the development of acute graft versus host disease (GVHD), which is one of the primary causes of morbidity and mortality in the allogeneic HCT patient population. The purpose of this study is to evaluate the efficacy and safety of generic tacrolimus, as compared to the branded product, Prograf, for the prevention of acute GVHD in the first 100 days following allogeneic HCT. Methods: This retrospective, single-center chart review includes patients who received an allogeneic HCT at IU Health University Hospital for the treatment of a hematologic malignancy between January 2005 and October 2013, received either brand or generic tacrolimus for immunosuppression following transplant, and filled their immunosuppressant medications with University Hospital Outpatient Pharmacy. Patients were excluded if they received tacrolimus as secondary prophylaxis following the development of acute GVHD, were being treated for conditions other than a hematologic malignancy, received an umbilical cord blood HCT, received preparative regimens that utilized non-myeloablative chemotherapy, or crossed over between brand and generic tacrolimus within the first 100 days following HCT. The incidence of acute GVHD will be reported both as a composite endpoint, identifying the presence of acute GVHD grade II, III, or IV, and as the presence of acute GVHD grade IV. Patients were also assessed for the development of thrombotic microangiopathy and nephrotoxicity within the first 100 days following HCT. Results: to be presented. Conclusion: to be presented

Learning Objectives:

Describe the clinical manifestations of acute graft versus host disease.

Recall possible adverse effects related to tacrolimus therapy.

Self Assessment Questions:

Which of the following organs is involved in the presentation of acute graft versus host disease?

A Lungs
B: Liver
C: Eyes
D: Mouth

Which of the following are part of The Center for International Blood and Marrow Transplant Researchs diagnostic criteria for thrombotic microangiopathy?

A Hemolysis
B Thrombocytopenia
C SCr greater than 2mg/dL
D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-405 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

CHARACTERIZATION OF ANTIBIOTIC USE IN CARDIOGENIC SHOC

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Background: Many patients with cardiogenic shock may be inappropriately prescribed antibiotics as the initial presentation may mimic septic shock. The distinction between sepsis and non-infective SIRS can have major diagnostic and therapeutic implications. To date, no studies have attempted to characterize infectious markers in patients with cardiogenic shock after contemporary management of acute myocardial infarction (AMI). The purpose of this study is to improve the management of patients with cardiogenic shock following AMI who also present with suspected infection.□□Methods: This is a retrospective, single-center, observational, case-control study. Patients will be screened using a database of those patients with both a diagnosis of acute myocardial infarction and cardiogenic shock during hospitalization identified by ICD-9 codes. Inclusion criteria include: clinical criteria for cardiogenic shock with hemodynamic confirmation (systolic blood pressure (SBP) less than 90 mmHg; mechanical hemodynamic support or vasopressor use required to maintain SBP greater than or equal to 90 mmHg), absence of other causes of shock at presentation and a pulmonary artery catheter in place. Patients will be excluded if they do not meet all of the aforementioned inclusion criteria. The control population will be those subjects with diagnoses of both AMI and cardiogenic shock without any predetermined infection criteria (positive blood, urine, or respiratory culture, WBC greater than 12000/mm3, core temperature greater than or equal to 38.3 degrees Celcius, positive or indeterminate chest x-ray). Antibiotic use and microbiological results wil be collected. Baseline patient characteristics at presentation and initiation of antibiotics will also be collected. A regression analysis of those variables with both statistical and clinical significance will be performed in an attempt to identify characteristics that might predict a subsequent diagnosis of infection.

Learning Objectives:

Explain the diagnostic and therapeutic implications in the management of patients with septic shock as compared to non-infective SIRS.

Identify patient characteristics that are associated with the development of infection in patients with cardiogenic shock following AMI.

Self Assessment Questions:

To date, what has been the only identified predictor of infection in patients in cardiogenic shock following acute myocardial infarction?

A Leukocytosis
B: Fever
C: High systemic vascular resistance
D: Low systemic vascular resistance

Although a previous study has identified a potential indicator of infection in patients in cardiogenic shock following AMI, why might the results of this study not be applicable?

A The study suggesting the correlation was not adequately powered
B Management of AMI has changed since the study was conducted
C Baseline characteristics of the study patients were statistically diffe
D All study patients received antibiotics

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-406 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PROTON PUMP INHIBITOR-ASSOCIATED HYPOMAGNESEMIA: A RETROSPECTIVE CASE-CONTROL STUDY

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Purpose: Generally, proton pump inhibitors (PPIs) are recognized as safe and effective drugs. However in 2011, the Food and Drug Agency (FDA) issued a safety communication outlining the risk of hypomagnesemia with prolonged PPI use. After a review of reports filed with the Adverse Event Reporting System (AERS), medical literature, and periodic safety updates, the FDA mandated that prescription PPI labels address this rare but serious side effect. The primary objective of this study is to investigate the frequency of PPI-associated hypomagnesemia amongst a veteran population in a facility where the majority of PPIs are obtained through prescription only.□□Methods: This study has been submitted to the Institutional Review Board for approval. The Computerized Patient Recording System (CPRS) will identify patients with a low magnesium level (case group, <1.8 mg/dL) and those with normal magnesium levels (control group, 1.8 - 2.4 mg/dL). CPRS will be searched for an active order for a PPI during the same time frame the magnesium level was obtained. Other data to be collected includes indication for PPI use, specific PPI and dose, refill history, duration of therapy, as well as concomitant diuretic use. Demographic information will also be collected, including subject gender age, and race. All data will be recorded without patient identifiers and maintained in a locked cabinet when not in use. Data collected will be reviewed by a team of clinicians and assessed to identify frequency of PPI-associated hypomagnesemia and other related clinical factors.□□Statistical Analyses: The primary outcome will be reported as a percentage and a calculated odds ratio. The secondary endpoints for continuous variables will be reported as a mean and standard deviation and assessed using a paired t-test. Nominal data will be reported as frequency percentages and analyzed using Fishers Exact. Type of diuretic use will be reported with descriptive statistics.

Learning Objectives:

Review the appropriate indications and mechanism of action of proton pump inhibitors

Describe the possible side effects associated with the use of proton pump inhibitors

Self Assessment Questions:

What is the mechanism of action of proton pump inhibitors ?

A increases the degradation of acid secreted by the parietal cells

B: suppresses acid secretion by inhibiting the parietal cell H+/K+ ATP

C: suppresses acid secretion by stimulating the parietal cell H+/K+ A

D: increases the amount of bicarbonate secretion to neutralize acid

Which of the following is a rare side effect of proton pump inhibitors?

A Hypertension

B Hypercalcemia

C Headache

D Hypomagnesemia

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-894 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

RETROSPECTIVE ANALYSIS OF THE TREATMENT OF URINARY TRACT INFECTIONS IN MEN WITH FLUOROQUINOLONE AND SULFAMETHOXAZOLE-TRIMETHOPRIM RESISTANT ENTEROBACTERIACEAE

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Purpose: □Fluoroquinolones and sulfamethoxazole-trimethoprim are we recognized antibiotics in the treatment of urinary tract infections (UTI), including complicated UTI in males. The widespread use of these antibiotics has led to an increased prevalence of resistance among common UTI pathogens. Since the incidence of UTI is much higher in females than in males, the majority of published research regarding the management of UTI is in the female population. Recommendations for males have been largely extrapolated from studies evaluating female patients. Currently, there is insufficient evidence for the use of nitrofurantoin, oral beta-lactams, fosfomycin and other oral antibiotics in the treatment of UTI in males. In clinical practice, these antibiotics are frequently used to treat cystitis caused by resistant pathogens, but efficacy data are lacking. The aim of this study is to evaluate the effectiveness of non-standard antibiotics in male patients with UTI caused by organisms in the Enterobacteriaceae family that are resistant to fluoroquinolones and sulfamethoxazole-trimethoprim.□Methods: □

This study is a retrospective chart review of patients diagnosed with UTI between January 01, 2009, and April 30, 2013. Patients will be identified through microbiology reports, and charts will be reviewed to determine patient inclusion. Patients symptoms, urinalysis results, culture and susceptibility data, prescribed antibiotics, duration of treatment and othe pertinent data will be collected. For patients with multiple episodes of UTI during this period, only the first episode will be reviewed. The rates of bacteriological cure, clinical cure, and treatment failure will be evaluated in these cases. □Results and Conclusions: □Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review current recommendations for the treatment of complicated urinary tract infections.

Discuss the differences between urinary tract infections in male and female patients.

Self Assessment Questions:

Which antibiotics are preferred in treatment of UTI in males?

A Fluoroquinolones and sulfamethoxazole-trimethoprim

B: Nitrofurantoin and sulfamethoxazole-trimethoprim

C: Amoxicillin/clavulanic acid and nitrofurantoin

D: Erythromycin and clindamycin

Which of the following statement regarding the frequency of UTIs in elderly male patients is true?

A Males regardless of age develop UTIs less frequently

B Compared to women, men older than 60 years of age have a simil

C Compared to women, men older than 60 years of age have a grea

D There are no available data on this subject

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-407 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PRESCRIBING OF ANTIMICROBIAL AGENTS AND CULTURE FOLLOW-UP IN THE EMERGENCY DEPARTMENT: A PHARMACIST REVIEW

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Statement of the Purpose: Antimicrobial resistance is considered one of the most concerning issues facing healthcare today and can be prevented or reduced through appropriate prescribing of antimicrobials. The primary objective of this study is to assess physician-based culture follow-up in the emergency department (ED) and determine intervention rates related to initial inappropriate antimicrobial therapy. The secondary objective is to determine readmission rates related to the initial infection. Such findings could potentially justify the need for antimicrobial stewardship in the ED setting. Statement of Methods Used: This study was submitted to the Institutional Review Board and approved. The study will consist of a retrospective chart review of ED patients who received antimicrobial therapy upon discharge prior to final culture results during the time period of January 1st, 2013 to June 30th, 2013. Review of the patient medical record will involve documentation of diagnosis, empiric therapy, microbiological and laboratory results, time to culture review and follow-up, and time to appropriate therapy (if initial therapy was inappropriate). If therapy was deemed to be inappropriate based on culture results, it will then be determined if the physician intervened by modifying the antimicrobial regimen (medication dose, frequency, or duration). In addition to assessing intervention rates, the information previously mentioned will be used to determine re-admission rates based on a chief compliant that is associated with the initial documented infection within 96 hours of ED presentation.

Results/Conclusions: Data collection and analysis are currently in progress. Results will be presented at the Great Lakes Pharmacy Residency Conference in April.

Learning Objectives:

Discuss the importance of implementing antimicrobial stewardship programs and the potential impact it can have on an institution

Review antimicrobial prescribing and physician-based culture follow-up in the emergency department

Self Assessment Questions:

Which of the following has insufficient evidence in preventing or reducing antimicrobial resistance according to the IDSA guidelines?

A Antimicrobial cycling
B: Education
C: Dose optimization
D: Parenteral to oral conversion

Which of the following is true regarding antimicrobial stewardship programs?

A They are associated with increased drug costs
B They are associated with decreased adverse events with antimicrc
C They are implemented more in the ED setting rather than inpatient
D All of the above

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-408 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EXPANDING PHARMACY SERVICES ON A HEART FAILURE UNIT

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Purpose Heart failure is associated with high morbidity, mortality, healthcare expenditures, and increasing rates of rehospitalization. In an attempt to improve hospital outcomes and reduce heart failure readmissions, an innovative pharmacist driven assessment, education, and electronic documentation process was developed as part of a unit-based heart failure initiative. The Centers for Medicare & Medicaid Services (CMS), Joint Commission, and American Heart Association (AHA) Get with the Guidelines have established core measures to ensure evidence-based care for heart failure patients. As of 2012, CMS will not provide reimbursement for heart failure patients readmitted within 30 days. Comprehensive discharge planning, heart failure medication education, medication optimization, and a focus on the transitions of care can impact heart failure outcomes. Pharmacists have demonstrated a key role in adherence to evidence-based heart failure medication core measures, identification and reduction of medication factors contributing to readmission, and patient education. The purpose of this project is to implement, evaluate, and optimize a heart failure pharmacist-directed assessment process. Methods A heart failure focused assessment tool for pharmacist use was created based on literature identifying medication factors linked to heart failure readmissions. These factors include adherence, ability to afford medications, language or social barriers, high risk medications, and use of evidence-based heart failure therapies. Using this tool, pharmacists conduct a heart failure medication review, patient or caregiver interview, and provide heart failure medication education to patients admitted with a primary diagnosis of heart failure. Data collected includes compliance to the assessment process, characterization of pharmacist interventions and time used to administer the assessment tool and heart failure education. Results will be used to further optimize the assessment process and explore use on additional cardiology units. Results and Conclusions Results and conclusions will be presented at the residency conference.

Learning Objectives:

Identify risk factors that place a heart failure patient at high risk of readmission.

Describe core measures included by CMS, Joint Commission, and AHA Get with the Guidelines to improve heart failure management.

Self Assessment Questions:

Which of the following is a medication related factor that places a heart failure patient at high risk of readmission?

A Dietary noncompliance
B: Inability to afford medications
C: Co-morbidities, such as psychiatric disorders
D: Patients who discharge against medical advice

What are two core measures pharmacists can impact to improve heart failure outcomes?

A Provide 60 minutes of heart failure education before discharge
B Use of evidence-based heart failure medications
C Left ventricular ejection fraction assessment
D Both A & B

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-752 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF THE HIV TESTING IN A COMMUNITY PHARMACY SETTING

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Purpose: Although there have been many advances in the realm of HIV treatment over the last three decades, there still remains a high need of awareness within the United States, especially in the state of Kentucky, who had a total of 3,423 new HIV infections diagnosed from 2002 to 2012. Out of those patients who were newly diagnosed from 2002 to 2012, approximately 46% or 1,576 were diagnosed with Acquired Immune Deficiency Syndrome (AIDS), a chronic, potentially-life threatening condition caused by the HIV virus. The focus of HIV awareness is the promotion of HIV testing services to help decrease the number of HIV cases that have progressed to AIDS by the time of diagnosis. The purpose of this study is to assess the impact of accessible, free HIV testing services in a community pharmacy setting.

Methods: The structure of this study is prospective in nature. A patient survey was developed to include collection of patient demographics to evaluate if the patient population reflects the high-risk patient population in the testing locations. Four area pharmacies were selected based on location and patient demographics to promote the free HIV testing services. All HIV testing remained anonymous, and no patient identifiers were collected during the course of the study. The primary outcome measures were the number of HIV tests performed and the number of reactive HIV tests compared to the total number of tests. The secondary outcomes include age, race, assigned sex at birth, current gender identity, previous HIV test history, assessment of risky behaviors and risk factors, yearly income, education level, history of sexually transmitted infections, and the individuals rationale behind getting an HIV test at the community pharmacy versus other locations, such as a physicians office.Results: Data collection currently in process.Conclusion: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify common risk factors for HIV infection.

Recall the benefits and barriers to providing HIV testing in a community pharmacy setting.

Self Assessment Questions:

Based on the information provided, patients surveyed reported that they were most likely to participate in which high-risk activity?

A IV and illicit drug use
B: Sexual acts without use of protective measures
C: Sexual acts with multiple partners
D: None of the above

Based on the information provided, what was the number one reason a patient received an HIV test at the community pharmacy location?

A Received test while waiting on a prescription
B Travelled to location for HIV testing specifically
C Received test while shopping in pharmacy
D More than one of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-753 -L02-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFECT OF CLINICAL PHARMACIST INTERVENTION ON THE ERROR RATES OF ANTIRETROVIRAL AND OPPORTUNISITIC INFECTION MEDICATIONS IN THE INPATIENT SETTING

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Based on a retrospective study performed at our institution last year, 38% of HIV inpatients were found to have a medication error involving their antiretroviral (ARV) and opportunistic infection (OI) medications. Although these lifesaving medications have increased the lifespan of those living with HIV/AIDS, these medication errors place HIV-infected individuals at significant risk for adverse events, clinically significant drug drug interactions, and failure of antiretroviral therapy (ART). There is very little about the clinical pharmacists ability to decrease ARV and OI errors. All HIV inpatients over the age of 18 years currently on ARVs admitted between October 1, 2013 and June 30, 2014 will be included in this prospective study. Pregnant women and children under the age of 18 are excluded. A clinical alert through the electronic medical charting system is sent notifying the investigators that an HIV patient has been admitted, or when an ARV is ordered for a patient. The investigators then evaluate if a medication error occurred and was corrected by the clinical pharmacist within the first 24 hours of admission. Data collected includes: demographic information, hospital stay information , clinical pharmacist intervention analysis, and medication specifics to include drug regimen and any drug-drug interactions. Other interventions include inpatient ARV formulary changes, pharmacist education, and a drug reference card for each clinical pharmacist. Multi-variate logistical regression models will then be used to find out what impact different interventions had on the overall error rate. Interim results indicate an overall decreased error rate of 16% (a 22% decrease thus far). The ARV error rate is 13% (0.34/patient), and the OI error rate is 27% (0.21/patient). 72% of these errors have been corrected prior to discharge. Based on these results, prompt clinical pharmacist intervention has helped to reduce the overall HIV error rate at our institution.

Learning Objectives:

Recognize ARV and OI treatment and prophylaxis medication errors in the inpatient setting

Identify methods for clinical pharmacist intervention in reducing ARV and OI treatment and prophylaxis medication errors in the inpatient setting

Self Assessment Questions:

1)Patient AB is admitted to the internal medicine service @1300, and is expected to stay for 2-3 days. Home ARV regimen includes: emtricitabine/tenofovir daily, darunavir 600 mg BID, and ritonavir 1

A Incorrect timing of the medication(s)
B: Incomplete regimen
C: Medication(s) require(s) renal adjustment
D: No medication error present

2)Opportunities for clinical pharmacists to decrease ARV and OI treatment and prophylaxis medication errors include:

A Daily chart review
B In-service for clinical staff
C Pharmacist Education
D All of the above

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-895 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

OUTCOMES OF CLINICAL TRIGGERS TO ENHANCE ANTIMICROBIAL STEWARDSHIP

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Purpose□One of the major issues in healthcare today is growing rates o resistant bacterial pathogens accompanied by slow emergence of new antimicrobial agents. Patients infected with these pathogens have high rates of inappropriate or inadequate therapy, which can negatively impact patient outcomes. The purpose of this research is to analyze the utility of a Clinical Triggers Program implemented at a 468-bed tertiary care facility in August 2011. This program quickly notifies appropriate providers of issues requiring prompt intervention, including the isolation of various drug resistant pathogens. It aims to minimize time to appropriate antimicrobial therapy and contact precautions.□□Methods□This is a retrospective cohort study of patients at a 468-bed tertiary care facility in Lexington, KY. Patients are included if they have any of the following isolates in microbiologic cultures and require either a change in antimicrobial therapy or initiation of containment precautions:□1) Carbapenem-resistant enterobacteriaceae□2) Extended spectrum beta-lactamase producing enterobacteriaceae□3) Fungemia due to Candida glabrata, Candida krusei, or Candida parapsilosis□4) Piperacillin/tazobactam MIC ≥ 16mcg/mL (Pseudomonas aeruginosa)□One arm will analyze patients from January to June 2011 prior to the implementation of the Clinical Triggers Program. The second arm will analyze patients from August 2013 to February 2014 after the implementation of the Clinical Triggers Program. Patient demographics, antimicrobial regimens, culture data, containment precautions, infectious disease consultation, clinical and microbiologic success, mortality rates, and length of stay will be documented and analyzed. Primary outcomes will include time to appropriate therapy and time to containment precautions. Secondary outcomes will include clinical and microbiologic success, in-hospital mortality, and length of stay (total, intensive care unit, and ventilation days).□□Results/Conclusions:□Data collection is currently in progress. Results and conclusions will be presented.

Learning Objectives:

Recognize the challenges of providing appropriate antimicrobial therapy in the setting of increasing antimicrobial resistance

Identify organisms with growing resistance to antimicrobial therapy and appropriate antimicrobial choices to cover these organisms

Self Assessment Questions:

Which of the following organisms is a likely culprit of antibiotic-resistant infections belonging to the group coined in 2008 as the "ESKAPE" organisms?

A Eschericia coli
B: Streptococcus pneumoniae
C: Acinetobacter baumanii
D: Proteus mirabilis

Which antifungal agent has Candida parapsilosis developed increasing resistance to?

A Fluconazole
B Micafungin
C Amphotericin B
D Meropenem

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-409 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

COST-EFFECTIVENESS OF A PROCALCITONIN GUIDED TREATMENT ALGORITHM IN SEPSIS

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Purpose: Recently, procalcitonin has emerged as a promising biomarker of bacterial infection. Use of procalcitonin testing and an associated treatment pathway has been demonstrated to reduce duration of antibiotic therapy without impacting mortality in diseases like community acquired pneumonia and sepsis. Procalcitonin testing, however, is an additional expenditure which may or may not be offset by gains in antibiotic cost reduction and decreases in bacterial resistance or the rate of antibiotic-related adverse events. The objective of this study is to determine the financial impact of utilizing procalcitonin to guide antibiotic use in the treatment of sepsis in health-systems in the United States.□ □

Methods: This study is a pharmacoeconomic model simulation. Using available published clinical and economic data including length of antibiotic therapy, procalcitonin testing and antimicrobial costs, and adverse event incidence and associated costs, a decision analytic model will be developed to test the cost-effectiveness of using a procalcitonin algorithm. We will perform both a cost-effectiveness and cost-utility analysis for the use of procalcitonin in sepsis from the hospital perspective. Effectiveness and utility measures will be defined using cost-per-clinical episode and cost per quality-adjusted life years (QALYs). Upper and lower sensitivity ranges will be determined for all inputs. Univariate and probabilistic sensitivity analyses (Monte Carlo simulation) will assess the robustness of our model and model variables To determine the cost per effect achieved, incremental cost-effectiveness ratios (ICERs) will be calculated and compared to a predetermined willingness-to-pay threshold. Our model will provide health-system decision makers with a valuable guide when evaluating whether to implement procalcitonin testing in patients with sepsis at their institution. □ □Results: Results will be presented at Great Lakes Pharmacy Residency Conference□□Conclusion: Conclusion will be presented at Great Lakes Pharmacy Residency Conference

Learning Objectives:

Explain what procalcitonin is and how it is used as a biomarker for bacterial infection and antimicrobial stewardship tool.

Relate knowledge about procalcitonin levels in sepsis to decisions about antibiotic therapy.

Self Assessment Questions:

Which of the following is CORRECT regarding procalcitonin?

A Procalcitonin is a metabolite of the hormone calcitonin.
B: Procalcitonin increases in viral infection and is a good indicator of
C: Procalcitonin is useful for antimicrobial stewardship in sepsis, but
D: Procalcitonin is more sensitive and specific than C-reactive proteir

Patient BC was admitted to your ICU for sepsis three days ago and had an initial procalcitonin level of 3 mcg/L. This morning, BC is clinically stable and has a procalcitonin level is 0.6 mcg/L. What

A Level is > 0.5 mcg/L, cessation is discouraged.
B Level is > 0.5 mcg/L, cessation is strongly discouraged and this is
C Level has decreased by 80%, cessation is encouraged.
D Level has decreased by 80%, cessation is strongly encouraged.

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-410 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION AND EVALUATION OF A GOAL-DIRECTED SEDATION PROTOCOL

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Purpose: Optimization of sedation and analgesia in mechanically ventilated patients has been associated with a number of positive outcomes, including decreased time to extubation, decreased hospital and intensive care unit (ICU) length of stay, reduced rates of ventilator-associated pneumonia, and reduced rates of delirium. The 2013 Society of Critical Care Medicine guidelines for management of pain, agitation, and delirium emphasize that multiple approaches can be employed to improve sedation practice. One such method is targeting a light level of sedation utilizing a validated sedation scale. Other beneficial interventions include daily spontaneous breathing trials (SBTs) and structured wean guidelines. Use of non-benzodiazepine sedatives or analgesic only regimens has been associated with decreased rates of delirium and increased ventilator free days. Implementation of a sedatio protocol that integrates the aforementioned interventions has been shown to effectively improve these outcomes. The purpose of this project was to assess the percent achievement of target sedation score in three ICUs before and after the implementation of an optimized sedation protocol.□□Methods: The sedation protocol was revised to facilitate dose titrations for continuous infusion sedatives, emphasize the importance of utilizing appropriate Richmond Agitation Sedation Scale (RASS) goals, and refine the criteria for daily SBTs. The primary outcome was the number of RASS scores within the specified goal range. Secondary outcomes included documentation of daily SBTs, mean total daily doses of sedative and analgesic medications, rates of patient self-extubation and re-intubation, discontinuation of sedative medications due to adverse drug reactions, ICU length of stay, and hospital length of stay.□□Results: Data collection is ongoing.
□□

Conclusions: Final results and conclusions will be presented.

Learning Objectives:

Select an appropriate RASS score when targeting a light level of ICU sedation.

Describe beneficial outcomes shown when sedation in mechanically ventilated patients is optimized.

Self Assessment Questions:

When assessing the depth of a patients sedation, which RASS goal range is appropriate when targeting a light level of sedation?

A -4 to -5

B: -3 to -2

C: -1 to +1

D: +2 to +3

Which outcomes have resulted from the implementation of a sedation protocol?

A Increased use of sedative medications, decreased hospital LOS

B Decreased ICU LOS, increased duration of mechanical ventilation

C Decreased use of sedative medications, increased ICU LOS

D Decreased duration of mechanical ventilation, decreased ICU LOS

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-411 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

AN EVALUATION OF ANTIBIOTIC SELECTION OF DAPTOMYCIN, LINEZOLID, OR VANCOMYCIN FOR THE TREATMENT OF METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS (MRSA)

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Purpose: Methicillin-resistant Staphylococcus aureus (MRSA) is a significant cause of community and health-care acquired infections and can be associated with considerable costs. Certain infections including bacteremia, prosthetic joint infection, osteomyelitis, and pneumonia often involve prolonged antibiotic therapy and inpatient stay. Several treatment options are available for MRSA infections but costs vary widely. The purpose of this study is to evaluate the length of stay, cost, and treatment outcomes of antibiotic selection of daptomycin, linezolid, or vancomycin for MRSA infections. □□Methods: The study is a retrospective analysis of adult inpatients admitted to Mount Carmel Health System between January 1, 2012 and December 31, 2012. Approval was granted by the Mount Carmel Institutional Review Board. Patients were included if they (1) had a positive culture for MRSA; (2) had an ICD-9 code for either bacteremia, prosthetic joint infection, osteomyelitis, or pneumonia; and (3) were treated with daptomycin, linezolid, or vancomycin. Patients were excluded if they received less than three days of antibiotic therapy or had a culture with vancomycin MIC of 2 or greater. The primary outcome is length of stay. Secondary outcomes include total hospital cost, 30 day re-admission, and mortality. Analysis of factors affecting these outcomes including age, gender, length of antibiotic therapy, obesity, diabetes, chronic obstructive pulmonary disease, acute kidney failure, chronic kidney disease, sepsis, severe sepsis, and septic shock will be conducted. □□Preliminary Results: Collection and analysis is in progress. □□Conclusion: Final results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify the indications for antibiotics commonly used to treat MRSA

Recognize the mechanism of action of antibiotics commonly used to treat MRSA

Self Assessment Questions:

Which of the following are antibiotic treatment options for MRSA pneumonia?

A Daptomycin, linezolid, or vancomycin

B: Linezolid or vancomycin

C: Daptomycin or vancomcyin

D: Vancomycin only

What is the mechanism of action of linezolid?

A Inhibits protein synthesis

B Inhibits cell wall synthesis

C Causes depolarization of cell membrane

D Inhibits topoisomerase II

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-413 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

RISK FACTORS FOR MORTALITY IN SEPTIC PATIENTS WHO RECEIVED MULTIPLE VASOPRESSORS

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Purpose: Septic shock is defined as sepsis-induced hypotension persisting despite adequate fluid resuscitation. The Surviving Sepsis Campaign (SSC) recommends vasopressors to maintain a mean arteria pressure of ≥65 mmHg if fluid resuscitation is insufficient. Often, septic patients require concomitant vasopressors to maintain hemodynamic stability; however, limited data exists to predict which patients will survive. The purpose of this study is to identify risk factors for mortality in patients with septic shock requiring ≥3 concomitant vasopressor agents.□□Methods: This is a single-centered, retrospective cohort study comparing patients that experienced hospital mortality to those who survived. All patients age ≥18 admitted between January 1, 2010 and December 31, 2012 with a diagnosis of septic shock as defined by the SSC who received ≥3 concomitant vasopressors in the medical and surgical intensive care units (ICU) were included. No minimum dose is required; however, patients must receive ≥24 hours of vasopressor therapy. Vasopressor therapy includes dopamine, epinephrine, norepinephrine, phenylephrine, and vasopressin. The criteria for exclusion from the study were other types of shock, pregnancy, cardiac surgery ICU patients, active cancer or receiving chemotherapy, immunosuppression, do-not-resuscitate status, incomplete data or improper documentation, and vasopressor use outside indicated areas. The primary objective is to identify independent risk factors for mortality in patients with septic shock who receive ≥3 vasopressors by comparing patients that experienced hospital mortality to those who survived. Secondary endpoints include 30 and 90-day mortality, hospital and ICU length of stay, and appropriate use of early goal-directed therapy. A multivariate analysis will be conducted to identify risk factors for mortality in patients with septic shock.□□Results/Conclusions: Data collection and analysis are currently in progress. The results and conclusions will be presented at the 2014 Great Lakes Pharmacy Residency Conference

Learning Objectives:

Discuss the Surviving Sepsis Campaign's recommendations for septic shock patients refractory to fluid resuscitation requiring vasopressor therapy.

Identify potential risk factors for mortality in patients with septic shock who receive ≥3 vasopressors.

Self Assessment Questions:

According to the Surviving Sepsis Campaign, in what instances is vasopressin recommended in patients with sepsis-induced hypotension?

A Single initial vasopressor

B: Vasopressin doses ≥0.03-0.04 units/minute

C: MAP ≥65 mmHg

D: Either raising MAP or decreasing norepinephrine dosage

Septic patients often require vasopressors if fluid resuscitation is insufficient. What target does the Surviving Sepsis Campaign recommend titrating vasopressor therapy to?

A MAP ≥45 mmHg

B MAP ≥55 mmHg

C MAP ≥65 mmHg

D MAP ≥75 mmHg

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-412 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

AN EVALUATION OF THE USE OF LIPOSOMAL AMPHOTERICIN B AT A LARGE ACADEMIC MEDICAL CENTER

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Purpose: Liposomal amphotericin B (Ambisome) is a lipid formulation of the antifungal agent, amphotericin B. The benefit of the liposomal formulation is equivalent efficacy with reduced risk of adverse drug events (e.g., nephrotoxicity and infusion-related reactions) as compared to the deoxycholate formulation. Literature suggests comparable efficacy in the use of liposomal amphotericin B across a wide dosing range of 1 mg/kg/ day to 15 mg/kg/day. Package insert dosing recommendations are 3 mg/kg/day to 5 mg/kg/day for most fungal infections. Current practice at The Ohio State University Wexner Medical Center (OSUWMC) is 5 mg/kg/day for both empiric and targeted therapy. The objective of this study is to evaluate the use of liposomal amphotericin B at OSUWMC and its associated side effects. The secondary objective is to provide education to prescribers encouraging the use of lower doses within the recommended dosing range. Methods: A retrospective review was conducted of all patients who received at least one dose of liposomal amphotericin B at OSUWMC between July 1, 2012 and June 30, 2013. The sample size was determined by expected patient volume rather than statistical power. Patients from all hospitals within OSUWMC were included in the study. Patients < 18 years or > 89 years of age and prisoners are excluded from the data analysis. Data collected will include: age, gender, weight, service, length of stay, fungal pathogen(s) isolated, dosing regimen, concurrent antifungals and nephrotoxins, host factors, indication(s), adverse drug events and hospital mortality. A descriptive analysis will be conducted. Results: Final results and conclusions are pending and will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss the recommended dosing strategies for liposomal amphotericin B in the management of invasive fungal infections.

Review the incidence of adverse drug events associated with liposomal amphotericin B.

Self Assessment Questions:

Which of the following is the recommended dosing for liposomal amphotericin B in the management of acute pulmonary Histoplasmosis?

A 1 mg/kg/day to 5 mg/kg/day

B: 3 mg/kg/day to 4 mg/kg/ day

C: 3 mg/kg/day to 5 mg/kg/day

D: 5 mg/kg/day to 7.5 mg/kg/day

Compared to the deoxycholate formulation, liposomal amphotericin B has demonstrated a reduction in which adverse drug events?

A nephrotoxicity, electrolyte abnormalities, hepatotoxicity

B nephrotoxicity, thrombocytopenia, infusion-related reactions

C nephrotoxicity, thrombocytopenia, hepatotoxicity

D nephrotoxicity, electrolyte abnormalities, infusion-related reactions

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-414 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF A PHARMACIST-MANAGED HEART FAILURE POST-DISCHARGE (BRIDGE) CLINIC FOR VETERANS

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BACKGROUND: Timely outpatient follow-up after a patient is discharged from a heart failure (HF)-related hospitalization is associated with lower readmission rates. Post-discharge clinics are used to follow up with patients who were recently hospitalized for acute HF exacerbations and serve as a "bridge" until patients are able to be seen for chronic disease state management. A pharmacist-managed HF post-discharge clinic at the VA Ann Arbor Healthcare System (VAAAHS) was established in November 2010 in an effort to improve outcomes and compliance in veterans with HF. PURPOSE: The objective of this study is to assess the impact of a pharmacist-managed HF post-discharge clinic on patient outcomes. METHODS: Patients who were hospitalized with a primary diagnosis of HF between November 1, 2010 and August 15, 2013 were identified using ICD-9 codes. A retrospective chart review was used to collect data on HF-associated outcomes and pharmacist interventions in patients who were seen at the pharmacist-managed post-discharge HF clinic compared to patients who were not seen at this clinic. Data that was collected included: patient demographics, significant past medical history, cardiovascular medications, ejection fraction, vitals, significant labs, and pertinent hospitalization details. Information on subsequent follow up appointments, emergency department (ED) visits, hospital readmissions death, and pharmacist interventions were also collected if applicable. The primary endpoint of this study was all-cause 90 day readmission and death rate. Secondary endpoints included all-cause readmission or ED visits, HF-related readmission and ED visits at 30 and 90 days post-discharge as well as pharmacist interventions made at the pharmacist-managed HF post-discharge clinic. RESULTS/CONCLUSIONS: Data collection and analysis are currently in progress. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the multiple strategies that have been implemented in an attempt to improve outcomes in patients with heart failure and decrease healthcare costs

Discuss the role of a clinical pharmacy specialist in the post-discharge management of patients hospitalized for heart failure

Self Assessment Questions:

Which of the following was/were created to facilitate improvement in patient outcomes and prevent readmissions for heart failure?

A Heart Failure Expert Panel Clinical Performance Measures

B: Joint Commission ORYX Core Measures

C: Centers for Medicare and Medicaid Services (CMS) Patient Prote

D: B and C

The addition of a pharmacist to a multidisciplinary healthcare team has been shown to:

A Decrease all-cause morbidity and mortality

B Decrease adherence to medication and lifestyle recommendations

C Detect and resolve drug related problems

D A and C

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-415 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ADDRESSING POTENTIALLY INAPPROPRIATE MEDICATION USE IN OLDER ADULT HOSPITALIZED PATIENTS

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Purpose: Inappropriate medication use in older adults (age 65 years or older) is associated with hospitalization, along with adverse events and increased cost across all healthcare settings. A retrospective review of 200 older adults admitted to Froedtert Hospital in July 2013 found that potentially inappropriate medications (PIMs), as defined by the Beers criteria, were most commonly prescribed during admission, rather than prior to admission or at discharge. The most commonly prescribed PIMs overall were lorazepam, zolpidem, diphenhydramine, cyclobenzaprine, and alprazolam. The purpose of this project is to assess the impact of a pharmacist-driven intervention aimed at reducing the number of PIMs used in older adult hospitalized patients. Methods: Pharmacists on two general medicine units will identify target PIMs (diphenhydramine, zolpidem, benzodiazepines) prescribed to older adults at Froedtert Hospital during admission or at discharge during a four week time period in February and March 2014. After identifying a PIM, the pharmacist will use clinical judgment to determine if the PIM is inappropriate for the older adult. If deemed inappropriate, the pharmacist will contact the prescriber and make a recommendation. Recommendation options include an alternative medication, a reduced dose, non-pharmacological therapy, or discontinuation of the medication. Outcomes measured include the total number of the target PIMs prescribed, the percentage of PIMs deemed appropriate versus inappropriate, the number of inappropriate medications that received a pharmacist recommendation, and the number of recommendations that were accepted versus rejected by the prescriber. Also measured are the number of prescribed inappropriate medications that were prior to admission medications, and the number of inappropriate medications that were prescribed during admission and continued at discharge. Results/Conclusions: The results and conclusions of this project will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Identify potentially inappropriate medications that are commonly prescribed to hospitalized older adults.

Discuss a process for reducing the use of potentially inappropriate medications in hospitalized older adults.

Self Assessment Questions:

Which medication is one of the top five most commonly prescribed potentially inappropriate medications in older adults at a 500 bed academic medical center?

A lorazepam

B: amitriptyline

C: clonazepam

D: hydroxyzine

A process aimed at reducing the number of potentially inappropriate medications used in older adult hospitalized patients at a 500 bed academic medical center used which of the following methods:

A Written education given to prescribers listing potentially inappropri

B Pharmacists contacted prescribers and made alternative recomme

C Pop-up warnings appeared at order entry of potentially inappropria

D Verbal education provided to prescribers about potentially inappro

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-754 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

ANALYSIS OF EPOETIN AND DARBEPOETIN USE WITHIN THE OHIO STATE UNIVERSITY WEXNER MEDICAL CENTER

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PURPOSE The purpose of this study was to analyze the use of the erythropoiesis stimulating agents, epoetin and darbepoetin, to determine the feasibility of streamlining to one formulary agent. The primary objective was to characterize use between epoetin and darbepoetin within The Ohio State University Wexner Medical Center (OSUWMC). The secondary objective was to evaluate clinical use of epoetin and darbepoetin to ensure baseline labs were available and justified the initiation of these medications. METHODS Researchers used an electronic medication record (EMR) generated report of patients prescribed an erythropoiesis stimulating agent between January 1, 2013 to December 31, 2013 at OSUWMC. A retrospective chart review characterized patients by medical service, indication, and admitting diagnosis and whether they were being treated with epoetin or darbepoetin. For this retrospective, observational study, the following data were collected and assessed: renal function, iron studies, supplemental therapy, and outcome. This was an exploratory study and the sample size was driven by the expected patient population size rather than statistical power. RESULTS Final results are pending and will be presented at the Great Lakes Pharmacy Residency Conference. A descriptive analysis will be conducted. CONCLUSION Final conclusions are pending and will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify when erythropoiesis stimulating agents are appropriate for use based on laboratory results

Recognize the feasibility of having one erythropoiesis stimulating agent on formulary

Self Assessment Questions:

What lab values are most important in determining whether a patient meets the requirement for an erythropoiesis stimulating agent?

A Albumin, Alkaline Phosphatase

B: Folate, Vitamin B12

C: Iron saturation, Hemoglobin

D: Mcv, bun

Which of the following are true regarding epoetin and darbepoetin use?

A Changes in hemoglobin usually occur 3-4 hrs after administration

B A hemoglobin lab value of 13 is an appropriate indication for darbe

C Epoetin is commonly dosed less frequently than darbepoetin

D Darbepoetin has a longer half life than epoetin

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-416 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

THERAPEUTIC OUTCOMES IN A GERIATRIC MEDICATION MANAGEMENT CLINIC: FOCUS ON DIABETES MANAGEMENT

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Purpose: The geriatric medication management clinic is a pharmacist driven clinic as a part of the geriatric primary care team. Patients seen in the geriatric medication management clinic often have multiple comorbidities and complex medication regimens, often compounded by other geriatric syndromes and some degree of cognitive impairment. Disease state specific therapeutic interventions are made based on patient specific goals and appropriateness of medication use in the geriatric population. The purpose of this evaluation is to assess therapeutic outcomes with a primary focus targeted on diabetic management within the geriatric medication management clinic. These outcomes include appropriateness of individualized A1c goals, change in A1c from baseline, safety outcomes including hypoglycemic events, falls, hospitalizations and emergency visits related to diabetes, and medication therapy interventions conducted through the geriatric medication management clinic. Methods: A retrospective chart review will be performed for all patients enrolled in the geriatric medication management clinic for diabetes management between August 1, 2011 and January 15, 2014. Data collected will include age, gender, A1c, A1c goal, hypoglycemic events, falls, emergency room visits and/or hospitalizations related to diabetes, medication changes and interventions, and number and type of diabetes medications. Individualized assessment of A1c goals will be evaluated based on established Diabetic Guidelines within the Veterans Affairs Department and State of Wisconsin. Results and Conclusions: To be presented

Learning Objectives:

Identify patient specific factors which should be assessed to determine an individualized A1c goal in a geriatric patient population

Discuss appropriate medication therapy for diabetes management in a geriatric patient population

Self Assessment Questions:

Which of the following patient specific factors may be used to determine an individualized A1c goal

A Weight

B: Cost of therapy

C: Hypoglycemia risk

D: Gender

Which of these would be the most appropriate antidiabetic therapy for use in the geriatric population

A Glyburide

B Glipizide

C Sliding scale insulin

D Chlorpropamide

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-417 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFICACY OF TRIMETHOPRIM-SULFAMETHOXAZOLE VERSUS MOXIFLOXACIN FOR TREATMENT OF STENOTROPHOMONAS MALTOPHILIA INFECTION

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Purpose: Stenotrophomonas maltophilia has emerged recently as one o several concerning environmental multidrug resistant organisms. Trimethoprim-sulfamethoxazole is the current drug of choice for treating Stenotrophomonas maltophilia infections based on its in vitro activity an reported positive clinical outcomes; however, selection of an alternative antimicrobial agent may be warranted due to resistance, patient allergies, manufacturer backorder, or medication intolerance. The purpose of this research is to investigate the efficacy and safety of moxifloxacin therapy in treating Stenotrophomonas maltophilia infections and determine if it could be an alternative antimicrobial therapy for patients unable to receive trimethoprim-sulfamethoxazole. Methods: This retrospective, noninferiority trial includes adult patients with at least one positive Stenotrophomonas maltophilia culture during 2009-2012 who received moxifloxacin or trimethoprim-sulfamethoxazole within 48 hours of positive culture and were treated for at least 48 hours. Patients who received concurrent antibiotics with Stenotrophomonas maltophilia susceptibility or who died within 48 hours of treatment initiation will be excluded. The primary endpoint is 28 day mortality, defined as death within 28 days of positive culture. Secondary endpoints include clinical treatment failure, microbiologic treatment failure and success, 7 day mortality, and 28 day readmission for Stenotrophomonas maltophilia infection. Adverse effects related to moxifloxacin or trimethoprim-sulfamethoxazole therapy will also be evaluated. Results and conclusion: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review the pathogenic properties of Stenotrophomonas maltophilia and patient risk factors for infection.

Define antimicrobial treatment options that have demonstrated efficacy for Stenotrophomonas maltophilia infections.

Self Assessment Questions:

Which of the following best describes Stenotrophomonas maltophilia?

A Gram positive coccus, typically infects immunocompetent hosts

B: Gram positive coccus, multiple-drug resistant

C: Gram negative bacillus, typically infects immunocompetent hosts

D: Gram negative bacillus, multiple-drug resistant

Which of the following statements is correct concerning Stenotrophomonas maltophilia treatment?

A Tetracycline derivatives have demonstrated excellent in vivo activi

B Trimethoprim-sulfamethoxazole is the current drug of choice.

C Penicillin derivatives can often be used as monotherapy.

D Clinical trials have proven fluoroquinolone treatment superior to tri

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-418 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PRESCRIBER UTILIZATION OF OHIO AUTOMATED RX REPORTING SYSTEM (OARRS), A PRESCRIPTION MONITORING PROGRAM.

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Purpose: Ohio utilizes a system known as the Ohio Automated Rx Reporting System (OARRS) that tracks all controlled medications as we as tramadol containing products. Pharmacists and prescribers are required by law to request and review an OARRS report before dispensing or prescribing OARRS reported medication for patients that exhibit signs of abuse or misuse. The purpose of this study is to survey Ohio prescribers about their current use of OARRS to determine if participants responses identify common themes in clinical utilization of the system.□□Methods: Prior to commencement, this study was submitted to the Institutional Review Board for approval. A list of emails for actively licensed Doctors of Osteopathic Medicine, Doctors of Podiatry, and Medical Doctors was obtained from the State Medical Board of Ohio and a web-based survey was distributed to 39,420 addresses. The following information was collected from respondents: Current position, number of years prescribing, primary practice area, current access to OARRS, Ohio county of practice, reasons for use, perceived impact OARRS has on practice, individual actually requesting the OARRS report for the practice, and method of documentation for receipt and review of the report. All information is stored in a password-protected computer in a limited access area within Akron General Medical Center and all data was collected without personal identifiers. The primary outcome is to determine the statewide utilization of OARRS and the factors that impact use. Secondary objectives include: Prescriber-reported level of effect an OARRS report has on the decision to write an OARRS reported medication, factors that predict increased o decreased use of OARRS, barriers Ohio prescribers perceive to reviewing an OARRS report prior to writing an OARRS reported medication, reasons prescribers do not have OARRS access, and documentation method for OARRS use.□□Results and Conclusions: Data analysis in progress, results to be presented.

Learning Objectives:

Discuss the current laws and requirements surrounding the Ohio Automated Rx Reporting System (OARRS)

Report the findings of an Ohio statewide survey conducted to determine prescriber utilization of the Ohio Automated Rx Reporting System (OARRS)

Self Assessment Questions:

Which of the following is true regarding documentation of a report obtained from the Ohio Automated Rx Reporting System (OARRS)?

A Documentation of receipt and review is only necessary for pharma

B: Documentation of receipt and review is not required for patients th

C: Documentation of receipt and review can be done by placing a cop

D: Documentation of receipt and review must be completed for all pat

Which of the following people can obtain their own personal account for the Ohio Automated Rx Reporting System (OARRS)?

A Registered Nurse

B Law enforcement officer

C Medical Assistant

D Pharmacy Technician

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-896 -L03-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF HYDROMORPHONE USE IN A COMMUNITY HOSPITAL

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Purpose: Inpatient pain management remains a challenge for clinicians due to unpredictable patient responses to opioid therapy. Because of its potency, some patients may be more sensitive to opioid therapy, resulting in severe and life threatening side effects. This may be more pronounced when using more potent opioids, such as hydromorphone. The purpose of this study is to evaluate the prescribing habits and adverse effects of intravenous hydromorphone in a community hospital before and after the implementation of a computerized physician order entry (CPOE) system. □□Methods: This study was approved by the Institutional Review Board at Franciscan St Margaret Health. A retrospective chart review will be conducted and include patients who are at least 18 years of age or older and received at least one dose of intravenous hydromorphone before (January 2012 to May 2012) and after (January 2013 to May 2013) the implementation of the CPOE system. Patients who received hydromorphone must have received at least one dose for inclusion in this study. Primary endpoints are overall rate of compliance with generally accepted recommendations in literature on hydromorphone prescribing as well as the evaluation of the impact of CPOE on compliance with these recommendations. Secondary endpoints are the number of adverse events, rapid responses/codes, and reversal agents used among those patients with dosing outside of the recommendations as well as the overall rate of adverse events. □□Preliminary Results:□□CPOE decreased the number of rapid responses due to hydromorphone. CPOE did not significantly decreased the number of opioid nave patients prescribed higher doses of hydromorphone and the number of opioid nave patients prescribed higher doses of hydromorphone. CPOE did increase concomitant opioid medications ordered. □□Final Results: Presented a GLPRC□□Conclusion: To be presented at GLPRC

Learning Objectives:

Recognize important patient-specific characteristics influencing treatment choice of opioids

Select appropriate dosing for hydromorphone in opioid nave patients

Self Assessment Questions:

Which of the following is an appropriate initial dose for a patient who is opioid nave?

A 1-2mg every 4 hours as needed

B: 1mg every 2 hours as needed

C: 0.2-0.6mg every 2 to 3 hours as needed

D: 2mg every 3 hours as needed

Which of the following should be considered when choosing a dose for a patient?

A Age

B Renal function

C Previous exposure to opioids

D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-419 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

U-500 INSULIN OUTCOMES IN VA MOVE! WEIGHT MANAGEMENT PROGRAM PARTICIPANTS VERSUS NON-PARTICIPANTS

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Purpose: The purpose of this retrospective chart review is to assess the efficacy and safety of U-500 insulin in patients transitioned from conventional insulin therapy and to compare these outcomes for VA MOVE! weight management program participants versus non-participants. MOVE! is a weight loss program that emphasizes healthy diet changes and exercise. □□Method: A retrospective chart review will be performed for patients with type 2 diabetes on U-500 insulin for at least 3 months. The primary outcome of the study is the change in A1c after transition to U-500 insulin for VA MOVE! weight management program participants compared to non-participants. Secondary outcomes include change in daily insulin dose, number of insulin injections per day, frequency of hypoglycemic episodes, body weight, and emergency department visits. Data for the A1c, daily insulin dose, weight, and frequency of hypoglycemia will be collected every 3 months for up to 2 years prior to transition and up to 5 years after transition to U-500 insulin. Interrupted time series analysis and linear regression will be used to analyze the data.□□Results/Conclusion: The results and conclusion are pending.

Learning Objectives:

Describe the potential benefits and risks of transitioning from conventional insulin therapy to U-500 insulin.

Identify factors that would make a patient a good candidate for transition from conventional insulin therapy to U-500 insulin.

Self Assessment Questions:

Describe the potential benefits and risks of transitioning from conventional insulin therapy to U-500 insulin.

A Improved glycemic control

B: Weight loss

C: Decreased need for follow up

D: Decreased frequency of hypoglycemic episodes

A factor that may make a patient a good candidate for transition to U-500 insulin from conventional insulin therapy includes:

A Prior use of insulin glargine

B Daily insulin dose greater than 200 units

C Frequent hypoglycemic episodes

D Poor adherence to conventional insulin therapy

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-420 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF A MULTIDISCIPLINARY PAIN, AGITATION, DELIRIUM GUIDELINE IN MECHANICALLY VENTILATED CRITICALLY ILL ADULTS

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A multi-disciplinary team updated our institutions pain, agitation, and delirium (PAD) guideline based on recommendations of the Society of Critical Care Medicine PAD guidelines. Our guideline emphasized protocolized sedation with increased as needed boluses and non-benzodiazepine infusions, daily sedation interruption, and pairing of spontaneous awakening (SAT) and spontaneous breathing trials (SBT). The purpose of this project was to evaluate the impact of implementatior of a PAD guideline on clinical outcomes and medication utilization in an academic medical center ICU. It was hypothesized that the guideline would improve clinical outcomes and decrease continuous infusion benzodiazepine usage.□□Pre-post retrospective chart review of 2085 (1147 pre, 938 post) critically ill, mechanically ventilated adults in a medical/surgical ICU between September 2011 and July 2013. The PAD guideline was implemented in September 2012.□□Average ventilation days was reduced after guideline implementation (3.98 vs 3.33 days, p=0.0008), as well as ICU and hospital length of stay (4.79 vs 4.24 days p=0.02 and 13.96 vs 12.82 days, p=0.03, respectively). Hospital mortality (19 vs 20%, p=0.72) and APACHE 4 scores (77.28 vs 79.14, p=0.19) were no different. □□After guideline implementation, the percentage of patients with midazolam infusions decreased (422/1147 (37%) vs 306/938 patients (33%), p=0.047). The percentage of patients receiving continuous infusion propofol (679/1147 (59%) vs 766/938 (82%), p = 0.0001) and dexmedetomidine (78/1147 (7%) vs 121/938 (13%), p=0.0001) increased. The percentage of patients receiving as needed bolus midazolam increased (434/1147 (38%) vs 557/938 (59%), p=0.0001) and the percent who had a continuous infusion opioid increased (592/1147 (52%) vs 580/938 (62%), p=0.0001). Average pain and sedative drug cost per month did not change ($13,606.12 vs. $13,368.30). □□A multi-disciplinary PAD guideline utilizing protocolized sedation and daily sedation interruption decreased ventilation days and ICU and hospital length of stay without increasing sedation costs and while decreasing midazolam drip usage.

Learning Objectives:

Identify strategies pharmacists can utilize to follow recommendations for the treatment of pain, agitation, and delirium in mechanically ventilated critically ill adults provided in the updated Society of Critical Care Medicine guidelines.

Describe the potential impact on quality, patient safety, and cost from multidisciplinary efforts focusing on the treatment of pain, agitation, and delirium in mechanically ventilated critically ill adults.

Self Assessment Questions:

Which of the following statements is the best strategy to follow the recommendations provided by the Society of Critical Care Medicine guidelines for the treatment of pain, agitation, and delirium in

A Develop a Pharmacy and Therapeutics approved-guideline with re
B: Create nursing-driven titration protocols
C: Implement a computerized physician order entry order set
D: All of the above

Which of the following are potential outcomes from following the recommendations in the new Society of Critical Care Medicine guidelines for the treatment of pain, agitation, and delirium in mechanica

A Pharmacy drug costs will increase
B Self-extubation rate will increase
C Hospital length of stay may stay the same
D Pharmacy drug costs may stay the same

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-421 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

AN EVALUATION OF CONTINUOUSLY INFUSED REMIFENTANIL IN MECHANICALLY VENTILATED CRITICAL CARE PATIENTS

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Purpose - Remifentanil is an ultra short acting -opioid agonist with a rapid onset and short duration of action. Organ independent metabolism lack of accumulation, and rapid onset/offset of action are several properties that make it unique from other opioid agents. Remifentanil has been made available for selection by the ICU team at Riverside Methodist Hospital for sedation management for a trial period of four months. The purpose of this study will be to evaluate the use of remifentanil for management of analgesia and sedation in mechanically ventilated patients. □□Methods - Remifentanil was approved by the Pharmacy and Therapeutics Committee for a trial period for use in analgesia and sedation management in mechanically ventilated patients in October 2013. Following approval by the Institutional Review Board, data was collected in two cohorts of patients. Cohort 1 contained mechanically ventilated patients admitted to the medical, surgical, cardiac, or neurological intensive care units at OhioHealths Riverside Methodist Hospital initiated on remifentanil infusion beginning one montl post-implementation of a remifentanil protocol. For Cohort 2, data was collected on a group of pre-remifentanil protocol patients with the same criteria as Cohort 1 who were admitted during the same three months of the previous year. The primary objective was to evaluate the frequency of remifentanil use following implementation of the protocol. Secondary objectives include a comparison between the two cohorts of ICU delirium, ventilator days, ICU length of stay, average sedative dose, and number of days at goal RASS. This data will be used to assess the implementation and utilization of remifentanil in mechanically ventilated patients. □□Results and Conclusions - Data collections is in progress. Final results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Report the frequency of use of remifentanil as a first-line medication to achieve adequate sedation in mechanically ventilated patients following implementation of a remifentanil protocol.

Describe patient outcomes including prior to and following implementation of a remifentanil protocol.

Self Assessment Questions:

Which of the following is (are) true with respect to the 2013 Pain, Agitation, and Delirium Guidelines?

A These guidelines recommend an analgesia based sedation
B: Opiates, including remifentanil, are first line medications for mana
C: Pain is typically under treated in adult ICU patients
D: All of the above

Which of the following is true regarding the use of continuously infused remifentanil?

A Accumulation can be seen following extended duration of infusion
B Mechanism of action varies from other opiates
C Metabolized independent of organ function
D Offset of action may vary in obese patients

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-422 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

THYMOGLOBULIN INDUCTION IN KIDNEY TRANSPLANT: IS MORE LESS?

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Purpose: Thymoglobulin is a lymphocyte depleting, polyclonal antibody used for induction therapy and treatment of rejection in kidney transplant patients. In order to reduce infection while maintaining adequate induction therapy, the total dose of Thymoglobulin has decreased over the years from 10.5 mg/kg to 6 mg/kg. Additional dose reductions have occurred, however, institutions use different dosing protocols since patient populations differ. In January 2008, Henry Ford Hospital adopted a new immunosuppression protocol that called for reduced doses of Thymoglobulin from 6 mg/kg to 4.5 mg/kg in high-risk kidney transplant patients. This study aims to assess transplant related outcomes following implementation of the new protocol including incidence of infection and biopsy proven acute rejection. Methods: This is a quasi-experimental study comparing the outcomes of high-risk kidney transplant in patients receiving induction therapy with 6 mg/kg versus 4.5 mg/kg of Thymoglobulin at Henry Ford Hospital. The project is approved by the Institutional Review Board. Collected data will include baseline characteristics and transplant related characteristics. Patients will be identified using the electronic medical record from January 1, 2003 to December 31, 2012. Patients over the age of 18 who received a cadaveric kidney transplant and induction therapy with Thymoglobulin 6 mg/kg or 4.5 mg/kg, and who have at least one criteria indicative of high risk transplant will be included. We will characterize the composite incidence of infection within 12 months post transplant by reviewing the incidence of BK viremia, CMV infection, and infection requiring hospitalization. We will also assess for biopsy proven acute rejection, patient survival, graft survival, delayed graft function, hospital length of stay, GFR, and 30 day readmission. Descriptive and comparative statistics will be utilized to analyze collected data. A $P<0.05$ will be considered statistically significant for all comparisons. Results and conclusions will be presented at the Great Lakes Conference.

Learning Objectives:

Discuss the use of Thymoglobulin induction therapy in kidney transplant patients.

Identify the reasons why reduced doses of Thymoglobulin for induction therapy may be beneficial.

Self Assessment Questions:

Which of the following statements is correct?

A Thymoglobulin is FDA approved for induction therapy in kidney tra
B: There are specific guidelines for the use of Thymoglobulin inductic
C: Thymoglobulin is commonly used for induction therapy in high-risk
D: The doses of Thymoglobulin used for induction therapy have been

Which of the following is a potential benefit to using reduced doses of Thymoglobulin for induction therapy in a kidney transplant recipient?

A Increased risk of rejection
B Reduced risk of infection
C Increased risk of DGF
D Reduced risk of infusion related reactions

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-423 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

A COMPARISON OF SURGICAL CARE IMPROVEMENT PROJECT (SCIP) MEASURE COMPLIANCE BEFORE AND AFTER PROSPECTIVE PHARMACIST AND NURSE INTERVENTIONS

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Purpose: To confirm that the presence of a pharmacist and nurse assessing surgeries and performing prospective medication interventions results in improved SCIP measure compliance. Methods: A retrospective chart review of the electronic medical record was conducted to evaluate SCIP measure compliance before and after prospective nurse and pharmacist interventions. Patients for the control and experimental group were identified utilizing a daily surgery roster; each arm included up to 100 patients. All data was de-identified and patient health information was stored in a password protected electronic file. Control group patients were collected starting with surgeries performed in April 2013. Experimental group patients were collected starting with surgeries performed in November 2013 after implementation of nurse and pharmacist prospective SCIP interventions. The primary outcome was compliance with all SCIP measures, except for surgical hair removal (Inf-6). The secondary outcome focused on compliance with the following problematic measures for the hospital: Venous thromboembolism (VTE) prophylaxis ordered (VTE-1), VTE prophylaxis received (VTE-2), and antibiotic selection (Inf-2). Results Preliminary results include thirty patients in each group. For each patient, nine SCIP measures were evaluated. In the control group, out of 270 measures, 78 were not applicable, 179 passed and there were 13 failures. In the experimental group, out of 270 measures, 92 were not applicable, 176 passed and there were two failures. Excluding those not applicable, preliminary secondary outcomes in the control group for SCIP Inf-2 show 27 passes and two failures, VTE-1 had 23 passes and one failure, and VTE-2 had 21 passes and three failures. The experimental group for SCIP Inf-2 had 26 passes and no failures, VTE-1 had 24 passes and no failures, and VTE-2 had 24 passes and no failures. Conclusion: Compared to surgeries with no prospective pharmacist and nurse intervention, preliminary results show an improvement in SCIP measure compliance.

Learning Objectives:

Define the goals and purpose of the Surgical Care Improvement Project (SCIP).

Identify which SCIP measures are most affected by prospective pharmacist intervention.

Self Assessment Questions:

Which of the following best describes the purpose of SCIP measures?

A Improve compliance with hospital surgery guidelines
B: Improve morbidity, mortality, and promote treatment consistency
C: Generate more revenue from an improved cost of care
D: Enforce government requirements for inpatient surgeries

A pharmacist would best be utilized to monitor which of the following SCIP measures?

A VTE-1 and Inf-6
B Inf-6 and Inf-10
C VTE-1 and Inf-2
D Inf-1 and Inf-9

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-424 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFECT OF AN AUTOMATED ELECTRONIC MEDICAL RECORD-BASED PHARMACIST-DRIVEN VALGANCICLOVIR DOSE OPTIMIZATION PROGRAM IN SOLID ORGAN TRANSPLANT RECIPIENTS

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Background: Cytomegalovirus (CMV) is an important source of morbidity and mortality in solid organ transplant (SOT) patients. Oral antiviral prophylaxis with valganciclovir (valGCV) effectively reduces the incidence of CMV infections following SOT. Previous data from our center demonstrated that underdosing of valGCV was associated with developing CMV viremia and ganciclovir (GCV)-resistance during the 6-month prophylaxis period. An automated program within our transplant EMR (OTTR, OTTR Chronic Care Solutions, Omaha, NE) was used to generate a list of patients who received under- or overdoses of valGCV based on estimated GFR. Transplant pharmacists reviewed this list at least weekly and optimized valGCV dosing. The purpose of this study was to evaluate the outcome of this intervention.□□Methods: Following IRB approval, a retrospective cohort study was conducted to describe the number of subjects intervened by this novel dose optimization program and to evaluate the number of CMV infections following use of the program. Two cohorts were defined before-and-after program implementation in May 2012. The cohorts included kidney, pancreas, and liver transplant recipients from April 2011 through March 2012 (n=388) and September 2012 through August 2013 (n=346). Fishers Exact Test was used to compare groups.□□Results: Following implementation of the dose optimization program, approximately 200 patients were reviewed on a weekly basis and 10% required dose adjustment. The incidence of CMV viremia ≥600 c/mL or biopsy proven disease was 10.6% (41/388) prior to program implementation, compared to 5.8% (20/346) after (p=0.02). Two patients receiving prophylaxis developed GCV-resistant CMV before program implementation, while no cases were observed after.□□Conclusions: This automated EMR-based pharmacist-driven valGCV dose optimization program was effective in reducing the frequency of CMV infections and was associated with a numeric reduction in the frequency of GCV-resistance. A larger study of such a dose optimization program is warranted.

Learning Objectives:

Discuss strategies for prevention of cytomegalovirus infection following solid organ transplant.

Review valganciclovir pharmacokinetics and dose optimization.

Self Assessment Questions:

The risk for cytomegalovirus infection following solid organ transplant may be reduced by administering which of the following prophylactic medications?

A Tacrolimus
B: Miconazole
C: Valganciclovir
D: Alemtuzumab

Valganciclovir requires dose adjustment for which of the following conditions?

A Hepatic dysfunction
B Renal dysfunction
C Heart failure
D A and B

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-425 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

A RETROSPECTIVE COMPARISON OF DAUNORUBICIN 60MG/M2 VERSUS DOSE-INTENSE DAUNORUBICIN (90MG/M2) IN PREVIOUSLY UNTREATED ADULT PATIENTS WITH ACUTE MYELOID LEUKEMIA

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Purpose: Treatment of acute myeloid leukemia (AML) remains problematic with poor overall survival. The most effective chemotherapy regimen for induction remission in patients treated for AML continues to be the combination regimen of daunorubicin (DNR) IV bolus daily for 3 days and cytarabine 100mg/m2 continuous infusion for 7 days. Recent trials have demonstrated improved complete remission (CR) with dose-intense daunorubicin((90mg/m2) compared to standard dose daunorubicin (45 mg/m2) (DNR-45). To date, no studies have compared DNR-60 to DNR-90. To determine whether DNR-60 is as effective as DNR-90, we propose this retrospective observational study at Northwestern Medicine. Patients who receive DNR-60 will be compared to those who received DNR-90 for remission induction. □□Methods: Newly diagnosed patients with AML who received DNR-60 or DNR-90 as part of the standard 7+3 induction regimen will be identified through the electronic medical record. Patients treated with DNR-60 or DNR-90 between January 2009 and December 2013 will be eligible for inclusion in the study. Baseline characteristics that will be collected include performance status, age, cytogenetic risk and FLT-3/NPM1 molecular mutation status. Treatment-associated toxicities such as infections, cardiac toxicities, and death will be evaluated. Our primary outcome is to compare CR rates between the groups. Secondary outcomes include disease free survival, overall survival, toxicity, and treatment related mortality.□□Results: Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Define the adverse drug effects from long term daunorubicin use.

Describe the patient population that did not benefit from dose intense daunorubicin.

Self Assessment Questions:

1.The adverse drug effects from long term daunorubicin use includes:

A a.□Ototoxicity
B: b.□Cardiotoxicity
C: c.□Secondary Malignancies
D: d.□B & C

2.The patient population that did not benefit from dose intense daunorubicin includes:

A a.□Pediatric patients
B b.□Patients with favorable cytogenetics
C c.□Patients with unfavorable cytogenetics
D d.□A & C

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-426 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

NON-ANTICOAGULATION RELATED INTERVENTIONS IN A PHARMACIST-MANAGED ANTICOAGULATION CLINIC

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PURPOSE: Pharmacists are an easily accessible health care resource for patients and play a significant role in the overall health of patients. Pharmacists provide services and make interventions in pharmacist-managed clinics outside of the clinics primary purpose that, if overlooked, could negatively impact the patients health and increase health care costs. Data describing these interventions would provide evidence that supports recognizing pharmacists as providers. This study aims to identify the types and results of non-anticoagulation related interventions made in patients enrolled in a pharmacist-managed anticoagulation clinic. METHODS: This is a retrospective cohort conducted by chart review of patients referred to the Internal Medicine Center of Akron (IMCA) Anticoagulation Clinic. This study has been approved by the Institutional Review Board. Patients included are at least 18 years old and have attended at least one face-to-face appointment in the IMCA Anticoagulation Clinic between July 21, 2009, and November 30, 2013. No exclusion criteria apply. The primary outcome of this study is the incidence of each type of non-anticoagulation related intervention made by pharmacists. Interventions are classified based on predetermined categories and include promoting continuity of care, health assessment and triage, acquiring necessary diagnostics, reconciling medications, and modifying therapy. Secondary outcomes are the amount of potential reimbursement associated with these interventions and the association between patient characteristics and interventions. The results of selected intervention categories will also be determined. Potential reimbursement is calculated for interventions that qualify as valid claims using OutcomesMTM reimbursement rates. Descriptive statistics will be used for the primary outcome, intervention results, and reimbursement. Relative risk will be used to describe patient predictor data. RESULTS AND CONCLUSIONS: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review current literature regarding pharmacist-managed anticoagulation clinics

Discuss a pharmacists role in providing services outside of anticoagulation management in pharmacist-managed anticoagulation clinics

Self Assessment Questions:

Pharmacists in pharmacist-managed anticoagulation clinics have been shown to reduce which of the following?

A Time within therapeutic range
B: The use of LMWH
C: The use of warfarin
D: Hospital admissions

Which of the following allows pharmacists to make interventions outside of an anticoagulation clinics primary purpose that may otherwise be overlooked?

A Pharmacists increase patient satisfaction
B Pharmacists have frequent interaction with patients
C Patients fill prescriptions through the clinic pharmacy
D Patients can make appointments for other wellness services

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-427 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE ROLE OF MENTAL HEALTH PHARMACISTS WITHIN THE VETERANS AFFAIRS (VA) HEALTH CARE SYSTEM

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Objective: With the increasing number of servicemen and servicewomen returning from Operations Enduring Freedom and Iraqi Freedom (OEF/OIF), the need for psychiatric services for veterans has been expanding. Mental health pharmacists have been incorporated in treatment teams for this population and have a growing opportunity to make an impact on patient care. However, data is lacking regarding the role of the mental health pharmacists in the VA. The purpose of this research project is to characterize the duties of psychiatric pharmacists and emphasize their importance within the VA system. Other goals include identifying ways to optimize training and show the increasing demand for psychiatric pharmacists. Methods: Two residents expressed interest in this nationwide project with the anticipation of presenting different aspects of the collected data. A survey was developed on SurveyMonkey. The survey consisted of 26 questions focusing on clinical responsibilities, training, student/resident responsibilities, and management/future plans. The survey link was emailed to the "Pharmacy Chiefs" list serve, as they were identified as a consistent point of contact for VA facilities nationwide. Members of this group were asked to forward this email to mental health pharmacists at their respective facilities. The survey link was emailed on 1/9/14 and a reminder was emailed four days prior to the deadline, which was on 1/31/14. Post-hoc analysis will be used to stratify data and identify trends. Descriptive statistics will be used to evaluate data. Results and Conclusion: Data collection and analysis is currently in progress. Results will be presented at the Great Lakes Pharmacy Residents Conference.

Learning Objectives:

Describe the training of mental health pharmacists within the VA

Identify common clinical responsibilities among mental health pharmacists within the VA

Self Assessment Questions:

Which of the following is true regarding training of mental health pharmacists within the VA?

A Over 50% of mental health pharmacists have completed a general
B: Over 50% of mental health pharmacists have completed a psychia
C: Under 50% of mental health pharmacists are BCPP certified
D: Over 50% of mental health pharmacists received more than 4 wee

One of the most common responsibilities of mental health pharmacists within the VA include

A Dispensing medications
B Leading patient education groups
C Medication reconciliation
D Clozapine monitoring

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-755 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

OPIOID OVER-UTILIZATION POINT OF SALE EDIT IN A COMMERICAL POPULATION: A PBM EVALUATION

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Objective: The purpose of this study is to determine if a point of sale (POS) edit can effect opioid utilization among a subgroup of high opioid utilizers over sequential six-month periods. □□Methods: A retrospective drug utilization cohort study was conducted on pharmacy claims data for 260 members who were identified as high opioid utilizers in a commercial population. This data consisted of opioid utilization information for each subject collapsed over each of the data collection periods including total claims, unique pharmacies, unique prescribers, total day supply and amounts reimbursed by the insurance plan. The POS edit was implemented on February 20, 2013, looking 60 days retrospectively to determine if the member met any of the four parameters: ≥4 prescribers of opioids, ≥150 days supply of opioids, ≥8 opioid claims, and ≥3 opioid dispensing pharmacies when they attempted to fill an opioid prescription. When a parameter was met, it resulted in a denial for pharmacy reimbursement. To receive reimbursement, the provider had to submit a prior authorization form stating awareness that their patient met the criteria for opioid utilization review and that they would like the patient to receive the prescription. Separate R-ANOVA statistics will be calculated to determine if any of the measures of opioid utilization changed over the sequential time periods. Secondary analysis will explore if covariates (age, gender, initial opioid utilization, etc.) significantly affect changes in the outcome measures over time.□□Results: Data collection is currently ongoing and will be completed in February 2014.□□Conclusion: Data analysis will indicate if the POS edit can favorably impact the opioid utilization among a subgroup of high opioid utilizers. Depending on the results, further analysis may be conducted to determine the cost-savings of the intervention.

Learning Objectives:

Recognize the need for a PBM approach to assuring safety around opioid-utilization.

Discuss potential barriers around curbing abuse and opioid-overutilization from a PBM perspective.

Self Assessment Questions:

Which of the following metrics can PBMs follow to assess opioid utilization?

A opioid scripts administered at the doctor's office

B: pharmacies used to fill opioid scripts paid with cash

C: prescribers writing opioid scripts for a patient using prescription be

D: opioid scripts filled using a discount card

What percentage of the worlds supply of hydrocodone is consumed by Americans?

A 99%

B 86%

C 62%

D 53%

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-756 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF ADHERENCE WITH LONG-ACTING INJECTABLES IN THREE CLINICAL SETTINGS

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Purpose: Medication adherence is an important aspect of medical treatment, but it is especially important in the psychiatric patient population. Long-acting injectable (LAI) medications have been shown to improve patient adherence by allowing patients to receive an intramuscular injection only once monthly or biweekly instead of having to take a medication by mouth every day. This method prevents missed or forgotten doses allowing for a steady amount of the medication to be in the patients body for the entire month or two weeks depending on the drug. This project will examine LAI adherence by evaluating how frequently patients miss their doses during a one year period in an outpatient community mental health clinic setting.□□Methods: Retrospective data will be collected from electronic medical records in adults initiated on an LAI between October 1, 2011 and October 31, 2012 with complete records for one year after the index date. The rates of adherence will be compared between three clinical settings treating patients in differing stages of acute or chronic illness: Prevention and Recovery Center for Early Psychosis (PARC), Adult Outpatient (AO), and Assertive Community Treatment (ACT). Additional data collected will include how frequently these subjects use acute care services (e.g., emergency department, crisis intervention unit, inpatient psychiatric unit), severity of illness, payer source (e.g., Medicaid, self-pay, patient assistance program), and civil commitment status.□□Results/Conclusions: We will report adherence rates using persistence of use as well as patient demographics, primary diagnosis, other mental health diagnoses, LAI administered, use of acute care services (if any), Adult Needs and Strengths Assessment (ANSA) scores, civil commitment status, and payer source.

Learning Objectives:

Recognize the benefits of using long-acting injectable antipsychotics

Recall what antipsychotics are currently available as long-acting injectable formulations

Self Assessment Questions:

Why are long-acting antipsychotics utilized in the mental health population?

A Better efficacy over oral formulations

B: Cheaper alternative to oral formulations

C: Improved compliance

D: Patient mistrust of mental health care providers

Which of the following is currently not available as a long-acting injectable formulation as of February 2014?

A Haloperidol

B Lurasidone

C Paliperidone

D Risperidone

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-428 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

RENAL IMPLICATIONS OF CONVERTING FROM A CALCINEURIN INHIBITOR TO SIROLIMUS IN HEART TRANSPLANTATION

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Calcineurin inhibitors (CNIs) form the backbone of most immunosuppressive regimens after solid organ transplantation. However, nephrotoxicity is one of their use-limiting side effects. Proliferation signal inhibitors (PSIs) such as sirolimus offer an alternative to CNIs and may be preferred as the primary immunosuppressant for patients with CNI-induced nephrotoxicity, certain cancer diagnoses, and/or cardiac allograft vasculopathy. Proteinuria is a well-known side-effect of sirolimus. While some studies show that sirolimus improves renal function after patients are converted from CNIs, these studies contain a cohort of patients whose renal function either does not improve or actually worsens while on sirolimus. The sirolimus prescribing information cites an unpublished trial of renal transplant patients converted from cyclosporine to sirolimus. In this trial, patients were stratified based on estimated glomerular filtration rate (eGFR) <40 or ≥ 40 ml/min, and the arm with eGFR < 40 was terminated early due to an increased rate of adverse effects. The purpose of this study is to evaluate the use of sirolimus in heart transplant recipients with underlying renal dysfunction. This study will include heart transplant recipients who have been converted from CNIs to sirolimus at any point and for any reason post-transplant. Patients will be stratified based on eGFR <40 or ≥ 40 ml/min at the time of conversion. The primary endpoint is change in renal function after conversion, and it will be measured by capturing SCr, eGFR, and degree of proteinuria at baseline, at 6 months, and at 12 months post-conversion. The secondary endpoint is tolerability of sirolimus and will be measured by the occurrence of sirolimus-associated adverse events and proportion of patients unable to remain on a sirolimus-based regimen. It is our hope that this work will provide insight regarding the renal benefits and risks of utilizing sirolimus in heart transplant recipients with pre-existing renal dysfunction.

Learning Objectives:

Describe reasons why patients may be switched from a calcineurin inhibitor to a proliferation signal inhibitor

Identify the common side effects of sirolimus

Self Assessment Questions:

A patient may be transitioned from a calcineurin inhibitor to a proliferation signal inhibitor

A If he or she has underlying hepatic dysfunction

B: If he or she has underlying renal dysfunction

C: If he or she develops leukemia

D: If he or she has a myocardial infarction

A common side effect of sirolimus is

A Cardiac allograft vasculopathy

B Cancer

C Proteinuria

D Elevated LFTs

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-429 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF SAFETY AND EFFICACY OF TWO AMINOGLYCOSIDE DOSING STRATEGIES FOR CYSTIC FIBROSIS EXACERBATIONS

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Purpose: High-dose therapy with therapeutic drug monitoring (HD-TDM) of intravenous aminoglycosides has been shown to improve efficacy and minimize toxicity among Cystic Fibrosis (CF) patients. Much of the data supporting HD-TDM for CF patients is derived from pediatric populations, but the benefits associated with HD-TDM are less well defined in the adult population. Several randomized, observational studies comparing once-daily with three-times daily aminoglycoside treatment have been conducted, yet optimal dosing strategies that relate drug exposure, efficacy, and toxicity in this population are lacking. The present study seeks to describe the aminoglycoside exposure, efficacy, and toxicity pharmacokinetic-pharmacodynamic indices in the setting of acute pulmonary exacerbations of the high-dose extended-interval strategies. The primary aim of this study is to evaluate aminoglycoside efficacy and toxicity outcomes in adult CF patients according to the HD-TDM dosing scheme (once-daily versus more than once daily) received. Methods: This is a retrospective, observational study of patients admitted to Northwestern Memorial Hospital between January 1 2005 and January 16, 2014. Eligible patients will be males or females > 18 and < 90 years of age. The study will be designed to evaluate 1) clinical efficacy between dosing strategies and 2) aminoglycoside exposure and efficacy and toxicity relationships in adult CF patients. Aminoglycoside efficacy will be the primary outcome defined by using changes in FEV1 during the course of treatment. Toxicity will be assessed secondarily as cochleotoxicity, vestibulotoxicity, and nephrotoxicity. The primary and secondary outcomes will be analyzed in a univariate analysis. Patient demographics to potential confounders will be collected and patients will be stratified according to severity of illness using the modified APACHE II to isolate aminoglycoside effects on the primary and secondary outcomes. A multivariate analysis will be used to assess the primary and secondary analyses while controlling for relevant confounders.

Learning Objectives:

Discuss life-threatening medical complications associated with acute disease exacerbations in adult Cystic Fibrosis patients.

Describe the toxicities associated with large lifetime cumulative doses of aminoglycoside therapy.

Self Assessment Questions:

Which of the following is the most common cause of mortality in patients with Cystic Fibrosis?

A Respiratory failure

B: Pancreatic insufficiency

C: Liver failure

D: Gallstones

Which of the following is a toxicity associated with large lifetime cumulative doses of aminoglycoside antibiotics?

A Hepatotoxicity

B Nephrotoxicity

C Pulmonary toxicity

D Cardiac toxicity

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-430 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

VANCOMYCIN DOSING IN HEMODIALYSIS PATIENTS: A RETROSPECTIVE REVIEW

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Purpose: The primary objective of this study is to assess the current practice of vancomycin dosing in hemodialysis patients at St. Elizabeth Healthcare by analyzing target level attainment and time in therapeutic range. The secondary objective is to evaluate the need for an improved protocol by comparing the results of this study to currently available literature. Methods: The hospitals electronic medical record system wi be used to identify all hemodialysis patients treated with IV vancomycin between July 2012 and July 2013. A retrospective review will be conducted with patients admitted to the Edgewood and Ft. Thomas locations. All patients that receive at least one hemodialysis session and one dose of IV vancomycin during admission and have at least two appropriately drawn vancomycin levels recorded will be included in the study. Patients will be excluded if they meet the following criteria: less than 18 years of age, pregnant, a history of hemodialysis as an outpatient but not actively receiving hemodialysis during hospitalization, receiving CRRT prior to hemodialysis, or patients who have a measurable vancomycin level upon admission. The following information, if available, will be collected: date and time of vancomycin administration, vancomycin dose, date and time of each dialysis session, dialysis filter type and flow rate, timing and value of each appropriately drawn vancomycin level, documented type and site of infection, vancomycin MIC if cultures and sensitivities are performed, patients dry weight, daily urine output, and whether a pharmacist or physician dosed the vancomycin. The primary outcome will be vancomycin target attainment. This is defined as measured post-load and maintenance troughs between 10-20 mg/L, with an optimal target of 15-20 mg/L. Results: Data collection is ongoing. Conclusions: Final results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference

Learning Objectives:

Describe the impact of hemodialysis on serum vancomycin levels.

Identify appropriate vancomycin dosing strategies in hemodialysis patients.

Self Assessment Questions:

Approximately what percentage of vancomycin is removed by high flux membrane filters during dialysis?

A 5 - 10%

B: 10 - 20%

C: 30 - 40%

D: 50 - 60%

Which of the following is true regarding vancomycin dosing in hemodialysis patients?

A A loading dose should never be administered.

B The most accurate time to obtain a vancomycin level is prior to a h

C Vancomycin levels should be maintained below 10 mg/L due to the

D A maintenance dose should be given immediately prior to a hemod

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-431 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSESSING THE MANAGEMENT OF SUSPECTED HEPARIN-INDUCED THROMBOCYTOPENIA IN NON-ICU PATIENTS

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Purpose: The purpose of this study is to determine if suspected heparin induced thrombocytopenia (HIT) is being managed appropriately at the University of Chicago Medicine. Appropriate is defined as adherence to current CHEST guidelines, and includes discontinuation of all sources of heparin, initiation of argatroban, initiation of warfarin once platelets have recovered to at least 150,000/mm3, and an overlap of argatroban and warfarin until the INR is therapeutic or for 5 days, whichever is greater. HIT is the most common form of drug-induced thrombocytopenia, and is associated with potentially life-threatening complications. Treatment of HIT is complex and, as it occurs infrequently, leaves many healthcare workers inexperienced in its management. The combination of inexperience and a lack of clear guidance on treatment increase the risk of errors in management. Previous studies have found inconsistent management of patients with HIT prior to the implementation of a management protocol, including the continuation of treatment despite negative laboratory assays or the re-ordering of heparin in HIT positive patients. Methods: This is a single center, retrospective chart review. Patients admitted to the University of Chicago Medicine from January 1, 2011 - December 31, 2013 who were suspected to have HIT were included. Clinical suspicion of HIT is indicated by the ordering of a platelet factor 4 enzyme linked immunoassay (PF4 ELISA). ICU, cardiothoracic surgery, and hematology/oncology patients were excluded due to the high rate of confounding factors typically seen in these patients. Data collected includes patient demographics, laboratory data, medications, and components of the 4T score. Secondary outcome measures include the most common deviations from the guidelines, percent of PF4 ELISAs with positive results, percent platelet drop prior to ordering a PF4 ELISA, and percent of patients with new thromboses. All outcomes will be analyzed with descriptive statistics. Results/conclusion: To be presented.

Learning Objectives:

Explain the pathophysiology of HIT.

Review the components and use of the 4T score.

Self Assessment Questions:

What type of reaction is HIT?

A Infusion related reaction

B: Dose related reaction

C: Immune (IgG) mediated reaction

D: Idiosyncratic reaction

Which of the following would earn two points in the 4T score?

A Possible other causes of thrombocytopenia

B Platelet fall within 5-10 days of the start heparin therapy

C Platelet fall of 30-50%

D Suspected (unconfirmed) thrombosis

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-432 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PHARMACOECONOMIC ANALYSIS OF BIVALIRUDIN VERSUS HEPARIN IN PATIENTS UNDERGOING PERCUTANEOUS CORONARY INTERVENTION

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Purpose: The use of bivalirudin has been associated with lower risk of bleeding in patients who undergo percutaneous coronary intervention (PCI) when compared to unfractionated heparin (UFH). Even though a small reduction in the risk of bleeding is seen with bivalirudin, we are unsure if this is associated with a lower cost to our healthcare system. The purpose of this study is to compare the costs of therapy between bivalirudin and UFH in patients undergoing PCI from the hospital perspective.□□Methods: This is a retrospective cohort study of patients who underwent PCI over a 6 month period. We will be evaluating patients who received either bivalirudin or UFH during PCI. The primary endpoint is to evaluate the total cost of care to the health system. The secondary endpoints are the length of stay, 30 day readmission rate, and the number of transfusions. We will conduct analyses on three predefined subgroups: 1) patients undergoing elective PCI, 2) unstable patients who are biomarker negative, 3) unstable patients who are biomarker positive. We will be collecting data for the cost of therapy and reimbursement. In addition, the following patient data will be collected: occurrence of bleeding, bleeding severity (rated using the Thrombolysis in Myocardial Infarction (TIMI) scale), PCI access site (femoral vs radial) type of stent placed, premedications, the dose of anticoagulant, and resulting activated clotting time. This study has been submitted to and approved by the Institutional Review Board. □□Results/Conclusions: Research is ongoing and preliminary results will be presented at the 2014 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Recall the mechanism of action for bivalirudin.

Define major bleeding according to the TIMI scale.

Self Assessment Questions:

What is the mechanism of action of bivalirudin?

A Factor Xa inhibitor

B: Direct Thrombin inhibitor

C: Factor Xa and Thrombin inhibitor

D: Vitamin K antagonist

What three components make up the definition of major bleeding according to the TIMI scale?

A Intracranial bleeding, hemoglobin decrease of 5 or more, and fatal

B Intracranial bleeding, hemoglobin decrease of 3-5, and fatal bleedi

C Bleeding requiring intervention, hemoglobin decrease of 5 or more

D Bleeding requiring intervention, hemoglobin decrease of 3-5, and f

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-433 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE EFFECT OF QUETIAPINE AND HALOPERIDOL ON QTC PROLONGATION IN INTENSIVE CARE UNITS (ICU)

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Purpose: There are no adequately powered trials to establish the efficacy or safety of antipsychotic agents in intensive care unit (ICU) patients, but the administration of antipsychotic agents for ICU delirium is endorsed by various international guidelines. Haloperidol and quetiapine have both been shown to increase the QTc interval in studies conducted on non-medically ill psychiatric patients. QTc prolonging medications could precipitate arrhythmias in a labile critically ill population with multiple risk factors for pro-arrhythmic events. However, there is no primary outcome data to address safety of antipsychotic agents in these critically ill patients. The primary objective of our study is to characterize the degree of QTc prolongation after administration of quetiapine or haloperidol in medical and surgical ICU patients. Secondary endpoints include time to QTc prolongation after initiation of the antipsychotic agent, and the effect of concomitant administration of medications known to prolong the QTc interval. □Methods: This was a prospective, observational study conducted at a large tertiary institution that enrolled patients newly initiated on haloperidol (n=25), quetiapine (n=25) on no other QTc prolonging medications, quetiapine with concomitant QTc prolonging medications (n=25), and patients on no QTc prolonging medications (n=25) in the ICU between December 15, 2013 - March 31, 2014. Rhythm strips were collected at baseline and one hour after administration of quetiapine or four hours after administration of haloperidol on a daily basis. Two blinded investigators measured the QT interval on lead II and lead V of each rhythm strip. A third blinded investigator evaluated the rhythm strip if a discrepancy occurred. Baseline demographics will be analyzed descriptive statistics. Comparative statistics will be analyzed using t-test or mann-whitney for continuous data, and chi-squared or fishers exact for categorical data where appropriate.□Results and Conclusions: Study in progress. Results and conclusions will be presented at the Great Lakes Conference.

Learning Objectives:

Recognize risk factors for QTc prolongation in critically ill patients

Identify strategies for QTc monitoring incritically ill patients newly initiated on haloperidol or quetiapine

Self Assessment Questions:

A 76 year old jaundiced female with congestive heart failure (EF: 35%) is admitted to your unit for hyperkalemia due to acute kidney injury. Which of the following is the LEAST likely to contribute to

A Age

B: Hepatic failure

C: Congestive heart failure

D: Hyperkalemia

A 56 year old intubated male is admitted to the medical ICU for management of septic shock secondary to community acquired pneumonia. He is extremly agitated and is CAM-ICU positive. The team starts q

A Stop quetiapine 150 mg po q12 hours

B Discontinue lansoprazole

C Replace electrolytes

D Stop azithromycin 500 mg IV q24 hours

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-897 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DETERMINE THE SENSITIVITY AND SPECIFICITY OF A SEPSIS SCREENING TOOL IN A RURAL COMMUNITY HOSPITAL

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Purpose: Initiating fluids and antibiotics as soon as possible in septic patients is crucial to their survival and several studies have demonstrated significant increases in mortality each hour antibiotics are delayed. Based on these studies early recognition of a patient becoming septic is imperative to their survival. Nurses at Ephraim McDowell Regional Medical Center (EMRMC) perform a sepsis screen on admission and at least once every shift on each adult (≥ 15 yo) patient. This screen requires the nurse to assess heart rate, temperature, blood pressure and other criteria that are early indicators of sepsis and septic shock. The sepsis screening tool is relatively new and the purpose of this project is to determine the sensitivity and specificity of the current sepsis screening tool used at Ephraim McDowell Regional Medical Center and its utility in identifying septic patients early to improve patient outcomes. Methods: A retrospective chart review was performed on all patients discharged from June 1, 2012 through May 31, 2013 that had a sepsis screen performed during their admission. The data will be analyzed to determine how many patients with an ICD-9 code for sepsis or septic shock had positive sepsis screens and how many patients without ICD-9 codes for sepsis or septic shock had negative screens. The only patients excluded are those under the age of 15 as sepsis screens are not performed on this population. Results: During the timeframe of June 1, 2012 through May 31, 2013 two hundred and ninety nine patients had a discharge diagnosis of sepsis or septic shock based on ICD-9 codes. Analysis of the data is still being performed to determine sensitivity and specificity of the sepsis screening tool.

Conclusions: Results will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Recall the criteria assessed by the current sepsis screening tool at Ephraim McDowell Regional Medical Center

Describe how a sepsis screening tool can be used to identify septic patients early in order to quickly administer appropriate therapies

Self Assessment Questions:

Which of the following is assessed as part of the sepsis screening tool a EMRMC?

A Pt/inr
B: Lactate level
C: Procalcitonin
D: Acute altered mental status

The sepsis screening tool is performed by nurses at EMRMC

A Once per day
B On all patients admitted to the hospital
C Once per shift
D Only in the intensive care unit

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-898 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF PROPHYLACTIC BOWEL ORDER PRESCRIBING IN ADULT ONCOLOGY PATIENTS: POOP STUDY

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Opioid-induced bowel dysfunction occurs in up to ninety percent of patients with advanced cancer, leading national guidelines recommend prophylactic bowel regimens to prevent constipation in cancer patients receiving opioids. The purpose of this study is to compare rates of constipation among various bowel regimens as well as to determine predictors associated with higher prescribing rates of an optimal bowel regimen. In a single-center, retrospective, cross-sectional trial, eligible adults who are prescribed opioids on the hematology/oncology service will be classified as receiving optimal, suboptimal, or inappropriate bowel regimens, as defined by the National Comprehensive Cancer Network (NCCN) pain management guidelines. The primary endpoint will be the rate of constipation among patients receiving optimal, suboptimal, and inappropriate bowel regimens. Secondary endpoints include length of hospital stay. A multivariate logistic regression will be used to determine predictors of optimal prescribing of bowel regimens in addition to reasons for failure of prophylactic bowel regimen. Variables to be collected and analyzed include: demographic information, cancer diagnosis, presence of metastatic disease, use of an order set, presence of opioid tolerance, Eastern Cooperative Oncology Group score, diet, concomitant medications, and presence of diarrhea at baseline.

Learning Objectives:

Describe the relevance of opioid-induced constipation within the oncology population

List the limitations of literature involving opioid-induced constipation

Self Assessment Questions:

What percentage of the oncology population experiences opioid-induced constipation?

A 80%
B: 85%
C: 90%
D: 95%

What are current limitations of literature involving opioid-induced constipation?

A Patients with Eastern Cooperative Oncology Group scores of 2 an
B The primary opioid used in the studies presented was oxycodone
C The primary opioid used in the studies presented was fentanyl
D The primary population studied was American

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-434 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DETERMINING RATES OF INAPPROPRIATE MEDICATION DOSING FOR PATIENTS WITH RENAL DYSFUNCTION IN AN OUTPATIENT SETTING

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Objectives: The purpose of this study is to quantify the rates of dosing errors for medications requiring dose adjustment based upon renal function estimates at the time of prescribing in the outpatient setting. Current error rates in this setting are unknown. The results will help inform decision makers on the necessity of process improvement efforts to reduce dosing error rates in this population. Methods: In this retrospective review, electronic medical records from an outpatient health system will be reviewed and analyzed. Patients are required to be at least 18 years of age and must have been prescribed a medication requiring dose adjustment for renal function between September 1, 2012 and August 31, 2013 for inclusion. The list of examined medications will be finalized based upon frequency of use, clinical relevance, as well as previous literature examining similar outcomes in the outpatient setting. An estimated creatinine clearance will be calculated using the Cockcroft Gault equation with lab values from the date the prescription was written or the closest date prior. The prescribed dose of the target medications will be assessed for appropriateness based on the calculated creatinine clearance for each patient. The incidence of inappropriate dosing will be reported for each medication individually and in aggregate by dividing instances of inappropriate dosing by total instances requiring dose adjustment. Descriptive statistics will be used to describe population demographics. Preliminary Results: Results will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify the most appropriate weight and serum creatinine values to use when calculating renal function estimations using the Cockcroft-Gault equation based on previous literature findings.

Recognize the clinical and financial implications of improperly dosing a patient with renal dysfunction taking a medication requiring dose adjustment in the outpatient setting.

Self Assessment Questions:

According to the 2012 publication in Pharmacotherapy by Winter et al. which of the following strategies results in the most accurate and least bias estimation of renal function when using the Cockcrof

A rounding serum creatinine up to 0.8 mg/dL if the value is less than
B: using the measured value of serum creatinine regardless of how lo
C: using actual body weight for patients if they are underweight or nor
D: b and c

Which of the following instances represents a potentially avoidable healthcare expenditure if the medication dose was adjusted for renal function prior to dispensing in the outpatient setting?

A A 66 year old female with stage 3 CKD (eGFR 30-59ml/min/1.73m
B A 65 year old male with stage 4 CKD(eGFR 15-29ml/min/1.73m2)
C A 72 year old male with stage 4 CKD (eGFR 15-29ml/min/1.73m2)
D An 84 year old female with stage 2 CKD(eGFR 60-89ml/min/1.73m

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-899 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

SAFETY OF KETOROLAC INTRAVENOUS INFUSION IN POSTOPERATIVE CORONARY ARTERY BYPASS GRAFT SURGERY PATIENTS

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Purpose: Non-steroidal anti-inflammatory drugs, including ketorolac, contain a boxed warning for increased risk of cardiovascular thrombotic events, myocardial infarction (MI), and stroke. Ketorolac is contraindicated for pain control in the setting of coronary artery bypass graft (CABG) surgery because of high risk of increased bleeding. Despite these risks and warnings ketorolac is frequently used for pain management in the postoperative setting, including as a continuous intravenous (IV) infusion in postoperative CABG patients although limited literature on safety is available. The objective of this study is to evaluate the safety of ketorolac IV infusion in CABG surgery patients. Methods: This retrospective chart review assessed the safety of ketorolac IV infusion in CABG patients by evaluating mortality, risk of bleeding, and myocardial infarction. Patients who underwent an isolated CABG procedure and received IV ketorolac infusion between January 1, 2008 and January 1, 2013 were included. These patients were randomly matched to an equal number of isolated CABG cases who did not receive ketorolac. The primary outcome measured was mortality and secondary outcomes included bleeding and myocardial infarction. Data from the Society of Thoracic Surgeons database was utilized to determine mortality and patient risk scores. Results: There are 178 patients who met inclusion for review, 89 in the treatment group and 89 in the control group. Data analysis is currently ongoing. Conclusions: The results of this study will help determine the safety of the practice of administering ketorolac IV infusion to CABG patients postoperatively.

Learning Objectives:

Define the rationale behind the use of intravenous ketorolac infusion in postoperative CABG patients.

Discuss safety concerns surrounding the use of intravenous ketorolac in CABG patients.

Self Assessment Questions:

Which of the following is a proposed mechanism by which ketorolac may have benefit in postoperative CABG patients?

A Prostaglandin activation
B: Platelet aggregation blockade
C: Antipyretic effects
D: Improved wound healing

A major concern regarding ketorolac use in CABG patients is the increase in:

A Need for other pain medications
B Risk of graft thrombosis
C Need for repeat CABG procedure
D Risk of myocardial infarction

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-435 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF A DISCHARGE PRESCRIPTION PROCESS FOR HIGH COST OR RISK EVALUATION AND MITIGATION STRATEGY PROGRAM MEDICATIONS

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Purpose: Increasing costs and high variability in patient length-of-stay (LOS) have created a push to decrease LOS while maintaining quality care. Medications that have a high cost or require additional steps to assure safe use, such as a Risk Evaluation and Mitigation Strategy (REMS), are often difficult to obtain and have the potential to postpone patient discharge. The purpose of this project is to streamline the process for the medications that may delay discharge, and thereby decrease the LOS and associated costs. Methods: This project is exempt from review by the Institutional Review Board because it is a quality improvement process. The target medications were identified by analyzing inpatient medications purchased by a four hospital health system in the past year that would be continued on an outpatient basis. Medications that are high cost or require a REMS program were examined. An in-service was provided to the pharmacy staff to educate them about the objectives of this project. A tool within the electronic health record will be developed to identify patients with active orders of these medications in order to begin the discharge prescription process sooner. Pharmacist and discharge planner workflows will be developed to facilitate this process. A form has been developed for data collection and to assist in the communication between outpatient and inpatient pharmacies. The objectives to be assessed include the number of monthly interventions documented by pharmacists, monthly outpatient prescription count of the target medications and the associated revenue, and overall length of stay trends post-implementation.

Results/Conclusion: Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Identify characteristics of medications that may delay the discharge process.

Recognize the difficulties faced when discharging patients on high-cost or high-risk medications.

Self Assessment Questions:

What classification of REMS criteria was utilized in identifying pertinent medications?

A Elements to assure safe use

B: Communication plan

C: Medication guide

D: Implementation system

What difficulties exist when discharging a patient on a high-cost medication?

A Difficulty finding a pharmacy that has the medication in stock

B Difficulty obtaining prior authorization from the insurance company

C Difficulty obtaining financial aid/paying for the medication

D All of the above

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-757 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

BOLUS AND CONTINUOUS INFUSION ANTITHROMBIN III IN PEDIATRIC EXTRACORPOREAL MEMBRANE OXYGENATION: DOSING, MONITORING, AND PREPARATION OF GUIDELINES

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Purpose: Extracorporeal membrane oxygenation (ECMO) is the use of mechanical devices to temporarily bypass and support heart or lung function during cardiopulmonary failure. Neonates compose the largest group of patients on ECMO. Proper anticoagulation is imperative during ECMO to maintain a balance between thrombosis formation of the ECMO circuit and hemorrhagic complications, such as intracranial hemorrhage and gastrointestinal bleed. Unfractionated heparin (UFH) is the most common anticoagulant used in ECMO. When antithrombin III (AT3) levels are low, clots can occur despite administration of large doses of heparin. AT3 deficiency is common in pediatric patients. The purpose of this study is to determine the effect of continuous and bolus infusion exogenous AT3 on the stabilization of coagulation parameters and continuous infusion heparin dosing. Upon completion, an AT3 Continuous Infusion and Bolus Dose Guideline will be developed for the Pediatric ECMO population. Methods: This study is a retrospective chart review of patients in the pediatric intensive care unit (PICU) who underwent ECMO. The primary outcome of this study is the relation of AT3 administration to heparin dosing requirements. Secondary outcomes of this study include the effect of AT3 on coagulation parameters and safety. Pediatric patients who required ECMO and received continuous infusion UFH with or without exogenous AT3 administration were included in this study. The electronic medical record system was used to collect data, including: patient demographics, ECMO course details, coagulation parameters, doses of heparin and AT3, platelet count, blood products transfused, bleeding and clotting events, and circuit changes. Each ECMO course was divided into hourly intervals with the clinical data documented in the appropriate interval.

Results/Conclusion: Data collection and analysis are currently in progress. Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Explain the challenges of anticoagulation during ECMO.

Describe how differences in the clotting cascade in pediatric patients affects anticoagulation monitoring.

Self Assessment Questions:

Which of the following are potential complications that may occur with anticoagulation during ECMO?

A Intracranial hemmorhage

B: Clotting of the ECMO circuit

C: Gastrointestinal bleed

D: All of the above

Which labaratory test directly measures heparin activity?

A Antifactor Xa Assay

B Activated clotting time

C Antithrombin III assay

D Activated Partial Thromboplastin Time

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-436 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF AN INSTITUTION SPECIFIC CELLULITIS ANTIMICROBIAL GUIDELINE

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Purpose: Cellulitis, a common skin and soft tissue infection, results in a significant amount of hospitalizations and office visits each year, with occurrences increasing annually. Current guidelines provide empiric treatment but contain limited information on recommending initial antibiotic treatment according to infection severity. By assessing the current antibiotic prescribing practice at our institution and preparing an antimicrobial guideline, it may be possible to recommend a more appropriate initial cellulitis antibiotic regimen. The primary objective of this study is to evaluate whether implementation of institution specific cellulitis antimicrobial guideline will result in a decreased length of stay.□□Methods: This study is a single-center evaluation of outcomes both pre-and post-cellulitis antimicrobial guideline implementation. Patients from June to August 2013 were retrospectively evaluated to identify initial antibiotic regimens started in the emergency department (ED), length of stay, cellulitis location, patient demographics, and subsequent antibiotic regimen continued or started when the patient was admitted to the floor. Cellulitis cases were defined by the ICD-9 diagnostic code for cellulitis, which was obtained from the institutions reporting database. Exclusion criteria included patients less than 18 years of age and if the patient had orbital, rectal, or hand cellulitis. A data surveillance system was utilized to determine a community antibiogram, which was used to develop the guideline. Prior to guideline implementation, ED physicians at Presence Saint Joseph Medical Center were educated on current resistance rates and utilization of the guideline. For three months following guideline implementation, prescribing practices will be analyzed similarly to pre-guideline implementation. A comparison of data between pre-and post-guideline implementation will be used to determine whether an institution specific cellulitis antimicrobial guideline has a positive effect on initial antibiotic regimen and length of stay.□□Results/Conclusions: Data collection is in progress. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the clinical presentation of cellulitis

Identify the most appropriate empiric antibiotic treatment for cellulitis depending on patient presentation

Self Assessment Questions:

Which of the following best describes the most common signs and symptoms of cellulitis?

A Redness, warmth, and swelling to the infected area

B: Itching and redness to the infected area

C: Redness and pain with mild fever

D: Cutaneous gangrene, tenderness, and pain

Which of the following antibiotics would be an appropriate outpatient treatment for cellulitis caused by CA-MRSA?

A Cephalexin

B Trimethoprim-sulfamethoxazole

C Amoxicillin

D Vancomycin

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-437 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

RETROSPECTIVE ANALYSIS OF CEFTRIAXONE VS. LEVOFLOXACIN FOR INPATIENT TREATMENT OF URINARY TRACT INFECTION IN A COMMUNITY HOSPITAL

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Purpose:□Levofloxacin is a first-line treatment for urinary tract infections (UTI) in hospitalized patients; however, resistance to fluoroquinolones is increasing. Ceftriaxone is another frequently recommended first-line option, and both antibiotics are commonly used in practice at our institution. Currently no data is available comparing the effectiveness of the two antibiotics at treating UTIs. A small pilot study at our institution showed that patients on ceftriaxone had a shorter length of stay than patients on levofloxacin. The purpose of this study is to expand on the initial data and compare treatment outcomes between the two antibiotic choices.□□Methods:□The study was approved by the institutions investigational review board (IRB). A retrospective chart review will be performed on patients admitted with a primary diagnosis of UTI who were hospitalized between January 1, 2011 and December 31, 2012 and received treatment with either levofloxacin or ceftriaxone. The primary outcome will compare failure rates between patients treated with ceftriaxone versus levofloxacin. Additional information gathered for secondary analysis includes basic demographic data, length of stay, days of therapy, intensive care unit days, adverse events, labs, urinalysis results, cultures with sensitivities, and if possible, readmission.□□Results/Conclusions:□Data collection and analysis are currently in progress. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Review current UTI treatment practices at our institution

Discuss the differences in UTI treatment outcomes between levofloxacin and ceftriaxone

Self Assessment Questions:

A trend in increasing resistance to fluoroquinolones has shifted prescribers to choose which of the following antibiotics for UTI treatment at Baptist Health Lexington?

A Nitrofurantoin

B: Piperacillin/Tazobactam

C: Sulfamethoxazole/Trimethoprim

D: Ceftriaxone

A small pilot study done at our institution showed that patients treated with ceftriaxone had improvement in which outcome compared to those treated with levofloxacin?

A Lower incidence of C. difficile infection

B Shorter length of stay

C Decreased mortality

D Lower rates of readmission

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-438 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF A DRUG SHORTAGE ON MEDICATION ERRORS AND CLINICAL OUTCOMES IN THE PEDIATRIC INTENSIVE CARE UNIT.

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Purpose: Medication errors can harm 1-2% of patients and can account for more than one-fourth of adverse events experienced in a six-month period. The risk of error may be increased during drug shortages due to increased prescribing of unfamiliar agents. A national shortage of fentanyl and the injectable benzodiazepines occurred in 2012, affecting Riley Hospital for Children at IU Health, with the biggest impact in January and February. As a result of the shortage, the prescribing of many unfamiliar alternatives for sedation and analgesia was increased in the pediatric intensive care unit (PICU). The purpose of this study was to assess the rate of prescribing errors and resulting adverse events before and during the shortage, to compare patient outcomes associated with sedation and analgesia in the PICU before and during the shortage, and describe the role of the clinical pharmacist in preventing prescribing errors.□□Methods: A retrospective chart review was performed of patients admitted to the PICU with at least one prescribed order for a sedative or analgesic agent during the time periods of January-February of 2011 and 2012. Patients were excluded if they were on the cardiovascular surgery service or were not receiving mechanical ventilation. For patients meeting criteria, initial orders for sedative and analgesic agents were identified and investigated for appropriateness of dose. The patients chart was then assessed for adverse events associated with any identified prescribing error. For each patient, demographic and outcome information was gathered including total ventilator days, number of unintended extubations, and length of stay in the PICU. Orders were also stratified by timing in regards to clinical pharmacy presence.□□Results and Conclusion: Data analysis is ongoing. Final results to be presented.

Learning Objectives:

Describe the impact of drug shortage on errors in prescribing of sedatives and analgesics in pediatric critical care patients.

Report the effect of drug shortage on adverse events related to sedatives and analgesics in pediatric critical care patients.

Self Assessment Questions:

Which of the following medications belongs to the most common class of drugs prescribed for sedation in the PICU?

A Pentobarbital

B: Ketamine

C: Chloral hydrate

D: Midazolam

Which medication is most likely to cause metabolic acidosis as an adverse effect?

A Morphine

B Dexmedetomidine

C Lorazepam

D Fentanyl

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-900 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

PHARMACIST DRIVEN ORAL CHEMOTHERAPY MONITORING PROGRAM IN AN OUTPATIENT ONCOLOGY CENTER

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Purpose:□The utilization of oral chemotherapy has drastically increased since the approval of the first oral agents over 50 years ago. In 2013, 7 out of 12 (58%) chemotherapy agents approved are administered orally. While oral chemotherapy may seem more convenient, there are many challenges associated with its use, namely, monitoring of adverse drug reactions (ADR) and adherence.□□Although few studies have been carried out to estimate adherence of oral chemotherapy, the literature suggests that pharmacist counseling may improve outcomes. Patients who are well informed and know what to expect during the course of therapy are better equipped to manage ADR. It is also known that a multidisciplinary approach plays a vital role in the care of oncology patients. This study investigated the impact of an intensified multidisciplinary pharmaceutical care program on the adherence of cancer patients treated with capecitabine. Adherence and probability of remaining on capecitabine were higher in the intervention group and deviation from drug intake interval was less common in the intervention group. □□The utilization of oral chemotherapy is growing at the Kellogg Cancer Center; however, there is no standardized method to consistently monitor and document adherence or ADR. The purpose of this project is to establish a pharmacist driven oral chemotherapy monitoring program to allow closer monitoring and timely management of ADR. □□Methods:□Monitoring tools will be developed and employed via electronic health record. Patients on oral chemotherapy will meet with a pharmacist prior to initiation of treatment. The pharmacist will then provide education and intensive follow up, either in person or via telephone, as well as communicate treatment complications to other healthcare professionals. □□Results/Conclusion:□Results and conclusions will be presented at the Great Lakes Residency Conference

Learning Objectives:

Recognize the need for education and close monitoring of patients on oral chemotherapy and how pharmacists can provide this service.

Describe possible barriers to establishing a pharmacist driven oral chemotherapy monitoring program.

Self Assessment Questions:

Utilization of oral chemotherapy is

A Increasing drastically

B: Decreasing drastically

C: Consistent over the past decade

D: Slowly decreasing due to expense of research and development

Common barrier(s) to establishing a pharmacist driven oral chemotherapy monitoring program may include

A Billing for cognitive service

B Patient willingness

C Identifying a need

D A and B

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-758 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

INSULIN SLIDING SCALE AND HYPOGLYCEMIA IN NON-CRITICAL PATIENTS

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Purpose: Inappropriate glycemic control places patients at increased risk for morbidity and mortality. In an effort to avoid poor outcomes associated with hyperglycemia, institutions may use insulin sliding scale to control a patients blood glucose concentration. Patients placed on insulin sliding scale are inherently at an increased risk for hypoglycemia. In a recent unpublished quality improvement project at Hillcrest Hospital a Cleveland Clinic hospital, evaluating medication-related hypoglycemia in non-intensive care units, the authors concluded that the insulin sliding scale usage predominantly caused the hypoglycemic events. The purpose of this study is to determine if the institution needs to modify the insulin sliding scale used in the protocol. The rationale is to evaluate the incidence of hypoglycemia (≤70mg/dL) between insulin regular sliding scale and the insulin lispro sliding scale. Methods: This is a retrospective, open-label, active-controlled, observational study in a 496-bed community hospital. Inclusion criteria consists of non-critical patients admitted into the hospital from January 2013 to September 2013, age ≥18 years old, time to glycemic event ≥ six hours after admission, and treated with an insulin sliding scale. Exclusion criteria included patients admitted for diabetic ketoacidosis, admitted to labor and delivery, admitted to a critical care unit, or receiving enteral/parenteral nutrition. Patients will be screened via a report run on the institutional computer software detecting all patients ordered insulin sliding scale. Enrolled patients will have blood glucose concentrations recorded from six hours after admission until discharged or transferred to a critical care unit. Institutional review board was obtained prior to conducting the study. Statistical analysis for nominal data will be evaluated via chi-square. Results and Conclusions: Data will be collected and results will be analyzed for presentation at the 2014 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Review the importance of glycemic control and the associated threshold

Discuss the use of insulin sliding scale in medical/surgical patients

Self Assessment Questions:

What is the threshold for hypoglycemia as defined by the American Diabetes Association?

A ≤ 60mg/dL

B: ≤ 70mg/dL

C: ≤ 80mg/dL

D: ≤ 90mg/dL

Which of the following statements is true?

A Insulin sliding scale is reactive not proactive

B Insulin sliding scale is not recommended by the American Diabete

C Insulin sliding scale is proactive not reactive

D A and B

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-439 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

CLOSING THE GAP BETWEEN CURRENT ANTIEPILEPTIC MEDICATION PRACTICE AND CLINICAL GUIDELINES THROUGH ENHANCED MONITORING AND EDUCATION

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Purpose: Due to variances in pharmacokinetics, potential severe adverse effects, and variability in prescribing amongst clinicians, antiepileptic medications (AEMs) including carbamazepine, fosphenytoin, phenytoin, phenobarbital, and valproate, merit more vigilant pharmacotherapy management and pharmacist intervention. The objective of this study is to compare the utilization and monitoring of antiepileptic medications in an inpatient setting to best practice guidelines. Identification of gaps in safety, appropriate medication use, and vigilant monitoring may help elucidate areas in which an AEM pharmacy service could help bridge guidelines and practice.

Methods: Data collection will be conducted using the health systems electronic medical record to identify adult patients with an antiepileptic medication used for the treatment of epilepsy, seizures, or seizure prophylaxis. AEM therapy and corresponding laboratory data will be utilized to compare current inpatient practice to clinical guidelines for antiepileptic medication use. Specifically, medication dosing, drug serum levels, adverse effects and/or toxicity, breakthrough seizures, and alterations in AED regimen will be evaluated. This IRB approved retrospective review will provide a site-specific assessment of the use of antiepileptic medications, potentially identifying any gaps in practice which could affect patient safety, seizure control, and clinical outcomes. Data collection includes patient demographic information, inpatient medications, home and discharge AED regimen, and serum AED levels. Additionally, relevant laboratory values pertaining to drug metabolism and clearance will be collected. Drug utilization reports, provider notes, and additional documentation pertaining to AED therapy and seizure status will be analyzed. A task force consisting of four pharmacists and a neurologist will assess the collected data and compare current AED management to predefined best practice guidelines to define what pharmacists can do to optimize AED management in the inpatient setting. Results/Conclusions: To be presented at the Great Lakes Residency Conference.

Learning Objectives:

Identify areas of antiepileptic medication therapy that is different in a large community based hospital when compared to best practice guidelines.

Outline pharmacy specific monitoring parameters and interventions for antiepileptic medication therapy.

Self Assessment Questions:

In which ways can pharmacists contribute to antiepileptic therapy monitoring?

A By monitoring if antiepileptic medications are continued appropriat

B: By ordering extra medication levels, even if they are not clinically r

C: By monitoring pertinent lab values that may impact AEM therapy

D: Both A and C

According to Patsalos et al., which one of these scenarios would be inappropriate to order an antiepileptic medication level?

A When an important pharmacokinetic change may occur, such as p

B To help diagnosis a potential medication toxicity

C For stable patient at a routine medical appointment

D To establish an individual's medication concentration at which they

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-440 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

UTILIZATION OF OBJECTIVES FROM THE ASHP 2015 AND PPMI INITIATIVES TO INSPIRE PHARMACY PRACTICE CHANGE IN A VA MEDICAL CENTER

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Purpose: To implement and evaluate the action items identified during the first half of this project. Methods: This project has been deemed a quality improvement project, and is thus exempt from IRB approval. The first action item identified involved clinical pharmacy specialists rotating job roles in the ambulatory care setting. This project aimed to evaluate the effectiveness of this practice model change. A survey was distributed to clinical pharmacy specialists participating in job rotation, and those who are not. A second action item identified was to further the idea of "total pharmacy care." Our institution is currently planning to implement a pilot program where we will use decentralized pharmacists on our medicine teaching teams to provide a more comprehensive care model. These clinical pharmacists will perform all duties for patients on their team, such as order verification, discharge medication reconciliation and counseling, and service as the primary contact for providers to pharmacy. The third action item identified was related to expansion of services within the medical center. Beginning in January, our department piloted having a pharmacy resident work in the emergency department, as this area is not currently staffed by a pharmacist. This project will look to evaluate the necessity of having pharmacy services within the ED. Other action items that will be completed over the upcoming months include, re-evaluating some of our restricted medication consults, and development of a renal dose adjustment policy. Preliminary Results: A total of 10 surveys were collected from individuals rotating jobs, and those not currently in that role. The majority of respondents stated that they would participate in job rotation if given the opportunity. Areas of interest for expansion of services included the emergency department and cardiology.

Results/Conclusions: Data collection and analysis are currently in progress. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review 2 key recommendations from the 2014-2018 ASHP Pharmacy Forecast and Pharmacy Practice Model Initiative (PPMI) related to pharmacist utilization.

Describe 3 advantages for using a decentralized pharmacist staffing model

Self Assessment Questions:

Based on the 2014-2018 pharmacy forecast, pharmacy practice leaders should focus on which of the following:

A Redeployment of pharmacists to patient care teams
B: Discharge medication reconciliation
C: Recommendations from the pharmacy practice model initiative
D: Minimization of FTE budget

Which of the following could be an advantage of using decentralized pharmacists?

A Increase in workload for central pharmacy
B Increase in employee turnover
C Decrease in information handoffs
D Decrease in job satisfaction

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-760 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

SURVEY OF COLLEGES OF PHARMACY TO DETERMINE METHODS OF PREPARATION FOR AND PROMOTION OF POSTGRADUATE EDUCATION

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Background/Purpose: Many national pharmacy organizations promote postgraduate education. Specifically, residency and fellowship training can serve as a means to enhance clinical maturity of pharmacy graduates - a necessary tool for positively influencing health care. Colleges of pharmacy promote postgraduate education in a variety of ways. Individual colleges of pharmacy have described their methods and at least one surveyor summarized methods for the support of residency training employed by multiple colleges of pharmacy in 2009. The purpose of this study is to summarize the extent to which colleges and schools of pharmacy currently promote postgraduate education and prepare their students to be competitive candidates for such programs.

Methods: An electronic survey was sent to administrators of all accredited colleges and schools of pharmacy in the United States. The survey collected information about formal activities made available to students regarding postgraduate opportunities: community and hospital-based PGY1 residencies, fellowships, masters degree programs, and PhD programs. The survey also collected information regarding the extent in which colleges of pharmacy assist unmatched students in obtaining a pharmacy residency position. Descriptive statistics were used to analyze the data via Statistical Package for the Social Sciences (SPSS). Participation in this survey was completely voluntary. Responses remained confidential and anonymous and were presented in aggregate. This study was approved by the Butler University Institutional Review Board. Results/Conclusions: Data collection and analysis are currently in progress. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

List common ways that pharmacy schools in the United States prepare their students to be competitive candidates for postgraduate education.

Discuss two characteristics of elective courses that are offered among pharmacy schools in the United States to prepare students for postgraduate residency training.

Self Assessment Questions:

Pharmacy schools in the United States may prepare their students to be competitive candidates for postgraduate education by:

A Conducting mock interviews
B: Mandating that all students participate in clinical tracks for residen
C: Offering to review students' application documents (curriculum vita
D: A and C

Which of the following statements is correct?

A Preparation for postgraduate education among pharmacy schools
B Availability of PharmD/Master's degrees is becoming less commo
C Postgraduate education encompasses more than pharmacy reside
D ACPE requires pharmacy schools to engage in formal mentoring p

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-759 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT OF AN INTERDISCIPLINARY PAIN TEAM WITHIN A COMMUNITY HOSPITAL SETTING

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Purpose: Poor management of pain is linked to reduced quality of life and decreased patient satisfaction. In a community hospital setting, there is still a need to focus on adequate and appropriate utilization of analgesic therapy. The ideal approach to pain management in an inpatient setting includes the utilization of an interdisciplinary pain team. Currently, pharmacists have a limited role in most hospital pain management teams. The objective of this study is to determine if pharmacist participation in the development of a pain team can improve pain management therapy for patients resulting in better pain control and increased patient satisfaction. In particular, pain control and management will be implemented for orthopedic patients undergoing total knee or total hip replacement. Methods: The pain management pharmacist will work with other healthcare providers to assess and monitor patients while also identifying their existing pain therapy needs. To detect areas needing improvement, patient surveys, medical charts, and the hospital database will be used to collect information. Patient costs and length of stay will be determined using hospital bills, charges from the revenue center and cost department, and hospital-specific Medicare cost reports. Patients will undergo an initial pain assessment by the pharmacist to identify and evaluate the effectiveness of their current pain management therapy. The patients will also be followed by the pharmacist for the duration of their hospital stay and evaluated daily for proper utilization and effectiveness of therapy. The pharmacist will also dose pain medication or suggest recommendations to improve current pain management for acute care patients to help facilitate the necessary interventions that will lead to improved patient outcomes.

Results/Conclusions: Data collection and analysis are pending and will be presented at the Great Lakes Pharmacy Resident Conference in April 2014.

Learning Objectives:

Select appropriate medication therapy for patients based on individual pain assessments.

Identify potential adverse effects of medications to ensure proper utilization of therapy during post-operative period.

Self Assessment Questions:

Therapy for which side effects of pain medications should be included as a part of post-operative medication regimen?

A Sedation, diarrhea, cough, runny nose

B: Constipation, dry mouth, nausea, itching

C: Diarrhea, runny nose, fever, cough

D: Dry mouth, diarrhea, itching, runny nose

How can a pre-operative pain assessment ensure that opioid requirements are met for post-operative medication therapy?

A Calculate the morphine equivalents used to treat pain and establis

B Pre-operative assessments are not useful for determining opioid th

C The assessment will help identify which opioid medication the pati

D It can ensure that all of the patient's home medications will be rec

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-441 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF THE 24/7 EMERGENCY DEPARTMENT MEDICATION RECONCILIATION PILOT

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Purpose: Accurate medication reconciliation is a key aspect of delivering safer care to patients throughout their hospital admission. In response to the Pharmacy Practice Model Initiative (PPMI), OhioHealth has expanded the role of pharmacy technicians and interns to include conducting medication histories in the emergency department. The objective of this study was to evaluate the impact of a new 24/7-admission medication reconciliation service in the emergency department. Methods: A single-center, retrospective review of emergency department admission records and clinical surveillance software at a tertiary care hospital during a two month pre-implementation evaluation phase and two month post-implementation evaluation phase was used to identify patients who received medication reconciliation conducted by a pharmacy technician. The following data were collected for patients documented using clinical surveillance software: number and type of documented intervention(s), time from decision to admit patient to time admission orders were received, reason medication reconciliation was not completed prior to admission (if applicable), time spent per patient on medication reconciliation, internal and external methods for obtaining information relevant to medication reconciliation, and time of day when medication reconciliation was performed. Overall patient capture rate and mean time spent per patient performing medication reconciliation were also calculated. A satisfaction survey was also administered to assess physician perceptions of satisfaction with the expanded pharmacy service. Results: Data collection and analysis is currently in progress. Results and conclusions will be presented at Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the frequency and type of medication discrepancies identified by pharmacy technicians as a part of the medication reconciliation process.

Identify the average time pharmacy technicians spent with patients on medication reconciliation activities.

Self Assessment Questions:

Which of the following was one of the most common interventions documented by pharmacy technicians during the medication reconciliation process?

A Clarified Last Dose

B: Clarified Allergy

C: Clarified Medication

D: Clarified Home Pharmacy

What was the most common amount of time spent per patient on medication reconciliation activities?

A <10 minutes

B 10-20 minutes

C 20-30 minutes

D >30 minutes

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-761 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARISON OF DEXMEDETOMIDINE PLUS BENZODIAZEPINES TO BENZODIAZEPINE THERAPY ALONE FOR ALCOHOL WITHDRAWAL SYNDROME IN THE ICU

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Purpose: Dexmedetomidine use for the management of acute alcohol withdrawal in patients admitted to the intensive care unit (ICU) is significantly more expensive than traditional benzodiazepine therapy. Few studies exist that examine adjunctive dexmedetomidine use in alcohol withdrawal. The primary objective of this study is to determine if the use of adjunctive dexmedetomidine in patients with alcohol withdrawal is associated with shorter ICU length of stay. Secondary objectives include evaluation of adjunctive dexmedetomidine for alcohol withdrawal with regards to hospital length of stay, rate of intubation/mechanical ventilation, and requirement for benzodiazepine administration. □□Methods: This retrospective cohort evaluated adult patients admitted to the ICU with acute alcohol withdrawal syndrome. Patients were divided into two groups, dexmedetomidine in addition to benzodiazepine therapy or benzodiazepine therapy alone. Patients were excluded from analysis if a concurrent order for clonidine was present or if, through review of clinician documentation, it was determined dexmedetomidine was not received solely for management of alcohol withdrawal syndrome. Data was collected regarding patient characteristics, dexmedetomidine use, medications for alcohol withdrawal including benzodiazepine and antipsychotic agents, need for intubation, ICU and hospital length of stay, as well as Clinical Institute Withdrawal Assessment (CIWA) of Alcohol scores.□□Results: Data collection is currently in process. □□Conclusions: To be presented.

Learning Objectives:

Review pathophysiology of alcohol withdrawal syndrome.

Discuss the role of dexmedetomidine in alcohol withdrawal syndrome.

Self Assessment Questions:

Which of the following is true regarding alcohol withdrawal syndrome?

A Alcohol withdrawal can result in seizures, autonomic instability, an
B: The Richmond Agitation Sedation Scale is primarily used for evalu
C: Alcohol alters neurotransmission through inhibition of GABA and s
D: Delirium tremens is a mild form of alcohol withdrawal syndrome.

What best describes the use of dexmedetomidine in the management of alcohol withdrawal syndrome?

A Benzodiazepine administration is not required when dexmedetomi
B Dexmedetomidine in addition to benzodiazepines may reduce agit
C Dexmedetomidine is FDA approved for treatment of alcohol withdr
D The primary use of dexmedetomidine in alcohol withdrawal is for s

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-442 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

INTERACTIVE WEB-BASED TRAINING MODULES PRIOR TO ADVANCED PHARMACY PRACTICE EXPERIENCES

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Purpose: Millennial students are characteristically different from previous generations, but educational techniques have struggled to adapt and create engaging opportunities for this demographic. Web-based training (WBT) modules offer a unique and interactive educational platform to strengthen pharmacotherapeutic knowledge prior to an advanced pharmacy practice experience (APPE).The objective of this study was to implement and evaluate interactive WBT modules prior to an ambulatory care or general medicine APPE.□□Methods: Six WBT modules were developed, three for a general medicine APPE (inpatient anticoagulation, pneumonia, antibiotic pharmacokinetics and pharmacodynamics) and three for an ambulatory care APPE (outpatient anticoagulation, diabetes medication therapy management). Students were contacted for voluntary study enrollment ten days prior to the APPE. Eligible participants for inclusion were all students enrolled in a general medicine or ambulatory care APPE facilitated by a Butler University faculty member. Students were excluded if they did not complete all study components or if they had previously been enrolled in the study. Students completed identical pre- and post-assessments to evaluate the efficacy of the modules. Additionally, students completed a perception survey at the conclusion of the APPE to determine the utility of these modules and the impact on student learning experiences. □□Results: Preliminarily, a total of 49 students have completed both the pre- and post-assessments, with 100% (20/20) ambulatory care students and 65.9% (29/44) general medicine students completing all study components. For the both the ambulatory care and general medicine APPE modules, improvement was noted in post-assessment scores compared to the pre-assessment results. Survey results demonstrate that a majority of participants agreed or strongly agreed that the WBT modules supplemented the APPE and were a positive learning experience. □□Conclusion: Preliminary results demonstrate interactive WBT modules prior to an APPE improve baseline knowledge and are a unique learning experience well received by pharmacy students

Learning Objectives:

Describe the process for development and implementation of web-based training modules.

Identify challenges with the implementation of web-based training modules.

Self Assessment Questions:

What types of learners are WBT able to impact?

A Visual
B: Auditory
C: Kinesthetic
D: All of the above

All of the following are challenges with WBT modules EXCEPT

A Student accountability
B Longevity of impact
C Student access
D Individualizing student instruction

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-762 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE INCIDENCE OF VENOUS THROMBOEMBOLISM IN MYELOABLATIVE VERSUS NON-MYELOABLATIVE ALLOGENEIC TRANSPLANTATION

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Purpose: The main objective is to identify the 2-year incidence of venous thromoboembolism (VTE) in patients undergoing allogeneic hematopoietic cell transplantations (HCT) and to compare myeloablative and non-myeloablative conditioning therapies. At this institution, VTE incidence has only been evaluated for up to one-year post-HCT. Few, if any studies exist regarding VTE occurrences that distinguish between the two aforementioned conditioning regimens. Despite the fact that national guidelines provide recommendations of VTE thromboprophylaxis and treatment in cancer patients, no clear recommendations exist in regard to the safe use of anticoagulants in patients with thrombocytopenia, a common HCT outcome. This is why there is a pressing need to identify better practices that address VTE prophylaxis and treatment in HCT. Assessing the incidence of VTE in HCT can help guide clinicians in providing better patient care, as well as enhance their ability to identify high-risk patients that may require prophylaxis. Methods: A single-center, retrospective, observational study was performed at the Indiana University Simon Cancer Center (IUSCC) in the Stem Cell Transplant Unit from January 1, 2006 through July 31, 2011. Eligible patients included adults 18 years and older who received an allogeneic HCT during the defined study period. Patients were excluded if they are already receiving anticoagulant treatment. Patients were allocated into two groups based on the conditioning treatment they received prior to HCT, myeloablative or non-myeloablative. Patients were identified by use of the IUSCC StemSoft database and analyzed using the IU Health electronic medical record. Basic demographic and baseline characteristics were recorded including age, gender, race and BMI. In addition, cancer diagnosis, chemotherapy preparative treatment, source of stem cells, immunosuppression treatment, duration of intravenous catheters, history of VTE or hypercoagulability, hormonal replacement therapy, surgery, and acute and chronic graft-versus-host disease were noted.

Results/Conclusions: To be presented

Learning Objectives:

Identify factors that contribute to venous thromboembolism (VTE) risk in cancer patients undergoing myeloablative or non-myeloablative allogeneic hematopoietic cell transplantation (HCT).

Describe the challenges in the treatment and management of VTE in HCT.

Self Assessment Questions:

According to current national guidelines, what is the preferred anticoagulant used for VTE treatment in patients with active cancer?

A Factor Xa Inhibitors
B: Unfractionated Heparin
C: Direct Thrombin Inhibitors
D: Low Molecular Weight Heparin

What is an advantage of non-myeloablative compared to myeloablative conditioning therapy?

A No advantages have been identified
B Less treatment-related toxicity due to lower doses of chemotherap
C Higher doses of chemotherapy utilized to achieve more killing of m
D Offers a similar mechanism to eradicate malignant cells as myeloa

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-443 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

OUTPATIENT SLIDING SCALE INSULIN USE FOR TYPE 2 DIABETES MELLITUS MANAGEMENT IN A VETERAN POPULATION: DESCRIPTIVE REPORT AND SAFETY ASSESSMENT

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Purpose: The majority of the literature on sliding scale insulin (SSI) focuses on its use in the inpatient setting, where lack of efficacy and safety concerns have been well-documented. In 2012, SSI was added to the Beers Criteria for Potentially Inappropriate Medication use in Older Adults, regardless of care setting. In a broad literature search, no studies were identified that assess SSI use in the outpatient setting for management of type 2 diabetes mellitus (T2DM). Limited studies describe SSI prevalence and use in the older adult population. This study will evaluate outpatient SSI use, including patient characteristics, reasons for implementation, and safety implications in the VA Ann Arbor Healthcare System (VAAAHS). Additionally, this study will stratify these findings by patient age: 50-64, 65-74, and 75 years and older.

Methods: A retrospective chart review will be conducted to evaluate the use of SSI in T2DM patients at VAAAHS. Patients age 50 years and older with T2DM managed by VAAAHS providers from 09/30/08 to 09/30/13 will be included. Data will be abstracted to characterize both the patients and SSI prescriptions. Data will be collected on comorbid medical conditions, laboratory results, and concomitant medications. A randomly selected subset of charts will be reviewed for safety issues not captured by abstraction and for documentation of rationale for SSI use. Descriptive statistics will be reported. In cases where comparisons show statistically significant differences, Pearsons chi squared test will be used for analysis. Results/Conclusions: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe sliding scale insulin use in outpatient management of Veterans with type 2 diabetes mellitus at the VAAAHS and any changes in patterns of use across the adult lifespan based on three age groups: 50-64, 65-74, and 75 and older.

Discuss the rationale and safety implications of outpatient sliding scale insulin use at the VAAAHS.

Self Assessment Questions:

According to the ADA and the VA/DoD guidance on management of T2DM, which of the following patient characteristics should qualify an individual for less stringent management?

A Severely diminished renal function and moderate hypoglycemia ris
B: Limited life expectancy and high hypoglycemia risk
C: Decreased life expectancy and moderate hypoglycemia risk
D: Decreased life expectancy and significant fall history

Which of the following is the most accurate definition of Sliding Scale Insulin used in previous literature?

A Use of rapid-acting insulin 1 to 5 times daily based on pre- and pos
B Use of short-acting or rapid-acting insulin 2 to 6 times daily based
C Use of short-acting or rapid-acting insulin 1 to 5 times daily based
D Use of short-acting or rapid-acting insulin 2 to 4 times daily based

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-444 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

INTRAVENOUS BUMETANIDE IN PEDIATRIC PATIENTS AFTER CARDIAC SURGERY

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Fluid overload is a common complication of cardiopulmonary bypass (CPB) and is associated with increased morbidity and mortality. CPB triggers an inflammatory response leading to capillary leak and edema. Fluid overload is further exacerbated by large volumes of intravenous fluids and blood products administered intra- and post-operatively. Finally, alterations to end-organ perfusion may lead to changes in renal function with subsequent fluid retention. Although furosemide is traditionally first-line in managing fluid overload in post-CPB pediatric patients, use of bumetanide is increasing. The purpose of this project is to evaluate the dosing and safety of intravenous bumetanide in pediatric post-CPB patients who do not respond to furosemide. □□We conducted a retrospective chart review evaluating the response to intravenous bumetanide in pediatric patients following cardiac surgery. Inclusion criteria was failure to respond to intravenous furosemide, age less than 18 years old, admission to the University of Michigan Congenital Heart Center between January 1, 2008 and September 1, 2013, and treatment with intravenous bumetanide within 30 days of cardiopulmonary bypass. Failure to respond to furosemide was defined as remaining at least 10% above dry weight while receiving continuous infusion furosemide at a rate of 0.5 mg/kg/hour for at least 24 hours. Patients receiving extracorporeal membrane oxygenation or renal replacement therapy were excluded. □□Patient and surgical characteristics, medication history, as well as surrogate markers for fluid status and renal function were collected from the electronic medical record. Occurrence of acute kidney injury and descriptive statistics characterizing bumetanide dosing will be reported. Continuous variables will be analyzed using a two-sided Student's t-test, while analysis of categorical data will be performed using a chi-squared test. Data collection and analysis is currently ongoing. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the mechanism of volume overload in pediatric patients after cardiopulmonary bypass.

Identify possible adverse effects of continuous infusion bumetanide.

Self Assessment Questions:

Which of the following contribute to volume overload after cardiopulmonary bypass in pediatric patients:

A Contact of blood with synthetic materials

B: Inflammation and cytokine release

C: Capillary leak and third-spacing of fluid

D: All of the above

Which of the following is a possible adverse effect of bumetanide continuous infusion:

A Electrolyte derangements

B Renal insufficiency

C Hypertension

D A and B

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-445 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF PHARMACIST INTERVENTION ON DIABETES CARE AT A FEDERALLY QUALIFIED HEALTH CENTER

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Statement of Purpose: To assess the impact of pharmacist intervention on diabetes-related outcomes of patients with uncontrolled type 2 diabetes □□Methods: Clinical services provided by community-based pharmacists were evaluated at a federally qualified health center through a diabetes management program. Eligible patients were enrolled by physician referral with a HbA1c > 9%, aged 18 years and older with type 2 diabetes, and had completed more than two clinic visits with at least two documented HbA1c values. Using ADA Standards of Care pharmacists and pharmacy students conducted comprehensive evaluations of medications, monitored adherence and adverse drug effects, recommended medication adjustments, and provided education and follow-up. Following each visit a patient note was faxed to the patients primary care provider in order for recommended changes to be implemented. Information collected was de-identified and entered into an excel spreadsheet for analysis. Primary outcomes included changes from HbA1c from baseline to the measured HbA1c within 90 days of the last clinic visit and achievement of the treatment goals. Secondary parameters include changes in baseline lipid levels, blood pressure, and BMI. Charts were reviewed retrospectively. Upon completion of data collection, descriptive statistics will be used to evaluate outcomes and pharmacist impact. Results/Conclusion: Data collection is ongoing and preliminary results will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify specific barriers to the implementation of pharmacist-led clinical services

Describe the impact of a clinical pharmacist as an addition to the health care team

Self Assessment Questions:

All of the following are barriers to the addition of pharmacist-run clinical services in a community setting except:

A Restricted access to patient chart and laboratory values

B: Ineffective communication with primary health care providers

C: Limited number of patients to benefit from pharmacist intervention

D: Ability to bill for visits including those via telecommunication

Which of the following best describes a clinical pharmacists' impact on access to health care?

A Increased physician availability for new and existing patients

B Increased physician time for breaks between patient visits

C Decreased physician-patient interaction and intervention

D Decreased direct patient cost for pharmacist-led visits

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-446 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF A PROSPECTIVE PCA SERVICE

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Purpose: Pharmacists at Parkview Regional Medical Center (PRMC) proactively talk to, evaluate, and educate patients on patient controlled analgesia (PCA) daily. This study will allow the pharmacy department at PRMC to evaluate the current practice in regards to the impact of PCA education and management by a pharmacist. The objective of this study is to evaluate the impact of pharmacist intervention on the appropriateness and effectiveness of PCAs when compared to PCAs managed by a physician without pharmacist input in a community hospital. Methods: This is a prospective study of a pharmacist intervention on patients admitted to PRMC with an active PCA medication order. An equivalent number of patients will be included in the pharmacist intervention group and the control group. All patients included will be evaluated by chart review to determine the appropriateness of the PCA, appropriateness of nursing monitoring parameters, and the existence of appropriate ancillary orders. Patients in the pharmacist intervention group will be evaluated to determine if pain is controlled, and all patients with uncontrolled pain will receive PCA education. The pharmacist will recommend PCA adjustments to the managing physician for patients with uncontrolled pain, and patients will be reevaluated every 24 hours. The control group will be assessed for pain control by evaluating pain scores, PCA doses, and any concomitan pain medications received. The primary outcomes are the improvement in pain scores associated with pharmacist intervention, and the appropriateness of concomitant medications prescribed along with a PCA. A secondary outcome measure is the impact of education provided by a pharmacist on pain scores. A safety analysis will include the percentage of patients that experienced adverse effects of PCAs and the percentage of patients in which naloxone was administered. Results/Conclusions: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify potential ways that pharmacists can improve pain management and safety associated with patient controlled analgesia

Describe the impact of a pharmacist intervention on pain management and safety for patient controlled analgesia patients

Self Assessment Questions:

All of the following are adverse effects associate with patient controlled analgesia except:

A Respiratory depression

B: Constipation

C: Diarrhea

D: Nausea

Which of the following recommendations did the Joint Commission suggest for decreasing adverse effects associated with patient controlled analgesia?

A A review of PCA orders by a pain management pharmacist

B Pain assessment every 24 hours

C Continuous PCA infusions in opioid naïve patients

D Starting a PCA on a patient with sleep apnea

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-447 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ACCURACY OF THE CAPRINI SCALE IN PREDICTING INCIDENCE OF VENOUS THROMBOEMBOLISM IN PULMONARY TUBERCULOSIS PATIENTS

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Purpose: The Caprini Scale is often used to assess risk for venous thromboembolism (VTE) in hospitalized patients. Although "serious lung disease" is one such risk factor, the Caprini Scale does not clearly define what pulmonary diseases are included in this term. There have been case reports and retrospective reviews that suggest pulmonary tuberculosis (TB) as an independent risk factor of developing VTE especially in the initial phase of the disease. This study aims to evaluate the accuracy of the Caprini Scale in predicting VTE in TB patients.

Methods: This study will review a retrospective cohort of adult patients admitted to the Detroit Medical Center with pulmonary TB from January 2008 to September 2013. Patients 18 years to 80 years of age diagnosed with pulmonary TB were identified using International Classification of Diseases-9 (ICD-9) codes for pulmonary TB, deep vein thrombosis and pulmonary embolism. Patients were excluded if they were admitted to Childrens Hospital of Michigan or had any other form o tuberculosis other than pulmonary. Information collected included patien demographics, co-morbid disease states, medication information, hospital length of stay, and pertinent laboratory values. The primary endpoint is to assess the accuracy of the Caprini Scale in predicting VTE in TB patients. Secondary endpoints are to characterize the incidence o VTE in pulmonary TB patients and to compare the differences in risk factors between the TB patients who developed VTE during the hospitalization and those who did not. Descriptive statistics will be used to determine differences in patient demographics and co-morbidities between the two patient groups. Data will be evaluated between groups by the Students t-test (for continuous parametric data) or the Mann Whitney - U test (for continuous non-parametric data). Results and Conclusions: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Explain the role of the Caprini Scale in patient assessment for VTE prophylaxis

Describe the correlation between the pulmonary tuberculosis and the incidence of venous thromboembolism compared with the general population.

Self Assessment Questions:

Which of the following risk factors are included in the Caprini Scale to assess VTE risk?

A Age over 40 years

B: Surgical history

C: Medications

D: All of the above

At what stage of pulmonary tuberculosis is the patient considered at greatest risk for VTE?

A Within one month of diagnosis

B Three months after diagnosis

C When anti-tuberculosis medications are started

D The risk is the same at all times in active TB

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-450 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF HEART FAILURE SPECIALTY CLINIC ON INPATIENT READMISSIONS

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Heart failure is a chronic disease with high mortality, high readmission rates, and a high economic burden to the healthcare system. The Dayton Veterans Affairs Medical Center (D-VAMC) developed a multidisciplinary heart failure specialty clinic to help combat these problems. An attending physician, nurse practitioners, pharmacists, registered dietitians, registered nurses, and representatives from mental health staff the clinic. Current literature shows better outcomes and decreased hospital readmissions for heart failure exacerbation if prompt follow-up in the outpatient setting is achieved. Furthermore, achieving targeted doses of therapeutic agents, such as ACE inhibitors, ARBs, beta-blockers, and spironolactone, also give way to better outcomes and improvements in NYHA functional classification in patients with heart failure. To assess the impact of this clinic on veterans with a recent heart failure exacerbation requiring inpatient admission at D-VAMC, this quality assessment project was developed. The aforementioned endpoints, as well as assessment of treatment of common co-morbidities and patient education, will all be included in the data extraction/analysis to be presented at the Great Lakes Pharmacy Resident Conference and used by D-VAMC to adjust clinic procedures and foci to further improve the value of this clinic to the veterans the D-VAMC serves.

Learning Objectives:

Recognize the importance of prompt follow-up post-discharge for patients with heart failure exacerbation

Discuss the need to titrate heart failure medications to the appropriate target dosages

Self Assessment Questions:

Following hospitalization for a heart failure exacerbation, which of the following should take place?

A Patient should be referred to primary care provider for follow-up in

B: 2.)□Patient should be given medications at discharge and counsel

C: Patient should be referred to specialist clinic specifically designed

D: Patient should be started on high dose loop diuretics to maintain d

Which three drugs have evidence for positive mortality benefits in patients with heart failure with reduced ejection fraction?

A Lisinopril, metoprolol succinate, and spironolactone

B Furosemide, metolazone, and valsartan

C Simvastatin, digoxin, and timolol

D Furosemide, digoxin, and spironolactone

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-449 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

VANCOMYCIN VERSUS DAPTOMYCIN IN METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS WITH VANCOMYCIN MINIMUM INHIBITORY CONCENTRATION GREATER THAN 1 MCG/ML IN COMPLICATED SKIN AND SOFT TISSUE INFECTIONS

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

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

Learning Objectives:

Describe the guideline recommendations for early initiation of daptomycin in MRSA infections susceptible to vancomycin

Recognize the barriers to continuing vancomycin therapy in susceptible MRSA cSSTI infections

Self Assessment Questions:

Current IDSA guidelines for MRSA indicate that daptomycin therapy may be warranted when:

A The vancomycin MIC is >1.5

B: A lack of clinical improvement is seen

C: The infection has spread to involve blood and bone

D: The patient exhibits other risk factors such as diabetes mellitus, ha

Physician documented reasons for initiation of daptomycin over vancomycin therapy for susceptible MRSA cSSTIs in the hospital include

A The vancomycin MIC is 1

B The patient has chronic kidney disease

C The patient will eventually be changed to daptomycin for outpatien

D Both B and C

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-448 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

TRANSITIONAL CARE: MEDICATION MANAGEMENT IN DISCHARGE FOLLOW UP

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Purpose: Medication Management in Care Transitions programs have been implemented throughout the United States in various medical centers. Care transitions with a focus on medication management have shown to reduce readmission rates, decrease total health care costs, and improve overall health outcomes. These programs primarily focus on enhancing the discharge process and the subsequent transition to the community setting. Pharmacists identify discrepancies and make interventions to medication therapy during the care transitions process. These interventions help to reduce medication-related events that may otherwise lead to suboptimal outpatient care and repeat utilization of services. The goal of this project is to assess pharmacist intervention during the post discharge process by way of follow-up phone calls on patients with heart failure at Franciscan St. Margaret Health.□□Methods: The study was granted approval by the Institutional Review Board. The electronic health record will identify patients with a diagnosis of heart failure. The inclusion criteria consists of patients with heart failure at least 18 years of age that have not been discharged to a skilled nursing facility or nursing home and are without cognitive impairment. The electronic health record will be used to gather the following data: patient age, gender, ethnicity, left ventricular ejection fraction, admission date, discharge date, readmission date, and discipline of the health care team member conducting the medication reconciliation prior to discharge. Eligible patients will be contacted via phone within five days of discharge. Responses to a medication compliance questionnaire will be recorded, and all pharmacist interventions will be classified using intervention tracking software. The primary efficacy outcome will analyze 30-day readmission rate, and the secondary efficacy outcome will assess pharmacist interventions during the post discharge follow up phone call.□□Results and Conclusions: Data collection is in-progress; results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify the impact of care transitions programs on healthcare system outcomes during discharge from the hospital setting.

Describe the pharmacists role in the care transitions process during discharge from the hospital setting.

Self Assessment Questions:

Care transitions programs focused on medication management have shown to provide which of the following benefits to the healthcare system:

A Reduction in readmission rates

B: Decrease in total health care costs

C: Improved overall health outcomes

D: All of the above are potential benefits care transitions programs ca

Pharmacist driven follow up phone calls will be conducted within _____ days of discharge.

A 5 days

B 6 days

C 7 days

D 8 days

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-451 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

A RETROSPECTIVE CHART REVIEW OF VETERAN PATIENTS CONVERTED FROM ROSUVASTATIN TO ATORVASTATIN FOR THE TREATMENT OF HYPERLIPIDEMIA

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In 2006, approximately one of every six deaths in the United States was due to coronary heart disease (CHD). One of the major risk factors for CHD is abnormalities of plasma lipoproteins. An abundance of evidence supports the link between increased total cholesterol (TC), elevated low density lipoprotein cholesterol (LDL-C), and reduced high density lipoprotein (HDL) to the development of CHD. The cornerstone lipid lowering agents used in patients with hyperlipidemia have been HMG-CoA reductase inhibitors, commonly known as statins. In this study, a cohort of hyperlipidemia patients treated with high dose rosuvastatin (20 mg or 40 mg) monotherapy were switched to the formulary therapeutic alternative atorvastatin. The purpose of this study is to evaluate the impact of the conversion from rosuvastatin 20 mg or 40 mg to atorvastatin 40 mg or 80 mg on lipid lowering efficacy. The primary endpoint of this study is change in LDL-C concentration. Additionally, the secondary endpoints include changes in LDL-C goal attainment, HDL-C concentration, triglyceride concentration; percentage of patients switched back to rosuvastatin and documented adverse drug reactions (ADRs) post-conversion. Data will be extracted from October 1, 2011 up to the end of the study period September 30, 2013. Study participants will be from two groups: 1) rosuvastatin 20 mg patients or 2) rosuvastatin 40 mg patients. □□This will be an electronic, retrospective, chart review and the following data points will be collected at Jesse Brown Veterans Affairs Medical Center: rosuvastatin and atorvastatin dose pre/post-conversion, patient demographics, CHD or CHD risk equivalent, hypertension, smoking status, HDL-C < 40 mg/dL, family history of CHD LDL-C goal, presence of liver disease, pre/post-conversion lipid profile data, reported ADRs, and reason(s) for switching back to rosuvastatin. □□

Results and conclusion will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Recognize the health burden of high blood cholesterol and cardiovascular disease.

Explain appropriate treatment options and follow-up for adult patients with hyperlipidemia.

Self Assessment Questions:

Which of the following statements is correct?

A There is insufficient evidence linking increased TC, elevated LDL-C

B: One of the major risk factors for CHD that can predispose a perso

C: Data from the AHA reports estimates of 46.8% or 10.2 million Ame

D: It has been identified that a low LDL level < 40 mg/dL is a strong ir

Which of the following medications has been the cornerstone lipid lowering agent in patients with hyperlipidemia?

A Niacin

B Ezetimibe

C Statin

D Omega-3 fatty acids

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-452 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATING NEUTROPENIA RECOVERY IN PATIENTS RECEIVING FILGRASTIM ON DAY +5 VERSUS DAY +10 POST AUTOLOGOUS HEMATOPOIETIC STEM CELL TRANSPLANT

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PURPOSE: The objective of this study is to compare the time to engraftment of patients who receive filgrastim on day +5 versus day +10 post autologous hematopoietic stem cell transplant. In addition, antibiotic use from start day of filgrastim, infection rate, number of fever days, and length of hospitalization will be compared. We hypothesize that neutropenia and neutropenic fever will be similar in the day +10 population compared to the day +5 population. METHODS: Prior to initiation, the study will be submitted to the Institutional Review Board for approval. A hematopoietic stem cell transplant database will be used to identify patients who have received autologous stem cell transplants from January 1, 2007 to June 30, 2013. Patients will be included if they received filgrastim on day +5 + 1 or day +10 + 1 post HSCT. Patients will then be matched based on age + 5 years and type of malignancy.

The health-systems electronic medical record system and the hematological database will be used to collect the following data: age, gender, weight, height, allergies, type of malignancy requiring transplant date of autologous HSCT, and chemotherapy conditioning regimen. Medication charts will be reviewed for filgrastim and antibiotic initiation and durations. Other data collection points include temperatures, blood or urine cultures, length of hospital stay, and survival endpoints. In this study, absolute neutrophil count recovery is defined as recovery to ≥500 cells/microL sustained for 48 hours or ANC >1000 cells/microL sustained for 24 hours. RESULTS/CONCLUSIONS: Data analysis and conclusions are pending and will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Define neutropenia and engraftment in patients receiving a stem cell transplant

Review the role of granulocyte colony stimulating factors in autologous stem cell transplant

Self Assessment Questions:

What is the definition of absolute neutrophil count recovery in this study?

A ≥500 cells/microL sustained for 48 hours or ANC >1000 cells/micr

B: > 250 cells/microL sustained for 48 hours or > 500 cells/microL su

C: > 1000 cells/microL sustained for 48 hours

D: > 500 cells/microL sustained for 24 hours

What is the purpose of initiating granulocyte colony stimulating factors, like filgrastim, after autologous stem cell transplant?

A Delay engraftment

B Decrease the duration of neutropenia

C Increase febrile days after stem cell transplant

D They have no effect

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-453 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION AND EVALUATION OF A PHARMACIST-MANAGED PLERIXAFOR PROGRAM IN AN ACADEMIC CLINICAL CANCER CENTER

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Purpose: In patients with non-Hodgkin lymphoma or multiple myeloma requiring autologous stem-cell transplantation, plerixafor is approved in combination with granulocyte colony-stimulating factor to mobilize stem cells to the peripheral blood for collection. Evaluation of 51 patients receiving plerixafor in 2012 identified several opportunities for dosing improvements. Internal data demonstrated 5.6% of patients receiving plerixafor lacked an FDA-approved indication and 11.8% received unadjusted doses of plerixafor despite a creatinine clearance less than 50 milliliters per minute. Six patients did not receive subsequent apheresis after plerixafor administration, exposing them to a costly and unnecessary medication. The purpose of this project is to implement a pharmacist collaborative practice agreement (CPA) and guideline to promote FDA-approved utilization of plerixafor for autologous stem-cell transplantation, with the goal of decreasing unnecessary administration and increasing adherence to evidence-based dosing practices.

Methods: This study is a retrospective analysis comparing patients who received plerixafor pre- and post-CPA implementation. The CPA requires pharmacist review of clinical parameters, adjustment of doses for renal function, and documentation of a progress note in the electronic health record (EHR). The progress note contains pertinent information for plerixafor dosing, including CD34 peripheral enumeration count, cell collection goal, and collection yield to date. The primary objective of this study is to reduce the incidence of plerixafor doses given without subsequent apheresis. Secondary objectives include reducing the use of plerixafor for non-FDA approved indications, increasing administration of renally-adjusted doses, and estimating cost savings. Results: Data collection and evaluation is ongoing and will be presented at the Great Lakes Pharmacy Resident Conference. Conclusions: Based on historical data, plerixafor dosing appears to be suboptimal and 12% of patients receive doses without subsequent apheresis. Optimization of plerixafor dosing, an educational plan, and post-implementation data will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss the indications and factors affecting plerixafor dosing in malignancy.

Review the current state of plerixafor dosing at a 500 bed academic medical centers outpatient oncology clinics.

Self Assessment Questions:

What are plerixafors approved indications?

A Multiple Myeloma

B: Non-Hodgkin Lymphoma

C: a and b

D: Neither a nor b

How many patients at Froedtert Hospital received apheresis after plerixafor administration in 2012?

A 21

B 38

C 45

D 51

Q1 Answer: C Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-454 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

C. DIFFICILE IN ICU PATIENTS: RISK FACTOR ANALYSIS IN PATIENTS WITH RECURRENT VERSUS NON-RECURRENT INFECTION

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Over the last decade, Clostridium difficile infection (CDI) has become particularly problematic due to its increased mortality, incidence, and severity. Previous studies identified risk factors for recurrence in hospitalized patients but a gap exists in identifying recurrence risk factors in the intensive care unit (ICU) population. Also, the rate of recurrence in the ICU population has yet to be established. The proposed research project will evaluate and determine the ICU-specific risk factors associated with CDI recurrence. Furthermore, this study will define the rate of CDI recurrence in the ICU population. This was a retrospective chart review study of risk factors for CDI in adult ICU patients admitted to a 990 bed University Medical Center. Patients were included if they were in the ICU between 2011 and 2013. Inclusion in the study required a positive CDI diagnosis in the ICU. CDI diagnosis was confirmed by the presence of diarrhea and positive PCR test or combination of positive antigen and enzyme immunoassay toxin tests. To evaluate whether a recurrent CDI occurred, patients were followed fo 12 weeks post their index case. Patients were excluded if they died at the time of their index case or if they were transferred from an outside ICU with missing information about their index case. A multivariate analysis was performed to identify risk factors for CDI recurrence.

Learning Objectives:

Identify risk factors for C. difficile recurrence in the general hospitalized population.

Define CDI recurrence rates in hospitalized patients.

Self Assessment Questions:

Based on the literature presented, which of the following is a risk factor for C. difficile recurrence in the general hospitalized population?

A Total parenteral nutrition (TPN)

B: Vasopressor use

C: Antibiotic exposure

D: Mechanical ventillation

Which of the following statements is true about CDI recurrence rates in hospitalized patients?

A First CDI recurrence risk is 20-28% and subsequent recurrence ris

B First CDI recurrence is 50-65% and subsequent recurrence risk de

C First CDI recurrence is 5-10% and subsequent recurrene increase

D First CDI recurrence is 40-50% and subsequent recurrence increa

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-455 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE IMPACT OF ISOTOPE DILUTION MASS SPECTROMETRY (IDMS) SERUM CREATININE (SCR) MEASUREMENTS ON DOSING OF RENALLY-ADJUSTED MEDICATIONS

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Purpose: In 2006, the National Kidney Disease Education Program (NKDEP) recognized the isotope dilution mass spectrometry (IDMS) method for measuring serum creatinine (SCr) levels as the standard for staging renal function. IDMS SCr levels are typically lower than non-standard SCr, potentially overestimating a patients drug clearance when used in the Cockcroft-Gault equation. For most renally-adjusted medications, dosing recommendations are based on non-standard SCr. This may lead to discrepancies in dosing when the proper conversion is not made, resulting in overdose and adverse events. The purpose of the study is to help evaluate the CrCl estimation and renal dosing of inpatient medications. Methods: This quasi-experimental study conducted at a large tertiary care institution evaluates dosing of select medications before and after the implementation of an intervention. The intervention consists of a computerized alert system to remind pharmacists to convert the IDMS SCr to non-IDMS (conversion made using a standard equation provided by the NKDEP) when estimating CrCl. Patients included were over the age of 18 years and on either dabigitran, enoxaparin, valgancyclovir, intravenous (IV) acyclovir, IV sulfamethoxazole-trimethoprim, or IV ganciclovir. Patients on renal replacement, with acute kidney injury prior to starting the study drug, and who are pregnant are excluded. The primary endpoint is the frequency of discordance between prescribed dosing and the non-IDMS based dosing. Secondary endpoint is the difference in dose associated adverse outcomes between the pre-intervention and post-intervention cohorts. Categorical data, including presence of discordance and adverse events, will be analyzed using the chi square test. Continuous data will be analyzed with the students t-test for parametric and Mann-Whitney test for non-parametric data. This study will include 240 patients, with 20 patients per study medication group, to detect a difference of 45% in primary outcome.

Learning Objectives:

Review the NKDEP recommendations for SCr standardization and the recent literature evaluating the effects of these recommendations on medication dosing.

Identify which patients may be at potential risk of discordant dosing and potential dose-dependent adverse events.

Self Assessment Questions:

When compared to non-IDMS SCr measurements, IDMS SCr levels tend to _____ creatinine clearance and _____ the risk of dose dependent adverse events.

A Underestimate; increase

B: Underestimate; decrease

C: Overestimate; increase

D: Overestimate; decrease

There is an 84 year old male presenting to the SICU for post-operative care. Orthopedics consult recommends enoxaparin for DVT prophylaxis. He weighs 60 kg (his ideal body weight is 59.2 kg) and his

A Enoxaparin 40mg subcutaneous injection once daily

B Enoxaparin 30mg subcutaneous injection once daily

C Enoxaparin 30mg subcutaneous injection twice daily

D Enoxaparin is contraindicated in this patient

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-763 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

BIVALIRUDIN VERSUS UNFRACTIONATED HEPARIN FOR ANTICOAGULATION DURING EXTRACORPOREAL MEMBRANE OXYGENATION

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Purpose: Extracorporeal membrane oxygenation (ECMO) temporarily supports the respiratory and/or cardiac system during acute severe cardiac or respiratory failure. Anticoagulation is necessary while on ECMO to prevent thrombosis. Continuous infusion unfractionated heparin (UFH) has been the anticoagulant of choice since it is the most studied, easily reversible, and has a rapid onset. However, despite UFH use, thrombosis and bleeding are still major complications of ECMO which has led to the use of newer anticoagulants including bivalirudin. The purpose of this study is to evaluate the efficacy and safety of bivalirudin compared to UFH as anticoagulants in ECMO. □□Methods: A single-center, retrospective study was conducted to compare the safety and efficacy of bivalirudin versus UFH for ECMO anticoagulation. Patients included in the study were on ECMO for more than 24 hours between January 1, 2011 and December 31, 3013 and were greater than 18 years of age. Patients who received UFH but were switched to bivalirudin were counted in both anticoagulant categories. Electronic medical records were used for data collection. The primary endpoint evaluates the time to reach goal activated clotting time (ACT) or activated partial thromboplastin time (aPTT) for bivalirudin compared to UFH. The secondary efficacy endpoint assesses the time patients stayed within the stated aPTT or ACT goal range. Secondary safety endpoints include adverse reactions defined as HIT, bleeding, VTE, or mortality.□□Results/Conclusion: Final data analysis and conclusion will be presented at Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Define the recommendations for anticoagulation in extracorporeal membrane oxygenation anticoagulation including what to monitor for the anticoagulation therapy.

Identify potential complications of anticoagulation therapy with either heparin or bivalirudin.

Self Assessment Questions:

What is the significance of antithrombin (AT3) during anticoagulation with heparin?

A AT3 inhibits heparin, leading to an increase in clots

B: Low levels could indicate heparin resistance

C: AT3 represents how anticoagulated the patient is

D: This is the first time I've heard of AT3

What is the estimated percentage of patients on ECMO who develop HIT?

A 1 to 5%

B Less than 1%

C 10 to 15%

D 5 to 10%

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-456 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

A RETROSPECTIVE CHART REVIEW OF MEDICATION DISCREPANCIES AT HOSPITAL ADMISSION

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Purpose: Medication reconciliation has been recognized by the Joint Commission as a critical process to decrease medication discrepancies upon transitions of care. By understanding the types of medication discrepancies and their impact on patient outcomes, we can tailor interventions to improve patient safety. The goals of this study are twofold: to examine the prevalence of medication discrepancies when patients are admitted to the hospital and to examine the relationship between medication discrepancies and hospital readmissions. □□The goals of this study will be achieved through the following specific aims: (1) classify the types of medication discrepancies; (1a) identify the frequency with which they occur; (1b) list the most common medications with which discrepancies occur; (2) recognize if discrepancies and re-admissions are associated with certain comorbidities; and (2a) indicate how many hospital re-admissions may be attributed to medication discrepancies between discharge and re-admission.□ □Methods: A retrospective chart review will be performed on patients admitted to the Madison VA Hospital. Inclusion criteria include patients admitted between December 1, 2012 to November 30, 2013 with all-cause readmission occurring within 30 days of discharge. Exclusion criteria is 89 years of age or older.□□The aims will be achieved by the following: medication discrepancies will be categorized into omissions, additions, duplications, incorrect dosages, incorrect timing, or other; a ratio for each discrepancy category will be calculated; medications in each discrepancy category will be tallied and high-alert medications will be identified; each patient with one of the five most common co-morbidities will be tallied to determine if there is a correlation between comorbidities and frequency or type of discrepancy; and the relationship between medication discrepancies and re-admission will be investigated by reviewing the initial discharge summary and by identifying the reason for the re-admission.□□Findings: Initial application, none to date□□Results and Conclusions: To be presented

Learning Objectives:

Identify a medication error that might be discovered upon medication recognition.

Identify where errors can occur in the medication reconciliation process.

Self Assessment Questions:

Which of the following statement is correct?

A Medication reconciliation is a process that involves only patients a

B: Medication reconciliation's sole purpose is to determine if the patie

C: Medication reconciliation can improve patient care by identifying di

D: Medication reconciliation is effective only when used in persons wi

Which of the answers below is the most accurate example of a medication discrepancy?

A An inpatient veteran is receiving 20 units insulin glargine subcutan

B A veteran is admitted January 15, 2014 to the hospital and has a p

C A patient who was admitted to the hospital last night has the follow

D A patient takes rosuvastatin 40 mg once daily and is started on the

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-901 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF COMBINATION DRUG THERAPY FOR CLOSTRIDIUM DIFFICILE-ASSOCIATED DIARRHEA

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According to the Centers for Disease Control and Prevention (CDC), most types of healthcare associated infections (HAIs) are declining; however HAI caused by Clostridium difficile remains at historically high levels. The 2010 update Society for Healthcare Epidemiology of America (SHEA) and Infectious Diseases Society of America (IDSA) guideline recommends a combination of oral (PO) vancomycin and intravenous (IV) metronidazole for the treatment of complicated severe Clostridium difficile-associated infection (CDI) despite a paucity of outcome data. The objective of this study is to determine if the use of dual antibiotic treatment is statistically different from the use of monotherapy in the treatment of CDI.□□This retrospective, single-center study will include 150 study subjects with documented CDI identified through electronic medical system reports. Between the dates of Jan 2009 and May 2013 subjects will be included in the study if they were older than 18 of age and if they received more than 72 hours of antimicrobial therapy. The following data were collected: demographic information (including patient's age, gender, and residence), immunity status, renal function, chemistries, complete blood count (CBC) with differential, imaging, prior CDI, CDI symptomology and severity, concurrent antibiotic use, prior antibiotic exposure, prior and current acid suppressive therapy, dose of PO vancomycin, dose of PO and IV metronidazole, duration of therapies, alternative therapies, surgical intervention, and documented adverse effects. The primary outcomes include CDI-associated mortality and resolution of symptoms at the end of treatment. Primary outcomes will be evaluated using multivariate statistics, accounting for the potentia covariates listed above.

Learning Objectives:

Recognize the significance Clostridium difficle-associated infection (CDI and its recommended treatment options

Describe the study design to compare combination therapy and monotherapy in Clostridium difficile-associated diarrhea (CDAD)

Self Assessment Questions:

What is/are the significance of CDI?

A Increased incidence and number of outbreaks

B: Increased mortality and virulence

C: Increased effective medication therapy

D: A and B

SHEA/IDSA recommends using combination of PO vancomycin and IV metronidazole for the treatment of complicated severe CDI in adults. The strength of this recommendation and the quality of evidence are

A Weak due to poor evidence to support this recommendation, evide

B Intermediate due to moderate evidence to support this recommenc

C Strong due to good evidence to support this recommendation, evic

D No strength of recommendation was mentioned in the guideline

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-457 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PROSPECTIVE, RANDOMIZED, COHORT STUDY ON BLOOD PRESSURE OUTCOMES FOLLOWING A HEALTH FAIR

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Purpose:□Professional pharmacy organizations use health fairs to provide hypertension education by promoting awareness, offering screenings, and counseling patients on lifestyle modifications . As pharmacy schools across the nation expand the service learning component of their curriculum, student-led organizations will likely increase the number of health fairs during the year. Studies demonstrating the benefits of outcomes after health fairs are lacking. We hypothesize that increased communication between student pharmacists and physicians will improve outcomes. Therefore, the purpose of this study is to determine if faxing patients blood pressure results to their primary care physician following a health fair will improve outcomes.□□Methods:□This prospective, randomized, cohort study is currently being carried out by pharmacists and student pharmacists from Sullivan University College of Pharmacy. Approval for this study was obtained from the Sullivan University College of Pharmacy Institutional Review Board. Blood pressure screenings are being conducted at health fairs throughout the Louisville, KY area from September 2012- April 2014, with follow-up continuing through May 2014. Written consent will be obtained from each participant. To be included in the study, patients aged 18 or older must present in a hypertensive state (average of two readings showing systolic blood pressure to be >140 mmHg or diastolic >90 mmHg). In addition, patients must have a primary care physician and be capable of providing a follow-up blood pressure measurement. Patients who present with a systolic blood pressure >180 mmHg or diastolic >110 mmHg will be excluded. Patients will be randomized to have their blood pressure results either faxed or not faxed to their primary care physician. All patients will receive 2- and 6-week follow-up phone calls. Interventions made since the health fair, as well as SBP and DBP readings will be documented at each follow-up interval.

Learning Objectives:

Identify patients that would most likely benefit from free health clinic screenings and follow-up.

Recognize barriers to successfully conducting a research project utilizing student pharmacists in health fair settings.

Self Assessment Questions:

Which type of patient would benefit most from health clinic screenings and follow-up

A Middle-class patient with health insurance and controlled hyperten

B: Low-income patient with no health insurance who rarely sees a ph

C: A 20-30 year old male who participates in at least 1 marathon per

D: None of the above

A barrier/Barriers to conducting a research project utilizing student pharmacists in health fair settings include:

A Self-reported follow-up of patients

B Ensuring exact methods are used during each encounter

C Using the same blood pressure machine at each encounter

D A & b

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-458 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTING QUALITY MONITORING AND OPTIMIZATIONS IN A CLINICAL SCORING TOOL

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PURPOSE: The clinical scoring tool is a build within the hospitals electronic medical record (EMR) that was designed for pharmacists to efficiently collect patient information, increasing the ability to prioritize and evaluate patient medication therapy. Clinical assessments performed by the pharmacist each day (e.g. profile review, venous thromboembolism (VTE) prophylaxis, parenteral to oral, renal dosing, etc) are displayed in columns within the EMR, aiding in hand-offs between pharmacists on different shifts.□Scoring tool activity is not currently reported, so pharmacist interventions are not monitored. The primary objective of this project is to report which scoring tool metrics are being completed on a daily basis. A portion of this data will be analyzed to determine quality and consistency of pharmacist clinical assessments. The secondary objective is to modify the current scoring tool based on pharmacist suggestions from a formalized survey. Modifications will be made post data collection as conclusions from the primary objective may impact future directions.□□METHODS: Pharmacist activity from the scoring tool (e.g. percentage of patients assessed for adequate VTE prophylaxis) will be captured electronically per hospital unit over a four week time frame. A subset of patients per unit will be randomly selected to verify quality of clinical assessments. Responses from a formalized survey will be used to assess the scoring tool impact on pharmacist workflow and collect suggestions for tool modifications.□□RESULTS/CONCLUSIONS: Results of clinical metrics and assessments including percentage of scoring tool metrics completed and an objective assessment of pharmacist interventions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review the benefits of using a scoring tool to view patient lists

Identify barriers to monitoring quality of pharmacist clinical assessments

Self Assessment Questions:

Which of the following statements is true?

A Assessing the quality of pharmacist clinical decisions is straightfor

B: The scoring tool sorts patients based on their clinical acuity (e.g. p

C: New pharmacy consults receive a higher score than a new kinetics

D: Pharmacists are expected to assess patients for VTE prophylaxis

Which monitoring parameter may have an impact on Value-Based Purchasing metrics?

A IV to PO

B VTE prophylaxis

C Renal dosing

D Profile review

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-764 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF DAPTOMYCIN COSTS AND ADHERENCE TO RESTRICTIONS FOR USE AT A COMMUNITY HOSPITAL

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Purpose: Daptomycin is one of the top drug expenses at Henry Ford Macomb Hospital. In the past twelve months, this institution spent over $330,000 acquiring 1,090 vials of daptomycin, despite strict guidelines for use. The purpose of this study is to evaluate the current use of daptomycin at Henry Ford Macomb Hospital and identify areas for cost-savings and waste minimization. □Methods: This is a retrospective study of patients receiving daptomycin at Henry Ford Macomb Hospital in the past 12 months. Data that will be collected include medical record number, age, gender, weight, serum creatinine, type of infection, allergies, culture results, previous vancomycin therapy, daptomycin dose ordered, number of doses received, ordering physician, and whether an infectious disease physician consult was placed. Analysis of appropriate prescribing according to hospital policy and potential cost savings through rounding of doses and batching IV preparation will be estimated The primary outcome of this study will be rate of appropriate prescribing Secondary endpoints include cost of daptomycin over the past twelve months, estimated savings through batch IV preparation and dose rounding, and type of infections treated.□Results: This study is still in process. Final results and conclusions to be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review indications for daptomycin use

Discuss solutions for improving daptomycin antimicrobial stewardship and cost management

Self Assessment Questions:

Which of the following are FDA approved indications for both daptomycin and ceftaroline?

A Community-acquired Pneumonia

B: Complicated skin and soft tissue infection

C: Native valve endocarditis

D: MRSA osteomyelitis

Reducing an institution's spending on daptomycin can be done by

A Using vancomycin instead and removing it from formulary

B Rounding doses and preparing doses through batch preparation

C Having pharmacists enforce restrictions for use

D B & c

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-765 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

N-ACETYLCYSTEINE PROPHYLAXIS TO PREVENT ACUTE KIDNEY INJURY IN PATIENTS TREATED WITH LIPOSOMAL AMPHOTERICIN B DURING THE 2012 FUNGAL OUTBREAK

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Over the course of the 2012 fungal outbreak due to contaminated steroid injections, 264 of the 751 identified cases have occurred in Michigan, the vast majority of which have been treated in our institution. Liposomal amphotericin B (LAmB) was used to treat many of the patients. In an effort to protect against the nephrotoxicity caused by LAmB, N-acetylcysteine (NAC) was employed as a prophylactic agent in some patients. The purpose of this study is to describe our experience using NAC prophylaxis in an attempt to lower the risk of acute kidney injury in patients treated with LAmB. The prophylaxis group includes patients started on NAC (600 mg by mouth twice daily) within 48 hours of starting LAmB, the non-prophylaxis NAC exposure group is composed of patients given NAC after 48 hours of starting LAmB, and the third group is those not exposed to NAC during LAmB therapy. This is a retrospective cohort study which will determine the maximum serum creatinine (SCr) and the proportion of patients whose Scr increased by 1.5x baseline for patients who were administered NAC in conjunction with LAmB treatment and in patients who received LAmB alone. Subgroup analysis will determine the difference, if any, in SCr associated with using NAC early in LAmB treatment versus later in LAmB treatment. Confounding variables such as comitant use of vancomycin, loop diuretics, angiotensin converting enzyme inhibitors, angiotensin receptor blockers, and renin inhibitors will be determined. Interim data review suggests that use of NAC is associated with lower maximum SCr. When NAC prophylaxis is started within 48 hours of first dose of LAmB, as compared to when NAC is started after 48 hours, the maximum SCr is lower, but final change in SCr remains similar between the two groups.

Learning Objectives:

Select the mechanism(s) for nephrotoxic effects of amphotericin B, and outline conventional strategies to help prevent them.

Discuss the strength of the current body of literature which supports the use of N-acetylcysteine as a nephron-protecting agent and identify when its use might be appropriate.

Self Assessment Questions:

Which of the following best describes the renal toxicity of amphotericin B?

A Formation of crystals which occlude the proximal tubule

B: Profound acidification of the urine which results in tubular cell lysis

C: Direct damage to distal tubular membranes and indirect constrictio

D: Disruption of glomerular cellular matrix

What is a proposed mechanism by which N-acetylcysteine may help protect the kidney?

A Decreased blood pressure

B Assist in inhibition of free radical formation, and promotion of oxyg

C Direct neutralization of membrane-bound amphotericin B

D Decreased postprandial blood glucose

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-459 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSESSING THE RISK FOR QTC PROLONGATION IN THE OUTPATIENT SETTING

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Introduction: Many commonly prescribed medications have been shown to prolong the QTc interval. This effect has been linked to a rare ventricular arrhythmia, torsade de pointes (TdP), and potentially sudden cardiac death. With variability in the extent of QT prolongation and the complexity of medication and patient-related factors impacting the overall risk of developing TdP, identifying at-risk patients is a challenge for healthcare providers. In effort to assist physicians in identifying patients who warrant ECG screening, an outpatient-focused risk assessment tool was developed by the clinical pharmacy staff at the St. Vincent Joshua Max Simon Primary Care Center (PCC) in Indianapolis, IN. The purpose of this study was to assess the efficacy of this tool in identifying patients at risk for a prolonged QTc interval. Secondary analysis included identification of which medications and risk factors had the greatest prolongation effect. Methods: This retrospective study was intended to apply the risk assessment screening tool to 900 patients with an in-office ECG performed at the PCC from June 1, 2009 to August 31, 2013. Patients were excluded if they were less than 18 or greater than 95 years of age, pregnant, had a documented implantable cardioverter-defibrillator device, or had a diagnosis of Wolff-Parkinson-White syndrome or congenital long QT. Patient characteristics for data collection were chosen based on risk factors shown in previous studies to contribute to a prolonged QT interval or increase the risk for TdP. Results: Will be presented at the 2014 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recall common medications and non-medication related risk factors associated with QTc prolongation.

Discuss the complexity in identifying patients at risk for QTc prolongatio

Self Assessment Questions:

Which of the following is a risk factor for QT prolongation?

A Cardiomyopathy

B: Female gender

C: Advanced Age

D: All of the above

Which of the following medications had a recent FDA warning issued regarding QT prolongation?

A Azithromycin

B Nitrofurantoin

C Amoxicillin

D Doxycycline

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-902 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

INTEGRATION OF THE NANOSPHERE VERIGENE TEST FOR RAPID DETECTION OF GRAM-POSITIVE BACTERIA AND RESISTANCE FACTORS INTO AN ANTIMICROBIAL STEWARDSHIP PROGRAM

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Purpose: The excessive prescribing of broad-spectrum antibiotics is a major problem in the medical community. This overuse of antimicrobial agents has resulted in the emergence of multi-drug resistant (MDR) bacterial strains. Rapid and accurate detection of bacterial species and resistance factors is essential for tailoring antimicrobial therapy. The purpose of this study will be to evaluate the effectiveness of implementing a rapid Gram-positive bacteria and resistance factor test into an existing antimicrobial stewardship program. Methods: This prospective study will be conducted at a 400-bed, community hospital. The following data will be collected: culture reports, antimicrobial therapy, time to appropriate antibiotic regimen, and Nanosphere Verigene test results. Data will be collected, recorded, and analyzed confidentially and without the use of patient identifiers. The laboratory will automatically run the Nanosphere Verigene test for inpatients with a gram-positive blood culture isolate and will contact pharmacy with the test results. The pharmacist will evaluate the patients profiles to ensure they are on appropriate treatment. The pharmacist will order a one-time dose of vancomycin for any mecA positive result, suggestive of MRSA. The pharmacist will also notify the physician and nurse of the test results and initial vancomycin therapy. An automatic Infectious Diseases consult will be ordered for all Staphylococcus aureus bacteremias. If a result comes back with a positive result for the vanA and/or vanB genes, the pharmacist will contact the physician. Appropriate isolation measure will be implemented with detection of resistance factors. The pharmacist will consult with the physician in all cases to determine further treatment Analysis will be completed to determine if the Nanosphere Verigene test reduced the time to appropriate antibiotic treatment and also to determine potential and actual cost savings to the institution. Results: Results pending. Conclusions: To be determined after analysis of results.

Learning Objectives:

Identify possible resistance genes the Nanosphere Verigene test can detect for gram-positive bacteria and what types of resistance these genes confer.

Recognize the advantages of utilizing a rapid detection assay for antimicrobial stewardship.

Self Assessment Questions:

Which of the following resistance genes correlates with MRSA?

A bla
B: vanA
C: vanB
D: mecA

Which of the following is an advantage of utilizing a rapid detection assay for antimicrobial stewardship?

A Reduced time to appropriate antimicrobial therapy
B Increased cost to the facility
C Slower turnaround time for test results
D Extended length of inpatient stay

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-766 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFECTIVENESS OF A MEDICATION RECONCILIATION PROGRAM CONDUCTED BY PHARMACY TECHNICIANS IN THE EMERGENCY DEPARTMENT

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Purpose: The Joint Commission identifies medication reconciliation as a source of transitional error that significantly impacts patient safety. Dedicated pharmacy-driven medication reconciliation has proven superior to the traditional nurse-physician model by reducing the rate of potential adverse drug events (ADEs) by > 85%. The objective of this study is to evaluate the effectiveness of a medication reconciliation program conducted by pharmacy technicians in the emergency department and to determine if the use of pharmacy technicians reduces unintentional discrepancies within the hospital and meets national norms. Methods: This study was submitted and approved by the Institutional Review Board. Phase I -Control Group From October 21, 2013 to January 31, 2014, fifty subjects will be included based on a prospective review using a generated list of patients admitted to Floyd Memorial Hospital. Subjects will be eligible if they are 18 years of age or older, admitted from the emergency department, and had a medication reconciliation completed. Subjects will be excluded if they do not speak English, do not have any home medications, are unresponsive, or are unavailable for a subsequent medication reconciliation. Electronic patient charts will be utilized for data collection, which will be documented on a Medication Reconciliation Collection Tool. This form includes demographic information, admission diagnosis, number of medications reconciled, time started, time ended, number of medication discrepancies, medication name and type of medication discrepancy (omission, not taking, dose, frequency, incorrect drug, other), and time and date of admission and discharge. Phase II - Intervention Group From October 21, 2013 to January 31, 2014, fifty subjects will be included based on a prospective review with implementation of a pharmacy technician driven medication reconciliation program. Phase III From February 1, 2014 to March 1, 2014 analysis of the intervention group will be performed using information from the Medication Reconciliation Collection Tool.

Learning Objectives:

Identify common medication discrepancies and their potential to cause harm to the patient.

List the potential benefits of a pharmacy-driven medication reconciliation program.

Self Assessment Questions:

What was the most common medication discrepancy documented in both the nursing and technician medication reconciliation groups?

A Omission
B: Frequency
C: Dose
D: Incorrect drug

What are the potential benefits of a pharmacy-driven medication reconciliation program?

A Improved patient safety
B Decreased time to complete medication reconciliations
C Cost Savings
D Both A and C

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-903 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

RETROSPECTIVE EVALUATION OF THE EFFECT OF TRANEXAMIC ACID ON THE REDUCTION OF BLOOD TRANSFUSION IN ELECTIVE ORTHOPEDIC SURGERY

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Background: Over the past decade, there has been an increasing prevalence of unicompartmental knee arthroplasty (UKA) an total knee arthoplasty (TKA), specifically a 15-fold increase in the number of UKA performed in the United Stat and over 650,000 TKA every year. While various protocols have been implemented to reduce blood loss, patients undergoing TKA or UKA have an increased risk of perioperative bleeding and may necessitate blood transfusion. The use of allogenic blood is not without consequences to the recipient, the risk of immunological reaction, infection, hemolysis, renal failure and even increased mortality Numerous studies have shown positive efficacy of tranexamic acid, a synthetic derivative of lysine, in reducing blood loss and transfusion in patients undergoing orthopedic surgery. Purpose: The purpose of this study is to evaluate whether the use of tranexamic acid decreases blood loss and blood transfusion in elective UKA or TKA. Methods: This is an Institutional Review Board-approved retrospective cohort study at Henry Ford Macomb Hospital comparing elective UKA or TKA patients who received tranexamic acid to those who did not. The study population includes all patients 18 years of age or older who underwent elective UKA or TKA between January 2013 and January 2014. Patients were excluded if they had a history of severe ischemic heart disease, chronic renal failure, cirrhosis, bleeding disorders, DVT or stroke. Patients were identified using ICD-9 codes corresponding to the listed surgeries. The primary endpoint is intraoperative and postoperative blood loss and number of allogenic blood transfusion. Secondary endpoints include: length of stay, change in hemoglobin from baseline, duration of surgery, and adverse events (venous thromboembolism, and post surgical complications). Results/Conclusions: Data collection and analysis is in progress. Results and conclusions will be presented at the 2014 Great Lakes Pharmacy Resident Conference

Learning Objectives:

Explain the pharmacology of tranexamic acid

Discuss the risk of blood transfusion in elective orthopedic surgery

Self Assessment Questions:

What is the mechanism of action of tranexamic acid?

A Direct Xa inhibitor

B: Noncompetitive inhibitor of fibrin

C: Competitive inhibitor of plasminogen activation

D: Noncompetitive inhibitor of antithrombin III

Which of the following is a risk with allogenic blood transfusion?

A Increased hospital stay

B Infection

C Increased venous thromboembolism

D Thrombocytopenia

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-460 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

LEAN SIX SIGMA APPROACH TO IMPROVING TIMELY PROCEDURAL MEDICATION AVAILABILITY FOR INPATIENT HEMODIALYSIS PATIENTS

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Purpose: At Ministry Saint Josephs Hospital (MSJH), there is an automated dispensing cabinet on the hemodialysis (HD) unit for dispensing standardized doses of medications commonly used on the unit. The pharmacy department sends all other medications. Based on voice of the customer, opportunity exists regarding the timeliness of patient-specific medication delivery. Currently, the pharmacy does not have access to an inpatient HD schedule, presenting an opportunity for improved communication in order to facilitate accurate and timely delivery of procedural medications. Using the tools of Six Sigma and Lean Manufacturing to standardize the process can reduce the instances of rework and wasted medications. The primary objective of this project is to improve medication availability at the time of dialysis. The secondary objectives include standardizing the process and improving provider and nursing satisfaction. Methods: The five phases of six sigma project methodology, which include define, measure, analyze, improve, and control, were used to drive this process improvement. Prior to initiation, this study was determined to be a quality improvement initiative and thus exempt from review by the Institutional Review Board. A survey was created and administered to HD nurses to gather voice of the customer. Value stream mapping to define the current workflow was completed and measures and potential areas for improvement identified. A baseline retrospective chart review was done for all adult HD patients receiving treatment between November 6, 2013 to November 25, 2013. The measures included: date and time the HD order was written, when it was scanned to pharmacy, how medications were entered into the computer, when dialysis occurred, and amount of rework. Final results and conclusions will be reported at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

State the five phases of Six Sigma project methodology

Describe the tools of Lean methodology

Self Assessment Questions:

What are the five phases of Six Sigma project methodology?

A Determine, Investigate, Measure, Analyze, Control

B: Define, Measure, Analyze, Improve, Control

C: Define, Investigate, Analyze, Input, Control

D: Define, Investigate, Analyze, Input, Control

What are the eight wastes according to Lean methodology?

A Defects, Over production, Waiting, Not utilizing technology, Transp

B Defects, Over production, Waiting, Not utilizing human talent, Ship

C Defects, Over production, Waiting, Not utilizing human talent, Trar

D Defects, Over production, Waiting, Not utilizing technology, Shippi

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-767 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

INCREASING CLINICAL PHARMACIST EFFICIENCY THROUGH IMPLEMENTATION OF A TARGETED WORKFLOW TOOL WITHIN THE ELECTRONIC MEDICAL RECORD

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Purpose: In an increasingly complex health care environment, with pharmacists responsible for over 5,000 drugs, development of enhanced tools and processes are paramount to meet the growing demands of patient care. The American Society of Health-System Pharmacists Section on Pharmacy Informatics and Technology created a vision statement on technology-enabled practice foreseeing computer-based triage systems triggering pharmacist intervention. The purpose of this project is to develop and implement a tool within the electronic health record (EHR) to increase the efficiency of the clinical pharmacist in delivering patient-centered medication management. Methods: An observational time study focused on quality improvement at a not-for-profit, community, teaching hospital was conducted. Site-specific policies and clinical monitoring procedures were examined to determine what data were necessary and available from the EHR. Members of the hospital pharmacys informatics team created modules in the EHR for use in clinical monitoring of patients. Each module displays the necessary patient-specific information required for the clinical decision making of defined clinical operations. These modules include: intravenous to oral medication administration route conversions, dose adjustments based on renal function, pharmacokinetic dosing, warfarin management, screening for appropriate venous thromboembolism prophylaxis, and assurance of stress ulcer prophylaxis when indicated. The primary endpoint is efficiency as a measure of the mean time required to complete patient chart review and subsequently identify and intervene on targeted drug related problems. Secondary endpoints include the number of computer mouse clicks, effectiveness as a measure of the number of interventions, incidence of the inability to complete tasks due to report failure, and pharmacist satisfaction based on post-implementation survey. Roughly half of the hospital pharmacy staff will be tested prior to module implementation. After module training the remaining staff will be tested after implementation.

Results/Conclusion: Data collection is ongoing. Conclusions will be presented at Great Lakes Pharmacy Conference.

Learning Objectives:

Identify barriers for technology support implementation within the pharmacy practice model.

Describe the purpose of pharmacists utilizing clinical monitoring reports.

Self Assessment Questions:

What is a barrier to implementing technology support within the pharmacy practice model?

A Pharmacists will need to be trained on a new way of practicing

B: Health systems will require the services of trained informaticists

C: Changing health system policies and formulary will require on-goin

D: All of the above

What is the purpose of pharmacists utilizing clinical monitoring reports?

A Decrease the number of staff pharmacists needed

B Increase efficiency of staff pharmacists

C Promote job growth

D Prevent unavoidable medication-related events from happening

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-768 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE IMPACT OF A PHARMACIST CONDUCTED COMPREHENSIVE MEDICATION REVIEW ON PATIENT MEDICATION ADHERENCE

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Statement of Purpose: To analyze the effect of pharmacist conducted comprehensive medication review (CMR) on patient medication adherence. Statement of Methods: A retrospective chart review involving 484 patients receiving medications from one regional supermarket chain in west Michigan was initiated to compare the medication adherence rates of patients who received a CMR with those who declined a CMR. Patients were identified based on eligibility for a CMR as determined by a medication therapy management (MTM) platform. Eligible patients were then divided into two study groups: those who received CMR and those who declined the CMR. Pharmacists conducted a single CMR on eligible patients who accepted. Pharmacists evaluated patient therapy based on current guidelines, recommendations, and standards of therapy. Following the CMR, pharmacists created a medication list and provided it to the patient. Each CMR was charged to the respective health insurance plan via MTM platform utilized. Information collected will be de-identified and entered into an excel spreadsheet for analysis. Data will be analyzed to identify trends in medication adherence, as defined by proportion of days covered (PDC), over a 12 month period for patients who received a CMR. Medication adherence for patients who declined the CMR will be tracked over a comparable time period. Data from both groups will be analyzed to identify the impact of pharmacist conducted CMR on patient medication adherence. In addition, patients who received a CMR will serve as their own control and we will be comparing their PDC 6 months prior to receipt of the CMR to their PDC 6 months post-CMR.

Preliminary Results: One regional supermarket chain was identified with a total of 484 patient charts eligible for review. Conclusions: Upon completion, data will be evaluated to determine the impact of pharmacist conducted comprehensive medication review on patient medication adherence in an outpatient setting.

Learning Objectives:

Discuss the role of a comprehensive medication review in patient therapy.

Describe the impact of a pharmacist conducted comprehensive medication review on patient outcomes.

Self Assessment Questions:

Which of the following best describes the role of a pharmacist conducted comprehensive medication review (CMR) within an individual patients care?

A There is no role of CMR in an individual patient's care.

B: The role of the CMR is to actively manage an individual patient's d

C: The only role of the CMR is to decrease the cost of an individual p

D: The role of the CMR is to decrease the number of prescription me

Which of the following best describes the impact of a pharmacist conducted comprehensive medication review (CMR) on patient outcomes?

A A pharmacist conducted CMR has no impact on individual patient

B A pharmacist conducted CMR can only impact patient outcomes w

C A pharmacist conducted CMR can only impact individual patient o

D A pharmacist conducted CMR can optimize individual patient outc

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-769 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

USE OF PROTHROMBIN COMPLEX CONCENTRATE IN ADDITION TO VITAMIN K FOR WARFARIN REVERSAL PRIOR TO EMERGENT CARDIOTHORACIC SURGERY

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Background: Anticoagulation with warfarin is common in patients presenting for emergent cardiothoracic surgery. Prior to emergent surgery, anticoagulation reversal is necessary to avoid significant intra- and peri-operative bleeding. Commonly, warfarin reversal is achieved with vitamin K and fresh frozen plasma (FFP); however, these therapies have limitations. Another option for reversal is Prothrombin Complex Concentrate (PCC). Recently at the Cleveland Clinic, a warfarin reversal protocol prior to emergent cardiothoracic surgery was implemented using low-dose PCC. This study assesses both efficacy and safety outcomes as well as blood product utilization post-PCC administration in patients needing warfarin reversal prior to emergent cardiothoracic surgery. Objective: To assess the utilization of blood products as well as in-hospital mortality, re-operation, thromboembolic events, duration of chest tube utilization, time to extubation, and intensive care unit and hospital length of stay with the use of PCC in addition to vitamin K for warfarin reversal prior to emergent cardiothoracic surgery compared to a historical control group. Methods: This was a retrospective IRB approved medical record review. The PCC cohort included patients undergoing emergent cardiothoracic surgery on warfarin with an INR ≥1.5 after initiation of the PCC reversal protocol and received at least one dose of PCC. Blood product utilization was measured from post-operative day (POD) 0 to POD 2. Results: The PCC and historical control cohorts included 20 and 50 patients, respectively. There was a significant reduction in the utilization of FFP (5.90 6.37 vs 9.88 7.91 units, P= 0.03) and platelets (1.50 1.24 vs 2.56 2.32 units, P= 0.02) in the PCC cohort compared to the historical control. There were no significant differences in utilization of other blood products and other secondary efficacy endpoints. Conclusion: Use of PCC prior to emergent cardiothoracic surgery reduces blood product administration in the intra- and peri-operative setting.

Learning Objectives:

Explain the rationale for using Prothrombin Complex Concentrate prior to emergent cardiothoracic surgery for warfarin reversal.

Discuss the clinical and pharmacoeconomic impact of using Prothrombin Complex Concentrate prior to emergent cardiothoracic surgery for warfarin reversal.

Self Assessment Questions:

What coagulation factors does Prothrombin Complex Concentrate contain?

A Ii, vii, x, xii

B: Ii, vii, ix, x

C: Ii, viii, xi, xii

D: V, vii, ix, x

What is the main difference between 3-factor and 4-factor Prothrombin Complex Concentrate?

A There is more Factor II in 4-factor Prothrombin Complex Concentr

B There is more Factor VII in 4-factor Prothrombin Complex Concen

C There is more Factor IX in 4-factor Prothrombin Complex Concent

D There is more Factor X in 4-factor Prothrombin Complex Concentr

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-461 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PHARMACOKINETIC ANALYSIS OF SUBLINGUAL TACROLIMUS ADMINISTRATION IN ORTHOTOPIC HEART TRANSPLANTATION

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Purpose: Tacrolimus is a calcineurin inhibitor utilized in maintenance immunosuppression protocols following orthotopic heart transplantation (OHT). Tacrolimus has a narrow therapeutic index, thus tacrolimus trough levels are used to direct dose adjustments to minimize toxicity and prevent graft rejection. Sublingual administration of tacrolimus serves as an alternative route that minimizes toxicities associated with its intravenous formulation. At Northwestern Memorial Hospital (NMH), OHT patients receive tacrolimus sublingually when unable to tolerate traditional oral administration. Dose conversion ratios between oral and sublingual administration of tacrolimus have varied between solid organ transplantations, with limited information available in OHT patients. The purpose of this study is to determine the dose conversion ratio between oral and sublingual tacrolimus administration in hospitalized OHT patients. Methods: This is a retrospective cohort study that will be conducted in adult OHT patients that have transitioned between oral and sublingual administration of tacrolimus at NMH from January 2009 through January 2014. To be included, patients must have documented steady-state tacrolimus trough levels within the target therapeutic range for both routes. Steady-state will be defined as receiving at least 48 hours of tacrolimus with a particular route prior to obtaining a therapeutic tacrolimus trough level. Patients who experienced a decrease in glomerular filtration rate greater than 50%, who were started on dialysis, who had a Child-Pugh score ≥ 10, or who received a concurrent strong CYP3A4 inhibitor or inducer at any time during tacrolimus route conversion will be excluded. The primary endpoint will be to determine the dose conversion ratio between the sublingual and oral routes of administration of tacrolimus in hospitalized OHT patients. The secondary endpoint will be time to therapeutic tacrolimus trough level following dose administration interchange. Results: Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss the rationale for administering tacrolimus sublingually in orthotopic heart transplantation (OHT) patients.

Describe the proposed differences in dose conversion ratios between oral and sublingual tacrolimus administration among varying solid organ transplant populations.

Self Assessment Questions:

Which of the following is an advantage of administering tacrolimus by sublingual route, as compared to intravenous administration?

A Reduced risk of severe nephrotoxicity

B: Bypass CYP3A4 metabolism interactions

C: Increased bioavailability

D: Less frequent trough monitoring required

Based on reported dose conversion ratio data between oral and sublingual tacrolimus administration in solid organ transplantation patients, which of the following is correct?

A The dose conversion ratio between oral and sublingual tacrolimus

B The dose conversion ratio between oral and sublingual tacrolimus

C In one major trial with 34 lung transplant patients, the dose conver

D In one major trial with 17 thoracic transplant patients, the dose cor

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-462 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

BASILIXIMAB PHARMACOKINETICS IN HEMATOPOIETIC CELL TRANSPLANT

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Purpose: Graft-versus-host disease (GVHD) can cause significant morbidity and mortality as a complication following high dose chemotherapy and allogeneic hematopoietic cell transplantation (HCT). GVHD can occur in both an acute and chronic form. Prevention of acute GVHD is accomplished via lymphocyte depletion of the donor graft or by pharmacologic means. Pharmacologic GVHD prophylaxis options include standard of care with methotrexate plus a calcineurin inhibitor or mycophenolate mofetil with a calcineurin inhibitor. Basiliximab, a chimeric monoclonal interleukin-2 receptor α-chain (IL-2Rα, also known as CD25 antigen) antibody, has been studied as prophylaxis and treatment of acute GVHD in the setting of a phase II clinical trial at the IU Simon Cancer Center. Basiliximab pharmacokinetics as acute GVHD prophylaxis in HCT have not been evaluated. The purpose of this study is to assess basiliximab pharmacokinetics in patients undergoing a non-myeloablative HCT phase II clinical trial using an enzyme-linked immunosorbent assay (ELISA). □□Methods: Patients with hematologic malignancies received non-myeloablative HCTs. Cyclosporine and basiliximab were used as acute GVHD prophylaxis. Patients were monitored for GVHD. Patient serum samples were taken at defined time points pre- and post-basiliximab infusions and were frozen for future laboratory analysis. The remainder of the methods will be discussed upon completion of ELISA development and data analysis at Great Lakes Pharmacy Resident Conference. □□Results/Conclusions: To be discussed upon completion of ELISA development and data analysis at Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the mechanism of action of basiliximab.

Explain the difference between myeloablative and non-myeloablative hematopoietic cell transplants.

Self Assessment Questions:

Which of the following best describes the mechanism of action of basiliximab?

A A chimeric monoclonal antibody against IL2Rα

B: A chimeric monoclonal antibody against CTLA-4

C: A chimeric monoclonal antibody against CD52

D: A chimeric monoclonal antibody against CD20

Which of the following best describes a myeloablative hematopoietic cel transplant?

A Low dose chemotherapy that does not cause cytopenia and does

B High dose chemotherapy with or without total body irradiation caus

C Chemotherapy with or without reduced dose total body irradiation

D Low dose irradiation that does not cause cytopenia and does not r

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-770 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

OPTIMIZATION OF STATIN USE FOR PRIMARY PREVENTION IN PATIENTS AT HIGH RISK FOR ASCVD

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PURPOSE: New updates to blood cholesterol guidelines place emphasis on the use of statins for primary prevention based on long term cardiovascular risk. Specifically, moderate to high intensity statin therapy is recommended for primary prevention in individuals aged 40 to 75 years with a low-density lipoprotein (LDL) cholesterol level between 70 and 189 mg/dL and a 7.5% or higher estimated 10-year risk of atherosclerotic cardiovascular disease (ASCVD). The purpose of this descriptive analysis is to assess current utilization of statins for primary prevention at the William S. Middleton Memorial Veterans Hospital and identify individuals that would most benefit from intensification of lipid therapy for primary prevention based on recent updates to blood cholesterol treatment guidelines. Additionally, this quality improvement project will investigate the use of adjunct, non-statin lipid lowering agents and identify potential areas for therapy simplification and cost savings. □□

METHODS: For this retrospective records review a list of veteran patients aged 45 to 75 years without clinical ASCVD or diabetes and a serum LDL level between 70 to 189 mg/dL after January 1st, 2012 will be generated. Computer generated random numbers will be used to select the electronic medical records of up to 300 veteran patients to be reviewed by the study pharmacist. Data collected and recorded from the medical record will include age, gender, race, smoking status, current lipid lowering medications and doses, lipid levels, systolic blood pressure, and antihypertensive treatment if applicable. A 10-year ASCVD risk will be calculated for each patient reviewed using the ACC/AHA Pooled Cohort Equations CV risk calculator. The ACC/AHA Guideline on the Treatment of Blood Cholesterol will be utilized qualification for moderate to high intensity statin therapy based on calculated ASCVD risk. □□RESULTS/CONCLUSIONS: The results and conclusion are pending

Learning Objectives:

Identify patients that may benefit from statin therapy for primary prevention of atherosclerotic cardiovascular disease

Classify intensity of statin therapy regimens

Self Assessment Questions:

Use of a moderate to high intensity statin for primary prevention would be recommended in which of the following patients based on 2013 ACC/AHA Guidelines on the Treatment of Blood Cholesterol?

A 80 year old patient with diabetes and LDL of 95

B: 55 year old patient with a 10.0% 10 – year ASCVD risk and LDL o

C: 65 year old patient with existing cardiovascular disease and histor

D: 45 year old patient with a 20% 10 – year ASCVD risk and LDL of 7

Which of the following statin regimens is considered moderate intensity?

A Simvastatin 10mg daily

B Pravastatin 20mg daily

C Lovastatin 40mg daily

D Fluvastatin 40mg daily

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-463 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PRE- AND POST-INTERVENTION STUDY TO ASSESS THE IMPACT OF A SEDATION PROTOCOL IN ADULT PATIENTS REQUIRING MECHANICAL VENTILATION IN THE INTENSIVE CARE UNIT AT A COMMUNITY HOSPITAL

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Purpose: In January of 2013 the Society of Critical Care Medicine (SCCM) released updated guidelines for the management of pain, agitation, sedation, delirium, and associated outcomes in adult critically ill patients. Critically ill patients often require mechanical ventilation to support respiration, and pharmacologic sedation is routinely used in ventilated patients to improve comfort and decrease stress. Evidence has shown that the implementation of a sedation protocol can decrease the duration of mechanical ventilation and decrease intensive care unit (ICU) length of stay. Implementation of a sedation protocol for mechanically ventilated adult patients in the ICU and evaluation of baseline (current) sedation practices has been attempted at Community Memorial Hospital in the past. However, when this previous assessment was conducted it was on paper charts and is not currently being utilized in the electronic system. The purpose of the study is to improve patient outcomes by optimizing the use of sedatives in mechanically ventilated adult patients in the ICU at Community Memorial Hospital.□□Methods: The initial phase of the study will be a retrospective analysis of sedative practices of twenty-five mechanically ventilated patients admitted to the ICU at Community Memorial Hospital between 1 January 2013 and 1 July 2013. Included patients will be those mechanically ventilated for ≥ 48 hours and individuals age ≥ 18 years. The second phase of the study will be a comparison of current sedative practice to clinical practice guidelines. The information gathered in this comparison will be used to determine the best intervention(s) to improve compliance with clinical practice guidelines. The third and final phase of the study will be to implement the proposed interventions and determine the benefit (if any) on patient outcomes.□□Results/Conclusions: The study is currently ongoing and results/conclusions will be reported in the final project manuscript.

Learning Objectives:

Identify the current recommendations outlined in the SCCM guidelines to improve outcomes in mechanically ventilated adult ICU patients

Outline an appropriate sedation regimen for an mechanically ventilated adult ICU patient

Self Assessment Questions:

Which of the following sedative agents may be preferred to help improve clinical outcomes in mechanically ventilated adult ICU patients?

A Propofol
B: Dexmedetomidine
C: Lorazepam
D: Choices A and B are correct

Which of the following strategies has been shown to provide beneficial outcomes in mechanically ventilated adult ICU patients receiving sedation?

A Maintaining light levels of sedation
B Maintaining deep levels of sedation
C Utilizing sedation holidays
D Choices A and C are correct

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-464 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

INTERMITTENT BOLUS ROCURONIUM VERSUS CONTINUOUS INFUSION CISATRACURIUM DURING THE COOLING PHASE OF PROTOCOL-DRIVEN TARGETED TEMPERATURE MANAGEMENT

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Background: Targeted temperature management (TTM) is currently recommended for comatose patients with return of spontaneous circulation (ROSC) following ventricular fibrillation cardiac arrest. Avoidance of shivering is essential during cooling to reduce tissue oxygen consumption and prevent metabolic heat production which counteracts efforts to rapidly reach target temperature. Neuromuscular blocking agents (NMBAs) are used to minimize or prevent shivering during TTM. The cooling phase of the TTM protocol at Methodist Hospital was recently modified from continuous infusion cisatracurium (CIS) to bolus rocuronium (ROC). However, current literature provides little information describing optimal NMBA dosing in TTM.□Purpose: To determine if time to goal temperature is similar between CIS and ROC.□Methods: The study was a retrospective chart review of post-cardiac arrest patients 18 years or older undergoing TTM between January 1, 2013 and December 31, 2013. IRB approval was granted with a waiver of informed consent. The study groups consisted of patients receiving CIS during cooling prior to August 7, 2013 and those receiving ROC during cooling after this date. Patients were excluded if they expired during the cooling phase or if both ROC and CIS were used during cooling. The primary objective was to compare time to goal temperature between groups. Secondary objectives included comparing in-hospital mortality, positive neurologic function at hospital discharge, and drug cost between groups. Collected patient demographic data included co-morbid conditions, initial cardiac rhythm, time to ROSC, and baseline temperature. Nominal data were compared using Chi square or Fishers exact tests, while continuous data were assessed using the Students t test or Mann Whitney U test as appropriate.□Results and Conclusions: A total of 122 patients received TTM during 2013, with 74 during the CIS phase and 48 during the ROC phase. Further data and conclusions to be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the goals of therapy for targeted temperature management.

Review existing literature describing the use of neuromuscular blocking agents during targeted temperature management.

Self Assessment Questions:

According to the 2010 American Heart Association Post-Cardiac Arrest Care guidelines, which of the following is the goal core body temperature for targeted temperature management?

A 30°c - 32°c
B: 31°c - 33°c
C: 32°c - 34°c
D: 33°c - 35°c

At what core body temperature range would neuromuscular blocking agents most likely be necessary to prevent or control shivering during targeted temperature management?

A Less than 31°C
B 31°c - 33°c
C 34°c - 35°c
D Greater than 36°C

Q1 Answer: C Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-465 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF PHARMACIST LED DISCHARGE COUNSELING ON 30-DAY READMISSIONS AND EMERGENCY DEPARTMENT VISITS

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Purpose: According to the New England Health Care Institute, medication non-adherence has shown to result in $100 billion per year ir excess hospitalizations and it is estimated that along with non-adherence, suboptimal prescribing, and other factors could result in as much as $290 billion per year in avoidable medical spending.1 Among elderly patients with >3 medications, adherence improved by 43% in patients who received pharmacist counseling before and after hospital discharge.2 The primary objective of this study is to determine the impact of pharmacist discharge counseling on 30-day post-discharge hospital readmissions and emergency department (ED) visits.

Methods: A prospective, single center intervention study with a pharmacy discharge counseling service from 8 am to 4 pm on Monday through Friday. This study was approved by the Institutional Review Board. Inclusion criteria include age ≥55 years, being discharged by participating hospitalist group, started on or already on a high risk medication as defined by the ISMP, and on ≥5 medications. Exclusion criteria include rejection of offer to counsel, discharge from inpatient rehabilitation, and discharge to place other than home. The pharmacist will review the patients medication list and collaborate with physicians to assess whether medication therapy is appropriate based on evidence based guidelines for patient specific disease states. Patient will receive counseling from a pharmacist prior to discharge and patient knowledge will be assessed using Agency for Healthcare Research & Qualitys discharge knowledge assessment tool (DKAT). Data collected for each group will include patients age, number of medications, high risk medications, readmissions, and DKAT score. A chart review will be conducted 30 days post discharge for readmissions and ED visits. The results will be compared to the current standard of care with discharge counseling by a nurse. Results and Conclusions: will be presented at the Great Lakes Pharmacy Resident Conference

Learning Objectives:

Discuss the impact on a patients knowledge base after discharge counseling by a clinical pharmacist.

Identify potential interventions for pharmacists to implement during the discharge counseling process.

Self Assessment Questions:

The involvement of clinical pharmacists in discharge counseling may:

A Increase patient knowledge of their medication regimen

B: Decrease readmissions and ED visits from preventable adverse ef

C: Decrease discrepancies between inpatient and outpatient medicat

D: A, b, & c

2.Objective 1.4 from the 2015 ASHP initiative states that by 2015, hospital inpatients discharged with complex and high risk medication regimens will receive discharge counseling managed by a pharmac

A 50

B 65

C 75

D 80

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-904 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

RETROSPECTIVE REVIEW OF THE UTILIZATION OF ORAL CHEMOTHERAPY AGENTS IN THE TREATMENT OF METASTATIC RENAL CELL CARCINOMA IN AN AMBULATORY CARE SETTING

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PurposeTreatment options for metastatic renal cell carcinoma (mRCC) have evolved from cytokine therapy (interferon-alfa and interleukin) to oral chemotherapy. Sunitinib, sorafenib, pazopanib, axitinib, and everolimus are oral chemotherapy agents FDA approved for treatment o mRCC. Diverse prescribing patterns and high drug price warrant review of their utilization in this patient population. Prescribing patterns are affected by many factors including adverse effects, disease progression and organ function. The purpose of this study is to analyze the utilization and prescribing patterns of oral chemotherapy agents in the setting of mRCC, including duration of therapy, sequence of therapy, and reasons for dose reduction or discontinuation. MethodsThis retrospective study will include 149 patients 18 years of age and older with a diagnosis of mRCC and prescribed an oral chemotherapy agent between January 2006 to October 2013. Patients receiving these medications as part of a clinical trial have been excluded. This quality improvement study was exempt from review by the Investigational Review Board. Data to be collected will include number of patients on each of the oral chemotherapy agents, date of diagnosis of mRCC, date of initiation of oral chemotherapy, date of death if applicable, date and reason for dose reduction or discontinuation, sequence of therapy, and total duration of therapy. All published NCCN kidney cancer guidelines were obtained from 2005 to present and will be utilized to assess if prescribing patterns were consistent with NCCN recommendations. Specifically, descriptive statistics will be used to describe the study population, analyze the utilization rate of each oral chemotherapy agent and the consistency with NCCN guidelines.Summary of (preliminary) results to support conclusionResults and conclusions to be presented at Great Lakes Pharmacy Conference

Learning Objectives:

Recognize oral chemotherapy agents used in the treatment of metastati renal cell carcinoma

Identify chemotherapy-specific adverse effects that may result in dose reduction, discontinuation, or initiation of a supportive care medication

Self Assessment Questions:

Which of the following oral chemotherapy agents is FDA-approved for use in the treatment of metastatic renal cell carcinoma?

A abiraterone

B: capecitabine

C: cyclophosphamide

D: sunitinib

What is a common adverse effect of pazopanib that may require a dose reduction or initiation of a supportive medication?

A alopecia

B bradycardia

C hypertension

D leukocytosis

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-466 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

THIRTY-DAY HOSPITAL READMISSION FOR THROMBOEMBOLIC COMPLICATIONS MEETING CRITERIA FOR SUSPECTED HEPARIN-INDUCED THROMBOCYTOPENIA

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PURPOSE: Heparin-induced thrombocytopenia (HIT) is an immune-mediated disease resulting from heparin exposure, leading to thrombocytopenia and thrombotic complications. Without timely recognition and management, the incidence of thrombosis and mortality may be up to 50 percent. Two retrospective studies have shown an association between recent positive HIT PF4 antibody tests and subsequent thrombosis after discharge. Such HIT testing is not routinely done in patients on heparin since thrombocytopenia may have multiple causes. However, platelet monitoring should be part of standard care for these patients.□□The purpose of this study is to compare the rate of 30-day readmissions for thromboembolic complications (TEC) in hospitalized patients exposed to heparin products among three patient groups: (1) Those with potentially undiagnosed HIT (thrombocytopenia without HIT testing); (2) those with low suspicion for HIT (no thrombocytopenia or negative tests); and (3) those with confirmed HIT (thrombocytopenia and positive tests, or clinical diagnosis). Secondary objectives include assessing HIT rates with unfractionated heparin versus low molecular weight heparin (LMWH).□□METHODS: This is a retrospective cohort study assessing patients exposed to heparin or LMWH products over an 18-month period. Adults were included if they had exposure to any heparin product using the hospitals electronic medical record and were excluded if they expired prior to discharge or were discharged on chronic anticoagulation outside of the setting of confirmed HIT. Based upon HIT testing results and HIT platelet criteria (<150,000/mm3 or a ≥ 50% decrease from baseline within expected timeframes of presentation), patients were grouped into the three aforementioned cohorts. The rate of readmissions due to TEC will be compared among these cohorts using ICD-9 codes for the readmission.□

RESULTS & CONCLUSIONS: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the utility of predictive clinical scoring tools in the identification of heparin-induced thrombocytopenia.

Identify patient populations who have a high risk of developing heparin-induced thrombocytopenia.

Self Assessment Questions:

Which of the following clinical scoring tools are highly specific for heparin-induced thrombocytopenia?

A The 4 Ts Score
B: The HIT Expert Probability (HEP) Score
C: Both A & B
D: None of the above

Which of the following patient populations are most likely to have a diagnosis of heparin-induced thrombocytopenia after heparin product exposure?

A Orthopedic surgery
B Medical patient population
C Cardiac surgery
D Both A & C

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-467 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

MAJOR ADVERSE OUTCOMES ASSOCIATED WITH THE USE OF NON-STEROIDAL ANTI-INFLAMMATORY DRUGS (NSAIDS) IN A RURAL HEALTH SYSTEM

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Purpose:□It is well established non-steroidal anti-inflammatory drugs (NSAIDS) are associated with major cardiovascular events, gastrointestinal bleeding, and acute kidney injury. The purpose of this study is to develop or employ guidelines for use of NSAIDS in at-risk individuals using local data as compelling evidence for change. The objective of this study is to correlate NSAID use with major adverse outcomes collated by known risk factors.□□Methods:□This retrospective chart review was submitted to the institutions pharmacy and therapeutics committee for approval. Investigators reviewed electronic medical records of adult patients to identify those receiving two or more prescriptions for NSAIDS from 2009 through 2013. For patients identified in this way, investigators calculated a dose density by dividing the number of doses of NSAIDS prescribed by the time period over which they were prescribed. Quantities of individual NSAIDS were adjusted using the World Health Organization's defined daily dose to allow merging of multiple drug entities contributing to a patient's dose density. Information regarding major cardiovascular events, gastrointestinal bleeding, and acute kidney injury was gathered for all patients. Investigators identified and documented known risk factors for the three adverse outcomes of interest. Patient outcomes will be analyzed in three subgroups according to dose density and risk for the corresponding outcome. Investigators will also analyze the type of NSAID, type of risk factor, and duration of therapy in relation to the patients actual outcome to determine trends.□□Results/Conclusion:□Summary of results and conclusion will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the process for calculating an individuals NSAID dose density

State risk factors for major adverse outcomes associated with NSAID use (including AKI, CVE, and GI bleed)

Self Assessment Questions:

A patient is prescribed ibuprofen 600mg tab TID #90 with 5 refills between 9/1/12-3/1/13 and celecoxib 200mg tab daily #30 with 5 refills between 3/1/13-9/1/13. The defined daily dose of ibuprofen is

A 1.04 doses/day
B: 1.25 doses/day
C: 2 doses/day
D: 2.5 doses/day

All of the following increase a patient's risk for gastrointestinal bleed associated with NSAID use EXCEPT _____.

A an age greater than 65 years
B long-term use of oral prednisone
C a history of uncomplicated ulcer
D concomitant use of a proton pump inhibitor

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-905 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF THREE ANTIFIBRINOLYTIC REGIMENS IN CARDIAC SURGERY.

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Background: A major complication of cardiac surgery is uncontrolled bleeding or widespread intravascular coagulation. To counteract resulting coagulopathies, antifibrinolytics are employed as alternatives to blood product transfusions. Prior to removal from the market in 2008, aprotinin was the primary agent used at our institution. Following this change aminocaproic acid (EACA) was used as a 5 g bolus given twice intra-operatively. Beginning 2010 the dosing regimen for EACA changed to 5 g bolus with 1 g/hr infusion continued over 5 hours. In April 2013, a drug shortage of EACA forced further change. Tranexamic acid (TXA) became the only available antifibrinolytic agent which, at our institution, was given as 15 mg/kg bolus followed by 2mg/kg/hr infusion over 5 hours. Although these agents are commonly used in practice to reduce the postoperative bleeding risk, evidence is lacking regarding the optima dosing strategy. □□Purpose: This study aims to evaluate the effect of the antifibrinolytic dosing regimens on postoperative bleeding rates, incidence of thrombotic risk and renal failure and drug cost at our institution. □□Methods: This is a single-center, retrospective chart review of adult inpatients undergoing cardiac surgery requiring cardiopulmonary bypass who received EACA bolus dose during April - June 2009, EACA bolus and infusions during April - June 2010, and TXA bolus and infusions during April - June 2013. Patients who were < 18 years of age, underwent transcatheter aortic valve replacement surgery, or expired during surgery were excluded. Data collected included: patien demographics, baseline and postoperative (up to 72 hours) lab values (CBC, coagulation panel, renal function, LFTs), type of surgery, peri-operative blood products, details of antifibrinolytic use, chest tube output, need for re-exploration and 30-day thrombotic complications (stroke, MI, DVT). □□Results and Conclusions: Data collection and analysis are currently being conducted. Final results and conclusions wil be presented at the Great Lakes Residency Conference.

Learning Objectives:

Describe the mechanism of action for antifibrinolytic agents

Identify the complications that present with the use of these agents.

Self Assessment Questions:

EACA and TXA are lysine analogs that competitively bind to _____ preventing fibrin degradation.

A Antithrombin III

B: Fibrin-binding site

C: Thrombin

D: Plassmin

Antifibrinolytic use can lead to which of the following complications?

A Renal failure

B Myocardial infarction

C Pneumonia

D A and B

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-468 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF FOSFOMYCIN ON THE TREATMENT OF MULTI-DRUG RESISTANT ORGANISMS CAUSING URINARY TRACT INFECTIONS

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Purpose: Fosfomycin interferes with phosphenolpyruvate synthetase, which halts the first step in peptidoglycan cell wall synthesis in Gram positive and Gram negative bacteria. Although it has been available for forty years, interest has resurged due to increased resistance to some o the more frequently used agents for urinary tract infections (UTIs). Multiple trials have demonstrated greater than 90% susceptibility of fosfomycin to ESBL producing Enterobacteriaceae, KPC possessing Klebsiella Pneumoniae, and Vancomycin resistant Enterococcus species, but the only FDA approved use for fosfomycin is acute, uncomplicated UTIs in women. The purpose of this study is to analyze the impact of using fosfomycin for the treatment of the aforementioned urinary pathogens.□□Methods: This is a single center study with two retrospective, observational cohorts and one prospective, interventional group at Rush University Medical Center in Chicago, Illinois. One retrospective cohort will include patients with multi-drug resistant (MDR) UTIs treated with agents other than fosfomycin. The other retrospective cohort will include patients treated with fosfomycin since its addition to formulary in April 2013. The intervention phase will prospectively include patients treated with fosfomycin for MDR UTIs. Fosfomycin susceptibility will be determined by the Kirby Bauer disk diffusion test. Urinary cultures will be sent to the microbiology laboratory according to standard medical practice, with results to be reviewed by a pharmacist who will actively recommend fosfomycin if appropriate based on key inclusion and exclusion criteria. □□Results and Conclusions: The primary outcome is the duration of intravenous (IV) antibiotic therapy. Secondary outcomes include cost, determination of fosfomycin susceptibility rates, duration of stay, and duration of time with an IV line. Safety outcomes include microbiological and clinical cure and thirty-day rate of hospital readmission. Data analysis will be completed in February and results and conclusions will be presented at the 2014 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify which organisms causing multi-drug resistant urinary tract infections are likely be successfully treated with fosfomycin.

Recognize the potential benefits from increasing the utilization of fosfomycin for multi-drug resistant urinary tract infections.

Self Assessment Questions:

Which statement is true regarding antibiotic selection for the treatment of a multi-drug resistant urinary tract infection?

A Fosfomycin is a reliable treatment option for a fluoroquinolone-resi

B: Providencia stuartii are intrinsically susceptible to fosfomycin.

C: Vancomycin resistant Enterococcus often retain susceptibility to fo

D: Klebsiella pneumoniae are intrinsically resistant to fosfomycin.

Which of the following is a potential benefit from increasing fosfomycin use in the hospital setting for the treatment of multi-drug resistant urinary tract infections?

A Fosfomycin is the least expensive oral option available for the trea

B Fosfomycin comes in an oral sachet, so duration of time requiring

C Dosing errors are unlikely with fosfomycin, as it is a one time only

D Fosfomycin can prevent hospital readmission of many patients wit

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-469 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

LIPOSOMAL BUPIVACAINE VERSUS ELASTOMERIC CONTINUOUS INFUSION BUPIVACAINE PUMP

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Background: Multimodal analgesia, the utilization of two or more medications acting through different mechanisms, is the preferred pain management strategy for surgical patients. A multimodal approach can help reduce opioid utilization and therefore limit opioid-related adverse events that may occur in post-operative patients. Bupivacaine is a local anesthetic that is used as part of a multimodal regimen, but is limited by its duration of action. Two delivery forms have been developed to extenc bupivacaines pharmacologic effect. An elastomeric continuous infusion bupivacaine pump has been used to infuse the medication via a cathete and a liposomal bupivacaine formulation has been recently approved by the Food and Drug Administration (FDA) for single intra-operative infiltration. This study will assess the utilization and efficacy of liposomal bupivacaine in comparison to elastomeric continuous infusion bupivacaine pump. Objectives: The primary study objective is to compare the total opioid use in the first 24 hours after surgery between patients receiving liposomal bupivacaine and patients receiving an elastomeric continuous infusion bupivacaine pump. Secondary outcomes include total opioid use 72 hours after surgery, time to first rescue opioid use, hospital length of stay (LOS), and identifying current utilization. Methodology: A retrospective chart review will be conducted to evaluate patient outcomes following medication administration. The study population will be identified from medication orders for adults from January through June 2013. Data will be collected regarding demographics, surgical procedure, study medication, opioid and non-opioid analgesic use, hospital LOS, and medication-related adverse effects. Opioid medication use (converted to morphine equivalents) and hospital LOS will be analyzed using medians and the Mann-Whitney U test. The log-rank test will be used for time to first rescue opioid use and descriptive statistics will be used for medication utilization and adverse events. Results and Conclusions: To be presented at the Great Lakes Residency Conference

Learning Objectives:

Explain the benefits of using a multimodal approach in treating pain in post-operative patients.

Describe the advantages of using alternative bupivacaine dosage forms.

Self Assessment Questions:

What are the main opioid-related side effect(s) that can potentially be reduced with multimodal analgesia?

A Constipation and sedation

B: Insomnia

C: Nephrotoxicity

D: Infection

What is the main justification for using alternative dosage forms of bupivacaine in a multimodal treatment approach?

A Reduced medication cost

B Extend duration of action

C Reduce bupivacaine-related side effects

D Allow for higher doses to be administered

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-470 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

NATIONAL SURVEY OF CLINICAL PHARMACY SERVICES PROVIDED FOR CANCER CLINICAL TRIALS

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Purpose: Oncology clinical pharmacists play a significant role in patient care by actively managing complex chemotherapy regimens and educating patients and staff to ensure the safe and effective utilization o medications. An increasing number of cancer patients are enrolled in complex investigational trials that require close monitoring and frequent dosage adjustments. With the increase in oral investigational chemotherapy trials, patient education, monitoring, and routine follow-up are critical elements to ensure patient adherence to complicated medication regimens. Although oncology clinical pharmacists are well positioned to provide the same level of service to patients enrolled in clinical trials, their role has not been well described in the literature. This study will assess clinical pharmacy services provided for cancer patients enrolled in clinical trials at NCI-designated cancer centers. Specifically, the survey will focus on three aims: 1) determining clinical pharmacy services currently provided to cancer clinical trial patients, 2) respondent perception of the necessity of these services, and 3) identifying barriers to implementing these services. Findings from this survey will assist with the development of best practice recommendations for clinical pharmacists involved in the care of cancer clinical trial patients. Methods: This study was a cross-sectional survey of the 68 NCI-designated cancer centers. Directors of Pharmacy were contacted and study data was collected electronically via Qualtrics survey over the course of 30 days. Respondents were sent a recruitment email, with reminder emails sent periodically prior to survey closure. Only one submission was allowed per institution. Descriptive and inferential statistics were used to evaluate the study aims. Results: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe trends in oncology that have led to increased complexity in cancer clinical trials.

Identify clinical services that pharmacists can provide for cancer clinical trial patients.

Self Assessment Questions:

Roughly what percentage of cancer clinical trials in development utilize oral chemotherapy agents?

A 5%

B: 10%

C: 25%

D: 50%

Which of the following are potential clinical roles for pharmacists in the care of cancer clinical trial patients?

A Participate in the development of cancer trial protocols for investig

B Educate research staff on investigational agents in cancer trials

C Make recommendations for dose adjustments per protocol

D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-471 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

SAFETY OF EXTENDED INFUSION PIPERCILLIN-TAZOBACTAM PLUS VANCOMYCIN VERSUS STANDARD INFUSION PIPERCILLIN-TAZOBACTAM PLUS VANCOMYCIN IN GENERAL MEDICINE PATIENTS WITH A DIAGNOSIS OF HEALTHCARE ASSOCIATED ACUTE KIDNEY INJURY

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Purpose: Vancomycin and pipercillin-tazobactam both present concern for acute kidney injury (AKI). Safety data regarding extended infusion combination therapy has not been fully evaluated. The objective of this study is to assess safety of extended infusion pipercillin-tazobactam and vancomycin therapy versus standard infusion pipercillin-tazobactam and vancomycin in general medicine patients, and to evaluate if one treatment modality predisposes patients to a greater risk of nephrotoxicity. Methods: This study will be submitted to the Institutional Review Board for approval. Data from an academic medical center will be analyzed over a 3 month period pre and post implementation of extended infusion pipercillin-tazobactam protocol. A retrospective analysis will be conducted comparing patients admitted to the hospital with a diagnosis of healthcare associated pneumonia (HCAP) who received extended-infusion pipercillin-tazobactam plus vancomycin versus standard infusion pipercillin-tazobactam plus vancomycin. Adult hospitalized patients on combination therapy with two or more serum creatinine (SCr) measurements will be included. Patients will be excluded if they are less than 18 years of age or if they are on any form of dialysis including continuous renal replacement therapy. The primary safety objective is AKI, defined as an increase in serum creatinine of at least 0.5 mg/dL or a 50% increase in serum creatinine from baseline at any time during antibiotic therapy. Safety outcomes will be compared between the two treatment groups and contributing factors for developing AKI will be assessed.

Results: This research is currently in the data collection phase. Results of this study, along with conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Define acute kidney injury (AKI)

Recognize common medications that may contribute to developing AKI

Self Assessment Questions:

Which of the following statements is true?

A AKI is defined as an increase in serum creatinine of at least 0.5mg

B: AKI is defined as an increase in serum creatinine of at least 0.5mg

C: AKI is defined as an increase in serum creatinine of at least 1mg/d

D: AKI is defined as a 75% increase in serum creatinine from baselin

According to recent data, which of the following medications may contribute to the development of AKI when administered with Vancomycin?

A Dabigatran

B Pipercillin-tazobactam

C Atenolol

D Metronidazole

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-472 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DOSE RELATED PATTERNS OF VENTRICULAR ARRHYTHMIA EVENT RATE DUE TO CARVEDILOL WITHDRAWAL IN PATIENTS WITH SYSTOLIC HEART FAILURE

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Background: Carvedilol is the most commonly utilized beta-blocker in patients with systolic heart failure at University of Kentucky HealthCare. However, there is an unresolved concern about beta-blocker dose management during acute decompensated heart failure because of pharmacological conflict between beta blockade and beta-blocker withdrawal. The most clinically significant adverse effect due to beta-blocker withdrawal is ventricular arrhythmia. The Heart Failure Society of American guideline recommends continuation of beta-blocker therapy on admission during acute decompensated heart failure. However, the specific dose management of beta-blockers is not discussed in the guideline. Therefore, the primary objective of this study is to evaluate dose related patterns of ventricular arrhythmia due to carvedilol withdrawal. The goal is to establish a consistent clinical approach for management of beta blockers during acute decompensated heart failure. Methods: A retrospective single center cohort study was conducted evaluating medical records from July 2011 to September 2013 in adult patients with systolic heart failure who were on carvedilol before hospitalization. Key exclusion criteria were patients on other beta blockers, second or third degree atrial ventricular block without pacemaker, symptomatic hypotension treated with vasopressors, or use of dobutamine. Dose continuation group (control group) was compared with dose discontinuation and dose reduction groups. Dose discontinuation groups was further divided into dose groups as follows: low dose group (< 6.25 mg twice daily), medium dose group (6.25 mg twice daily < dosage < 18.5 mg twice daily), high dose group (18.5 to 50 mg twice daily). Primary outcome was ventricular arrhythmia confirmed by attending cardiologist. The sample size needed for 80% power to compare groups on the primary outcome was estimated as 410. Logistic regression was also used to adjust for potential confounders in comparing groups. Results/Conclusions: Data collection is ongoing. Results and conclusions will be presented by the date of presentation.

Learning Objectives:

Explain beta-blocker pharmacological conflict in the setting of acute decompensated heart failure

Recognize how carvedilol dose needs to be managed for patients with acute decompensated heart failure

Self Assessment Questions:

The pharmacological conflict of using beta-blockers during acute decompensated heart failure relates to:

A Beta-blockade

B: Beta-blocker withdrawal

C: Negative chronotropic effects

D: A and B

Which of the following best describe the most appropriate dose management of carvedilol on admission during acute decompensated heart failure hospitalization?

A Dose discontinuation

B Dose reduction

C Dose continuation

D Switching to metoprolol on admission

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-473 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF COMPREHENSIVE MEDICATION REVIEWS IN GERIATRIC PATIENTS

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Purpose: Older adults are demanding increased healthcare attention in regards to prescription medication use due to highly complex regimens and multiple disease states. As patients age, medications can have a more pronounced effect on older adults, which can negatively affect patient safety and increase healthcare utilization costs. Medications can also have dramatic effects on cognitive status, an important concern for patients with dementia and their caregivers. Comprehensive geriatric medication reviews optimize medications for elderly patients and avoid inappropriate medication use. Previous literature has shown comprehensive medication reviews can successfully identify and reduce medication-related problems to improve healthcare. The purpose of this research is to determine outcomes in geriatric patients that have received a pharmacist-led comprehensive medication review. Methods: A post-hoc analysis will be conducted on geriatric patients identified from a primary care practice. Patients that have received a comprehensive medication review by a pharmacist will be compared to control patients from the same medical practice. Patients to be included in the study must be at least 65 years of age or older, take at least 5 medications, and have received a recent comprehensive medication review. Exclusion criteria include patients with renal failure and those with multiple providers involved in primary care. The main objective of this study is to compare medication-related problems after the completion of a comprehensive medication review by a pharmacist for the geriatric patient and caregiver at a primary care office. The primary outcome is the difference in medication-related problems, defined according to the STOPP Criteria (Screening Tool of Older Persons Prescriptions). Secondary outcomes include acute healthcare utilization, costs, falls, acceptance of pharmacist recommendations, assessment of the pharmacists value by providers, and efficiency of services provided by the pharmacist. Results/Conclusions: To be presented at Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recognize risk factors for inappropriate medication prescribing.

Identify potential medications that may have adverse effects in geriatric patients.

Self Assessment Questions:

What is a potential risk factor for inappropriate medication prescribing?

A Polypharmacy
B: Young age
C: Normal renal function
D: Using only one physician

Which of the following medications should be considered inappropriate to use in geriatric patients due to an increased risk for falls?

A Atorvastatin
B Lisinopril
C Alprazolam
D Aspirin

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-771 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF A PHARMACIST-DELIVERED TOBACCO INTERVENTION PROGRAM IN AN AMBULATORY ONCOLOGY CLINIC

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Purpose: According to the American Cancer Society, tobacco use is associated with 30% of all cancer deaths and 87% of all lung cancer deaths. Tobacco abstinence is imperative for helping to prevent the progression of disease, decrease complications from therapy, and improve cancer outcomes in oncology patients. These benefits are in addition to the health benefits that tobacco cessation yields for all smokers. The goal of this study is to describe the implementation and feasibility of a tobacco intervention program in an ambulatory oncology clinic and determine the effectiveness of pharmacist-delivered services in this setting. Methods: This is a prospective, randomized pilot study that has been approved by the UIC Institutional Review Board. After obtaining informed consent, patients will be assigned in a 1:1 ratio to either the low-intensity or high-intensity group. Patients in the high-intensity group will receive behavioral counseling by a pharmacist during their chemotherapy sessions or in conjunction with other oncology clinic appointments. If indicated, pharmacists will recommend pharmacological interventions to help patients quit their use of tobacco. Patients in the low-intensity group will receive tobacco dependence therapy at the discretion of their primary care and oncology physicians. The primary outcomes of this study are the number of patients recruited to participate in the tobacco dependence program and the number of successfully completed pharmacist meetings. Secondary outcome measures include patient self-reported satisfaction and impact of pharmacist-delivered behavioral counseling and pharmacological interventions on smoking cessation confirmed by carbon monoxide breath tests. All data collected from this study will be analyzed utilizing simple descriptive and comparator statistics. Results: Patients are currently being recruited and results are pending.

Learning Objectives:

Discuss the benefits of quitting smoking and tobacco treatment considerations that are specific to cancer patients.

Describe factors that influence a cancer patient's decision to quit smoking.

Self Assessment Questions:

Which of the following is a benefit of quitting smoking for a patient who was recently diagnosed with cancer?

A Decreased appetite
B: Increased risk of heart disease
C: Decreased risk of secondary tumor
D: Increased risk of clot

Based upon the literature, which of the following factors has been associated with a cancer patients decision to quit smoking?

A Stage of disease
B Enrollment in a clinical trial
C Time of the year
D Employment status

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-474 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF INTRAWOUND APPLICATION OF VANCOMYCIN POWDER DURING SPINAL SURGERIES

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Background Surgical site infections associated with spine surgery significantly affect morbidity, mortality, and cost. Previous studies have reported wound infection rate after spine surgery to be between 2.8% and 10%. The efficacy of cephalosporins for preventing postoperative wound infections has decreased in the past several years due to increasing resistance. Retrospective studies have shown that adjunctive application of vancomycin powder in wounds may decrease post-operative incidence of infection in posterior cervical and thoracolumbar fusions. Despite promising data for thoracolumbar and cervical fusions, little is known about efficacy of vancomycin powder in other spine operations. Purpose The purpose of this study is to evaluate the difference between incidence of post-operative infection and complications directly patients that received vancomycin powder in the surgical site versus patients that did not receive vancomycin powder for all types of spinal surgeries at our institution. Methods This study is a single-center, retrospective chart review. Electronic and paper records were obtained for all study patients at our institution. Data was collected for adult patients who had spine surgery between January 2009 and December 2012. Treatment group was defined as patients that received intraoperative vancomycin powder into the surgical site. Control group was defined as patients that did not receive vancomycin powder. For each group, we selected 50 consecutive patients that had undergone spine surgery at our institution. Data collection consisted of patient demographics, social history, and medical comorbidities. Pertinent operative details including surgery date, surgeon name, procedure type, number of vertebral levels, use of instrumentation, duration of operation, and pre- and post-operative systemic antibiotic prophylaxis were recorded. A history of previous spinal surgeries and spine infections, any concomitant infections, and readmissions due to spinal infection complications were also obtained and recorded. Data was analyzed using descriptive and comparative statistics. Results and conclusions

Results and conclusions will be presented at the Great Lakes Conference.

Learning Objectives:

Describe potential benefits of using vancomycin powder intraoperatively as prophylaxis against spine surgical site infections

Identify common organisms associated with surgical site infections

Self Assessment Questions:

Which of the following is a benefit of using vancomycin powder intraoperatively for infection prophylaxis?

A Cephalosporin resistance is decreasing

B: Minimal side effects due to minimal systemic absorption associate

C: High cost technique

D: Difficult application of vancomycin powder into the surgical site

What is the most common organism isolated from surgical site infections in spine surgery?

A Staphylococcus epidermidis

B Staphylococcus aureus

C Enterococcus spp.

D Pseudomonas aeruginosa

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-772 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

OPTIMIZING THE MANAGEMENT OF STAPHYLOCOCCUS AUREUS BACTEREMIA

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Purpose: Staphylococcus aureus bacteremia (SAB) is associated with a mortality rate ranging from 12-33%. Several aspects of clinical management have shown to have impact on mortality and clinical outcomes. The objective of this project is to design and implement an evidence-based clinical pathway to optimize the treatment of SAB and to evaluate the impact of this pathway on clinical outcomes. Methods: A comprehensive literature review was conducted to evaluate treatment options in SAB that optimize patient outcomes. A clinical pathway was developed in collaboration with Infectious Diseases physicians incorporating these key elements. The pathway was disseminated to physicians as a resource for SAB treatment. A workflow for pharmacists was created to assist in intervention strategies for SAB management. Currently, a dedicated pharmacist receives real-time notification of SAB, reviews patient information, and contacts managing physicians to optimize therapy according to pathway recommendations. Patients are then reviewed daily by the pharmacist to facilitate ongoing pathway adherence as additional clinical microbiological data becomes available. Data collected will include patient demographics, isolate susceptibilities, treatment data, 30-day in-hospital mortality, length of stay, and readmission rate for SAB complications. Outcomes will be compared to a retrospective cohort of patients identified from the microbiology laboratory database with a blood culture positive for S. aureus between August 2012 and August 2013. Results/Conclusion: Data collection is currently in progress. Results and conclusion will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify evidence-based management options for S. aureus bacteremia that have shown in the current literature to impact mortality and clinical outcomes.

Describe the utility in the prospective management of S. aureus bacteremia of identifying uncomplicated versus complicated bacteremia.

Self Assessment Questions:

Which of the following management options for S. aureus bacteremia has shown in the current literature to decrease mortality?

A Use of vancomycin in methicillin-sensitive S. aureus bacteremia

B: Infectious disease consultation

C: Use of gentamicin in S. aureus bacteremic patients without endoca

D: Use of clindamycin in methicillin-resistant S. aureus bacteremia

The identification of uncomplicated versus complicated S. aureus bacteremia can be used to:

A determine duration of antimicrobial therapy

B identify the source of bacteremia

C determine goal target range for vancomycin troughs

D identify patients that would benefit from de-escalation of therapy

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-475 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ANALYSIS OF PHARMACOTHERAPY FACTORS AFFECTING EMERGENCY DEPARTMENT READMISSIONS

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Analysis of Pharmacotherapy Factors Affecting Emergency Department Readmissions:□According to the Centers for Disease Control, there are 130 million Emergency Department (ED) visits each year in the United States and at least 45% of those patients are discharged home with a prescription. Our facility has approximately 65,000 visits per year, with nearly 40% leaving the ED with a prescription. Although much research has gone into factors that affect patient readmission rates, there is a relatively small amount of research that has been devoted to studying medication issues (e.g. compliance) after a visit to the ED and the rate of readmission. Moreover, the outcomes of ED patients who did not fill prescriptions or who did not have access to receive medications prescribed are unknown. In this study, we aim to identify factors, including ones pertaining to medications that could explain why patients who are discharged from the ED present back within three days or less.□Statement of Methods Used:□This is a retrospective review of medication records from January 1, 2010- December 31, 2012 in patients ≥ 18 years old seen in the University of Kentucky Emergency Department who were readmitted to the hospital within 30 days of discharge from the emergency department at UK. Patients will be identified using a readmission list that is generated through electronic medical record. Demographic data and medication-related issues were collected, among other pertinent data from the medical record.
□

Summary of (preliminary) results to support conclusion□Results are pending completion of data collection.

Learning Objectives:

Identify risk factors related to pharmacotherapy for re-admission within 30 days of discharge from the emergency department

Define patients at high risk for readmission and develop procedures that may decrease the risk of the readmission

Self Assessment Questions:

What is the definition of a readmission?

A A readmission is any admission date during that 30 day window, re
B: A readmission is only an admission during a 90-day window
C: A readmission is when patients are transferred from one unit to a c
D: A readmission is any admission date during a 120-day window

Which of the following statements are correct?

A It would be a waste of resources to deliver medications to the patie
B Patients who have less than one co-morbidity are at a higher chan
C Annual cost of readmissions for Medicare is $18 billion per year
D Patients who are readmitted within 72-hours, do not count as a rea

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-773 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE IMPACT OF CARE COORDINATION IN COMMUNITY PHARMACIST-DELIVERED MEDICATION THERAPY MANAGEMENT.

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Purpose: To determine if pharmacists who review a target of six months worth of medical history in preparation for a comprehensive medication review (CMR) identify more health related problems than pharmacists who do not. This study also seeks to describe parts of the health record used by pharmacists to identify health related problems, and categorize types of problems discovered by both intervention and usual care groups.□□Methods: The proposed study is a prospective non-blinded, randomized trial designed to measure the efficacy of care coordination before a CMR in identifying health related problems within 4 to 6 Indiana community pharmacies enrolled in the Medication Safety Research Network of Indiana (Rx-SafeNet). The care coordination intervention will consist of intervention-group pharmacists reviewing a target of 6 months of health history from the patients primary care provider prior to the CMR.A target of 150 patients will be sought for enrollment. Participating pharmacists will be stratified on number of CMRs performed in past yea and randomized to the intervention or usual care groups. Data to be collected will include types of problems discovered, types of records received, types of records used to discover problems, as well as provide and patient demographics. Data will be analyzed using parametric and nonparametric statistics, as appropriate.□□Results: Preliminary results will be presented at the 2014 Great Lake Conference in West Lafayette, Indiana pending IRB approval.□□Conclusion: This study will determine i pharmacists who engage in care coordination during a CMR delivery discover more health related problems

Learning Objectives:

Describe the importance of coordinated care under the Affordable Care Act, and identify opportunities for community pharmacists to participate in transitions of care.

List which parts of medical records are required to be shared among providers within CMSs Transition of Care Summaries.

Self Assessment Questions:

Which of the following can a pharmacy utilize to attain revenue for delivering care coordination services?

A Being part of an ACO (Accountable Care Organization)
B: Billing Transitions of Care CCTP codes
C: Applying for a grant under the Community-Based Care Transitions
D: A and C

Which of the following is not required under CMSs Transition of Care Summaries?

A Medication List
B Diagnostics Test Results
C Problems List
D Office Visit Notes

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-906 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE ECONOMIC AND CLINICAL IMPACT ASSOCIATED WITH THE UTILIZATION OF DAPTOMYCIN FOR THE TREATMENT OF METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS INFECTIONS

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Background: In the last two decades, methicillin-resistant Staphylococcus aureus (MRSA) has become a significant public health concern. MRSA has emerged as a predominant pathogen in complicated skin and skin structure infections (cSSSIs), bacteremia, and infective endocarditis. MRSA-associated infections are more difficult to treat and lead to increased morbidity, mortality, and healthcare costs compared to methicillin-susceptible Staphylococcus aureus (MSSA). Historically, vancomycin has been the treatment of choice for infections caused by MRSA. However, due to increasing treatment failure, alternative agents must be considered. One such alternative, daptomycin, has exhibited non-inferiority to vancomycin for cSSSIs, Stapyhylococcus aureus bacteremia, and right-sided endocarditis. Although daptomycin has a favorable adverse effect profile and requires less monitoring than vancomycin, its acquisition cost is significantly higher. Oftentimes, this is a limiting factor for its use. Purpose: The purpose of this study is to assess the impact of daptomycin on total hospitalization cost due to MRSA-associated cSSSIs, bacteremia, and endocarditis. Secondary endpoints examine the clinical impact, and include a comparison of treatment success, treatment failure, length of stay, duration of therapy, adverse effect incidence, and readmission rates. Methods: This is a retrospective chart review of hospitalized adult patients, who received either daptomycin or vancomycin from November 1, 2012 to October 1, 2013 for the treatment of MRSA cSSSIs, bacteremia, or endocarditis. Patients included in this study had a clinical diagnosis of cSSSIs or bacteremia with or without endocarditis, and microbiologic confirmation of MRSA within 48 hours of starting the study drug. Results/Conclusions: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference in April 2014.

Learning Objectives:

Identify differences between MSSA and MRSA infections in terms of morbidity, mortality, and institutional healthcare costs.

List the advantages/disadvantages of daptomycin compared to vancomycin for the treatment of MRSA infections.

Self Assessment Questions:

Why must alternative agents to vancomycin be considered for the treatment of MRSA infections?

A Due to an increasing number of patients with vancomycin allergies

B: There is a nationwide shortage of vancomycin

C: Vancomycin MIC creep is associated with significant morbidity, mo

D: Vancomycin has a high acquisition cost

Which of the following factors limits institutional use of daptomycin?

A The need for frequent monitoring of drug levels

B Dapomycin has a high acquisition cost

C Its unfavorable adverse effect profile

D High incidence of treatment failure

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-476 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF THE RELATIONSHIP BETWEEN OPIOID EXPOSURE IN EXTREMELY LOW BIRTH WEIGHT INFANTS IN THE NEONATAL INTENSIVE CARE UNIT AND LONG TERM NEURODEVELOPMENTAL OUTCOMES

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Purpose: Extremely low birth weight (ELBW) infants are exposed to many painful procedures while in the neonatal intensive care unit (NICU) such as catheter insertion and removal, tracheal intubation and lumbar puncture. Exposure of ELBW infants to repetitive pain and stress in the NICU leads to abnormalities in respiration, heart rate, blood pressure and may alter neuronal and synaptic organization. Opioid analgesics are administered to reduce pain, stress and to potentially reduce poor neurologic outcomes. There is limited data in regards to neurodevelopmental outcomes of preterm infants exposed to opioids, and available studies have conflicting results. The purpose of this study is to examine the relationship between opioid exposure in ELBW infants in the NICU and long term neurodevelopmental outcomes. □□Methods This was a single-center retrospective observational cohort study at Rush University Medical Center (RUMC). Patients that were cared for in RUMC NICU, weighed less than 1000 grams at birth, received any opioid, and received follow up at RUMC were included in this study. Those that were admitted to RUMC NICU after 7 days of age, had congenital malformations, metabolic disease, severe intrapartum asphyxia, or death prior to discharge were excluded from analysis. The primary outcome of this study is the average cognitive, language and motor scores on the third edition of the Bayley Scales of Infant and Toddler Development (BSITD-III) at 20 months CA. Secondary outcomes include average BSITD-III subscale scores (cognitive, receptive language, expressive language, fine motor, and gross motor) at 20 months CA, maximum pain score during opioid exposure and presence of cerebral palsy or sensory abnormalities.□□Results/Conclusions: Results and conclusions of this study will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Explain the potential mechanism between repetitive pain and stress in ELBW infants and neurologic injury

Discuss medications that have been associated with poor neurologic outcomes in ELBW infants

Self Assessment Questions:

Which of the following are associated with repetitive pain and stress in ELBW infants?

A Elevations in blood pressure

B: Elevations in respiratory rate

C: Alterations in neuronal and synaptic organization

D: All of the above

Which of the following medications has been associated with poor neurologic outcomes in ELBW infants?

A Midazolam

B Caffeine

C Spironolactone

D Vitamin D

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-477 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PRESCRIBING PATTERNS OF ASPIRIN FOR PRIMARY PREVENTION OF CARDIOVASCULAR DISEASE IN GERIATRIC PATIENTS WITH DIABETES: A SELF-REPORTED SURVEY

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Purpose: Primary literature and national guidelines provide conflicting recommendations regarding the use of aspirin for primary prevention of cardiovascular disease. Data is limited in geriatric patients with diabetes a population at high risk for cardiovascular events and aspirin adverse effects. Currently, both the American Diabetes Association (ADA) and the American Geriatrics Association (AGS) have published guidelines or the care of patients with diabetes that include recommendations on the use of aspirin. The objective of this study is to identify preferences in prescribing of aspirin for primary prevention in geriatric patients with diabetes and determine if providers follow the 2013 ADA or AGS guidelines.□□Methods: A self-reported survey questionnaire based on a common patient case scenario was distributed at an urban academic medical center to identify opinions on the decision to prescribe aspirin for primary prevention of CVD in geriatric patients with diabetes. Providers included were attending physicians, fellow physicians and mid level practitioners of the internal medicine, geriatric medicine, family practice, cardiology and endocrinology specialties as well as resident physicians rotating through the geriatric medicine, family practice, cardiology and endocrinology specialties during the study period. In a retrospective fashion we will (1) characterize prescribing patterns of aspirin for CVD primary prevention (2) determine if aspirin prescribing follows 2013 AGS or ADA practice guidelines and (3) compare aspirin prescribing patterns between subspecialties and provider types.□□Results/Conclusions: To be presented at the 2014 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

List 2013 ADA and AGS guideline recommendations related to aspirin for primary prevention of cardiovascular disease

Discuss benefits and risks of daily aspirin therapy in geriatric patients with diabetes

Self Assessment Questions:

1.The 2013 AGS guidelines for older adults with diabetes recommends which group of patients receive daily aspirin for primary prevention of cardiovascular disease?

A All geriatric patients with diabetes

B: Only geriatric patients with diabetes whose CVD risk score >5%

C: Only geriatric patients with diabetes whose CVD risk score >10%

D: No geriatric patients with diabetes

Which of the following statements is correct?

A Aspirin increases the production of gastroprotective prostaglandins

B Bleeding risk with daily aspirin therapy is increased in the elderly

C Aspirin increases platelet activation, aggregation and vasoconstric

D CVD event rates are low in the elderly

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-478 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DOES A COMPUTERIZED RISK ASSESSMENT TOOL INCREASE APPROPRIATE PRESCRIBING OF PHARMACOLOGIC VENOUS THROMBOEMOBOLISM PROPHYLAXIS?

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Purpose□The Centers for Disease Control and Prevention estimate that venous thromboembolism (VTE) in adult patients is responsible for 547,596 hospitalizations and 28,726 deaths annually in the United States. Hospitalization is a significant risk factor for VTE development; however VTE is preventable through the proper administration of pharmacologic preventative therapy/prophylaxis. The objective of this study is to determine if the implementation of a VTE risk calculator tool within the electronic medical record has had an impact on the appropriate use of pharmacologic VTE prophylaxis in this academic teaching institution.□□Methods□This study has been approved by the institutional review board as a Quality Improvement project. Patients aged 18-89 years who were treated as inpatients at this academic teaching institution by an internal medicine team between 10/2010 through 11/2010 or 10/2013 through 11/2013 are eligible for this study. Subjects will be excluded if they fail to meet any of the above criteria. The following data will be collected: patient demographics, whether risk assessment tool was applied, eligibility for pharmacologic VTE prophylaxis, type of VTE prophylaxis ordered, number of doses ordered and received, time from admission to administration of first prophylaxis dose, Charlson Comorbidity Index, safety data (rates of bleeding and clotting events), and 30 day readmission. We will also determine if the automatically calculated VTE risk assessment score is accurate as compared to hand-calculated score. Data will be collected on hard-copy paper forms and entered into an electronic master spreadsheet. All data will be recorded without patient and will be kept confidential. In regards to statistics used in this study, the Fishers exact test will be used for the categorical data and the unpaired t-tests will be used to analyze continuous, parametric data.□□Results□Presented at Great Lakes Pharmacy Residency Conference 2014.□□Conclusion□Presented at Great Lakes Pharmacy Residency Conference 2014.

Learning Objectives:

Identify eligible patients to receive VTE prophylaxis based on their Caprini Risk Assessment score.

Indicate the appropriate VTE prophylaxis regimens available at the Detroit Medical Center.

Self Assessment Questions:

Which of the following is as a risk factor for venous thromboembolism according to the Caprini Risk Factor Assessment?

A Age 18-40

B: Sepsis (<1 year)

C: Abnormal pulmonary function (COPD)

D: BMI 25 kg/m2

Which of the following is an appropriate VTE prophylaxis option available at the Detroit Medical Center?

A Heparin 80 units/kg bolus, followed by Heparin 18 units/kg/hr infus

B Enoxaparin 40mg daily

C Enoxaparin 1mg/kg twice daily

D Fondaparinux 5mg daily

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-774 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

HYPOGLYCEMIC EVENT RATES OF INTERMITTENT INSULIN AND CONTINUOUS INSULIN INFUSION IN INTENSIVE CARE

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Purpose: Healthcare associated hypoglycemia can lead to recurrent morbidity and occasionally mortality. Episodes of hypoglycemia impair defenses against subsequent episodes, increasing the risk of recurrent hypoglycemia. Recurrent episodes of hypoglycemia in diabetic patients also impairs long-term blood glucose control. A secondary analysis of the NICE-SUGAR trial data suggests that hypoglycemic events are associated with an increased risk of mortality. A multicenter retrospective review evaluating the impact of hypoglycemic events on resource utilization in an intensive care unit (ICU), found an increased ICU length of stay. Both occurrence and number of hypoglycemic episodes positively correlate with increased ICU length of stay. The purpose of this study is to compare hypoglycemic event rates between continuous insulin infusion and intermittent insulin treated subjects hospitalized in intensive care.□□Methods: Prior to data collection, approval was obtained from the Institutional Review Board at Parkview Regional Medical Center (PRMC) for this retrospective electronic medical record review. Eligible subjects include those 18 years and older, whom have received either continuous insulin infusion or intermittent insulin in any PRMC ICU. The primary outcome is the percentage of subjects with a hypoglycemic event (blood glucose level o ≤ 70 mg/dL) or severe hypoglycemic event (blood glucose level of ≤ 40 mg/dL) in either group. Secondary outcomes are as follows: a subgroup analysis for the number of hypoglycemic events per subject per group, the difference in overall length of stay of those with a hypoglycemic event and those without a hypoglycemic event, mortality during admission of those with a hypoglycemic event and those without a hypoglycemic event, and an analysis of the device used to measure blood glucose.□□Results/Conclusion: Data collection and analysis are i progress. Final results will be presented at the 2014 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Recognize the quality of care ramifications of hypoglycemic events.

Identify how resource utilization is impacted by hypoglycemic events.

Self Assessment Questions:

Which of the following can be a complication of hypoglycemic events?

A Recurrent hypoglycemic events
B: Recurrent hyperglycemic events
C: Worsened blood pressure control
D: Increased cholesterol levels

Which of the following is a ramification of resource utilization when hypoglycemic events occur in an intensive care unit?

A Increased risk of mortality
B Increased risk of morbidity
C Increased length of ICU stay
D Decreased length of ICU stay

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-479 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

SAFETY AND EFFICACY OF BACLOFEN IN CRITICALLY ILL PATIENTS AT RISK FOR ETHANOL WITHDRAWAL

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Statement of Purpose□The impact of ethanol abuse on hospitalizations is well documented and has been shown to have a significant impact on patient morbidity and mortality. Current strategies have not changed much in recent decades, focusing on substitution therapy with benzodiazepines. However, due to concerns for adverse outcomes associated with benzodiazepines, newer therapies are being investigated. Baclofen is a selective GABA-B receptor agonist. Both GABA-A and GABA-B receptor activation increase GABA neuronal output, but unlike GABA-A, GABA-B receptor function remains preserved in chronic ethanol abuse, suggesting a role for baclofen. The purpose of this study is to evaluate the safety and efficacy of baclofen in critically ill patients at risk for ethanol withdrawal.□□Statement of Methods Used□This is a retrospective, cohort study, evaluating patients at risk for ethanol withdrawal, defined as a reported ingestion of > 60 grams of ethanol daily, who received baclofen as treatment between January 1, 2010 to April 1, 2013. Inclusion criteria include: 18 years or older and admission to the ICU. Exclusion criteria include: prior baclofen use, history of severe psychiatric illness, epilepsy, suspected concomitant withdrawal, GCS ≤ 8 on admission, hepatic encephalopathy, creatinine clearance < 30 mL/min, pregnancy, and inmate of a prison or correctional facility. Our primary outcome is time within goal sedation range (RASS -2 to +1). Other outcomes include: ICU length of stay, hospital length of stay, milligrams of lorazepam utilized, use of dexmedetomidine, antipsychotic use, mechanical restraint use, disposition on discharge, and ventilator days. Descriptive statistics will characterize baseline demographics. Students T test will be used to assess parametric continuous variables. Chi Square Test will be used for nominal variables. Mann-Whitney U Test will be used for nonparametric continuous variables and ordinal measures. □
□

Summary of Results to Support Conclusion□In progress□□Conclusion Reached□In progress

Learning Objectives:

Identify the common clinical states associated with ethanol withdrawal.

Explain the mechanism of action of baclofen in the management of ethanol withdrawal.

Self Assessment Questions:

Which of the following is not an anticipated symptom of ethanol withdrawal syndrome?

A Autonomic Hyperactivity
B: Seizures
C: Hallucinations
D: Hematemesis

Baclofen has a role in ethanol withdrawal due to its action on:

A Central α-2 receptors
B GABA-A receptors
C GABA-B receptors
D Voltage-gated Sodium Channels

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-480 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

BENEFITS OF MEDICATION THERAPY MANAGEMENT SERVICES

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Background: Non-adherence to medications treating chronic conditions remains one of the biggest challenges in healthcare. There is a direct correlation between decreased adherence and increases in healthcare costs, morbidity, and mortality. Pharmacists have shown significant impact in the realm of medication adherence and patient education through Medication Therapy Management (MTM). The goals of MTM are to optimize patient outcomes through adherence, detect drug therapy problems, and decrease medication costs. Stephanie Tubbs Jones (STJ) Health Center Pharmacy is one of many Cleveland Clinic outpatient pharmacies and sees a large number of underserved patients STJ Health Center Pharmacy utilizes the Getoutcomes program to identify patients in need of MTM. This project will continue to allow pharmacists to deliver effective MTM services. Objectives: Increase adherence by 50% after MTM services; classify drug therapy problems to identify benefit of pharmacist intervention; determine overall percentage of patients who improved adherence; measure return on investment by reviewing reimbursement received Methodology: Screening procedures will be performed by the primary investigator and will include patients in the Getoutcomes "MTM Opportunities" queue, which organizes patients in need of pharmacist intervention. The study population will include patients in this queue who filled at least one prescription from the STJ Health Center Pharmacy from Jan. 1, 2013-Nov. 30, 2013. Adherence rates will be measured three months before and after pharmacist intervention, and will be calculated by determining the actual number of times patient picked up prescription compared with the number of times patient should have picked up prescription within the prescribed timeframe. Exclusion criteria includes non-adherence for maintenance medications discontinued by physician or started during time frame after pharmacists intervention, and patients unable to be contacted. Impact of adherence will be analyzed through a paired sample t-test. Results and Conclusions: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify factors impacting adherence of chronic maintenance medication

Explain the impact of a pharmacist in the area of Medication Therapy Management

Self Assessment Questions:

According to the World Health Organization, what is the average non-adherence rate among those with chronic illnesses?

A 30%

B: 40%

C: 50%

D: 60%

Which of the following is a commonly accepted threshold for defining an adequate level of medication adherence?

A 75%

B 80%

C 85%

D 90%

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-775 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

SECOND VICTIMS: PHARMACY STAFF PERCEPTIONS OF A SUPPORT PROGRAM AT A PEDIATRIC HOSPITAL

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Second victims are health care providers who are involved in an unanticipated adverse patient event, medical error, and/or patient relatec injury who become victimized in the sense that the provider is traumatized by the event. Many organizations provide some type of formal employee support, such as pastoral care or employee assistance programs. However, there is gross underutilization of these programs and often a reluctance of staff to use formal support services. In a survey conducted by Scott and colleagues, only one percent of respondents expressed a desire to involve individuals outside of their practice environment for second victim support. Thus, internal peer support is often what a second victim desires when coping with an emotional event. A survey was distributed to all pharmacy employees at a free-standing academic pediatric hospital to evaluate the staff perception of support following an unanticipated or stressful event. After analyzing the survey results, a second victim program was implemented to provide support for those employees involved in such events. The program consists of trained peer supporters who serve as first responders. If a staff member requires support beyond what is provided by peer supporters, a chain of escalation is followed. After implementation of the program in the pharmacy department, a second survey will be given to staff to evaluate their perception of support following involvement in unanticipated or stressful event.

Learning Objectives:

Define the term "second victim"

Discuss the Three-Tiered Interventional Model of Second Victim Suppor

Self Assessment Questions:

Tier 2 of the Scott Interventional Model of Second Victim Support consists of which of the following groups:

A All department employees

B: Trained peer supporters

C: Employee assitance programs

D: Clinical psychologists

After which of the following situations might a member of the health care team feel they are a second victim?

A After learning that they dispensed an incorrect dose of a medicatic

B After caring for a patient who became violent and harmed the emp

C After responding to multiple traumas in the Emergency Departmer

D All of the Above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-776 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF RIVAROXABAN, ENOXAPARIN, AND WARFARIN ON HOSPITAL READMISSION RATES AFTER TOTAL KNEE ARTHROPLASTY

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PURPOSE: To compare prescribing patterns for rivaroxaban, enoxaparin, and warfarin and determine hospital readmission rates for venous thromboembolism (VTE) or adverse treatment effects.

METHODS: Electronic medical records were examined to complete a retrospective review of hospitalized patients that received either rivaroxaban, enoxaparin, or warfarin after a total knee arthroplasty (TKA). All data was de-identified and all patient health information was stored in a password protected electronic file. Data was analyzed in reverse chronological order for a one year timeframe and included a maximum of 100 cases for each anticoagulant evaluated. The primary endpoint of this study is 30 day hospital readmission rate. Secondary endpoints include 60 and 90 day hospital readmission rates, cause of readmission, bleeding rates, and initial anticoagulant dose. RESULTS: One hundred and eighty four patients met inclusion criteria. The patient population included 100 warfarin patients, 52 rivaroxban patients, and 32 enoxaparin patients. The median age was 65 years of age (range 44 - 88). Seventy nine percent of patients that received rivaroxaban also received one dose of warfarin the morning rivaroxaban was initiated. Seventy two percent of patients received enoxaparin as bridge therapy with warfarin. Ten patients were readmitted within 30 days. Reasons for readmission include suspected and diagnosed deep vein thrombosis, suspected and diagnosed pulmonary embolism, hematoma, and suspected wound infection. CONCLUSION: Anticoagulant use for VTE prevention following TKA at Memorial Hospital of South Bend is not consistent with current evidence based recommendations. Conflicting treatment guidelines exist which may create confusion among healthcare providers and could negatively impact patient outcomes. The results suggest a need for education among healthcare providers and the adoption of a hospital protocol or treatment algorithm to ensure safe and consistent practice.

Learning Objectives:

Discuss the differences in treatment guidelines and literature regarding the preferred agent for venous thromboembolism prevention following total knee arthroplasty.

Recognize inappropriate anticoagulant use for venous thromboembolism prevention following total knee arthroplasty based on current evidence based recommendations.

Self Assessment Questions:

The 2007 guidelines from the American Association of Orthopaedic Surgeons recommend which anticoagulant as the preferred agent for venous thromboembolism prophylaxis after total knee arthroplasty?

A Enoxaparin
B: Warfarin
C: Aspirin
D: Fondaparinux

In this study, which anticoagulant was most often used inappropriately?

A Warfarin
B Rivaroxaban
C Enoxaparin
D Unfractionated heparin

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-481 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ANTIBIOTIC RESISTANCE PATTERNS OF DISCHARGED EMERGENCY MEDICINE PATIENTS IN AN ACADEMIC TEACHING INSTITUTION

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Purpose Due to the global presence of antibiotic resistance and prescriber unfamiliarity involving prevalence of community-acquired resistance patterns, health care providers must be equipped with all available tools in order to accurately prescribe empiric antibiotic regimens to patients discharged from the emergency department. When no outpatient-specific antibiogram exists, treatment regimens are determined from guideline recommendations or extrapolated from inpatient antibiograms, which may not appropriately describe resistance patterns within the community. Knowing outpatient resistance rates can decrease the contribution to future antimicrobial resistance; decrease the incidence of relapsing infections; and decrease hospital re-admission, ultimately leading to cost savings. The purpose of this study is to evaluate the appropriateness of empirically prescribed antimicrobials for University of Cincinnati Medical Centers two most common empirically treated community-acquired infections, skin and soft tissue infections (SSTIs) and urinary tract infections (UTIs).

Methods This is an investigator-initiated, retrospective study evaluating patients who presented to University of Cincinnati Medical Center (UCMC) Emergency Department (but were not admitted), who were treated for SSTIs and/or UTIs and discharged home on antibiotics. The primary outcome is to describe community antibiotic resistance patterns of discharged emergency medicine patients. Secondary outcomes include evaluation of SSTI and UTI recurrence between patients discharged on appropriate empiric antibiotic treatment (antibiotic regimen in which the resulted culture reports susceptibilities as sensitive) compared to those on inappropriate empiric antibiotic treatment (antibiotic regimen in which the resulted culture reports susceptibilities as intermediate or resistant). Recurrence will be defined as repeat infections of the same organ system. Other outcomes include identifying predictors of treatment failure in community-acquired SSTI and UTI and developing an institution-specific antibiogram depicting resistance patterns of discharged emergency medicine patients.

Results Data collection and analysis are ongoing.

Learning Objectives:

Review the Infectious Diseases Society of America (IDSA) treatment guidelines for skin and soft tissue infections (SSTIs) and urinary tract infections (UTIs)

Discuss the community antibiotic resistance patterns and the similarities/differences between community and whole hospital antibiotic resistance.

Self Assessment Questions:

Per IDSA guidelines, what antibiotic from the list below is recommended for the treatment of mild/moderate methicillin-resistant Staphylococcus aureus (MRSA) SSTIs?

A Vancomycin
B: Linezolid
C: Sulfamethoxazole-trimethoprim
D: Daptomycin

Sulfamethoxazole-trimethoprim is an appropriate empiric antibiotic for the treatment of acute uncomplicated cystitis, unless the local resistance rates exceed what percentage?

A 5%
B 10%
C 15%
D 20%

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-777 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

INTRANASAL FENTANYL AS AN ADJUNCTIVE AGENT IN PEDIATRIC PROCEDURAL PAIN CONTROL: EVALUATION OF SAFETY, EFFICACY, NURSING AND PARENT SATISFACTION

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Background: Insertion of an intravenous (IV) line is a key component in management of hospitalized patients, but can be a traumatic experience for many pediatric patients. During line insertions, administration of topical anesthetics or anxiolytics is often necessary to alleviate pain and anxiety in children. Current standard of care at our institution includes administration of oral midazolam, lidocaine 4% topical cream, vapo-coolant topical spray, and/or oral sucrose. Intranasal fentanyl (INF), a mu-opioid receptor agonist administered via an atomizer, has recently been approved corporate-wide as an adjunctive agent for procedural pain control in pediatric inpatient settings. One advantage of INF includes relatively quicker onset compared to other agents; however, the potential for systemic side effects does exist. With this new agent, our goal is to optimize pain control during IV line starts and improve parent and nurse satisfaction scores. Much of the current pediatric literature with INF administration is in the emergency department, but it has not been studied extensively for procedural pain control. The guidelines for INF administration in this setting were implemented at our institution mid February.□□Purpose: To evaluate the newly-implemented INF standard of care guidelines in terms of efficacy, safety, and parent/nurse satisfaction as compared to the previous standard of care. □□Methods: This is an observational, single center, pre- and post-implementation study including pediatric patients ages 6 months - 17 years (weight 5 - 50 kilograms) who receive IV line starts from October 2013 - February 2014. In each group (pre- and post-implementation of the INF protocol), we will collect demographics, age-appropriate pain scores, vital signs, and surveys assessing parent/nursing satisfaction. Fentanyl administration will be consistent with institutional guidelines and will not exceed 2 mcg/kg/dose or 100mcg/dose. □□Results and Conclusions: Data collection and analysis are currently being conducted; final results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Discuss the role of intranasal fentanyl in controlling procedural pain, including mechanism of action and administration.

Describe advantages and disadvantages associated with the use of intranasal fentanyl in the setting of pediatric procedural pain.

Self Assessment Questions:

Intranasal fentanyl is administered using which of the following?

A Atomizer
B: Nebulizer
C: Spacer
D: Spray Bottle

An advantage of intranasal fentanyl includes:

A Epistaxis
B Quicker onset compared to other agents
C Slowed excretion
D Invasive route of administration

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-482 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF A HEALTH SYSTEM PHARMACY PRACTICE MODEL REDESIGN

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Purpose: Aurora Health Care, an integrated system with 15 hospitals, underwent a pharmacy practice model redesign in mid 2013. Medication order management was centralized throughout the system to allow pharmacists at the hospitals to focus on transitions of care. Centralization of orders enables decentral site-based pharmacists the opportunity to provide patient education, complete admission and discharge medication reconciliation, and attend caregiver rounds without having to medication orders. The objective of the project is to assess the impact on pharmacy services after the practice redesign and establish a baseline for future assessment.□□Methods: A project plan was developed and metrics were identified via literature review and discussions with senior administrators. Clinical and outcome metrics were chosen based on redesign initiatives. An extraction method was developed for both manual and electronic health record compiled metrics. Electronic health record compiled metrics are being validated. Initial results have been evaluated by the management team and process improvement strategies have been developed and implemented. Analysts will be trained in metric collection to sustain ongoing comparison. A work sampling study will be completed in February. Study design has been completed and pagers were acquired and tested. A data collection form has been developed and modified based on management feedback. Education is being provided to staff on study purpose and expectations. Study results will be compared to a previous study that was completed prior to the model redesign.
□□

Results/Conclusions: Data collection and validation of new electronic health record compiled reports are currently being conducted.

Learning Objectives:

Describe one limitation of a work sampling study.

Identify two valuable metrics to assist with pharmacy service process improvement.

Self Assessment Questions:

Which of the following options is a major limitation of a work sampling study?

A Electronic health record access
B: Misinterpretation of data collection form
C: Extra pagers
D: Bathroom breaks

Which of the following metrics would assist with central order verification process improvement?

A Number of pharmacy students
B Number of new prescriptions
C Percentage of patients immunized for flu
D Order verification processing time that meet goal

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-778 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION AND EVALUATION OF AN EVIDENCE BASED GUIDELINE FOR THE PREVENTION OF CONTRAST INDUCED NEPHROPATHY

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Background: Contrast-induced nephropathy (CIN) is a known iatrogenic problem that can increase morbidity, mortality, cost of medica care, and length of hospital stay. Despite its ability to cause harm, intravenous contrast (IVC) remains one of the few agents that continue to be administered to patients without pharmacist evaluation. Hydration with saline has been extensively studied and is the most widely accepte management strategy for the prevention of CIN. There is still much debate over the efficacy of sodium bicarbonate compared to saline and the benefits of acetylcysteine continue to be questioned. An evidence-based guideline was developed at our institution to stratify patients at risk for CIN and provide strategies to minimize the occurrence of CIN.

Purpose: To reduce incidence of CIN through development and implementation of a guideline at our institution. Methods: This study was exempt from institutional review board approval on the basis of its quality improvement design. This is a single-center study consisting of two phases. Phase 1 is a retrospective, electronic chart review of inpatient IVC orders from 8/2013-9/2013. Phase 2 is a prospective evaluation of inpatient IVC orders from 11/2013-02/2014. Patients were included if they were ≥18 years, had IVC ordered as an inpatient at least 2 hour before procedure, and had serum creatinine (SCr) ordered before IVC administration. Patients with IVC exposure in the last 5 days, no follow-up SCr ordered, or receiving hemodialysis were excluded. Primary intervention was recommendations based on newly established guidelin on a case-by-case basis to physicians following investigator evaluation of patients receiving IVC. The primary endpoint is the incidence of CIN, defined as a ≥0.5 mg/dL increase in SCr from baseline within 48hrs following IVC. Secondary endpoints include number of patients who received acceptable treatment, number of investigator interventions, and the number of interventions accepted. Results/Conclusions: Data collection/evaluation in progress.

Learning Objectives:

Recognize the risk factors associated with the development of contrast-induced nephropathy

Identify strategies to prevent the development of contrast-induced nephropathy

Self Assessment Questions:

Which of the following patients has the highest risk of developing contrast-induced nephropathy?

A 45 year old female with diabetes being treated with ceftaroline for
B: 75 year old female with cirrhosis being treated with vancomycin an
C: 45 year old female with dyslipidemia being treated with gentamicin
D: 75 year old female with an acute GI bleed being treated with amox

Which of the following is the best strategy to prevent contrast-induced nephropathy?

A Hydration with normal saline
B Oral acetylcysteine
C Avoid or minimize the use of IV contrast dye when possible
D Hydration with sodium bicarbonate

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-907 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF INTRAPARTUM MATERNAL GLYCEMIC CONTROL UTILIZING A ROTATING FLUID PROTOCOL AT AN ACADEMIC MEDICAL CENTER

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Purpose: Diabetes is the most common pre-existing medical disease in pregnancy. There is a strong association between maternal hyperglycemia and neonatal hypoglycemia. The inadequate management of insulin and dextrose during labor are a contributing factors to maternal and neonatal adverse outcomes. Controversy surrounds the management of glycemic control during labor and delivery. According to the American Congress of Obstetricians and Gynecologist and American College of Endocrinology, intrapartum glycemic goal should be between 70 -110 mg/dL. Alternatively, the National Institute for Clinical Excellence recommends an intrapartum glycemic goal between 72 -126 mg/dL. Experts recommend using an intravenous infusion protocol intrapartum to obtain tight glucose control and reduce the risk of neonatal hypoglycemia. Currently, University of Chicago Medicines (UCM) protocol for intrapartum glycemic control maintains glucose levels between 70-110 mg/dL. The complexity and ambiguity surrounding UCMs protocol may unintentionally cause maternal hyperglycemia and neonatal hypoglycemia. The purpose of this study is to determine if the current protocol is effectively managing intrapartum blood glucose (70-110mg/mL) compared to provider directe therapy. Methods: This is a retrospective chart review of all female adult patients with type I, II, or gestational diabetes admitted to University of Chicago Labor and Delivery Department between January 1, 2012 to December 1, 2013. Data collection includes patient demographics, maternal and neonatal glucose, type of intravenous fluids, initiation of insulin infusion, type of provider directed therapy othe than protocol, dextrose used for rescue and presence of maternal ketones. The primary endpoint is the percentage of time glucose is within the goal of 70 -110 mg/dL. Secondary endpoints will evaluate maternal and neonatal hypoglycemic rates, adherence to hospital protocol, describe provider directed management if different from protocol, and assess NICU admissions. Data analysis will use chi square, fishers exact, students t-test and descriptive statistics. Results: To be presented Conclusion: To be presented

Learning Objectives:

Describe current intrapartum glycemic control practices at University of Chicago Medicine

Identify the barriers of current intrapartum glycemic control protocol

Self Assessment Questions:

According to the American Congress of Obstetricians and Gynecologist & American College of Endocrinology the recommended intrapartum glycemic goal should be:

A Less than 120 mg/dL
B: 70 -110 mg/dL
C: 72-126 mg/dL
D: Less than 140 mg/dL

Inadequate management of intrapartum glucose can lead to:

A Neonatal hypoglycemia
B Neonatal hyperglycemia
C Decrease rates of NICU admissions
D Tight glycemic control is not recommended during intrapartum per

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-908 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

A RETROSPECTIVE REVIEW OF DABIGATRAN ADHERENCE IN A PHARMACIST-MANAGED ANTICOAGULATION CLINIC COMPARED TO USUAL CARE

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Purpose: Dabigatran is an oral anticoagulant that was approved by the FDA in 2010. It is a direct thrombin inhibitor that is indicated to decrease the risk of stroke and thromboembolism in patients with non-valvular atrial fibrillation. Non-adherence is a potential concern with dabigatran. In clinical trials, dabigatran has been associated with higher rates of side effects leading to medication therapy discontinuation. Pharmokinetic factors also increase the risk of medication non-adherence with dabigatran therapy. The medication must be dosed twice a day due to a short half-life. It is sensitive to moisture and cannot be used in a medication organizer or pillbox. These factors along with the increased risk of side effects may lead to medication non-adherence. Guidelines recommend that patients receiving warfarin should be managed by an anticoagulation management service which could possibly increase therapy adherence. Likewise, preliminary guidance recommends that patients receiving dabigatran should also be monitored to ensure compliance. The primary objective of this study is to evaluate adherence rates of patients on dabigatran receiving care in a pharmacist managed anticoagulation clinic versus patients receiving usual care. Secondary objectives will evaluate safety and efficacy of dabigatran. Methods: This study will be a multicenter, retrospective chart review. The study population will consist of patients on dabigatran who were managed by a pharmacist-run clinic and the second group will consist of patients who received usual care. Patients greater than 18 years of age with a prescription for dabigatran will be included in this study. Patients with a creatinine clearance less than 15mL per minute, on dialysis, or who transferred prescriptions to a non-VA facility or never filled their prescription will be excluded from this study. Electronic patient charts will be reviewed to determine medication adherence and reported thromboembolic events or bleeding. Results: to be presented Conclusion: to be presented

Learning Objectives:

Recognize some of the barriers to medication adherence with the new oral anticoagulants.

Identify techniques to help patients improve adherence with new oral anticoagulants.

Self Assessment Questions:

Which of the following is a potential barrier to adherence with the new oral anticoagulants?

A Three times a day dosing with dabigatran
B: Gastrointestinal side effects with dabigatran
C: Twice daily dosing dabigatran
D: B&c

Which of the following could be used to improve medication adherence with new oral anticoagulants?

A Patient education and follow up provided by pharmacists
B Dabigatran can be adjusted to once daily dosing because of a long
C Use of a medication organizer or pillbox with dabigatran
D All of the above

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-483 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF ADHERENCE TO THE 2012 SURVIVING SEPSIS CAMPAIGN UPDATE AND ASSOCIATED OUTCOMES AT AN ACADEMIC MEDICAL CENTER

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Purpose Sepsis incidence is on the rise, responsible for approximately one million hospitalizations in the United States each year and was the eleventh leading cause of death in 2011. The Surviving Sepsis Campaign (SSC) was published in 2004 with the aim of decreasing mortality associated with sepsis by 25% in 5 years. Their efforts have included publishing updated guidelines and "bundles" of care to help guide healthcare providers in the treatment of a sepsis patient. The SSC bundles have been described as central in their sepsis improvement efforts. Early bundle recommendations by the SSC have been surrounded by criticism regarding their ethics, bundle adherence, and outcome data. However, the recently published 2012 bundles are free from ethical controversy and provide a more defined set of recommendations compared to previous publications. The purpose of this study is to evaluate outcomes associated with SSC 2012 bundle adherence in emergency department patients. Methods This is a single center, investigator-initiated, retrospective chart review. Adult patients admitted to the University of Cincinnati Medical Center Emergency Department from February 2013-October 2013 who meet the Society of Critical Care Medicine and American College of Chest Physicians definition of sepsis, severe sepsis, or septic shock will be included. The first aim will be to evaluate the rate of adherence to the SSC 2012 bundle updates. Patients will then be separated into tertiles based on percent adherent to the SSC 2012 bundle items and incidence of in-hospital mortality between groups will be evaluated. Other aims include comparing morbidity outcomes (length of hospital stay, time on ventilator, days in intensive care unit and patient disposition) between adherence groups. A multivariate regression will be performed to identify predictors of mortality in all patients. Results Data collection and analysis are on-going.

Learning Objectives:

Discuss the controversy surrounding previous publications of the Surviving Sepsis Campaign guidelines and bundles.

Identify key differences between the 2010 and 2012 Surviving Sepsis Campaign bundles.

Self Assessment Questions:

1.Which Surviving Sepsis Campaign Guideline component has been shown to improve mortality outcomes in patients with severe sepsis?

A Fluid boluses of 30ml/kg for hypotension
B: Timing of antibiotics
C: Use of norepinephrine as a first line vasopressor
D: The use of activated protein C

2.Which adverse event was significantly different between dopamine and norepinephrine when used as a first-line vasopressor in shock patients?

A Skin ischemia
B Myocardial infarction
C Arterial occlusion
D Arrhythmias

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-484 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

OUTCOMES AND UTILIZATION OF A PHARMACY DISCHARGE SERVICE ON 30 DAY READMISSION RATES IN PATIENTS HOSPITALIZED FOR ACUTE DECOMPENSATED HEART FAILURE

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Thirty day readmissions for heart failure (HF) are occurring at an alarming rate, representing an increased burden on the patient, provider and healthcare system. The national 30-day readmission rate is currentl estimated at 23 percent. Additionally, Centers for Medicare and Medicai services now penalize hospitals with excessive readmissions, creating a financial incentive for organizations to improve their performance. Data shows that the etiology of HF readmissions consists of modifiable and non-modifiable risk factors. Medication nonadherence, a modifiable risk factor, can contribute to increased HF readmissions. An internal analysis conducted at our institution revealed that nonadherence is a frequent contributing factor. Given that optimal medical therapy has shown to improve HF outcomes, proper use according to published guidelines after hospital discharge is essential. Several programs have investigated transitions of care, but provision of medications at discharge is an inconsistent part of these programs. Supplying patients with medications at discharge can identify barriers to adherence which may decrease readmission rates. This study is a retrospective chart review of HF patients discharged from the University of Illinois hospital from 2008 to 2013 with a primary discharge diagnosis of heart failure. The objective o this study is to evaluate the utilization of pharmacy discharge services in HF patients discharged after an acute exacerbation. The primary outcome is the rate of 30-day readmissions between patients utilizing the service compared to the standard of care. Key secondary outcomes include percent of patients in whom nonadherence was identified as a reason for readmission and percent of patients treated with evidence-based HF therapy six months after the index hospitalization. Patients wil be matched with a control group of patients hospitalized for HF who were discharged during the study period without utilizing the service. Data collection is currently ongoing. Results will be presented at the Great Lakes Residency conference.

Learning Objectives:

Identify factors that contribute to hospital readmissions for acute decompensated heart failure

Explain the advantages and disadvantages of utilizing a pharmacy discharge service in patients with acute decompensated heart failure

Self Assessment Questions:

What is the current national average 30-day readmission rate for patients with heart failure?

A 8%

B: 12%

C: 23%

D: 35%

Which of the following are potential barriers to medication adherence in the heart failure patient?

A Complexity and quantity of medications

B Low socioeconomic status

C Lack of understanding of medication regimen

D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-485 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

UTILIZATION OF CLINICAL AND LABORATORY PARAMETERS TO GUIDE SERUM GENTAMICIN MONITORING IN NEONATAL PATIENT

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Purpose: A retrospective review was published in August of 2012 in the American Journal of Health System Pharmacy that identified serum creatinine, urine output, and shock requiring vasopressor therapy as three potential risk factors for out-of-range gentamicin levels in neonatal patients. The purpose of this retrospective analysis is to validate those risk factors in a Level IIIb neonatal intensive care unit. Additional risk factors proposed by the authors will also be examined in this study. Results of this analysis may impact criteria for obtaining serum gentamicin levels in neonatal patients per protocol at the study site in th future. Methods: This retrospective review was approved by the Institutional Review Board. Patient-specific gentamicin monitoring cards will be used to identify eligible patients. The following data will be collected from the electronic health record and gentamicin monitoring cards: demographic information, gentamicin dose and interval, serum creatinine, urine output, vasopressor use, and gentamicin peak and trough levels. No patient identifiers will be recorded, and confidentiality will be maintained throughout the review. Patients eligible for inclusion will have been maintained on gentamicin therapy long enough to require serum gentamicin levels to be drawn per pharmacy protocol. Patients previously treated with gentamicin or dosed outside of protocol parameters will be excluded. Patients meeting inclusion criteria will be stratified into three cohorts based on subtherapeutic, therapeutic, or supratherapeutic gentamicin peak and/or trough levels. Cohorts will be reviewed for clinical and laboratory parameters potentially correlated witl sub optimal gentamicin levels. Results/Conclusions: To be presented at Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify patient-specific risk factors that could affect serum gentamicin levels in neonatal patients

List three benefits of risk-based gentamicin monitoring

Self Assessment Questions:

According to Stach et al., which of the following risk factors is most likely to affect serum gentamicin levels in neonatal patients?

A Serum creatinine > 0.6 mg/dL

B: Shock requiring vasopressor therapy

C: Urine output < 2 mL/kg/hr

D: Blood urea nitrogen > 20 mg/dL

Which of the following is a benefit of risk-based gentamicin monitoring over routine gentamicin monitoring?

A Increased accuracy of levels

B Reduced blood transfusions

C Minimized patient discomfort

D Reduced length of stay

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-486 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT AND IMPLEMENTATION OF CODE BLUE DOCUMENTATION IN THE ELECTRONIC MEDICAL RECORD BY PHARMACISTS

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Purpose: This investigation aims to create a system that allows for pharmacists to document code blue events in an electronic medical record (EMR) in real-time and to test this system during a pilot implementation phase. Historically, code blue documentation has been completed on paper forms by a code team pharmacist and a separate account is entered into the EMR by the physician retrospectively. Physicians often have poor access to the written code report, resulting in discrepancies between the documentation completed in the EMR and the written record. Electronic code documentation by pharmacists offers a solution to decrease discrepancies of reporting through improved communication between pharmacist recorders and physicians. An electronic documentation system will facilitate access to accurate code blue information and will increase efficiency of code documentation by streamlining the documentation process. Methods: A code blue documentation tool was created utilizing specific functionality within the EMR. It was designed to allow for efficient documentation while including all elements of current paper documentation. Proposed workflow changes were presented at multidisciplinary operations and quality meetings to obtain approval from involved disciplines prior to pilo testing. The tool will be evaluated with a three month pilot testing phase during all adult code events in the emergency department. Electronically documented codes during the pilot phase will be assessed for discrepancies compared to physician records of codes occurring during the same time period one year prior as a comparator group to assess documentation improvement. Pharmacists will be surveyed pre- and post-implementation to evaluate for user satisfaction, accuracy, and efficiency of the documentation tool. Summary of Results: This project has created a functional electronic medical record tool. A pilot implementation phase is expected to show increased user satisfaction, accuracy, and efficiency in the documentation of code blue events.

Conclusions: Project results and conclusions remain under investigatior

Learning Objectives:

Describe the process for changing workflows that will impact multiple disciplines

Define the challenges associated with training pharmacists on new workflows

Self Assessment Questions:

What is the best way to impact workflow changes involving other disciplines?

A Wait until the day of implementation to communicate workflow cha
B: Seek input from other disciplines early on in the development proc
C: Restrict communication with other disciplines to email
D: Obtain input from all disciplines whether or not changes affect ther

What is one barrier that made training pharmacists on the new workflow difficult?

A Variability in ensuring two pharmacists are involved with each code
B Desire for extensive training, straining resources available to traine
C Preferring to be involved with other clinical activities
D Not seeing the benefit of documenting code blue events

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-779 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATING THE INCIDENCE OF HEMORRHAGIC EVENTS IN PATIENTS WITH RENAL INSUFFICIENCY RECEIVING DOSE-ADJUSTED FULL-DOSE ENOXAPARIN OR CONTINUOUS INFUSION UNFRACTIONATED HEPARIN

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Purpose: Current literature suggests low molecular weight heparins (LMWH) and unfractionated heparin (UFH) should be used cautiously in patients with renal disease due to the possibility of increased risk of hemorrhage. Since LMWHs are excreted renally, there have been concerns regarding the proper dosing and dosage adjustments in patients with varying degrees of renal impairment. Due to the use of both LMWH and UFH in patients with renal insufficiency, the incidence of major bleeding and thrombosis in these patients should be evaluated to better determine optimal anticoagulation dosing strategies in this population. Methods: It is the primary aim of this retrospective analysis to determine the incidence of hemorrhagic events in patients with renal insufficiency receiving full-dose enoxaparin or continuous infusion UFH from January 1, 2013 to June 30, 2013 at a 404-bed urban community teaching hospital. All patients will be identified through medication reports based on ordered drugs and through total chart review using the health systems electronic medical record. Patient charts will be used to identify the duration of therapy, indication for anticoagulation, renal function and incidence of hemorrhagic events. Additionally, this study will focus on a number of secondary endpoints including in-hospital and 60-day mortality, indication for full anticoagulation, the incidence of thrombocytopenia, initiation of pantoprazole or octreotide continuous infusions, and HIT diagnosis. Data regarding the subjects age, body weight, severity of illness, and incidence of new thromboembolism, myocardial infarction, or ischemic stroke while on full anticoagulation will also be collected. All data will be analyzed using appropriate statistical tests with the statistical software SPSS version 18.0 or later. All p values <0.05 are considered statistically significant. This study has been approved by the Institutional Review Board. Results/Conclusions: Data is currently under review and all results will be presented at Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Review the current challenges facing proper dosing of enoxaparin and unfractionated heparin in patients with renal dysfunction

Discuss the outcomes in patients with renal dysfunction who received dose-adjusted full-dose enoxaparin or continuous infusion unfractionated heparin

Self Assessment Questions:

Unfractionated heparin may have the potential to avoid hemorrhagic adverse events associated with low-molecular weight heparin in patients with renal dysfunction due to its:

A Less rapid clearance
B: Longer duration of action
C: Renal and hepatic elimination of the drug
D: Both A and B

The current American College of Chest Physician guidelines for parenteral anticoagulants suggests the following if LMWH is to be administered to patients with renal insufficiency:

A LMWH should never be used in this patient population
B Anti-Xa levels do not need to be monitored since there is no data s
C UFH should be preferred over LMWH due to its non-renal eliminati
D A dose reduction should be considered and anti-Xa levels should b

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-487 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF EFFICACY AND SAFETY OUTCOMES IN PATIENTS TAKING WARFARIN WHO WERE SWITCHED TO TELEPHONE ANTICOAGULATION CLINIC FROM FACE-TO-FACE ANTICOAGULATION CLINIC

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Purpose: Warfarin is an anticoagulant that exerts its effect by inhibiting vitamin K epoxide reductase. The relationship between the dose of warfarin and the response is widely variable and can be influenced by many genetic and environmental factors, making dosing difficult. A standardized model of the prothrombin time (PT) is used for monitoring called the international normalized ratio (INR). INR goals should be individualized for patients based on indications and patient specific factors such as history of bleeding or clots. INR goals are set to prevent cerebrovascular accidents (CVA), transient ischemic attacks (TIA) or venous thromboembolism (VTE) but also to minimize bleeding. With the risk for serious side effects, frequent monitoring is required. It is estimated that patients spend approximately one hour in face-to-face anticoagulation clinic, including waiting time. With the need for frequent monitoring, the decrease in waiting time for patients enrolled in telephone anticoagulation clinic would be a benefit. The purpose of this study is to evaluate the efficacy and safety outcomes in patients taking warfarin who were switched to telephone anticoagulation clinic from face to-face clinic. Methods: This is a retrospective, electronic chart review of veterans at Jesse Brown Veterans Affairs Medical Center who are currently enrolled in telephone anticoagulation clinic, and receiving warfarin therapy between May 1, 2008 and September 1, 2013. Patients will be included if they had at least 70% of their anticoagulation visits in face-to-face anticoagulation clinic for a continuous one year period who were then switched to telephone anticoagulation clinic and had at least 70% of their anticoagulation visits in telephone anticoagulation clinic in the subsequent continuous one year period. The primary endpoints of the study are time in therapeutic INR range, event rate of CVA/VTE and major bleeds. Results: Results and conclusions will be presented at the 2014 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss different factors that can influence warfarin dosing in patients.

Identify the advantages of telephone anticoagulation clinic.

Self Assessment Questions:

Which of the following affect(s) warfarin dosing in patients?

A Genetic variations in CYP2C9

B: Renal dysfunction

C: Vitamin K in diet

D: A and C

What is one advantage of an anticoagulation telephone clinic?

A Increase in waiting time

B Decrease in waiting time

C Less frequent INR monitoring

D More time spent with providers

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-488 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ANALYSIS OF VANCOMYCIN DOSING AND MONITORING IN BURN PATIENTS

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Purpose: Infection is a significant source of morbidity and mortality among patients with burn injuries. Therefore, it is necessary to reach therapeutic antibiotic concentrations quickly in order to adequately treat infection. Current literature suggests that patients with burn injury display alterations in vancomycin pharmacokinetic parameters including higher vancomycin clearance and shorter half-lives. These pharmacokinetic derangements often require larger doses of vancomycin to reach target serum trough concentrations. At Eskenazi Health, vancomycin dosing is performed under the direction of a pharmacy-to-dose protocol. The primary objective of this study is to evaluate the effectiveness of the pharmacy-to-dose protocol in achieving target vancomycin serum trough concentrations of 10-20 mg/L in patients with a ≥ 10% total body surface area (TBSA) burn injury. Methods: This retrospective, observational study will include patients with ≥ 10% TBSA burn injury who receive vancomycin for treatment of a known or suspected infection starting on July 1, 2013 with at least one serum peak or trough concentration. Patients will be excluded if they are < 18 years old, pregnant, a prisoner, have cystic fibrosis, or are at risk for or experience acute kidney injury upon vancomycin initiation or up to the time of initial serum concentrations. Measured steady state serum trough concentrations will be used to determine the percentage of patients who achieved target trough concentrations, the primary endpoint. Secondary endpoints will include percentage of patients: requiring dose adjustments, with initial trough concentrations < 10 mcg/mL, and with initial trough concentrations > 20 mcg/mL as well as pharmacokinetic parameters. Safety and efficacy will be evaluated by reported adverse events and documented clinical outcome. Results: Data collection and analysis is ongoing. Results will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify common pathogens in patients with burn injury

Recognize pharmacokinetic changes in burn patients

Self Assessment Questions:

What is the most common organism isolated from burn patients?

A Klebsiella pneumoniae

B: Enterococcus species

C: Staphylococcus aureus

D: Pseudomonas aeruginosa

Which of the following is an expected pharmacokinetic change in burn patients?

A Decreased creatinine clearance

B Shorter vancomycin half-life

C No change in serum albumin

D Increased volume of distribution

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-489 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF AN INSTITUTIONAL PROTOCOL CHANGE TO INCREASE THE MAXIMUM INITIAL INFUSION RATE FOR INTRAVENOUS UNFRACTIONATED HEPARIN

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Purpose: The American College of Cardiology recommends intravenous unfractionated heparin infusions (IV UFH) to run at a maximum initial infusion rate of 1000 units/hr. Mount Carmel Health System (MCHS) changed the institutional protocol, increasing the maximum initial infusion rate from 1000 units/hr (group A) to 1800 units/hr (group B) based on new evidence in treating patients with body mass index greater than 30 kg/m2. The primary objective of this study is to determine if a difference in time to therapeutic activated partial thromboplastin time (aPTT) exists between groups. Secondary outcomes include bleeding incidence and the percent of correct versus incorrect draw times. Methods: This retrospective study is approved by the MCHS Institutional Review Board. The study assesses patients 18 years of age and older admitted to MCHS. Those included were on IV UFH infusion for more than 24 consecutive hours between September 1 2012 and September 30, 2013. Exclusion criteria include: contraindications to heparin, pregnancy, von Willebrand disease (vWD), at therapeutic aPTT prior to heparin initiation, enrolled in Seattle-II EKOS trial, or on IV heparin infusion during the month of the protocol change (March 2013). aPTT will be obtained up to 48 hours comparing actual draw times to protocol set draw times. Results: To date, 102 patients have been evaluated. Time to therapeutic aPTT within 24 hours and 48 hours was found to be 54.9% and 59.6% in group A and 49% and 48.9% in group B, respectively. Percent of correct and incorrect draw times did not differ from group A to B. Group A had 3 patients receiving blood products while on heparin infusions and group B had 4 patients. Conclusion: Pending final data analysis.

Learning Objectives:

Describe the current literature pertaining to use and administration of intravenous unfractionated heparin (IV UFH).

Discuss the outcomes in increasing the maximum initial infusion rate of IV UFH at a community teaching hospital.

Self Assessment Questions:

What maximum initial infusion rate of intravenous unfractionated heparir does American College of Cardiology recommend?

A 800 units/hr

B: 1000 units/hr

C: 1500 units/hr

D: 1800 units/hr

Which of the following statements regarding intravenous unfractionated heparin (IV UFH) is true?

A It is recommended to dose IV UFH based on adjusted body weigh

B The therapeutic activated partial thromboplastin time while on IV U

C The pharmacokinetic and pharmacodynamic properties of heparin

D Efficacy of IV UFH is measured by the activated partial thrombopla

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-490 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF THE USE OF RISK ASSESSMENT TOOLS FOR THE VETERAN POPULATION STARTING TRIPLE ORAL ANTITHROMBOTIC THERAPY

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Purpose: Patients who have atrial fibrillation (AF) are at a higher risk of developing acute coronary syndrome. There is conflicting data to suppor the use of triple oral antithrombotic therapy (TOAT), consisting of aspirin clopidogrel or prasugrel, and warfarin, due to increased risk of bleeding in patients on warfarin receiving percutaneous coronary intervention (PCI). The available guidelines and literature emphasize the use of TOAT only after a thorough risk assessment of patients when indicated. Different risk assessment tools have been introduced including CHADS2, CHA2DS2-VASc, and HAS-BLED. The scores provide objective measures to guide the initiation of TOAT based on risk for stroke and bleed. However, it is reported in the literature that the tools are not appropriately used, leading to underutilization of anticoagulation therapy. The primary objective of the study is to determine if the guidance from the risk assessment tools leads to appropriate therapy and less complication, defined as bleeding events and recurrent ischemic stroke, in patients with AF undergoing PCI. The secondary objective of the study will provide characteristics of the two cohorts.

Methods: A retrospective cohort study, comparing two groups of veterans: those whose therapy reflected appropriate risk scores and those whose therapy did not reflect appropriate risk scores. The primary outcome of the study is the number of documented complications, including any episode of bleed, drop in hemoglobin greater than 2 g/dL, hemorrhagic stroke, or recurrent ischemic stroke. The secondary outcome will include the number of days on therapy, whether a different type of antiplatelet and/or antithrombotic regimen other than TOAT was used, and the number of follow-up visits in the clinic (Primary Care and Anticoagulation Clinic) and INR values. Results/Conclusion: to be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

List the available risk assessment tools that can be used to help guide selection of anticoagulation or antiplatelet therapy in high-risk patients.

Describe potential adverse events that may occur due to inappropriate use of antithrombotic therapy in patients with atrial fibrillation undergoing percutaneous coronary intervention.

Self Assessment Questions:

What are the risk factors that are calculated into the HAS-BLED score?

A Alcohol usage

B: Labile INR

C: Diabetes

D: A&b

Inappropriate use of triple oral antithrombotic therapy can lead to which of the following adverse event(s)?

A Restenosis of the stent

B Thrombosis formation leading to stroke

C Hemorrhagic stroke

D All of the above are potential adverse events

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-491 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

FINANCIAL IMPACT AND HANDLING OF MEDICATIONS FROM AN OUTSIDE SOURCE

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Purpose: Medications from an outside source (i.e. brown bag and white bag medications) were identified to be a growing issue at Aurora Health Care that needed to be addressed. The objectives of the project were to identify problems and barriers to the current process of handling medications from an outside source, to assess the financial impact of white bag medications, and to propose a process to address the challenges identified at Aurora Health Care.□□Methods: An assessmen of the current process of handling medications from an outside source was completed at Aurora Health Care and a survey of twelve other state hospitals was conducted to identify problems and potential solutions. A financial impact analysis of white bag medications from hospital-based infusion clinics and a proposal for handling medications from an outside source were prepared to present to the organizations leadership. A plan to handle these medications during the interim until policy implementation was also prepared. Policy development and communication of the policy to the organizations leadership, pharmacy, nursing, and physician groups will be performed.□ □Results: A policy was drafted that prohibits the use of brown bag medications at Aurora Health Care and places restrictions on the use of white bag medications Analysis showed that potential financial earnings for 2013 from white bag medications were approximately $1 million. Based on the problems identified and financial impact of these medications, the proposal is to process these medications through the medical benefit and still service patients through supply of medication through Aurora Specialty Pharmacy. □□Conclusion: There are many issues and risks associated with medications from an outside source. Quantification of the degree of medications from an outside source in Aurora Health Care hospitals showed that these medications are having a substantial financial impact and an effect on workflow.

Learning Objectives:

Identify alternative distribution channels for specialty medications.

Describe issues associated with white and brown bag medications.

Self Assessment Questions:

Which alternative distribution channel has the largest growth rate?

A Physician buy and bill
B: White bagging
C: Brown bagging
D: Patient assistance

What is an issue associated with both white and brown bag medications

A Increased financial earnings
B Decrease in drug waste
C Billing discrepancies
D Stability and integrity of drug

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-781 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFECT OF PROVIDING SELECTED FREE DISCHARGE MEDICATIONS TO HEART FAILURE PATIENTS ON 30-DAY READMISSIONS

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Purpose: Twenty-five percent of Medicare beneficiary heart failure patients are readmitted to the hospital within a 30 day period. Several studies examined strategies to prevent patients from being readmitted, such as physician or nurse follow-up, partnering with hospitals or physicians, arranging follow up appointments, or assigning staff members to follow up with lab results after discharge. The purpose of this study is to assess the change in 30-day readmission rates for heart failure patients who receive selected free medications at discharge. Primary endpoint is the 30-day readmission rate between participants and non-participants. Secondary endpoints are patient reported barriers to obtaining medications.□□Methods: This study was approved by the Institutional Review Board and informed consent will be obtained from al participants included in the study. Patients will be included in the study i they have a diagnosis of heart failure and have financial, transportation, or psychosocial barriers to obtaining their heart failure medications. Patients will be excluded if the patient or their physician decline to participate. Participants will receive a free 30 day supply of selected heart failure medications (ACE inhibitor, beta blocker, diuretic, potassium chloride, and/or digoxin) as well as medication and disease state counseling from a clinical pharmacist. Data will be collected on all patients screened and will include demographics, patient reported barriers to obtaining medications, and if they are readmitted in 30 days.□□Results/Conclusion: Data collection, study, and analysis are currently in progress. Results and conclusions will be presented at Grea Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify patient barriers to attaining their heart failure medications.

Discuss the impact of supplying 30 days of certain heart failure medications to patients in need.

Self Assessment Questions:

Based on the research presented, what is the most common patient barrier to attaining their heart failure medication?

A Financial barrier
B: Transportation barrier
C: Psychosocial barrier
D: Religious barrier

What percentage of Medicare beneficiary heart failure patients are re-admitted yearly?

A 10%
B 25%
C 30%
D 45%

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-780 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF OPIOID-SPARING EFFECTS OF INTRAVENOUS ACETAMINOPHEN AFTER CORONARY ARTERY BYPASS GRAFT SURGERY

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Purpose: The management of acute postoperative pain has proven challenging for health care providers and represents an area of practice with potential for improvement. In recent years, multimodal therapy consisting of opioid and non-opioid agents administered simultaneously has been used to provide synergistic pain control and reduce opioid-related adverse effects, including nausea, vomiting, constipation, sedation, and respiratory depression. Several studies have evaluated the safety and efficacy of intravenous (IV) acetaminophen for pain control in surgical patients and shown significant opioid-sparing effects as an additional benefit. Methods: This is a retrospective, cohort study involving patients who received doses of IV acetaminophen with opioids or opioid monotherapy after undergoing coronary artery bypass graft surgery (CABG). The study will be conducted at a 468-bed tertiary care facility in Lexington, Kentucky where approximately 1,000 CABG procedures are performed annually. Data from August 2008 to August 2013 will be collected through chart review of existing hospital databases both preceding and following the introduction of IV acetaminophen to the hospital formulary. The primary endpoint assessed will be total morphine equivalents administered post-operatively. Secondary endpoints will include pain scores, total acetaminophen dose administered, time to first bowel movement, total ventilator time, ICU length of stay, total length of stay, antiemetic use, sedative use, and use of medications to treat delirium. The resulting data will be utilized to evaluate the utility of IV acetaminophen as an opioid-sparing drug. Patients excluded from the analysis will include those retained in the ICU for more than one week, patients with an allergy or intolerance to acetaminophen or opioid analgesics, and patients with severe hepatic impairment. The study protocol has been approved by the Western Institutional Review Board under exemption status.

Learning Objectives:

List the FDA-approved indications for intravenous acetaminophen.

Review the physiological pain response and recognize where acetaminophen exerts its pharmacologic effect in this process.

Self Assessment Questions:

Which of the following is an FDA-approved indication for intravenously administered acetaminophen?

A Reduction of drug-induced fever

B: Severe pain in hospitalized children less than 2 years of age

C: Monotherapy for moderate to severe pain

D: Moderate to severe pain in combination with opioid analgesics

The mechanism of action of acetaminophen primarily involves inhibition of synthesis of which endogenous substance?

A Substance P

B Prostaglandin

C Cox-2

D Serotonin

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-492 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE ROLE OF MENTAL HEALTH PHARMACISTS WITHIN THE VETERANS AFFAIRS (VA) HEALTHCARE SYSTEM

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Objective: With the increasing number of servicemen and servicewomer returning from Operations Enduring Freedom and Iraqi Freedom (OEF/OIF), the need for psychiatric services for veterans has been expanding. Mental health pharmacists have been incorporated in treatment teams for this population and have a growing opportunity to make an impact on patient care. However, data is lacking regarding the role of the mental health pharmacists in the VA. The purpose of this research project is to characterize the duties of psychiatric pharmacists and emphasize their importance within the VA system. Other goals include identifying ways to optimize training and show the increasing demand for psychiatric pharmacists. Methods: Two residents expressed interest in this nationwide project with the anticipation of presenting different aspects of the collected data. A survey was developed on SurveyMonkey. The survey consisted of 26 questions focusing on clinical responsibilities, training, student/resident responsibilities, and management/future plans. The survey link was emailed to the "Pharmacy Chiefs" list serve, as they were identified as a consistent point of contact for VA facilities nationwide. Members of this group were asked to forward this email to mental health pharmacists at their respective facilities. The survey link was emailed on 1/9/14 and a reminder was emailed four days prior to the deadline, which was on 1/31/14. Post-hoc analysis will be used to stratify data and identify trends. Descriptive statistics will be used to evaluate data. Results and Conclusion: Data collection and analysis is currently in progress. Results will be presented at the Great Lakes Pharmacy Residents Conference.

Learning Objectives:

Describe the training of mental health pharmacists within the VA

Identify common clinical responsibilities among mental health pharmacists within the VA

Self Assessment Questions:

Which of the following is true regarding training of mental health pharmacists within the VA?

A Over 50% of mental health pharmacists have completed a general

B: Over 50% of mental health pharmacists have completed a psychia

C: Under 50% of mental health pharmacists are BCPP certified

D: Over 50% of mental health pharmacists received more than 4 wee

One of the most common responsibilities of mental health pharmacists within the VA include

A Dispensing medications

B Leading patient education groups

C Medication reconciliation

D Clozapine monitoring

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-782 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARING INFECTION RATES IN CARDIAC SURGERY PATIENTS RECEIVING PRE-OPERATIVE CEFUROXIME PLUS VANCOMYCIN VERSUS EITHER VANCOMYCIN OR CEFUROXIME ALONE.

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Statement of Purpose: The primary objective of this study is to compare post-operative surgical site infection rates between cefuroxime, vancomycin, or a combination of the two in patients undergoing cardiothoracic surgery. A secondary objective of the study is to evaluate the use of vancomycin in the pre-operative setting at Community Heart and Vascular Hospital. While there is sufficient evidence to suggest tha monotherapy with cephalosporins or vancomycin is beneficial prior to cardiothoracic surgery, there is limited evidence that the combination of the two provide any further benefit. Statement of Methods Used: This is a retrospective comparative cohort study of cardiothoracic surgery patients at Community Heart and Vascular Hospital between June 2012 and June 2013. Patients will be matched in a 1:1 ratio based on the pre operative antibiotic regimen they receive; the primary groups being compared will be those receiving the combination of cefuroxime and vancomycin versus either agent as monotherapy. Eligible subjects are those aged 18-89 who underwent a cardiothoracic surgery within the above timeframe. Patients will be excluded if they were on antibiotics to treat an infection at the time of surgery, had been on antibiotics in the previous 30 days leading up to surgery, and anyone with an active infection. Surgical infections will be determined using the Center for Disease Control and Preventions (CDC) criteria. Patients receiving vancomycin will be evaluated for compliance with the CMS criteria for using vancomycin. Additionally, patient demographics, peri-operative surgical data, and outcomes will be evaluated and compared. Data will be analyzed using chi-square tests for categorical data and t-tests for continuous variables. Comparable non-parametric tests will be used for categorical data. Summary of preliminary results: The total population includes 213 individuals with average age of 66 years.

Conclusions reached: Project is currently in preliminary data collection phase

Learning Objectives:

Identify appropriate pre-operative antibiotic regimens in the setting of cardiothoracic surgery

Indicate appropriate criteria for use of vancomycin in the setting of cardiothoracic surgery

Self Assessment Questions:

1.All of the following antibiotics are recommended for prophylaxis in cardiothoracic surgery except:

A Cefazolin
B: Ceftaroline
C: Cefuroxime
D: Vancomycin

2.All of the following are appropriate criteria for prophylactic use of vancomycin in cardiothoracic surgery except:

A Patient receiving antibiotics within the past 30 days
B Patient undergoing valve and/or CABG surgery
C Patient with history of MRSA infection
D Patient with documented allergy to PCNs or cephalosporins

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-493 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

CLINICAL IMPACT OF DUAL ANTIMICROBIAL THERAPY IN CRITICALLY ILL PATIENTS WITH GRAM NEGATIVE SEPSIS OR SEPTIC SHOCK

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Purpose: Mortality from severe sepsis and septic shock approaches 25%. Delayed administration of appropriate antimicrobial therapy is associated with an additional 7.6% increase in mortality for each hour treatment is delayed. Because of this concerning rate, dual antibiotic therapy in sepsis or septic shock is often employed in an effort to decrease overall mortality. This may lead to overexposure of antibiotics that can increase adverse effects, cost, resistance, as well as risk for superinfection. Recently published literature has concluded there is no mortality benefit with dual therapy. However, post-hoc analysis of this literature shows a possible mortality benefit in patients presenting with neutropenia and/or those presenting with shock. The objective of this study is to determine if double antibiotic coverage in patients presenting with sepsis or septic shock increases in hospital survival. Methods: This will be a retrospective cohort study at Northwestern Memorial Hospital occurring from January to December of 2013. Patients with an ICD-9 code for sepsis and/or septic shock who are admitted to an intensive care unit within 24 hours of diagnosis and have one or more positive blood cultures for a gram negative pathogen will be included. Patients will be excluded if they do not remain in the hospital for at least 48 hours or do not meet consensus guideline definitions for sepsis and/or septic shock. Baseline demographics, clinical laboratory values, and microbiology data will be recorded on a standardized data collection tool. The primary endpoint evaluated will be hospital mortality. Secondary endpoints will include time to clearance of blood cultures, vasopressor free days, and length of ICU stay. Continuous variables will be analyzed using Students t-test and categorical variables will be evaluated using the Chi-square or Fishers Exact test as appropriate.

Results: Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the rational behind using two agents active against Pseudomonas in patients with sepsis or septic shock

List reasons antibiotics with overlapping coverage may be problematic

Self Assessment Questions:

Double coverage of Pseudomonas has shown a mortality benefit in patients presenting with which of the following characteristics?

A Liver transplant and neutropenia
B: Neutropenia and shock
C: Kidney failure and neutropenia
D: Shock and kidney transplant

Potential outcomes of overusing antibiotics include which of the following?

A Increased risk of resistance
B Decreased risk of superinfection
C Decreased risk of resistance
D Decreased cost to the patient and the hospital

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-494 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF HEMODYNAMIC CHANGES FOLLOWING PROPOFOL ADMINISTRATION IN CRITICALLY ILL PATIENTS WITH NORMAL VERSUS REDUCED EJECTION FRACTIONS

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BACKGROUND: Propofol is a short-acting intravenous sedative commonly utilized in critically ill patients. It is associated with an increased risk of hypotension and bradycardia. The manufacturer recommends caution when using propofol in patients with severe cardiac disease, defined as an ejection fraction (EF) < 50%. However, there is limited literature to support avoiding propofol in this patient population.

PURPOSE: The purpose of this study was to evaluate differences in clinical outcomes between critically ill patients with normal and reduced EF who receive propofol therapy. METHODS: This retrospective chart review was conducted following Institutional Review Board approval. Critically ill adults who received a continuous propofol infusion between July 2011 and July 2013 were eligible for inclusion. Exclusion criteria included circulatory shock on presentation, beta-blocker, calcium channel blocker, or digoxin overdose, alcohol withdrawal, or a history of tachy-brady syndrome. Eligible subjects were stratified into two groups: normal EF (defined as EF ≥ 50%) and reduced EF (defined as EF < 50%). Baseline demographics and vital signs, including blood pressure (BP) and heart rate (HR), were collected. The primary endpoint was the incidence of hypotension (defined as systolic BP < 90 mmHg) or bradycardia (defined as HR < 60 bpm) requiring treatment during the first 12 hours of propofol infusion. Treatment was defined as fluid boluses, atropine, dose reduction or discontinuation of propofol, or initiation or dose increases of vasopressors. Secondary endpoints included intensive care unit (ICU) and hospital length of stay, in-hospital mortality, and incidence of hypertriglyceridemia or pancreatitis. RESULTS AND CONCLUSION: Results and conclusions to be presented at the 2014 Great Lakes Pharmacy Conference.

Learning Objectives:

Review the current practice guidelines for the pharmacologic management of sedation in critically ill adult patients.

Discuss the proposed underlying pharmacology contributing to propofols cardiovascular side effect profile.

Self Assessment Questions:

For sedation in adult ICU patients, the Society of Critical Care Medicine (SCCM) guidelines recommend the use of:

A midazolam
B: propofol
C: lorazepam
D: phenobarbital

Based on in-vitro research, propofol has been shown to:

A Inhibit L-type calcium channels
B Stimulate alpha-adrenergic receptors
C Inhibit beta-adrenergic signal transduction
D A & c

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-495 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

MISSING CARTFILL MEDICATION REDUCTION AT AURORA ST. LUKES MEDICAL CENTER

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Aurora St. Lukes Medical Center uses a robot to process medications. The use of automation has greatly increased the accuracy and efficiency of pharmacy services. One component of automation may involve the filling of scheduled medications within a specified 24 hour time period commonly known as cartfill. While the utility of cartfill has allowed for increased productivity, concerns regarding the potential fail points of cartfill distribution remain. The purpose of this project is to identify causes and reduce the number of missing medications from cartfill at Aurora St. Lukes Medical Center. In order to assess the baseline accuracy and efficiency of cartfill distribution, medications for each patient on select floors at Aurora St. Lukes Medical Center were physically checked prior to the daily cartfill delivery run and compared to a generated cartfill report and the patient's electronic medication administration record (eMAR). Missing medication requests sent by the nursing staff to pharmacy via the health system's electronic system were tracked and reviewed. Medications brought back to the pharmacy for each patient were also noted. A number of possible fail points in the medication delivery process were identified. Findings were analyzed and used to implement strategies to decrease the number of missing medications from cartfill. Preliminary findings from this project will demonstrate the accuracy rate of the automated robot in dispensing cartfill doses. Final conclusions will be presented in the presentation.

Learning Objectives:

Recognize the role of cartfill dispensing in the medication distribution process.

Identify two possible fail points in the medication distribution process.

Self Assessment Questions:

A cartfill distribution model typically includes:

A Unit doses for individual patients within a pre-determined period of
B: Daily pharmacist verification of all scheduled medications
C: Unit based cabinets on each unit
D: Controlled substances

One possible fail point in the medication distribution process is:

A Orders verified while the patient is in operation and recovery rooms
B Medication orders with recently changed administration times may
C The automated robot drops over 30% of medications.
D Both A&B

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-783 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF THE ABSORPTION OF RIVAROXABAN IN PATIENTS WITH A HISTORY OF ROUX-EN-Y BARIATRIC SURGERY

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Purpose: Venous thromboembolism (VTE) is a serious complication of total knee arthroplasty. Without VTE prophylaxis, the incidence is estimated at 40-88%. Rivaroxaban is an oral anticoagulant approved for use in this setting. Data is currently lacking on the absorption of rivaroxaban in patients with a past surgical history of Roux-en-Y gastric bypass. This is a surgery typically performed in morbidly obese patients, and morbid obesity is a risk factor for degenerative joint disease in the knee. As a result, patients undergoing total knee replacement may have a history of bariatric surgery. At Franciscan St. Francis Health in Indianapolis, IN, rivaroxaban 10 mg daily is the standard of care for VTE prophylaxis following total knee replacement. The purpose of this prospective study is to determine the absorption of rivaroxaban 10 mg in patients with a history of Roux-en-Y gastric bypass surgery undergoing total knee replacement.□Methods: All study subjects will be identified fo inclusion between December 2013 and May 2014 prior to having total knee replacement or revision if they have a history of Roux-en-Y. Patients will be educated on the risks and benefits of participating in the study prior to receiving their first dose of rivaroxaban 10 mg. If included, one lab draw will be performed 3-hours after the first, post-operative dose of rivaroxaban and an anti-Xa level and aPTT will be obtained from the lab draw. The results will be compared to literature values of anti-Xa and aPTT levels from previous pharmacokinetic studies. Any patients with levels that fall outside of the normal range will be placed on enoxaparin during their post-operative recovery. The investigators will follow the electronic medical record of each included patient for 90 days following the initiation of rivaroxaban to determine the incidence of VTE and bleeding.□Results: Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the predicted effects of Roux-en-Y gastric bypass on absorption of rivaroxaban.

Identify appropriate lab tests to determine the anticoagulant effect of rivaroxaban.

Self Assessment Questions:

Which of the following would be expected to reduce rivaroxaban absorption?

A Administration distal to the stomach

B: Longer duration of exposure in the stomach

C: Decreased acidity in the stomach

D: Increased acidity in the stomach

Which coagulation assay is most appropriate for monitoring rivaroxaban activity?

A Inr

B Chromogenic anti-Xa

C Ecarin clotting time

D Chromogenic anti-IIa

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-496 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION AND EVALUATION OF AN UPDATED THERAPEUTIC HYPOTHERMIA PROTOCOL IN A COMMUNITY HOSPITAL

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Purpose: More than two-thirds of resuscitated patients from cardiac arrest die before hospital discharge due to post-resuscitation brain and myocardial dysfunction. Therapeutic hypothermia (TH) has been shown to reduce the severity of post-cardiac brain injury and improve survival ir patients who remain comatose after resuscitation. Studies with different treatment modalities are constantly emerging, therefore monitoring new and effective developments and a systematic and regular assessment o a hospitals TH protocol is important. The purpose of this study is to compare mortality and favorable outcomes at hospital discharge in patients who underwent TH post cardiac arrest before and after implementation of an updated TH protocol. □□Methods: This study is a prospective, single-center, observational study with historical controls assessing mortality rates of patients receiving therapeutic hypothermia. The historical control group consists of patients treated during the preceding 12 months prior to implementation of the updated TH protocol Patients in the prospective arm are eligible for treatment with the updated TH if they meet protocol inclusion and exclusion criteria. The primary outcome is mortality at discharge, while the secondary outcomes include favorable outcome, time to target core temperature, and impact of pharmacist involvement in protocol initiation. The data collected include: patient demographics (gender, age), medical history, cause of cardiac arrest, arrest location, initial arrest heart rhythm, survival to hospital discharge, place of discharge, and time to target core temperature. □□Results: to be presented □□Conclusion: to be presente

Learning Objectives:

Define therapeutic hypothermia.

Discuss the recommendations regarding the use of therapeutic hypothermia in patients post-cardiac arrest.

Self Assessment Questions:

What is the major cause of morbidity and mortality after return of spontaneous circulation post cardiac arrest?

A Infection

B: Anoxic brain injury

C: Respiratory failure

D: Sepsis

What is the target core temperature for patients undergoing therapeutic hypothermia?

A 28°C to 30°C

B 30°C to 32°C

C 32°C to 34°C

D 34°C to 36°C

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-497 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

INTEGRATING AN AMBULATORY CARE PHARMACIST INTO FAMIL' MEDICINE PRACTICE AT BEAUMONT HEALTH SYSTEM-TROY

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The purpose of this study is to determine the direct benefits of an ambulatory care pharmacist on patient and physician education in the Family Medicine Center at Beaumont Health System - Troy. Through participation in activities focusing on medication optimization, medicatior cost-savings, and team-based care coordination, improved safety and quality of patient care will be provided. Additionally, an improvement in patient health literacy is anticipated through direct patient education. The greatest areas of pharmacist impact will be revealed by categorizing specific pharmacy interventions, analyzing the benefits of a pharmacist from a physicians perspective, and determining the monetary savings to the health system.□□Pharmacist participation within the Family Medicine Center outpatient clinic occurred from 12/2/13 to 1/21/14 for a total of 30 clinic days. Daily activities included providing drug information, performance of medication reconciliations, assessment of potential cost-saving options of prescribed medications, and patient education on various chronic disease states. Physician educational in-services were also offered. Voluntary patient satisfaction surveys were given to patients who had direct interaction with the pharmacist. Upon completion of pharmacist involvement, surveys were dispensed to assess staff/physician satisfaction with pharmacy services.□□Data analysis is currently in progress. Preliminary data from the staff/physician surveys show positive feedback regarding satisfaction with the pharmacy services offered. Upon completion of data collection and analysis, submission of a proposal for a full-time ambulatory care pharmacist position at the Family Medicine Center is anticipated. Final results/conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify the benefits of an ambulatory care pharmacist on the quality of patient care and the resulting cost-savings from offered pharmacy services.

Classify the types of interventions most commonly made by the pharmacist in the ambulatory care setting

Self Assessment Questions:

What benefits are seen when a pharmacist participates in an outpatient (primary care) setting?

A Increased difficulty with care coordination

B: Worsening of patient satisfaction with medical services offered

C: Promotion of team-based care

D: No differences are seen with pharmacist participation

What types of interventions were made by the pharmacist during her time at the Family Medicine Center?

A Formulary interchanges

B Opioid conversions

C Pharmacokinetic dosing evaluations

D IV to PO conversions

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-498 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF ELECTRONIC DISCHARGE MEDICATION RECONCILIATION ON QUALITY MEASURES IN ISCHEMIC STROKE AND ACUTE MYOCARDIAL INFARCTION PATIENTS

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Purpose: On June 25th 2013, Methodist Hospital at Indiana University Health implemented an electronic process for medication reconciliation upon discharge. Accreditation by The Joint Commission requires the reporting of quality measures that include appropriate discharge medications in patients admitted for stroke and myocardial infarction (AMI). These measures are aligned with the reporting requirements for Meaningful Use Stage 1. The purpose of this study is to determine the appropriateness of discharge medications in patients admitted for ischemic stroke or acute myocardial infarction, pre- and post-implementation of electronic discharge medication reconciliation.□□Methods: All patients discharged between February 24th 2013 and November 2nd 2013 with a principal diagnosis of either AMI or stroke were included for retrospective chart review. Patients were excluded for age < 18, for length of stay > 120 days, if expired during admission, if discharged to hospice, or if they left AMA. Principal ICD-9 codes and exclusion criteria were selected with guidance from TJC specifications. Data collected for each patient included age, gender, LOS, nursing unit, principal diagnosis ICD-9, home medications, discharge medications, history of atrial fibrillation, LVEF, and LDL. Patients pre- and post-implementation, with a 1-week wash-out period starting June 25th, were compared. The primary endpoint is the composite proportion of appropriate discharges in patients with AMI and stroke. An appropriate AMI discharge is defined as ASA, statin, and beta blocker for all patients and an ACE-I/ARB for LVEF <40%; for stroke, it is anti-thrombotic, anti-coagulant for atrial fibrillation, and statin for LDL >100. The primary endpoint was analyzed via chi-squared test, secondary endpoints by descriptive statistics. An a priori sample size of 216 was required for 80% power to detect a 10% difference with an alpha of 0.05.□□Results/Conclusions: Data collection is ongoing. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify the appropriate discharge medications for patients admitted for acute myocardial infarction and ischemic stroke.

Explain the significance of compliance with inpatient clinical quality measures such as discharge medications.

Self Assessment Questions:

Which patients are required to have statin therapy prescribed upon discharge?

A All myocardial infarction patients

B: All stroke patients

C: Only stroke patients with LDL > 100

D: Only stroke patients with atrial fibrillation

What is the significance of compliance to discharge quality measures?

A The Joint Commission accreditation requires >97% compliance

B Compliance is a Meaningful Use stage 1 core objective

C Measures are reported on consumer-focused hospital comparison

D Patients discharged inappropriate are less likely to be readmitted

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-909 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT OF AN EVIDENCE BASED COMPREHENSIVE IMMUNIZATION MENU IN THE COMPUTERIZED PATIENT RECORD SYSTEM (CPRS)

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PURPOSE Vaccinations are key to the prevention of many common diseases. The current immunization ordering process at the Cincinnati Veteran Affairs Medical Center (CVAMC) lacks a uniform approach in the computerized patient record system (CPRS), creating unnecessary barriers to the delivery of care. The objective of this project is to design a user-friendly and informative immunization order set in CPRS. The implementation of such an order set stands to potentially streamline the vaccination process, improve adult vaccination rates, and enhance the delivery of care to our diverse veteran population. METHODS AND PROCEDURES A CPRS order set shall be designed by conducting an internal review, surveying providers, and by reviewing immunization guidelines. A review of current immunization ordering practices and available vaccination rates at the VA medical center shall be collected and select healthcare professionals and services involved in ordering immunizations will be surveyed regarding current challenges in ordering vaccines through CPRS and frequently asked immunization inquiries. With assistance from informatics and pharmacy, a CPRS order set will be designed to address the needs and focuses identified from the aforementioned analyses. A drafted order set shall then be reviewed and approved by the Pharmacy and Therapeutics committee (P&T) and Clinical Executive Board (CEB). Clinical Informatics will implement the order set into CPRS following its approval.

Learning Objectives:

Discuss the importance of vaccinations and their benefits.

Identify how informatics and an order set can be utilized to address inquiries regarding immunization schedules and indications.

Self Assessment Questions:

Which of the following is true regarding vaccinations?

A Only patients with comorbidities or the elderly stand to benefit from
B: Immunizations can prevent cancer, protect against infections preva
C: More patients are receiving the herpes zoster vaccination in compa
D: Immunization guidelines are updated every two years by the Cente

According to the Institute for Safe Medication Practices, which of the following is a benefit to standard order sets?

A Increase variation and unintentional oversight through unstandardi
B Modify practice through evidence-based care
C Reduce necessary calls to physicians for clarifications and questio
D Increase the potential for medication errors through integrated safe

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-784 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF MISSED DOSES OF SELF-ADMINISTERED TUMOR NECROSIS FACTOR (TNF) ALPHA INHIBITORS AMONG PATIENTS ENROLLED IN A PSORIASIS SPECIALTY CARE MANAGEMENT PROGRAM

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Purpose Psoriatic disorders are chronic, immune mediated medical conditions that can significantly impact a patients quality of life. When disease severity is moderate to high, tumor necrosis factor (TNF) alpha inhibitors, such as adalimumab and etanercept, are often used to manage these disorders. While several studies have evaluated adherence and discontinuation rates of TNF alpha inhibitors in psoriatic disorders, limited data exists regarding reasons for gaps in therapy. The primary objective of this study is to determine the extent to which missed doses of adalimumab and etanercept, among patients with psoriatic disorders, are medically justified or behaviorally motivated.

Methods This retrospective observational study evaluated patients during a four-month period who received at least two refills for adalimumab or etanercept while enrolled in a psoriasis specialty care management program. Medication adherence assessments were initiated upon each refill via telephone, and counseling was provided by a pharmacist when non-adherence was reported. When applicable, reasons for each missed dose were documented during the pharmacist consult. All data were stored in the pharmacys electronic database and reasons for non-adherence were assigned as medically justified or behaviorally motivated by the investigator following review of the recorded consultation data. Medication possession ratios (MPR) for adalimumab and etanercept were calculated for all patients.

Preliminary Results Through two months of data collection, 3,413 eligible patients were identified. Of the 278 patients who received pharmacist consults related to non-adherence, a greater number of patients missed doses due to behaviorally motivated reasons rather than medically justified (212 and 66 patients, respectively), thus suggesting the importance of early educational efforts in patients receiving TNF-alpha inhibitors. Final results and a conclusion will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Recognize how missed doses of adalimumab and etanercept in patients with psoriatic disorders can be classified as medically justified or behaviorally motivated.

Outline a strategy to assess adherence rate in patients receiving adalimumab and etanercept in the specialty pharmacy setting.

Self Assessment Questions:

Which of the following reasons for non-adherence is considered to be medically justified for an anti-TNF agent?

A Patient forgetfulness
B: Hospital admission
C: Needle phobia
D: Literacy barriers

Which of the following is used to assess adherence in patients receiving adalimumab and etanercept?

A Health Assessment Questionnaire II (HAQ-II)
B Adherence Ratio Index (ARI)
C Medication Possession Ratio (MPR)
D Koo-Menter Psoriasis Instrument (KMPI)

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-499 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARISON OF INTENSIVE VS. MODERATE GLUCOSE CONTROL IN SURGICAL ICU PATIENTS WITH SEVERE SEPSIS OR SEPTIC SHOCK

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Purpose: Patients who are admitted to the intensive care unit (ICU) for severe sepsis or septic shock demand immediate attention in order to prevent organ damage and death. Therefore, medications administered within the initial hours of onset can influence the patients outcome. The most recent Surviving Sepsis Campaign guidelines recommend maintaining blood glucose less than or equal to 180 mg/dL. The guidelines were set based mostly on the NICE-SUGAR (Normoglycemia in Intensive Care Evaluation-Survival Using Glucose Algorithm Regulation) trial. Indiana University (IU) Health University Hospitals Surgical ICU allows for both intense blood glucose control, goal blood glucose 80-110 mg/dL, and moderate blood glucose control, goal blood glucose 100-150mg/dL. The purpose of this project is to determine if intensive glucose control is as safe and efficacious as moderate glucose control in the setting of severe sepsis or septic shock in a surgical ICU

Methods: This study is a retrospective, observational chart review of patients in the Indiana University (IU) Health University Hospitals Surgical ICU from January 2008 to December 2012. Physicians choose among the two treatment algorithms (moderate or intense) based on preference. Patients are included if they are age 18 or older and must be diagnosed with severe sepsis or septic shock as documented by the ICD 9 codes or meeting clinical diagnosis criteria. Patients must be admitted to the surgical ICU for at least three consecutive days and received continuous insulin infusion. Patients whom are pregnant, incarcerated or on hospice will be excluded from this study. The primary outcome for this study is the comparison of ICU mortality rate in severe sepsis or septic shock patients in the Surgical ICU receiving intense blood glucose control vs. moderate blood glucose control. Preliminary Results: Formal results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify current recommendations of glycemic targets in hospitalized patients.

Discuss the potential use for intensive blood glucose control in patients with severe sepsis or septic shock.

Self Assessment Questions:

According to the 2012 Surviving Sepsis Campaign guidelines, which patient should be initiated on a protocolized approach to blood glucose management?

A A 37 year old male with SIRS and the following two blood glucose
B: A 25 year old female with severe sepsis and the following two bloc
C: A 85 year old male with sepsis and the following two blood glucose
D: A 56 year old female with septic shock and the following two blood

Which of the following blood glucose goals does the 2012 Surviving Sepsis Campaign recommend?

A 80-110 mg/dL
B ≤ 150 mg/dL
C 110-180 mg/dL
D ≤ 180 mg/dL

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-500 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF AN ANTIMICROBIAL CLINICAL DECISION SUPPORT SYSTEM (CDSS) WITHIN A VETERANS AFFAIRS MEDICAL CENTER: PART 1 OF 2

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Purpose: In an attempt to improve the quality and safety of antimicrobial therapy, electronic antimicrobial clinical decision support systems (CDSS) have been developed to offer clinical guidance at the point of order entry. The objective of this project is to improve antimicrobial stewardship through implementation of an antimicrobial CDSS into a VA Medical Center computerized patient record system. The focus of part one of this project is to review literature in support of antimicrobial CDSS utilization and the creation and analysis of a needs assessment distributed to providers. Methods: The antimicrobial CDSS consists of menus that guide a provider in selecting appropriate antimicrobial therapy for a suspected disease, syndrome, or pathogen, and then propagates a quick order with recommended drug dosing, route, and interval. The CDSS will be implemented in the acute care setting only with potential to expand to the outpatient clinics. In order to maximize provider utility, a needs assessment has been distributed to identify factors that may affect prescriber acceptance of CDSS. The antimicrobial CDSS order menus, which will be transferred from another VA Medical Center, will be tailored based on needs assessment results, reviewed for guideline adherence, and adjusted based on local susceptibility patterns. Preliminary Results: A total of 48 prescribers from different specialty areas completed the needs assessment. The most commonly cited benefits of antibiotic order sets by prescribers include improved quality of antibiotic prescribing, reduced prescribing errors, and improved adherence to clinical guidelines. The top recognized barriers of current order sets by providers include clinical scenarios beyond the scope of order sets, alert fatigue, and lack of education regarding order sets. To date, the antimicrobial CDSS has been approved for testing by the Clinical Informatics Committee and Medical Executive Committee. Conclusion: Final conclusion will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify potential benefits and perceived barriers by providers surrounding the implementation of an antimicrobial CDSS

Review current literature regarding the benefits of implementation of an antimicrobial CDSS within a VA Medical Center

Self Assessment Questions:

A perceived barrier to implementation of an antimicrobial CDSS is

A Improved quality of antibiotic prescribing
B: Reduced prescribing errors
C: Improved adherence to clinical practice guidelines
D: Clinical scenario beyond the scope of CDSS

The use of CDSS within the Minneapolis VA Medical Center resulted in

A Improvement in appropriate antimicrobial use
B Increased prescriber satisfaction
C Decreased 30-day mortality
D Decreased use of restricted antimicrobials

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-501 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFECT OF B-BLOCKER CONTINUATION IN PATIENTS WITH ACUTE DECOMPENSATED HEART FAILURE (ADHF) RECEIVING MILRINONE

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Purpose: There is limited data on the clinical benefit of continued -blocker and milrinone therapy in patients with acute decompensated heart failure (ADHF). The theoretical benefits of combination therapy include a reduction of heart rate and tachyarrhythmias. The purpose of this study is to evaluate the use of -blockers and the incidence of tachyarrhythmias in patients with ADHF receiving milrinone.□□Methods This is a retrospective cohort study of ADHF patients started on milrinone and admitted to the cardiac intensive care unit at Rush University Medical Center from September 2011 - August 2013. Patients were included if they were ≥ 18 years old, admitted for an acute heart failure exacerbation with a left ventricular ejection fraction of ≤ 40%, and taking -blocker therapy prior to admission. Exclusion criteria included hypersensitivity to one of the required medications, dialysis, unstable arrhythmia at presentation, sinus bradycardia, and a history of atrioventricular nodal ablation with pacemaker implantation. Patients were divided into the -blocker continuation group or the group that did not continue their -blocker upon hospital admission. All patients received milrinone. Data collected included heart rate, incidence of tachyarrhythmia/type, medications, blood pressure (BP) at milrinone initiation and at 24 hours, incidence of BP < 80; BP < 90; and mean arterial pressure (MAP) < 50, length of stay, mortality, and hemodynamic parameters at time 0, 6, 12, 24, and 48 hours since milrinone initiation. □□

Results/Conclusion: Data collection is ongoing and results will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the role of inotropes in patients with ADHF

Discuss the potential benefits of using a B-blocker in combination with milrinone in patients with ADHF

Self Assessment Questions:

Milrinone is recommended by the American Heart Association in which of the following patients with ADHF?

A Patients in cardiogenic shock
B: Stage C heart failure
C: Class III heart failure
D: Patients with evidence of diastolic dysfunction

Which of the following is a theoretical benefit of continuing B-blocker therapy in a patient on milrinone?

A Increased heart rate
B Decreased systolic function
C Decreased arrhythmia risk
D Decreased exercise capacity

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-502 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF A PILOT PROGRAM ON THE QUALITY AND DOCUMENTATION OF COUNSELING AND EDUCATION ON ORAL CHEMOTHERAPY IN AN OUTPATIENT ONCOLOGY CLINIC

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Purpose: The number and use of oral chemotherapy agents has greatly increased in the last decade and many common malignancies can be treated with them. Oral chemotherapy offers more convenience compared to infusions. However, due to potential toxicities and importance of adherence for successful treatment of oral chemotherapy, it is essential patients receive adequate education. Updated ASCO/ONS safety standard encourages institutions to provide education and assess adherence to oral chemotherapy. The purpose of this study is to evaluate a pilot program that provides formalized process and education materials for improvements in quality and documentation of patient education, adherence, and patient satisfaction. □□Methods: This is a single-center retrospective, observational cohort study that will include patients who have had a physician order for at least one oral chemotherapy agent from Saint Joseph Hematology/Oncology East. Patients will be divided into two groups according to whether or not they were prescribed an oral chemotherapy agent before or after implementation of the pilot program. The primary outcome is to evaluate for improvements in quality (indicated by number of patients receiving education, percentage of topics covered in education, and patient self-reported understanding of the education provided). Secondary outcomes include chart documentation of education provided to patients receiving oral chemotherapy, adherence (indicated by patient self-report of whether or not the prescription was filled and how many doses were missed in a month), and patient satisfaction with counseling. Data will be collected via a chart review and phone calls conducting patient surveys. Institutional Review Board approval has been submitted to Western IRB and will be obtained prior to starting data collection. □□Results and Conclusions: Results are pending and will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recognize recommended safety standards for oral chemotherapy education, documentation, and adherence assessments

Identify important counseling points when educating patients about oral chemotherapy

Self Assessment Questions:

Which of the following is a true statement about the ASCO/ONS safety standards for oral chemotherapy?

A Patient education materials do not need to be appropriate for the p
B: Patient's should receive information on both handling and disposal
C: An assessment of a patient's oral chemotherapy adherence only n
D: Patient's should receive a written prescription initially with enough

Which of the following is an important counseling point to discuss with a patient receiving an oral chemotherapy agent?

A Anticipated duration of the oral chemotherapy agent
B What to do if a dose of oral chemotherapy is missed
C Potential side effects and symptom management
D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-910 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF A FIRST DOSE TECH-CHECK-TECH PROGRAM IN AN ACADEMIC MEDICAL CENTER

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In 2004, the University of Wisconsin Hospital and Clinics (UWHC) implemented a tech-check-tech (TCT) program upon receiving a variance from the Pharmacy Examining Board (PEB). This variance allows a trained pharmacy technician to complete the final check of medications filled via a cartfill process by another pharmacy technician while maintaining a 99.8% accuracy rate. Due to advancements in dispensing technology, along with the success of the UWHC TCT program, expansion to first dose medications dispensed from semi-automated dispensing technology was recognized as a goal for UWHC. Implementation of a first dose TCT program included the following methods: (1) Complete a study to determine checking accuracy rates for pharmacists and technicians; (2) State the project goals to the PEB and obtain an addendum to the UWHC TCT variance to allow first doses; (3) Collaborate with the UWHC Human Resources Department to create an advanced pharmacy technician position description; (4) Define the qualifications, training procedures, competency assessment and final validation for both cartfill and first dose TCT; (5) Implement first dose TCT into the current staffing model and define an ongoing quality assurance process to evaluate technician accuracy rates. The pre-implementation phase determined pharmacist and technician accuracy rates and classified the type of errors identified. Two inpatient pharmacy technicians were trained and validated for first dose TCT and included in the study. Preliminary results show a technician accuracy rate of 99.8% and a pharmacist accuracy rate of 99.6%. The final results of this study will be presented at a future PEB meeting. In preparation for implementation, a workgroup will assist in the development of technician workflows and establish quality assurance methods by restructuring the content and reporting in the current TCT database. The final results of this project will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Define the role of pharmacy technicians in a tech-check-tech program.

Recall the essential components of a tech-check-tech program.

Self Assessment Questions:

Which of the following provides the most accurate definition of tech-check-tech?

A Utilization of trained nurses to verify the accuracy of medications c
B: Utilization of pharmacists to verify the accuracy of medications fille
C: Utilization of trained pharmacy technicians to verify the accuracy o
D: Utilization of trained pharmacy technicians to verify the accuracy o

Essential components of a tech-check-tech program include:

A Undetermined qualifications for technician participation in the prog
B Ongoing quality assurance process to ensure pharmacy technician
C Development of an ASHP Accredited Pharmacy Technician Traini
D A competency evaluation related to inventory control and drug sho

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-785 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF A THERAPEUTIC SUBSTITUTION OF ALBUTEROL/IPRATROPIUM COMBINATION INHALERS TO NEBULIZERS AT AN ACADEMIC MEDICAL CENTER

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Purpose: During the fiscal year of 2012, albuterol/ipratropium inhalers were the fifteenth most expensive medication at The Ohio State University Wexner Medical Center (OSUWMC), accounting for expenditures over $450,000. Our department sought ways to decrease this expenditure without compromising patient care. The purpose of this study was to assess the financial impact to our department and analyze the effect on respiratory therapists (RT) workload after a therapeutic substitution from the inhaler to the nebulized formulations was instituted

Methods: Data were collected from October to December of 2012 and 2013 to compare similar timeframes before and after the formulary substitution. Data collected to evaluate the impact of the substitution included medication administration, cost, and prescribing patterns. Medications evaluated include albuterol inhalers and nebulizers, ipratropium inhalers and nebulizers, tiotropium inhalers, budesonide/formoterol inhalers, fluticasone inhalers, budesonide nebulizers, formoterol inhalers and nebulizers, racemic epinephrine and albuterol/ipratropium combination inhalers and nebulizers. Purchasing data were compared to measure the cost impact of therapeutic substitution to the department. Pharmacy verification data were evaluated to determine the impact on order volume. Additionally, documented administrations were assessed to evaluate the change in RT workload. Results: Final analysis is ongoing and the results will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Recognize the potential cost savings associated with substituting albuterol/ipratropium combination nebulizers for albuterol/ipratropium combination inhalers

Explain the impact of this change on the respiratory therapy department

Self Assessment Questions:

How much money was spent annually on albuterol/ipratropium combination inhalers?

A $100,000
B: $200,000
C: $300,000
D: Over $450,000

How did this formulary change impact respiratory therapist workload?

A Increased
B Decreased
C Stayed the same
D Not enough Information

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-786 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE IMPACT OF COMPREHENSIVE MEDICATION REVIEWS POST-EMERGENCY DEPARTMENT OBSERVATION UNIT DISCHARGE: A TRANSITION OF CARE PILOT STUDY.

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Purpose□The purpose of the study is to assess the impact of comprehensive medication reviews (CMR) performed by community pharmacists in collaboration with emergency medicine (EM) pharmacists for patients discharged from an emergency department (ED) observation unit (OU). Objectives include: (1) to compare the modified Care Transition Measure (CTM-15) medication section results after OU discharge to after community pharmacist-performed CMR; and (2) to identify and quantify drug-related problems (DRPs) from the CMR.□□Methods□The pilot study will occur with patients discharged from an academic medical center ED OU, who participate in a CMR at a grocery-store chain community pharmacy. Patients will be recruited from the OU. Eligible patients include those 18 years of age or older with a specific Ohio Managed Medicaid insurance plan and diagnoses of cardiovascular disease (hypertension and congestive heart failure), diabetes, and/or respiratory disease (asthma and chronic obstructive pulmonary disorder). EM pharmacists will enroll the patients, create a discharge summary, and fax the summary to the community pharmacist □□

The community pharmacist will schedule and conduct a CMR in accordance with the Medication Therapy Management Core Elements within 14 days of OU discharge. After the CMR, the patient will be asked to complete the survey instrument. A retrospective post-then-pre survey methodology will be used to measure the impact of a CMR delivered by a community pharmacist after a patient experiences this transition of care. This methodology will be utilized to decrease response shift bias, which can be an issue when assessing self-reported change. Additionally, the community pharmacist will collect data to describe DRPs from the CMR. Descriptive statistics will be used to summarize the data.□□Results□This study is in progress. □□Conclusions□This study is in progress.

Learning Objectives:

Discuss patient information hand-off by emergency medicine pharmacists to community pharmacists

Describe commonly identified drug-related problems post- observation unit discharge

Self Assessment Questions:

Which of the following are common drug-related problems identified post- observation unit discharge?

A Need for additional medication therapy

B: Ineffective medication

C: Dosage too low

D: All of the above

Which of the following is a method to enhance patient understanding of medications post- observation unit discharge?

A Ignore them; patients do not need to understand their medications

B Pharmacist collaboration and hand-off of patient information

C Perform a comprehensive medication review

D Both B and C

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-503 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF A PHARMACIST DRIVEN TACROLIMUS DOSING PROTOCOL IN THE OUTPATIENT BLOOD AND MARROW TRANSPLANT (BMT) POPULATION

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Purpose: Allogeneic blood and marrow transplant is an increasingly performed treatment modality used for hematological disorders. Patients undergoing transplants are at high risk for the development of toxicities, including graft-versus-host disease (GVHD), a complex condition resulting from activation of donor T cells against host allo-antigens. The current standard of care for acute GVHD prophylaxis employs methotrexate in combination with tacrolimus. Tacrolimus is a high risk medication prone to drug interactions requiring frequent clinical monitoring and dose adjustments. □□In the BMT clinic within Froedtert Hospitals Clinical Cancer Center, current practice is for physicians and advance practice providers to monitor and manage patients tacrolimus therapy. Pharmacists are well positioned within the clinic's multidisciplinary team to assist in the management of patients' medication therapy; however, there currently is no process formally involving pharmacists in the dosing of tacrolimus. The objective of the study is to implement and evaluate a collaborative practice agreement for pharmacist managed tacrolimus dosing in the outpatient BMT clinic. □□

Methods: This is a single center comparative analysis of patients who have undergone allogeneic transplant before and after implementation o the pharmacist driven dosing protocol. Patients undergoing allogeneic transplant between December 2013 and March 2014 whose tacrolimus dosing is managed according to the pharmacist driven protocol will be compared to historical controls who underwent allogeneic transplant between December 2012 and March 2013. The primary outcome measure is the percentage of allogeneic transplant patients whose tacrolimus level is within the goal range at the first clinic visit on or after post-transplant day 50. Secondary outcomes include the time within goal tacrolimus range, patient adherence to tacrolimus therapy, frequency of tacrolimus lab draws, prescription capture, and provider satisfaction.□□Results and Conclusions: Data collection and outcomes evaluation are currently being completed and will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify risk factors for the development of graft-versus-host disease after allogeneic blood and marrow transplant.

Discuss common toxicities associated with the use of tacrolimus for the prevention of acute graft-versus-host disease in the allogeneic blood and marrow transplant population.

Self Assessment Questions:

Which of the following is NOT a risk factor for the development of graft-versus-host disease after allogeneic blood and marrow transplant?

A Increased age of stem cell donor

B: A higher degree of donor-recipient HLA mismatch

C: Supra-therapeutic tacrolimus levels

D: Gender mismatch between donor and recipient

Which of the following is NOT a toxicity commonly associated with the use of tacrolimus for the prevention of acute graft-versus-host disease in the allogeneic blood and marrow transplant population?

A Headache

B Hypomagnesaemia

C Hypotension

D Impaired renal function

Q1 Answer: C Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-504 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

INCIDENCE OF CYTOMEGALOVIRUS VIREMIA AND PHARMACOECONOMIC ANALYSIS OF DELAYED-INITIATION, LOW-DOSE VALGANCICLOVIR IN MODERATE RISK KIDNEY TRANSPLANT PATIENTS

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Purpose: Although studies have evaluated valganciclovir (VAL) for cytomegalovirus (CMV) prophylaxis, none have addressed delayed-initiation (DI) prophylaxis and the impact it may have on CMV incidence and on healthcare costs. At our institution, a cost-savings initiative was implemented that delays initiation of VAL in moderate serological risk kidney transplant recipients to POD7 or discharge, whichever occurs first. Our previous regimen consisted of VAL pre-op 900mg followed by 450mg daily for 6 months. This study aims to determine if DI CMV prophylaxis could be an appropriate cost-saving strategy without compromising patient outcomes. Methods: This study is a retrospective chart review evaluating kidney transplant recipients with moderate serological risk for CMV, defined as donor-negative/recipient-positive or donor-positive/recipient-positive, who underwent transplantation after implementing the DI protocol. The historical control consists of patients who underwent kidney transplantation with moderate serological risk for CMV prior to instituting the DI protocol. The incidence of CMV viremia from initiation of prophylaxis to 1 year follow-up is being compared in both groups. Cost savings are being quantified. Results: To date, 70 DI patients have at least 3 months of follow-up, with an average of 7.8 months. 70 historical controls have been analyzed. Four patients in the control group developed detectable viremia in an average of 4.8 months while 1 patient in the study group has developed viremia at 3 months. The DI VAL has resulted in patients receiving an average of 5 fewer VAL tablets compared to the control. This equates to a cost-savings of $354.50 per patient. We estimate that our center transplants 120 moderate risk recipients per year equating to a yearly cost savings of $42,539. Conclusion: These early results demonstrate that the DI CMV prophylaxis does not result in a higher incidence or level of CMV viremia early after transplant, and with considerable health care savings.

Learning Objectives:

Describe the two most common strategies being utilized for the prevention of cytomegalovirus in kidney transplant recipients and why prophylaxis is necessary

Discuss the potential risks and benefits of employing a delayed-initiation prophylaxis protocol for cytomegalovirus in kidney transplant recipients

Self Assessment Questions:

Name the type(s) of prophylaxis used to prevent cytomegalovirus (CMV) in kidney transplant recipients and why prophylaxis is used.

A Universal prophylaxis and preemptive therapy are often used to pr
B: Universal prophylaxis and preemptive therapy are often used to pr
C: Preemptive therapy has become the only strategy used to prevent
D: Universal prophylaxis is the only strategy used to prevent CMV in l

Which of the following statements is correct?

A Employing a delayed-initiation prophylaxis protocol for cytomegalo
B Employing a delayed-initiation prophylaxis protocol for cytomegalo
C Employing a delayed-initiation prophylaxis protocol for cytomegalo
D

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-505 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF A CLINICAL DECISION SUPPORT TOOL TO FACILITATE FORMULARY MEDICATION UTILIZATION

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Purpose:□□The use of computerized systems to aide in prescribing provides an option for reducing drug costs through the use of formulary decision support, particularly at the point of prescriber order entry. The implementation of formulary decision support tools offer the advantage of directing prescribers to choose a formulary equivalent medication when a non-formulary medication is ordered. The use of this type of too has the potential benefits of formulary adherence and cost containment. The purpose of this project is to implement a dynamic clinical decision support tool within the electronic health record to facilitate formulary compliance at the point of order entry, to assess the impact this tool has on formulary medication utilization, and to assess post-implementation prescriber satisfaction.□□Methods:□□Non-formulary medications were reviewed to determine appropriate formulary alternatives using existing databases. A clinical decision support tool was built into the test environment of the electronic health record. Testing will follow to validate functionality and identify any associated issues. After verification and validation, the tool will be transitioned into the electronic health record. The primary indicator of the project is to increase inpatient formulary medication utilization when prior to admission medications are ordered. This will be assessed by a post-implementation evaluation of the acceptance of the dynamic alert suggestions. A secondary indicator is the assessment of prescriber satisfaction with the use of the dynamic clinical decision support through a post-implementation survey. □□Results/Conclusion:□□Testing of the clinical decision support tool is currently in progress with plans for a post implementation survey once fully implemented. Final results and conclusions will be presented at the Great Lakes Residency Conference in April 2014.

Learning Objectives:

Recognize benefits and limitations associated with the use of dynamic clinical decision support within an electronic health record

Outline the process for implementing a clinical decision support tool

Self Assessment Questions:

Which of the following is a potential disadvantage of clinical decision support?

A Improved patient safety
B: Alert desensitization
C: Enhanced quality of care
D: Medication cost reduction

Which of the following criteria is necessary to support dynamic formulary clinical decision support alert functionality when suggesting formulary alternatives?

A Pharmaceutical subclass
B Route of administration
C Ordering provider type
D Name of the medication

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-787 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT OF PERIOPERATIVE PAIN MANAGEMENT GUIDELINES

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Purpose: Clinical practice guidelines for acute pain management describe the important role of the pharmacist. Despite this recognition, there has not been an effective utilization of these resources or a defined role for pharmacists in pain management at Froedtert Hospital. Patients often receive an insufficient perioperative analgesia regimen and their pain management remains suboptimal throughout the stay. The inpatient staffing model at Froedtert Hospital allows pharmacists to be present on each unit and creates an ideal opportunity for the pharmacist to serve as a unique healthcare team member to closely monitor for optimal pain management. The purpose of this project is to improve the patients pain scores and the patients perception of pain management at Froedtert Hospital by implementing guidelines and utilizing pharmacist-driven pain management. Methods: This pre-post quality improvement pilot study is being conducted in adults using daily opioids prior to admission who are undergoing elective surgery by orthopedic, urology, neurosurgery, or general surgery services. The primary objective is to increase the number of patients who reach their goal pain score in the immediate post-operative period. Secondary objectives are to develop and implement guidelines for appropriate peri-operative pain management, to define the role that pharmacists have in assessing and intervening on acute pain management, and to improve the results of the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) pain management questions to reach benchmark. The guidelines will be implemented after approval from the Pharmacy, Nutrition, and Therapeutics Committee. The collection of pre implementation data (February - April 2013) is being obtained retrospectively via chart review and the same information will be collected after implementation of the guidelines via retrospective chart review for a similar time period. Results/Conclusions: The results and conclusions of this project will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss the pharmacists role in acute pain management throughout the entire perioperative period.

Describe analgesia strategies that will be outlined in the guidelines and utilized by the healthcare team to improve acute pain management.

Self Assessment Questions:

Which of the following roles does the pharmacist have in acute pain management throughout the perioperative period at Froedtert Hospital?

A Obtain an accurate medication history prior to admission for electi
B: Determine and recommend preliminary perioperative analgesia re
C: Monitor for appropriate pain management in the postoperative peri
D: All of the above.

Which of the following analgesia strategies best describes the strategies outlined in the perioperative analgesia guidelines?

A Each patient to be started on the same initial as needed doses of
B Each patient to be started on an around-the-clock schedule of ace
C Each patient to be started on an initial post-operative opioid dose
D Each patient should stop all prior to admission opioids and utilize

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-506 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEPRESSION SCREENING AND TREATMENT OF VETERANS ENROLLED IN THE OUTPATIENT HEPATITIS C CLINIC

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Purpose: The prevalence of chronic hepatitis C virus (HCV), an infection associated with a high rate of comorbid psychiatric disorders, is higher among veterans than nonveterans. These psychiatric comorbidities are often barriers to antiviral treatment, as therapy with interferon-alpha has a multitude of psychiatric side effects. Untreated psychiatric conditions may negatively impact patient outcomes so adequate psychiatric monitoring is highly important. The purpose of this study is to assess the changes in antidepressant utilization for patients enrolled in the outpatient Hepatitis C Clinic at the William S. Middleton Memorial Veterans Hospital. In addition, this study will aim to identify the current standard of practice for the management of depression by categorizing and quantifying antidepressant initiations and antidepressant changes during interferon therapy. Methods: A retrospective chart review will be completed for up to 100 patients enrolled in the Hepatitis C Clinic between January 1st, 2006 and December 31st, 2012. Computer generated random numbers will be used to select which patients records to review. Data to be abstracted will include age, gender, past Mental Health history, antiviral medication regimen, number of antiviral treatments, dates of interferon therapy, completion of interferon therapy or if therapy terminated early due to medication side effects, HCV RNA at baseline, weeks 4, 8, 12, 24, 36 and 48, sustained virologic response (SVR) rates, active outpatient medications and refill records for antiviral medications, available baseline and changes in PHQ-9 scores, referrals to IC or MH during treatment, and any addition/changes in antidepressant therapy during hepatitis C virus treatment.

Results/Conclusions: This study is currently in progress. Final results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify the prevalence of chronic hepatitis C virus (HCV) infection among the Veteran population versus the nonveteran population

Describe the psychiatric side effects of medications used in the treatment of chronic hepatitis C (HCV) infection

Self Assessment Questions:

What is the prevalence of chronic hepatitis C virus (HCV) infection in the Veteran population compared to the general United States nonveteran population?

A About four times greater in the Veteran population
B: About ten times greater in the Veteran population
C: About four times greater in the United States nonveteran populatio
D: About ten times greater in the United States nonveteran populatio

What medication used in the treatment of chronic hepatitis C virus infection has been associated with significant psychiatric effects including irritability, mood swings, and depression?

A Ribavirin
B Interferon
C Boceprevir
D Telaprevir

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-507 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT AND ASSESSMENT OF A NEW PHARMACY SERVICE FOR MULTIPLE SCLEROSIS

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Purpose: To develop and assess a new pharmacy service for the procurement, dispensing, processing, and monitoring of specialty medications for multiple sclerosis (MS) patients in an outpatient pharmacy.□□Methods: A need for a specialized pharmacy service has been identified for MS patients within a health system in the northern Chicago suburbs. The service needs will be evaluated through a voluntary survey of clinicians in the neurology department. The survey will seek to identify current areas of practice upon which pharmacy involvement can have an impact including, but not limited to: medication counseling, insurance claim submissions, and adherence monitoring. In addition, availability of the specialty medications for dispensing in the outpatient pharmacy will be determined. Processes for determining availability include communication with the pharmacy wholesaler and drug manufacturers. A process for including new prescriptions into the current workflow of the pharmacy will also be established including anticipation of problems and education of the pharmacy staff to the new specialty medications. Futhermore, a standardized process for handling third party payment issues will be established. This process will require the pharmacist to act as a liaison between the payer, the prescriber, and the patient to handle any prior authorizations and claims rejections that may result. Lastly, a method for ensuring consistent and effective patient counseling and adherence monitoring will be developed. This wi include patient counseling by a pharmacist who is familiar with the new patients and/or specialty medication at initiation, and providing follow-up phone calls to assess for adverse effects and adherence after initiation. Following an implementation period, a post survey will be conducted with the physician office staff and pharmacy staff to determine the benefits of this service and areas for improvement.□□Preliminary Results - None to be reported yet.□□Conclusions - None to be reported yet.

Learning Objectives:

Discuss the specialty medications for multiple sclerosis (MS) that this service will focus on and barriers to procurement

Outline the characteristics of this service and the potential advantages and disadvantages to various stakeholders

Self Assessment Questions:

Which of following is an advantage to establishing a specialty pharmacy service within a health-system?

A Increases continuity of patient care

B: Helps to cut operating costs

C: Decreases pharmacist workload

D: Increases patient dissatisfaction

Which of the following is a major barrier to procurement of specialty medications?

A Most health-systems do not want to be responsible for high risk m

B Only physician offices can distribute specialty medications

C The drug manufacturer has closed distribution channels

D Most physicians do not want health systems to obtain specialty me

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-508 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

RETROSPECTIVE REVIEW OF UNRESECTABLE, LOCALLY-ADVANCED OR METASTATIC PANCREATIC CANCER PATIENTS TREATED WITH GEMCITABINE IN COMBINATION WITH CISPLATIN

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Purpose: Pancreatic cancer is the 4th leading cause of cancer death in the United States with a dismal 5-year survival of 6%. Until recently, the standard of care for patients with metastatic or unresectable, locally-advanced disease was single agent gemcitabine; however, a meta-analysis published in 2008 identified a subset of patients with good performance status that may benefit from gemcitabine in combination with either a platinum analog or a fluoropyrimidine. Two recent phase 3 trials have found that the 3-drug combination of FOLFIRINOX (fluorouracil, irinotecan, oxaliplatin) and nab-paclitaxel in combination with gemcitabine both offer a survival advantage when either is compared to single agent gemcitabine. The purpose of this study is to assess the progression-free survival (PFS) in metastatic and locally-advanced pancreatic cancer patients treated with a combination of gemcitabine and cisplatin in the first-line setting.□□Methods: This is a retrospective review of patients with metastatic or locally-advanced pancreatic cancer treated with a combination of gemcitabine and cisplatin in the first-line setting between January 1, 2011 and December 31, 2012. For PFS, 58 subjects have 80% power to detect an increase from 3.7 months (based on historical data with single agent gemcitabine to 5.5 months (anticipated PFS with the combination of gemcitabine and cisplatin). Data collection includes gender, age, race, baseline performance status, pancreatic tumor location (head, body, tail), baseline site of metastases, prior surgery, biliary stent status, CA 19-9 levels, duration of treatment, best response, time to progression, second line therapy, time to death, and toxicities. Survival endpoints will be analyzed using Kaplan-Meier methods. Cox proportional hazard regression will be used to determine if any patient demographics or clinical characteristics are associated with PFS. □□Results: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Report the PFS and overall survival of patients with metastatic or locally-advanced pancreatic cancer treated with a combination of gemcitabine and cisplatin in the first-line setting.

Describe the safety and toxicity profile of patients with metastatic or locally-advanced pancreatic cancer treated with a combination of gemcitabine and cisplatin in the first-line setting.

Self Assessment Questions:

Which of the following regimens has shown survival advantage in the treatment of metastatic or locally-advanced pancreatic cancer?

A Gemcitabine plus cisplatin

B: Gemcitabine plus oxaliplatin

C: Gemcitabine plus nab-paclitaxel

D: Gemcitabine plus fluorouracil

What is the most common grade 3 or 4 toxicity with the combination of gemcitabine and cisplatin as seen in this study?

A Nausea/vomiting

B Hematologic

C LFT elevations

D Nephrotoxicity

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-509 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

RETROSPECTIVE COMPARATIVE COHORT OF CONCOMITANT PIPERACILLIN-TAZOBACTAM AND VANCOMYCIN USE AND ACUTE KIDNEY INJURY

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Purpose: Historically, both penicillins and vancomycin have been known to contribute to the development of acute kidney injury (AKI) when used individually. Due to a perceived increase in incidence of AKI in patients treated concomitantly with piperacillin-tazobactam and vancomycin, infectious disease physicians within our health network have begun to avoid using this combination. A literature review reveals no published studies examining this relationship, thus the purpose of this study is to compare the incidence of AKI by categorization, utilizing RIFLE criteria, in patients treated concomitantly with piperacillin-tazobactam and vancomycin versus those with no changes in renal function from baseline. Methods: This study is a retrospective comparative cohort. Patients aged 18-89 years admitted to the four primary hospitals within our health network that received therapy with both piperacillin-tazobactam and vancomycin for ≥48 hours between June 2011 and June 2013 were evaluated for inclusion. The case group consists of patients with AKI, defined as an increase in serum creatinine (SCr) ≥2mg/dL within 48 hours of treatment. Patients with no evidence of AKI were matched according to admission time frame 7 days. Clinical characteristics will be compared utilizing independent samples t-test, chi squared analysis or comparable tests for non-parametric data utilizing a significance value of <0.05. Results: Initial sample recruitment yielded 802 patients of which 108 were included; 18 were AKI patients, which were matched with non-AKI patients in a 1:5 ratio. Mean age was 61 years (range: 21-87 years) with 66 males (61%) and mean length of stay of 8.15 days (12.06 days in AKI patients and 7.29 days in non-AKI patients). Conclusion: The overall incidence of AKI in patients receiving piperacillin-tazobactam and vancomycin within our health network was lower than initially projected with only 2.24% of the study population meeting our AKI definition. Influence of concomitant nephrotoxins, antibiotic doses and comorbidities are currently being analyzed.

Learning Objectives:

Recognize medications commonly implicated in contributing to acute kidney injury

Identify factors potentially contributing to development of AKI including concomitant nephrotoxins, antibiotic doses, vancomycin trough levels and comorbidities

Self Assessment Questions:

Which of the following commonly used medications have been shown to contribute to the development of acute kidney injury?

A Simvastatin
B: Ondansetron
C: Metoprolol succinate
D: Lisinopril

Which of the following vancomycin-associated characteristics have an association with an increased incidence of AKI in patients treated with vancomycin?

A Vancomycin doses >4 grams per day
B Vancomycin trough levels <10mCg/mL
C ICU admission while being treated with vancomycin
D Duration of vancomycin therapy < 5 days

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-788 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF A RELATIVE VALUE UNIT PRODUCTIVITY ANALYSIS SYSTEM FOR PHARMACY DEPARTMENTS IN A MULTI-HOSPITAL SYSTEM

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Background: For hospital systems the traditional metrics to measure workload have been the facility census or other statistics such as CMAED. Pharmacy department workload is often misrepresented using these standards. The intensity of work often depends not only on the amount of medications dispensed, but also the type of medications used and the interventions required to ensure patient safety. Purpose: The primary objective is to revise an existing RVU system to take into account clinical activity and the intensity of tasks performed. The secondary objectives include ensuring the system is sensitive to changes in clinical activity and demonstrating the revised system is a reliable tool for budgeting pharmacy staff. Methods: This multi-centered, retrospective, process improvement project uses data from four hospital sites from September 2013 to November 2013. This will be accomplished by editing a baseline RVU system from other Trinity sites and ensuring it best reflects the amount of time and effort put in by pharmacy staff to complete required tasks. Adjusted RVUs were derived using the current baselines as standard and by timing work activities at a single facility to validate the revised RVU values. The adjusted RVUs were applied to each medication and intervention at each facility and compared to previous RVUs values. Primary outcome was the difference in RVUs/hour worked from the original RVU system to the revised RVU system in each individual hospital for the set test period. Secondary outcomes include the difference in RVU values during periods of various clinical activity, the difference between budgeted staff hours versus real hours worked for each RVU system at the test site where the existing system is currently in use. Results: Results and conclusions to be presented at the Great Lakes Residency Conference.

Learning Objectives:

Recognize that pharmacy workload includes both medications dispensed and clinical interventions

Select a reliable metric that will respond to trends in workload and allow for reporting the impact that new initiatives have on the pharmacy departments.

Self Assessment Questions:

RVUs different from census and CMAED because:

A RVUs are tied to dollar amounts
B: Census always takes into account the acuity of the patients admitt
C: CMAED is adjusted based on which medications are dispensed m
D: Census and CMAED have a difficult time accounting for pharmacy

An RVU system is useful for a pharmacy department due to the fact that

A Not everything pharmacy does is valuable
B Pharmacy does a multitude of different activities taking a variety of
C Pharmacy administrations like using census metrics
D All of the activities in the pharmacy are difficult to complete correct

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-789 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

DIFFERENCE IN MORTALITY BETWEEN PATIENTS INFECTED WITH METHICILLIN SENSITIVE STAPHYLOCOCCUS AUREUS (MSSA) BACTEREMIA AS COMPARED TO METHICILLIN RESISTANT STAPHYLOCOCCUS AUREUS (MRSA) BACTEREMIA

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Purpose: Staphylococcus aureus bacteremia (SAB) is associated with a mortality of approximately 30%. Complications from SAB include possible sepsis, endocarditis, vasculitis, and seeding at sites such as bones, joints, and kidneys. Current literature demonstrates that patients with methicillin sensitive Staphylococcus aureus (MSSA) bacteremia treated with vancomycin have higher rates of mortality than patients with MSSA bacteremia who are treated with beta-lactam antibiotics. The objective of this study is to determine if there is a difference in mortality in patients with methicillin resistant Staphylococcus aureus (MRSA) bacteremia as compared to MSSA bacteremia treated with vancomycin for the entire course of bacteremia. Methods: Institutional Review Board approval will be submitted for this study. A retrospective chart review of inpatients at a community health system between January 1, 2006 and October 1, 2013 will be performed. Data will be collected from an electronic health record system. Patients with the following characteristics will be included in the study: positive blood culture for MSSA or MRSA, received vancomycin for treatment of SAB, over the age of 18, and subsequent blood culture after initial positive culture for SAB. Patients who received antibiotics other than vancomycin as primary therapy for treatment of SAB will be excluded from the study. The primary outcome for this study will be 30 day all-cause mortality for patients with a positive blood culture for MSSA or MRSA. Secondary outcomes will include on-treatment mortality for patients with MRSA or MSSA bacteremia, 30 day all-cause mortality stratified by the Charlson Comorbidity Index, and on-treatment mortality stratified by the Charlson Comorbidity Index. Seventy-five patients in each group will be required to show a difference in 30 day all-cause mortality between patients with MRSA bacteremia as compared to MSSA bacteremia; alpha=0.05, power=80%. Results/Conclusion: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe potential complications associated with Staphylococcus aureus bacteremia (SAB).

Recall the estimated percent mortality in patients with Staphylococcus aureus bacteremia (SAB).

Self Assessment Questions:

Which of the following choices correctly identifies a potential complication from Staphylococcus aureus bacteremia (SAB)?

A Diabetes mellitus
B: Endocarditis
C: Pleural effusion
D: Deep vein thrombosis

What is the approximate percent mortality associated with Staphylococcus aureus bacteremia (SAB)?

A 0.3%
B 10%
C 30%
D 50%

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-510 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF THE FDA WARNING FOR AZITHROMYCIN ON UTILIZATION AT AN ADULT ACADEMIC MEDICAL CENTER

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Purpose: In March 2013, the FDA released a warning to the public that azithromycin can prolong the QT interval, thereby altering the electrical activity in the heart which may lead to life-threatening arrhythmias including torsades de pointes. The clinical impact of FDA warnings has yet to be elucidated in the literature. The purpose of this study is to determine how the azithromycin FDA warning has impacted its utilization by providers at a large academic medical center. Methods: This single-centered, retrospective, observational study was conducted at The University of Chicago Medicine (UCM) to evaluate azithromycin utilization between July 1, 2012 through February 28, 2013, before the FDA warning, and between April 1, 2013 through November 30, 2013, after the FDA warning. The primary outcome is the difference in azithromycin utilization in number of days of therapy per 1000 patient days. Secondary outcomes include the percentage of days EKGs were ordered in compliance with UCM guidelines, percentage of days potassium and magnesium were repleted in compliance with UCM guidelines, and utilization of alternative antibiotics selected with atypical coverage including doxycycline, levofloxacin, and moxifloxacin. A total of 334 patients were included to detect a 20 percent reduction between the two groups providing a power of 90 percent and two-sided type I error rate of 0.05. Adult patients who were treated with at least 48 hours of azithromycin were included in this analysis. Patients were excluded if they received non-consecutive doses. The following additional data was collected: age, gender, ethnicity, azithromycin indication, dose and duration of therapy, length of stay, risk factors for QTc prolongation, and concomitant medications known to cause QTc prolongation. Results/Conclusions: Data collection and evaluation is currently in process. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recall risk factors for fatal arrhythmias associated with azithromycin.

Review the rates of cardiovascular death with azithromycin compared to other or no antibiotics.

Self Assessment Questions:

Which of the following is considered a risk factor for causing fatal arrhythmias in patients being treated with azithromycin?

A Uncorrected hyponatremia
B: History of tachyarrhythmia
C: Uncompensated heart failure
D: Diabetes mellitus

Historically, a non-statistically significant difference in the rate of cardiovascular death was found between azithromycin and _____.

A No antibiotic
B Amoxicillin
C Ciprofloxacin
D Levofloxacin

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-790 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

RETROSPECTIVE ANALYSIS OF A RESPIRATORY VIRUS PANEL VERSUS INFLUENZA POLYMERASE CHAIN REACTION ASSAY AND ITS IMPACT ON ANTIMICROBIAL STEWARDSHIP

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Purpose: Antimicrobial stewardship promotes the treatment of infections while minimizing toxicity and the risk of resistance. Due to the fact that viral respiratory infections are non-specific in presentation, it can be difficult to assess not only the need for antimicrobial therapy, but also the distinct type of antimicrobial therapy that is warranted. The purpose of this study is to determine if length of stay, appropriate antimicrobial therapy and isolation status are impacted by the additional diagnostic information provided by the respiratory viral panel (RVP) versus a standard influenza polymerase chain reaction (PCR). Additionally, this study will aim to compare potential cost savings from a decrease in antimicrobial use in RVP positive patients to the actual cost of the RVP test itself. Methods: A retrospective electronic chart review of all adult inpatients tested with the RVP or influenza PCR at a community health system will be conducted utilizing data collected from December 1, 2011 to August 17, 2013. This study was approved by the Institutiona Review Board. Statistics will be descriptive in nature and will be completed by an internal statistician. Primary outcome measures include the number of inappropriate anti-infective agents used for respiratory infections discontinued after the RVP or PCR test results become available, number of isolation days, length of hospital stay, turn-around time of the RVP and cost of antibiotics that were inappropriately continued after the RVP or PCR test results become available. Subjects will be excluded if they are less than 18 years of age and if the RVP or PCR tests were performed as an outpatient. Results/Conclusions: Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Describe potential issues with providing appropriate antimicrobial therapy for viral respiratory infections.

Identify the advantages of a respiratory viral panel for the identification o respiratory viral panel.

Self Assessment Questions:

Which of the following is a potential issue with providing appropriate antimicrobial therapy for viral respiratory infections?

A Non-specific presentation of viral respiratory infections versus bact
B: The diagnostic information provided by a respiratory viral panel
C: The diagnostic information provided by a polymerase chain reactic
D: None of these are potential issues with providing appropriate antim

Which of the following are advantages of the respiratory viral panel?

A One sample is required of the patient
B The respiratory viral panel can test for multiple viruses at one time
C Potential to improve antimicrobial stewardship
D All of the above

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-511 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSESSMENT OF DRUG-DRUG INTERACTIONS AND RISK FACTORS ON THE QTC INTERVAL IN PATIENTS ON DRONEDARONE

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Statement of Purpose The purpose of this research project is to determine the risk factors for QTc interval prolongation and the drug-drug interactions associated with a QTc interval ≥500 milliseconds (ms) in patients on dronedarone. Prolongation of the QTc interval can lead to a potentially fatal arrhythmia, torsade de pointes. Statement of Methods This retrospective study will include approximately 1100 patients at least 18 years of age on dronedarone for at least 3 consecutive months. Patients who do not have an electrocardiogram (ECG) measurement prior to initiation of dronedarone and do not have a least one follow-up ECG measurement during dronedarone therapy will be excluded. Risk factors for QTc prolongation and drug-drug interactions with dronedarone will be assessed in patients with a QTc ≥500 ms. Risk factors for QTc prolongation include abnormal electrolytes (potassium, magnesium, calcium), organ dysfunction (kidney, liver), advanced age, female gender, bradycardia, history of QT prolongation, and structural heart disease. Drug-drug interactions with dronedarone will be assessed as concomitant use of CYP3A4 inhibitors (e.g., ketoconazole) and drugs with a known or possible risk of torsade de pointes (e.g., citalopram). The statistical analysis of this research project will consist of two stages. The first stage will determine the number of patients with a QTc interval ≥500 ms per QTc measurement during dronedarone therapy. If at least 30 patients have a QTc measurement ≥500 ms, a comparison of the impact risk factors and drug-drug interactions have on the outcome of the QTc interval will be assessed using Fishers Exact test. If there are less than 30 patients with a QTc ≥500 ms while on dronedarone therapy, this study will be observational and data will be gathered regarding patient demographics, risk factors for QTc prolongation, and drug-drug interactions.

Summary of Results to Support the Conclusion Results and Conclusions will be presented at the Great Lakes Pharmacy Conference

Learning Objectives:

Describe the impact of risk factors for QTc prolongation on the QTc interval in patients on dronedarone.

Discuss drug-drug interactions with dronedarone that increase the risk o torsade de pointes.

Self Assessment Questions:

Which of the following is a risk factor for QTc prolongation:

A Male gender
B: Abnormal electrolytes
C: Tachycardia
D: Middle-age

Dronedarone is contraindicated with which of the following drugs:

A Ketoconazole
B Linaclotide
C Pravastatin
D Lisinopril

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-791 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF HEPATITIS B VACCINATION RATES IN THE DIABETIC POPULATION OF A COMMUNITY FAMILY HEALTH CLINI

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Background: Since 1996, 29 outbreaks of hepatitis B virus (HBV) infection in long-term-care facilities in the U.S. have been reported to the CDC. Of these, 25 outbreaks involved adults with diabetes who had received assisted blood glucose monitoring. Through an evaluation prompted by these reports, the Hepatitis Vaccines Work Group of the Advisory Committee on Immunization Practices (ACIP) found that diabetic persons between the ages of 23-59 without hepatitis B-related risk behaviors had 2.1 times the odds of developing acute hepatitis B as those without diabetes. Based on these findings, the ACIP released a recommendation on October 25, 2011 that "hepatitis B vaccination should be administered to unvaccinated adults with diabetes mellitus (type 1 and type 2) who are aged 19 through 59 years." □□Purpose: The primary objective of this study is to evaluate the impact of the 2011 ACIP recommendation on hepatitis B vaccination rates in patients with type 1 or type 2 diabetes mellitus between the ages of 19-59.□□Methods: This is a retrospective cohort study conducted at Center for Family Health in Jackson, MI comparing the number of new hepatitis B vaccinations among diabetic patients who had an encounter in the year prior to the ACIP recommendation versus those who had an encounter in the year following the recommendation. Patients were included if they had a diagnosis of type 1 or type 2 diabetes prior to their encounter and if they were aged 19-59. Patients were excluded if they were previously vaccinated for hepatitis B. Secondary outcomes include the percentage of current diabetic patients between the ages of 19-59 that ever received hepatitis B vaccination, pneumococcal vaccination, or influenza vaccination in the past year.□□Results/Conclusions: Data collection and analysis are ongoing. Results and conclusions will be presented at the 2014 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss the rationale behind the 2011 ACIP recommendation to administer hepatitis B vaccination to adults aged 19-50 with diabetes mellitus.

State the recommendations for hepatitis B vaccination in patients with diabetes mellitus based on age.

Self Assessment Questions:

Which of the following practices could increase the risk of contracting HBV among patients with diabetes?

A Disposing of lancets in a sharps container

B: Multipatient use of finger stick devices designed for single-patient

C: Inadequate disinfection and cleaning of blood glucose monitors be

D: Both B and C

What action should be taken for a 63-year-old patient with diabetes who has never been vaccinated for hepatitis B?

A It is recommended that hepatitis B vaccination be administered as

B Hepatitis B vaccination may be administered at the discretion of th

C It is not recommended that hepatitis B vaccination be administered

D It is recommended that hepatitis B vaccination be administered to

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-512 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTING A PHARMACY SERVICE FOR POST-DISCHARGE HEART FAILURE PATIENTS

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Purpose:□Heart failure is estimated to affect 5.1 million adults in the United States, and its prevalence is projected to increase 25% by 2030. The cost of treating heart failure in 2013 was estimated to be $32 billion. Starting October 1, 2012, Centers for Medicare and Medicaid Services (CMS) reduced reimbursement to hospitals with heart failure readmission rates in excess of their calculated, target readmission rate. Aurora St. Lukes Medical Center (ASLMC) is the largest hospital within Aurora Health Care, a not-for-profit, integrated health care system. The outpatient pharmacy located within ASLMC dispenses prescriptions and provides medication therapy management (MTM) services to patients and caregivers. The objective of this study is to develop and implement processes for pharmacist follow-up with heart failure patients post-discharge in order to mitigate potential risk factors for readmission.□□Methods:□The outpatient pharmacist identified heart failure patients requiring follow-up with a pharmacist and set inclusion criteria to determine when an outpatient pharmacist would follow-up with a discharged heart failure patient. The outpatient pharmacist determined types of interventions to be performed by pharmacists during follow-up and identified methods for pharmacist follow-up. A pilot in the ASLMC outpatient pharmacy was implemented in November 2013 and continued through February 2014. During the pilot, the outpatient pharmacist contacted eligible heart failure patients at home within one to two weeks of discharge from ASLMC and either provided a telephone medication review or scheduled an in-person comprehensive medication review to be completed in the outpatient pharmacy. All interventions and education provided by the outpatient pharmacist were documented in the patients' electronic health records.□□Results/Conclusions:□Data collection is in progress. Results and conclusions will be presented at Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify two benefits of reducing heart failure readmission rates in a health system.

List at least three risk factors for readmission that can be reviewed by an outpatient pharmacist during follow-up with discharged heart failure patients.

Self Assessment Questions:

What is one benefit to reducing heart failure readmission rates in a health system?

A Reducing heart failure readmission rates will affect a very small pa

B: Reducing readmission rates will have minimal effect on overall hea

C: Reducing heart failure readmission rates will help improve quality o

D: Reducing readmission rates will help to reduce the already limited

What is one risk factor for readmission that an outpatient pharmacist can make an intervention on with discharged heart failure patients?

A Patient follows a low-salt diet and monitors weight daily

B Patient is able to pay for and pick up all of his medications

C Patient understands indications for all medications

D Patient has poor medication adherence with evening medications

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-792 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

CHICAGO COLLEGE OF PHARMACY MOTIVATIONAL INTERVIEWING STUDY

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Good communication skills are an essential part of a pharmacists role in providing medication counseling and delivering patient-centered care. Pharmacists seek to improve medication adherence, assist with the adoption of lifestyle recommendations and preventative care, and ultimately produce positive health outcomes. In recent years, both the American Association of Colleges of Pharmacy and the Accreditation Council for Pharmacy Education have endorsed principles for behavior modification as an essential component to be incorporated into practice and the curriculum. Motivational Interviewing (MI) is an effective communication method employed by healthcare professionals of diverse backgrounds. It is a powerful, patient-centered approach designed to activate motivation for change. MI uses a guided communication style to uncover a patients resistance to change while encouraging them to consider collaborative solutions. Several MI studies have shown improvements in patient outcomes. The CCPMI study aims to teach MI to pharmacy students utilizing an e-module and live workshop designed by pharmacists. Fourth-year pharmacy students from Chicago College of Pharmacy were recruited from ambulatory care rotations and invited to participate in the study. An e-module and live workshop were developed by the investigators with a combined total of 2 hours of education. Pre and post-questionnaires were distributed at the beginning and end of the ambulatory care rotation in order to assess changes in the participants confidence, attitudes and knowledge towards motivational interviewing during the study period. Data will be analyzed using descriptive analysis and results will be presented upon completion of data collection. The study will take place from 1/2014 until 9/2014. Data collection is still in process.

Learning Objectives:

Define Motivational Interviewing

List the impact of improving pharmacists communication skills on patien outcomes

Self Assessment Questions:

Which of the following statements most accurately defines Motivational Interviewing?

A A directive, prescribing method for communicating the necessity o

B: A communication style that is patient-centered and aims to uncove

C: A communication style used to persuade the patient to change

D: A directive approach in communicating outcomes and adherence i

Improvement in pharmacist-patient communication has shown which of the following results?

A Improved adherence

B Improved health outcomes

C Increased health care costs

D A and B are correct

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-513 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

ADMISSION MEDICATION RECONCILIATION: IMPLEMENTATION AND EVALUATION OF A PRIOR-TO-ADMISSION MEDICATION PREFERENCE LIST

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Purpose: Completing an accurate and updated admission medication history can improve the medication reconciliation process, which is essential to patient safety and was recognized by The Joint Commissior in 2011 as a National Patient Safety Goal. It is estimated that 35-50% of patients have discrepancies in medication histories or admission medication orders. These medication discrepancies can lead to medication errors and result in drug-related morbidity and mortality which can lead to an increase in healthcare cost. A way to improve the admission medication reconciliation process is to create and implement a prior-to-admission (PTA) medication preference list that will help facilitate documentation of accurate medication histories. A PTA medication preference list will contain all strengths of formulary medications and common non-formulary medications. The objective of this project is to determine the improvement in admission medication reconciliation after implementation of a PTA medication preference list.

Methods: A PTA preference list will be created by including all inpatient medication orders verified by a pharmacist within the previous year. Once the preference list is implemented, the percent of medications with all complete fields (drug name, dose, route, frequency) at the time of admission medication reconciliation completion will be measured and compared before and after implementation. This process will be completed by randomized patient chart review. In addition, the percent o non-formulary medications ordered each month will be measured and compared before and after the PTA preference list is implemented. A two-group chi-squared test of equal proportions will be used to test for a statistically significant difference between the two groups. This project is exempt from review from the Institutional Review Board because it meets criteria for quality improvement processes. Results: Data collection and analysis are ongoing. Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Identify the purpose for obtaining accurate and updated medication histories upon patient admission.

Review the process of creating and implementing a PTA medication preference list.

Self Assessment Questions:

Which of the following are barriers to accurate medication reconciliation?

A Time restrictions

B: Limited patient knowledge of their medications

C: Decreased staff resources

D: All of the above

When performing medication reconciliation, a PTA medication preference list can potentially improve the accuracy of all of the following EXCEPT:

A The right patient

B The right drug route

C The right drug strength

D The right drug frequency

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-911 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE INCIDENCE OF HYPOTENSION AFTER EMERGENT RAPID SEQUENCE INTUBATION WITH ETOMIDATE OR PROPOFOL SEDATION

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Purpose: Goals for rapid sequence intubation (RSI) are to produce a state of unconsciousness, optimize intubating conditions, and to prevent hemodynamic instability. Several induction agents may be used yet there are no standard guidelines developed for the use of pharmacological agents in RSI. Popular induction agents that are frequently used in emergent RSI, owing to their pharmacokinetic profiles include etomidate and propofol. While acting similarly, they have different adverse effect profiles. Propofol produces direct arterial vasodilation that has been associated with a greater reduction in mean arterial blood pressure (MAP) as compared to etomidate, which has minimal hemodynamic effects. Drug shortages have dictated selection o agents for RSIs with little data comparing the two when used for emergent RSI. The objective of this study is to determine the mean change in hemodynamics in patients receiving propofol or etomidate for induction in emergent RSI. □□Methods: A retrospective cohort study will be conducted for patients undergoing emergent RSI who received etomidate or propofol for induction. Patients will be identified using ICD-9 codes for emergent airway or by querying the electronic airway paging system. Admitted adult patients undergoing RSI who receive etomidate or propofol between May 2013 and August 2013 will be assessed for inclusion. Mean change in systolic blood pressure will be assessed as the primary outcome variable between the two groups. Additionally, use of vasopressive agents post RSI, outcome of successful intubation, change in MAP, and in-hospital mortality will be analyzed secondarily between the two groups. Standard statistical methods including chi square tests and t-tests, as appropriate, will be utilized to assess for differences between the groups. □□Results: Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify the roles of propofol and etomidate in rapid sequence intubation

Discuss the pharmacokinetic profiles of propofol and etomidate.

Self Assessment Questions:

The onset of action with propofol as compared to etomidate is:

A Faster
B: Slower
C: The same
D: Are dose dependent and cannot be compared.

2.Propofol and etomidate are examples of _____ in rapid sequence intubation.

A Induction agents
B Paralytic agents
C Pretreatment agents
D Post-intubation agents

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-912 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

AN EVALUATION OF QTC PROLONGING EFFECT OF HALOPERIDOL ALONE COMPARED TO HALOPERIDOL IN COMBINATION WITH OTHER QTC PROLONGING AGENTS

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Background: Corrected QT (QTc) interval prolongation to greater than 500 milliseconds can predispose patients to development of Torsades de Pointes (TdP), a malignant cardiac arrhythmia. At our institution, haloperidol is a common medication used to treat agitation due to delirium in the Intensive Care Units (ICUs). Haloperidol has been shown to cause QTc interval prolongation when administered alone and in combination with other at risk medications. There is limited data characterizing QTc prolongation risk due to a single medication versus drug combinations.□□Purpose: The purpose of this study is to determine whether an additional increase in QTc prolongation exists when combining haloperidol with other QTc-prolonging medications.□□Methods: Following Institutional Review Board approval, a retrospective chart review was performed on patients admitted to an ICU between September 30, 2009 and September 30, 2013. Eligibility criteria included patients over 18 years old, intravenous (IV) injection of haloperidol during admission, and two or more documented 12-lead EKGs. Eligible patients were sorted into 1 of 5 study groups. These groups included: receipt of haloperidol IV or haloperidol IV plus amiodarone, ondansetron, moxifloxacin, or azithromycin. For patients who received haloperidol IV in combination with another QTc-prolonging agent, the second agent was given within 24 hours prior to and 48 hours after haloperidol administration. Data collected included age, gender, dosage, time, and route of administration of the QTc-interval prolonging agents, recorded QTc intervals, potassium and magnesium levels and past medical history of cardiovascular conditions including: coronary artery disease, cardiomyopathy, heart failure, cardiac dysrhythmias, and valvular heart disease. Study endpoints included percentage change in QTc intervals, development of TdP within the same hospital admission, and in-hospital mortality.□□Results/Conclusions: Results and conclusions to be presented at the 2014 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe risk factors for QTc interval prolongation

Identify the most common medications associated with QTc prolongatio

Self Assessment Questions:

Which of the following is/are (a) risk factor(s) for QTc prolongation?

A Age < 50 years old
B: Medication adverse effect
C: Electrolyte disturbances
D: B and C

Which of the following medication(s) is/are associated with known risk for QTc prolongation?

A Amiodarone
B Haloperidol
C Acetaminophen
D A and B

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-514 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF THE SAFETY AND EFFICACY OF A UNIVERSAL HEPARIN INFUSION PROTOCOL IN MORBIDLY OBESE VERSUS NOT MORBIDLY OBESE PATIENTS

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Purpose□□An increasing morbidly obese patient population bears an impact on drugs with weight-based dosages and calls into question the safety and efficacy of dosing based strictly on weight. Unfractioned heparin is a weight-based parenteral anticoagulant that acts by increasing the activity of antithrombin III (ATIII) which ultimately inactivates thrombin. The 468-bed tertiary care facility being studied utilizes a single, universal heparin infusion protocol with bolus dosage maximums for each indication based on CHEST guidelines. This study sought to determine the need for development of a modified dosing and titration protocol for morbidly obese patients in order to achieve appropriate anticoagulation at the same rate and frequency as the not morbidly obese population.□□Methods□□This study is a retrospective, single-institution, cohort analysis comparing morbidly obese patients with not morbidly obese patients in the use of a universal heparin infusion dosing protocol. Patients were eligible for review if they had a heparin infusion for any indication between August 15, 2010 and June 30, 2013 and did not meet exclusion criteria. Eligible patients were then classified as morbidly obese or not morbidly obese according to body mass index (BMI) and a random sample was selected for chart review. Data collection will be used to determine patient demographics, coagulation lab values, heparin infusion rates throughout treatment, tota bolus dose of heparin, inpatient mortality, episodes of bleeding or thrombosis, concomitant anticoagulant use and co-morbidities. Primary objectives include achievement of therapeutic activated partial thromboplastin time (aPTT), time to therapeutic aPTT if achieved and infusion dose required to achieve therapeutic aPTT. Secondary outcomes include percentage of time aPTT values are therapeutic, subtherapeutic and supratherapeutic; occurrence of bleeding or thrombotic event; and inpatient mortality.□□Conclusion□□Data collection is currently in progress. Results and conclusions will be presented.

Learning Objectives:

List the pharmacokinetic and pharmacodynamic parameters that create variability in the anticoagulant response to unfractioned heparin.

Review the mechanism of action and recommended dosing of unfractionated heparin and discuss how these might be affected in the morbidly obese population.

Self Assessment Questions:

Which of the following parameters is a potential cause of variability in the anticoagulant response to unfractionated heparin?

A Degrees of endogenous resistance to the pentasaccharide sequer
B: Accelerated hepatic metabolism of antithrombin III after exposure
C: Decreased response to unfractionated heparin in early stages of s
D: Concentrations of neutralizing plasma proteins and cellular binding

Which of the following is the primary mechanism of action for unfractionated heparin?

A Potentiation of antithrombin III (ATIII) activity which inactivates thro
B Competitive inhibition of subunit 1 of the VKOR complex which dep
C Inhibition of platelet activation and formation of fibin clot through di
D Prodrug that is converted to a reversible, direct thrombin inhibitor t

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-515 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF PHARMACIST INTERVENTION ON INAPPROPRIATE USE OF PROTON PUMP INHIBITORS AT A COMMUNITY HOSPITAL

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Purpose:□A previous study at our institution evaluated changes in proton pump inhibitor (PPI) ordering and the utility of a policy allowing pharmacists to discontinue inappropriately prescribed PPIs. This study found an overall 8% reduction in inappropriate PPI use along with a reduction in the difference between intensive care unit (ICU) length of stay and duration of PPI therapy. The current study expands upon the previous research to quantify the appropriateness of PPI use and evaluates the impact of pharmacist intervention on reducing inappropriate use of PPIs. □□Methods:□The institutions investigational review board (IRB) approved this study. A retrospective chart review was conducted on 100 randomly selected adult patients who received at least four days of PPI therapy and who were not receiving acid suppression therapy at home (PPI or H2 receptor antagonist). A second chart review will be conducted on an additional 100 randomly selected patients hospitalized after implementation of changes in PPI ordering via computerized physician order entry, removal of PPIs from admission order sets, and a policy allowing pharmacist discontinuation of PPIs upon transfer of patients from the ICU to the floor. Collected data will include patient demographics, days of PPI therapy, PPI indication, and hospital and ICU length of stay. The primary outcome is overall reduction in inappropriate PPI use. Secondary outcomes include total reduction in PPI use and reduction in days of PPI therapy after transfer from the ICU to the floor. □□Summary of (preliminary) results to suppor conclusions: □Analysis of pre-intervention data revealed inappropriate PPI use in 47% of patients. Data collection for the post-intervention comparator group is ongoing and final results and conclusions will be presented at Great Lakes Residency Conference.

Learning Objectives:

Discuss magnitude and consequences of inappropriate use of proton pump inhibitors

Describe impact of pharmacist intervention on improving appropriate use of proton pump inhibitors

Self Assessment Questions:

Published literature indicates what percentage of hospital proton pump inhibitor use may be inappropriate?

A 12%
B: 34%
C: 73%
D: 89%

Which of the following is a change implemented at our institution with regards to utilization of proton pump inhibitors (PPIs)?

A Limitation of PPI use to patients who are mechanically ventilated f
B Therapeutic interchange of PPIs to H2 receptor antagonists
C Restriction of PPI use to patients with gastrointestinal bleeding
D Discontinuation of PPIs by the pharmacist upon transfer of patient

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-516 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

RISK FACTORS FOR PIPERACILLIN/TAZOBACTAM-RESISTANT GRAM-NEGATIVE BACTERIA IN HEMATOLOGY/ONCOLOGY PATIENTS WITH FEBRILE NEUTROPENIA

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Febrile neutropenia (FN) is a frequent complication of cancer therapy and is considered a serious medical emergency. IDSA guidelines recommend that empiric therapy with an anti-pseudomonal beta-lactam agent, such as cefepime, a carbepenem, or piperacillin/tazobactam, be initiated within two hours of presentation; however, a preferred agent is not identified. In this setting, inappropriate empiric antimicrobial therapy has been associated with poor outcomes. The purpose of the current study is to identify risk factors for piperacillin/tazobactam-resistant gram-negative bacterial infections in hematology/oncology patients with FN to potentially help better guide empiric therapy in this setting.□□The current study will be a retrospective, case-case-control study and was approved by the Institutional Review Board. Hematology/oncology inpatients at our institution who developed FN from 2007-2012 will be divided into three groups: those with piperacillin/tazobactam-resistant gram-negative infections (PipTazR), those with piperacillin/tazobactam-sensitive gram-negative infections (PipTazS), and those without a positive culture during their FN episode (CultureNeg). Patients less than 18 years of age, patients with positive cultures obtained from outside hospitals with incomplete records, and bone marrow transplant recipients will be excluded from the study. Patient demographics, clinical outcomes, traditional risk factors for piperacillin/tazobactam resistance, and potential hematology/oncology-specific risk factors for antibiotic resistance will be retrospectively collected from the medical record. Unconditional logistic regression analysis will be conducted to determine risk factors for piperacillin/tazobactam resistance. Clinical outcomes including 30-day all-cause mortality, ICU admission, and hospital and ICU length of stay will be compared between the PipTazR and PipTazS groups. Finally, a dual-axis antibiogram will be created to characterize the resistance pattern of piperacillin/tazobactam resistant gram-negative bacteria in this population. □□Data collection and evaluation are ongoing

Learning Objectives:

Review the IDSA guidelines for the treatment of febrile neutropenia

Discuss the literature regarding gram-negative resistance in hematology/oncology patients

Self Assessment Questions:

PS is a 37 year old male with AML on day 8 of 3+7 chemotherapy. His ANC is 0.4 and he is tolerating therapy well. Overnight, he develops a temperature of 39.1 and his PICC site appears red and swollen

A Meropenem + tobramycin

B: Piperacillin/tazobactam + vancomycin

C: Cefepime

D: Cefoxitin + vancomycin

Which of the following is true regarding the literature on gram-negative resistance in hematology/oncology patients?

A Receipt of clofarabine chemotherapy has consistently been associ

B Inappropriate antibiotic therapy has not been shown to be a risk fa

C Acute myeloid leukemia patients have been shown to be at higher

D Prior antibiotic exposure has been reported as a risk factor for mul

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-517 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

CLINICAL OUTCOMES IN HIV+ ADULTS WITH K65R MUTATION

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PURPOSE: The K65R mutation is reported in HIV-infected individuals treated with tenofovir, limiting the use of other nucleoside reverse transcriptase inhibitors. The purpose of this study is to determine virologic, immunologic, and treatment outcomes in patients who acquired K65R.□□METHODS: Single-site (Ruth M. Rothstein CORE Center), retrospective chart review. Inclusion criteria included K65R mutation on HIV genotype, age ≥18 years, and receiving care at CORE. Patient demographics, HIV genotype, regimen prescribed pre and post K65R development,HIV viral load, and CD4 counts were collected.□□PRELIMINARY RESULTS: 174 patients were identified, 160 qualified for inclusion, data collection have been completed on 96, and 27 (28%) were lost to follow-up. Demographics: 74% male, 67% African American, median age at time of HIV genotype 43 years. The most common regimen at time of HIV genotype was tenofovir/emtricitabine/efavirenz (70%). The median time on a tenofovir-containing regimen before K65R development was 24.5 months. 88 patients began a salvage regimen and returned for at least one follow-up appointment, median time on salvage regimen was 23 months (range, 1 101), 90% achieved undetectable viral load at least once, and the median CD4 count increase was 169 cells/mL. Patients receiving <3 vs ≥3 active drugs were compared. Undetectable viral load was achieved in 85% (22/26) vs. 92% (57/62) in the two groups respectively, p-value = 0.301. Mean changes in CD4 count from baseline were 117 vs. 191 cells/mm3 respectively, p-value = 0.055.□□CONCLUSION: Most patients with K65R responded to a salvage regimen and achieved undetectable viral load and an increase in CD4 count. The most commonly prescribed salvage regimen in this population was zidovudine/lamivudine + boosted darunavir + raltegravir. While there is a trend toward higher rates of achieving viral suppression and greater increases in CD4 count with a salvage regimen containing ≥3 active drugs, the results were not statistically significant.

Learning Objectives:

Describe the impact that K65R mutation development has on a patient's antiretroviral therapy.

Recall the most commonly prescribed salvage regimen prescribed for patients who developed K65R mutation in this study.

Self Assessment Questions:

Which of the following best describes the impact that K65R mutation has on a patient's antiretroviral therapy?

A The mutation confers resistance to all NRTI's except zidovudine.

B: The mutation results in no other options for the patient in terms of

C: The mutation confers resistance to all protease inhibitors.

D: The mutation confers resistance to the first generation integrase in

Which of the following regimens was the most commonly prescribed for patients who developed K65R mutation in this study?

A Efavirenz/Tenofovir/Emtricitabine + Raltegravir

B Tenofovir/Emtricitabine + Etravirine + Raltegravir

C Zidovudine + Darunavir + Ritonavir + Raltegravir

D Zidovduine/Lamivudine + Darunavir + Ritonavir + Raltegravir

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-692 -L02-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFECTIVENESS OF PHARMACIST-LED MEDICATION COUNSELING ON 30-DAY READMISSION RATES IN CONGESTIVE HEART FAILURE PATIENTS

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Purpose: Congestive heart failure (CHF) is one of three diagnoses assessed by the Centers for Medicare and Medicaid Services (CMS) for readmission rates. Readmission rates along with HCAHPS survey scores are a few elements that help determine reimbursement for hospitals. As of October 2013, Palos Community Hospital (PCH) has a 26.4% readmission rate in CHF patients compared to the national average of 24.8%. PCH has also scored lower than the national average in areas of the HCAHPS survey that involve medication, an area in which a pharmacist can positively effect. Recent studies have shown promising results in readmission rates through pharmacist-led discharge counseling. Although readmission rates did not differ significantly in all o these studies, patient satisfaction significantly improved in almost all instances. This study was conducted to establish if pharmacist-led medication counseling affected the 30-day readmission rate in heart failure patients and post-discharge survey scores. □□Methods: This was a prospective, interventional study that was conducted from December 2013 to March 2014 in patients 18 years of age or older with a confirmed diagnosis of CHF. Patients were excluded if they were discharged to a nursing facility, had cognitive impairment that would prevent education, or did not provide consent. Patients in the intervention group were provided education by the pharmacist with an emphasis on medication. After discharge, all patients received a follow-up call at least 3 days after discharge to administer a post-discharge survey. The survey used was meant to collect information on the patients stay at the hospital and to assess patients understanding of mediation. The survey also addressed questions similar to those used in the HCAHPS survey. The intervention group was also offered to ask any questions about their medications or disease state management during this follow up call.□□Results/Conclusions: To be presented at the GLPRC

Learning Objectives:

Identify the diagnoses the CMS Readmission Reduction Program measures for readmission rates

Review main counseling points that should be discussed with heart failure patients

Self Assessment Questions:

Which of the following patient populations is not currently assessed for readmission rates by the CMS Readmission Reduction Program?

A Congestive Heart Failure
B: Pneumonia
C: Copd
D: Acute MI

What is the national CHF readmission rate?

A 15%
B 20%
C 25%
D 30%

Q1 Answer: C Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-518 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF AN INVASIVE CANDIDIASIS ALGORITHM FOR ANTIFUNGAL STEWARDSHIP

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The objective of this study is to evaluate whether an invasive candidiasis algorithm decreases time to effective antifungal therapy, duration of unnecessary therapy and cost of unnecessary therapy. This study is a retrospective cohort evaluating the effect of an invasive candidiasis algorithm on appropriate use of antifungal agents at an inner city hospital. Patients aged 18 or older who receive fluconazole or anidulafungin, have at least one beta-D-glucan assay or histological evidence of yeast cells or hyphae or pseudohyphae from a normally sterile site between February 2013 and February 2014 are included for analysis. Subjects are excluded if they have a non-Candida invasive fungal infection, are not initially treated with fluconazole or anidulafungin or are diagnosed with and treated for invasive fungal infection within 48 hours of hospital admission. Data obtained from the electronic medical record will be analyzed using univariate and multivariate tests. The primary aim is to compare the utilization of antifungal therapy in patients managed and not managed in compliance with an invasive candidiasis algorithm. Secondary aims include establishing compliance with the invasive candidiasis algorithm and comparing overuse of antifungal therapy, in-hospital mortality and length of stay in patients managed and not managed in compliance with an invasive candidiasis algorithm. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Explain the use of beta-D-glucan in combination with an invasive candidiasis algorithm in the treatment of invasive fungal infections.

Describe the impact of an invasive candidiasis algorithm on the financial burden of antifungal therapy.

Self Assessment Questions:

TD is a 59-year-old female who presented with severe sepsis status pos exploratory laparotomy. She is hemodynamically unstable with a norepinephrine drip. The team would like to cover for a possible

A Fluconazole 800 mg x 1, then 400 mg daily
B: Fluconazole 200 mg
C: Anidulafungin 200 mg x 1, then 100 mg daily
D: No empiric therapy is necessary

TD has received antifungal therapy for several days. In that time, a peritoneal culture grew Candida albicans. What is the best antifungal therapy?

A Fluconazole 400 mg daily
B Fluconazole 200 mg daily
C Anidulafungin 100 mg daily
D No treatment is necessary because the culture is colonization

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-519 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF A TELEPHONE CARE MANAGEMENT STRATEGY TO REDUCE CHF READMISSIONS

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Purpose In 2009, the Centers for Medicare and Medicaid Services began focusing on congestive heart failure (CHF) as a quality measure. Hospital readmissions due to heart failure occurring within 30 days are not reimbursed and have become a point of interest for hospitals across the country. At this community health system, the average CHF readmission rate during the 2012-2013 fiscal year was 20%. While this rate is below the national average, there is an ongoing system-wide initiative to further decrease CHF readmissions. A recent study in the New England Journal of Medicine showed the positive effects of a pharmacy-based CHF telephone management strategy; after 1 year of implementation the study saw a reduction in medical expenditure and a reduction in hospitalizations. This project will focus on implementing a pharmacy-based telephone care management strategy with the goal of reducing heart failure readmissions. Methods This is a prospective evaluation that will be piloted at two hospitals within the health system and is exempt from IRB review. Inclusion criteria are patients with CHF, 18 years of age and older and are discharged to home. Patients will be excluded if they are going to a long term care facility, have dementia or i they refuse medication counseling. CHF patients will be identified; following discharge they will be contacted by a pharmacist within 48-72 hours post-discharge and at 12-15 days post-discharge. The pharmacis will discuss the patients CHF medications and answer questions. Patients will be followed to determine if they were readmitted within 30 days. The readmission rates following this project will be compared to the CHF readmission rates from 2013. A minimum of 90 patients will be involved to achieve 80% power to detect a 15% difference in readmission rates due to pharmacist intervention.

Results/Conclusions To be presented at Great Lakes Pharmacy Resident Conference

Learning Objectives:

Discuss medication areas that are linked to an increase in heart failure readmissions

Identify which populations are experiencing an increase in heart failure hospitalizations

Self Assessment Questions:

Which of the following areas are linked to an increase in heart failure readmissions?

A Poor medication adherence

B: Adverse events

C: Incorrect medication administration

D: All of the above

Between 2000 and 2010 which sub-group experienced an increase in hospitalizations due to heart failure?

A Females over 50 years of age

B Men over 50 years of age

C Adults 65 years and younger

D Adults 65 years and older

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-793 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF A DRUG INDUCED QTC PROLONGATION MONITORING AND PHARMACIST INTERVENTION PROGRAM IN A TERTIARY CARE SETTING

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Purpose: Drug induced QTc prolongation increases the risk of a potentially fatal polymorphic ventricular tachyarrhythmia commonly known as torsades de pointes. The risk for torsades de pointes can be reduced with targeted medication management. Monitoring of the QTc interval and patient specific risk factors can also reduce the risk and should be incorporated into medication monitoring plans by pharmacists. An opportunity exists at this facility for utilizing consistent monitoring of patients QTc interval, risk factors, and associated QTc prolonging medications to standardize pharmacist intervention and documentation related to QTc prolonging medications. The primary objective of this project is to create and implement a standardized pharmacy screening and monitoring program for drug induced QTc prolongation. Methods: Prior to initiation, this project was identified as a quality improvement initiative and thus was exempt from review by the Institutional Review Board. Clinical surveillance software was used to retrospectively evaluate QTc prolonging medication interventions hospital wide. Following this collection, a screening and monitoring tool for drug induced QTc prolongation was created. A template was also created in the clinical surveillance software to consistently document patient demographic data and pharmacist interventions relating to QTc prolonging medications. During the months of November 2013 and January 2014, the screening and monitoring tool was implemented on a general medicine floor. This data will be evaluated to determine the number of interventions and frequency of QTc prolonging medication interactions compared to the pre-implementation period. An educationa competency will be developed for all pharmacists. After completion, the screening and monitoring tool will be implemented hospital wide for use by pharmacists. Preliminary Results: Early data suggests that patients are frequently on QTc prolonging medications and a standardized QTc medication screening and monitoring tool increases pharmacist interventions. Final results and conclusions will be reported at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Explain the process for developing and implementing a hospital wide pharmacist QTc screening and monitoring tool.

Describe the role of a pharmacist in the risk assessment and management of QTc prolonging medications.

Self Assessment Questions:

Which of the following laboratory values should be assessed by pharmacists when monitoring patients on QTc prolonging medications?

A Phosphorus level

B: Potassium level

C: Sodium level

D: Bicarbonate level

Which of the following medications is associated with the highest risk of QTc prolongation?

A Ondansetron

B Citalopram

C Dofetilide

D Azithromycin

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-794 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

A RETROSPECTIVE REVIEW OF DENIED NON-FORMULARY DRUG REQUESTS AND PATIENT CLINICAL OUTCOMES

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Background/Purpose: Drug formularies have been successfully implemented at different healthcare facilities and systems for many years. Drug formularies in the Department of Veterans Affairs (VA) date back to mid-1950s. In 2009, a single VA National Formulary (VANF) was created and is currently the only formulary in the VA. The VANF includes all medications and supplies on formulary and is available at all VA medical centers. The formulary process within the VA system allows the medical facility to focus on appropriate and efficacious drug use, patient safety, promotion of a uniform pharmacy benefit, in addition to a reduction in the acquisition cost of drugs. The importance of maintaining a formulary list is to preserve and limit expenses while maintaining exceptional healthcare services. The purpose of this study is to evaluate denied non-formulary medication requests and to assess if financial benefit and positive clinical outcomes exist. Methods: This is a retrospective, electronic chart review of denied non-formulary medication requests for agents used to manage diabetes, dyslipidemia, pain, hypertension, benign prostatic hyperplasia (BPH) and overactive bladder (genitourinary). The primary endpoint will be to determine the impact of these denials on patient clinical outcomes. Data to be collected are denied non-formulary medication request reports, clinical outcomes in the form of laboratory data or progress note assessment of disease state progression from 01/01/2008 through 09/30/2013. Additionally, all non-formulary medication requests, included in the pre-specified date interval, will be analyzed for reasons of denial. Results and Conclusions: Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference taking place from April 23-25, 2014.

Learning Objectives:

Describe the rationale of non-formulary request procedures within a medical facility

Describe the advantages of maintaining a formulary process in a medical facility

Self Assessment Questions:

What is the importance of maintaining a formulary list within a medical facility?

A Preserve expenses of medications

B: Maintain exceptional healthcare services

C: A and B

D: None of the above

Which of the following is/are advantages of maintaining a formulary process in a medical facility?

A Maintain an appropriate and efficacious drug usage

B Focus on patient safety

C Promote a uniform pharmacy benefit

D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-520 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

LEVETIRACETAM PHARMACOKINETICS IN SUBARACHNOID HEMORRHAGE PATIENTS WITH AUGMENTED RENAL CLEARANCE: A MONTE CARLO SIMULATION

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Background: Annually, in the United States, approximately 30,000 patients will develop an aneurysmal subarachnoid hemorrhage (SAH) with a mortality rate of approaching 50%. SAH patients tend to be hyperdynamic, primarily due to the physiologic response to SAH and the use of vasopressors and fluids for the treatment of cerebral vasospasm. Preliminary evidence suggests that due to this hyperdynamic state, SAH patients exhibit augmented renal clearance (ARC). ARC is enhanced renal elimination of circulating solutes and is defined by a creatinine clearance above normal. In the literature, ARC has been described in various critically ill populations but has only been theorized in SAH population. Additionally, seizures may occur in up to 20% of SAH patients and often they receive antiepileptics such as levetiracetam, which is renally eliminated. The use of drugs that are primarily renally cleared put this population at risk of being under-dosed when using conventional dosing. Purpose: The primary purpose of this project is to determine the likelihood of attaining specific levetiracetam concentrations based on the creatinine clearance derived from a prospective aneurysmal SAH study population. Methods: This is an Institutional Review Board approved prospective, single-center study including aneurysmal SAH patients admitted to our facility between January 1, 2013 and January 31, 2014. Patients who met inclusion criteria were consented and enrolled in the study and a 24-hour urine sample was collected to measure the patients creatinine clearance. If patients experienced cerebral vasospasm, the urine collection was repeated during vasospasm treatment. Serum concentration-time profiles were simulated for multiple IV doses of levetiracetam using Monte Carlo Simulation (Crystal Ball, 2000) to assess the probability of target attainment (PTA) for attaining specific levetiracetam concentrations based on the actual creatinine clearance values obtained in this SAH population. Results/Conclusions: Results will be presented at Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Recognize the implications of augmented renal clearance (ARC) in aneurysmal subarachnoid hemorrhage (SAH) patients

Describe the utility of a Monte Carlo Simulation (MCS) tool in pharmacy literature

Self Assessment Questions:

Augmented renal clearance (ARC) in patients with aneurysmal subarachnoid hemorrhage can lead to:

A Supratherapeutic levels of renally cleared pharmaceuticals

B: Severe under-dosing of renally cleared pharmaceuticals

C: Decreased creatinine clearance and drug accumulation

D: Severe under-dosing of non-renally cleared pharmaceuticals

Monte Carlo Simulation is a tool that is useful for:

A A mathematic model which can provide the correct dose and inter

B A mathematic model which can only be utilized for assistance with

C A mathematic model helpful for expanding the sample size of a stu

D A type of prospective study used to asses augmented renal cleara

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-521 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE IMPACT OF PHARMACIST EDUCATION IN PATIENTS WITH HEART FAILURE ON DISEASE STATE AND MEDICATION KNOWLEDGE: THE TEACH TRIAL

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Purpose: Current literature suggests that hospital readmissions result from a multitude of factors, including poor patient understanding of disease states, uncertainty in appropriate medication use after discharge, and lack of awareness of warning signs warranting a call to their physician. Heart failure is one of the top reasons for readmissions and a potential target for patient education. The objectives of this study are to determine the impact of pharmacist education about heart failure and associated medications on 1) patient knowledge of the disease state and 2) heart failure 30-day hospital readmission rates.□Methods: This prospective, randomized, single-center study will include patients greater than 18 years of age that are admitted with an active diagnosis of heart failure, and recent (within one year) documentation of an ejection fraction. The control group will receive standard of care, including heart failure education by nursing and dietary staff, while the intervention group will receive standard of care plus pharmacist provided education focusing on heart failure and associated medications. Both groups will receive a pre- and post-assessment tool, adapted with permission from the Atlanta Heart Failure Knowledge Test, during their hospitalization. Goal enrollment is a total of 64 patients (32 patients per group) to have 80 percent power to detect a 10 percent difference in post-assessment scores between groups. A chi-squared test will be used to compare achievement rates of a 10 percent difference when comparing groups.
□

Results and Conclusions: Data collection and analysis are currently being conducted.

Learning Objectives:

Describe the epidemiology, pathophysiology and treatment recommendations for heart failure.

Discuss current literature regarding heart failure readmissions with pharmacy involvement.

Self Assessment Questions:

Which of the following class of medications is not recommended in hear failure?

A Beta-blockers

B: Angiotensin Receptor Blockers

C: NSAIDs

D: Diuretics

Which of the following interventions made by pharmacists have been studied in current literature?

A Education

B Medication reconciliation

C Follow-up phone call post-discharge

D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-795 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF ANTIPYSCHOTIC THERAPY FOR MANAGEMENT OF DELIRIUM IN THE INTENSIVE CARE UNIT

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Purpose: Delirium is associated with the acute onset of cerebral dysfunction typically characterized by altered baseline mental status, inattention, disorganized thinking, or level of consciousness. Patients may be agitated, calm or lethargic, or fluctuate between the two. The dopamine antagonist haloperidol is the most commonly prescribed medication for this indication despite minimal evidence supporting its use. Recently published guidelines emphasize non-pharmacologic interventions to prevent its onset, however evidence supporting one drug over another with regards to delirium-specific states is limited and contradictory. As such, no specific antipsychotic is recommended alone or in conjunction with non-pharmacologic treatment.□□Methods: Retrospective, observational cohort study with prospective outcome evaluation following prescriber education at Lutheran Hospital. The primary endpoint of the study is the length of delirium as measured by a positive CAM-ICU score following administration of haloperidol or dexmedetomidine for the treatment of delirium in adult ICU patients. Secondary endpoints include all-cause mortality, length of ICU stay, length of hospitalization, and rates of patient readmission within 30 days. A retrospective chart review is to be performed for adult ICU patients who received haloperidol between 1 January 2012 and 1 September 2013. In early fall 2013, ICU prescribers will receive education on the hospitals updated delirium protocol. Following that session, prospective chart review will be utilized to evaluate patient outcomes. Predetermined endpoints will be used to compare patients receiving therapy consistent with the hospital protocol and those who do not. Inclusion criteria include adult age (≥18 years old), ICU admission >24 hours, and a positive CAM-ICU score while present in the ICU. Patients who have a negative CAM-ICU score or lack documentation of its result, contraindications to haloperidol and dexmedetomidine, or a positive pregnancy test will be excluded from statistical analysis.□□Results: Results pending.□□Conclusions: Will be made after results are analyzed.

Learning Objectives:

Describe the role of pharmacologic management of patients with delirium according to the SCCM guidelines

Recognize the immediate and long-term patient safety concerns associated with delirium

Self Assessment Questions:

The preferred method of preventing delirium is through use of:

A Haloperidol

B: Dexmedetomidine

C: Non-pharmacologic measures

D: Aripiprazole

Patients who present with delirium are associated with:

A Increased mortality

B QTc prolongation

C Increased infection rates

D Increased lethargy

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-522 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

USE OF PIOGLITAZONE AND TIME TO INSULIN THERAPY IN TYPE 2 DIABETES

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Purpose: To determine the mean time to initiation of insulin therapy after starting pioglitazone therapy in patients with type 2 diabetes mellitus. Secondary objectives of this review are to identify and evaluate reasons of pioglitazone therapy discontinuation including but not limited to adverse effects, adherence and need for escalation or de-escalation of therapy. Additionally, to evaluate effectiveness of therapy based on hemoglobin A1C and use of pioglitazone in patients with heart failure or history of bladder cancer following FDA reports and guidance in relation to safety concerns.□□Methodology: A retrospective chart review will be completed for up to 300 patients on pioglitazone from January 1, 2008 through December 31, 2012. Patients included must have available A1C results before and at least 3 months after drug initiation. Patients will be excluded if pioglitazone was not filled in the 2 months post initiation, if they were on insulin therapy when pioglitazone was initiated or if the prescription was filled at an outside pharmacy. Effectiveness of pioglitazone therapy will be determined by collecting hemoglobin A1C at time of initiation and at least 3 months post change of pioglitazone dose or any other antidiabetic therapy change. Data collected will include age, gender, duration of use and dose changes, time to start insulin therapy, diagnosis and classification of heart failure, history or presence of bladder cancer, hemoglobin A1C goals if specified, concomitant antidiabetic therapy, provider type, clinic where diabetes is managed and reason for drug discontinuation, if applicable. Laboratory data will include hemoglobin A1C, blood glucose, AST, ALT and bilirubin.□□Results/Conclusions: The results and conclusion are pending.

Learning Objectives:

Identify the therapeutic use and place in therapy of pioglitazone for type 2 diabetes mellitus.

Discuss the safety warnings and concerns related to thiazolidinedione therapy.

Self Assessment Questions:

Pioglitazone has a black box warning and should thus be avoided in which patient population:

A Uncontrolled hypertension

B: New York Heart Association (NYHA) class III or IV heart failure

C: Impaired renal function

D: Family history of bladder cancer

What is the maximum recommended daily dose of pioglitazone in patients with type 2 diabetes mellitus?

A 15 mg/day

B 30 mg/day

C 45 mg/day

D 60 mg/day

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-523 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF HYPOGLYCEMIC EVENTS DURING TREATMENT OF DIABETIC KETOACIDOSIS

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Purpose: Despite the implementation of a diabetic ketoacidosis (DKA) treatment protocol at Euclid Hospital, hypoglycemia continues to be problematic during DKA treatment. The purpose of this study is to identify the number of hypoglycemic events (blood glucose < 70 mg/dL) and subsequently, evaluate healthcare providers compliance with the 2009 American Diabetes Association (ADA) guidelines for the management of DKA. Methodology: This study has received institutional review board (IRB) approval prior to data collection. A retrospective char review will be conducted to determine the number of hypoglycemic events that occurred while patients received treatment for DKA in the ICU at Euclid Hospital. Patients 18 years of age and older with an admitting diagnosis of DKA (defined by ADA guidelines) between June 2012 through September 2013 will be included in the study. Patients tha are pregnant, initiated on subcutaneous insulin, or had a length of stay less than 24 hours will be excluded. Data collection will include: patient demographics, potassium, anion gap, blood glucose, arterial pH, serum bicarbonate, time to resolution of ketoacidosis, initiation of D5W, and ICU length of stay. The primary outcome will assess the number of hypoglycemic events while receiving treatment for DKA. Secondary outcomes will assess the rate of glucose reduction, initiation of D5W after blood glucose reaches 20025 mg/dL, potassium level maintenance of 4-5 mmol/L during treatment, time to resolution of DKA (defined according to ADA guidelines), and ICU length of stay. Results and conclusions: Data collection is in process. Results are pending and will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Discuss the recommended blood glucose range that should be maintained until the resolution of DKA.

Recall the appropriate insulin that should be initiated first when treating DKA, based on the 2009 ADA treatment guidelines for DKA.

Self Assessment Questions:

Based on the 2009 ADA guidelines for DKA treatment, what is the proper range to keep blood glucose levels until the resolution of DKA?

A 100-150 mg/dL

B: 150-200 mg/dL

C: 200-250 mg/dL

D: 250-300 mg/dL

What type of insulin is recommended to be initiated first when treating DKA in the ICU, according to the 2009 ADA guidelines for DKA treatment?

A Insulin glargine

B Insulin NPH

C Insulin lispro

D Insulin regular

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-524 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE EFFECT OF A PHARMACIST BASED DISCHARGE COUNSELING PROGRAM ON HOSPITAL CONSUMER ASSESSMENT OF HEALTHCARE PROVIDERS AND SYSTEMS (HCAHPS) SCORES, 30-DAY READMISSION RATES, AND PATIENT SATISFACTION

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Background: With the ongoing evolution of our healthcare system from a fee for service to a pay for performance model, the roles of pharmacist are likely to change. The implementation of the hospital consumer assessment of healthcare providers and systems (HCAHPS) survey, a survey that measures patients perceptions of their hospital experience, is a key factor in this reform. Beginning October 1st, 2012, all hospitals receiving funding from Medicare now have 1% of their reimbursement withheld. Reimbursement is reallocated to those hospitals that perform well on HCAHPS survey. Many studies have been conducted in the ambulatory setting showing the benefit of pharmacist involvement in medication management, however no current literature exist on the effects of pharmacists intervention on HCAHPS scores in the inpatient setting. Objective: Evaluate the effect of pharmacist based discharge counseling on overall HCAHPS scores, as well as composite scores of discharge information and medication communication, and 30-day readmission rates. Methodology: A prospective, observational study was be conducted to evaluate patient outcomes after receiving medication related discharge counseling from a pharmacist. The study population included all patients 18 years or older, with a hospital stay of at least 24 hours, being discharged home from a cardiovascular surgery step-down unit at the Cleveland Clinic. Over a six month period, all patients discharged from the intervention unit received counseling and will be compared to baseline and post-intervention data for patients that did not receive counseling. Data was collected regarding demographics, co-morbid disease states, number of medications at discharge, discharge diagnosis, length of hospital stay, and previous hospital admissions within the last 12 months, overall HCHAPS scores, medication communication composite HCAHPS scores, and discharge information composite HCHAHPS scores. Results and Conclusions: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Explain the effect HCAHPS scores will have on a health-system's reimbursement

Recognize the evolving structure of value based purchasing

Self Assessment Questions:

Beginning October 1st, 2013, what percentage of Medicare DRG reimbursements is withheld by CMS?

A 1%
B: 1.25%
C: 1.5%
D: 2%

What percentage of the Total Performance Score does the patient experience domain (HCAHPS) represent?

A 5%
B 15%
C 30%
D 50%

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-796 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF SAFETY AND EFFICACY OF A PHARMACIST-MANAGED PATIENT CONTROLLED ANALGESIA SERVICE

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Purpose The management of undertreated postoperative pain remains at the top of current health care initiatives as the Joint Commission and other organizations concur that pain is the fifth vital sign. Effective pain management can accelerate mobilization after surgery, reduce costs, and augment patient comfort and satisfaction. Patient-controlled analgesia (PCA) has demonstrated increased patient satisfaction, superior analgesic efficacy, and lower complication rates when compared with as-needed administration. Several small studies assessing the impact of pharmacist involvement in PCA services found that they provided effective pain management and increased clinical involvement. The goal of this study is to compare the safety and efficacy of a pharmacist-managed PCA service with a standard physician, midlevel, and nurse-managed PCA service provided at sister hospitals within the health system. Methods This retrospective cohort study will include patients receiving PCA for post-surgical pain control from January 2012 to present. The primary efficacy endpoint will be assessed by measurement of the area under the curve of pain intensity versus time up to 72 hours post-PCA initiation for each group. Pain scores (VAS) gathered from charted assessments by nursing staff will be recorded for each group during the study period. Baseline characteristics, including age, sex, type of surgery, and potential risk factors for opioid-related adverse events will be collected. Additionally, patient PCA use will be evaluated in terms of medication used, initial PCA settings, and the number of PCA setting changes during the initial 72 hours of therapy. The use of adjunct and breakthrough analgesia will also be collected. The secondary endpoint of patient safety will be evaluated during the study period by comparing the incidence of respiratory depression, use of rescue opioid antagonist, rescue antiemetics, and episodes of hypoxia between the two groups. Results Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss methods to evaluate efficacy of pain management.

Describe risk factors for opioid-induced adverse events.

Self Assessment Questions:

1)Effective pain management can do which of the following:

A Lengthen hospital stay
B: Decrease mobilization
C: Decrease hospital costs
D: Lengthen time on PCA

2)Which disease state poses the greatest risk for opioid-induced adverse events?

A Asthma
B Hypertension
C Diabetes
D Anemia

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-525 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

OUTCOMES ASSOCIATED WITH GLYCEMIC CONTROL IN THE NON ICU HOSPITAL SETTING

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Background: Current published guidelines for inpatient glycemic control target glucose levels within a specific range depending on acuity of the unit caring for the patient. The America Association of Clinical Endocrinologists and the American Diabetes Association addressed inpatient glycemic control with a consensus statement. A fasting goal of < 140 mg/dL and a random goal of < 180 mg/dL are advocated. Few data are available for the non-ICU hospital setting regarding the optimal level of control. Indeed the concept of targeting blood glucose values in an absolute range has been questioned with an alternative hypothesis that glycemic variability could represent a preferred target. Moreover, distinct goals for fasting and random glucose levels complicate management and the merit of a stricter fasting goal in this setting.□Purpose: The primary objective of this study is to evaluate if glycemic control within various proposed glycemic targets are associated with different frequencies of outcomes evaluated in intensive and ambulatory settings.□Methods: A retrospective cohort analysis of veterans nationwide admitted to a general medicine unit over a five-year period is sought. Glycemic control designation will be based on the glycemic control during the first three days of hospitalization. Data collected will include patient demographics; outpatient and inpatient medication profiles; BCMA data; glucose values (capillary and venous blood); serum creatinine; WBC count; microbiological culture results; admission diagnosis; patient problem list; hospital length of stay; ICD codes consistent with diabetes, infection, cardiovascular events, and seizure; as well as ICU admission and mortality rates.

□

Results/Conclusions: Data collection is in progress.

Learning Objectives:

Identify inpatient glycemic targets set forth by the AACE/ADA consensus statement for non-ICU patients.

Recognize adverse patient outcomes that are related to poor glycemic control in the inpatient setting.

Self Assessment Questions:

What is the fasting blood glucose target for non-ICU patients set forth by the AACE/ADA consensus statement on inpatient glycemic control?

A <140 mg/dL
B: <160 mg/dL
C: <180 mg/dL
D: <200 mg/dL

Poor glycemic control in the inpatient setting has been associated with which of the following patient outcomes?

A Decreased hospital length of stay
B Increased infection rate
C Increased wound healing
D Decreased mortality

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-526 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DETERMINING INITIAL VANCOMYCIN DOSING RECOMMENDATIONS IN OBESE PATIENTS

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Purpose: The growing prevalence of obesity necessitates evidence regarding medication dose adjustments to achieve therapeutic concentrations in the obese population. Current vancomycin dosing recommendations endorse initial doses based on total body weight (TBW) in obese patients and obtainment of serum concentrations for dose adjustments, but clinical uncertainty exists based on pharmacokinetic derangements noted in available literature. Our objective is to determine pharmacokinetic parameters in obese patients in order to adjust doses and design initial dosing recommendations for future use. □□Methods: This retrospective, observational study includes adult obese patients (BMI ≥ 30 kg/m2) who received vancomycin for treatment of a known/suspected infection between October 1, 2012 and March 30, 2014 with at least one set of steady state peak and trough serum concentrations. Patients were excluded if they were pregnant, incarcerated, required hemodialysis/CRRT, had cystic fibrosis or burn injury, and were at risk for or experienced AKI upon initiation of vancomycin therapy or until serum concentration determination. Mean and median calculated pharmacokinetic parameters stratified by BMI obesity classes [the primary endpoints (Vd, k, and t1/2)] will be used to develop a dosing algorithm for vancomycin in obese patients. Secondary endpoints include percentage of patients: requiring dose adjustments, initially meeting target trough concentrations, and with initial trough concentrations < 10 or > 20 mcg/mL. Safety and efficacy will be evaluated by documented clinical outcome and reported adverse events □□

Preliminary Results: Preliminary data from four patients (median age 47 yrs, range 22-51) with median BMI 50.6 kg/m2 (range 37-64) reveal a median Vd 0.6 L/kg TBW (range 0.35-0.75) and median t1/2 10.8 hr (range 6.5-16.9) despite normal renal function (median estimated creatinine clearance 101 mL/min, range 62-145). □□Conclusions: General dosing recommendations may not be feasible due to wide pharmacokinetic variability, and obese patients may require intensive monitoring to achieve target serum concentrations.

Learning Objectives:

Describe vancomycin pharmacokinetic derangements found in obese patients

Identify initial dosing recommendations for vancomycin in obese patients

Self Assessment Questions:

Obesity has been shown to result in which of the following physiologic changes?

A Decreased risk of cardiovascular disease
B: Decreased blood volume
C: Increased renal clearance
D: Increased half-life of vancomycin

Which method for estimating creatinine clearance is thought to be the most precise for obese patients?

A Salazar-Corcoran
B Cockcroft-Gault
C Mdrd
D Mdrd4

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-527 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ADVANCING THE APPLICATION OF INFORMATION TECHNOLOGY TO IMPACT SAFE AND EFFECTIVE MEDICATION USE THROUGH IMPLEMENTATION OF THE PHARMACY PRACTICE MODEL INITIATIVE (PPMI)

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Purpose: A multi-patient task list was implemented at our institution alerting pharmacists of new dosing consults and out of range critical laboratory results. This retrospective study evaluates the effectiveness of this technology in the medication workflow process to improve the management of high-risk drugs. We will assess whether implementation of this multi-patient task list decreases time to response to critical alerts and therapeutic anticoagulation within 24 hours for heparin and argatroban. Time to initial dose of vancomycin, and magnitude by which documentation rates for pharmacy clinical interventions and counseling improve after implementation of the multi-patient task list will also be assessed. Methods: The following data will be collected: evaluate the drug that caused the alert, the value reported, time the alert was received, time of intervention (heparin/argatroban) or initial dosing (vancomycin), time required for clinical pharmacist to document the action. Documentation will include time to therapeutic anticoagulation, indication for anticoagulation (heparin or argatroban), if a bolus dose was ordered, time of first therapeutic result, difference between the time of first therapeutic result and the time pharmacy was consulted, and assessment if patient was in the therapeutic range 24 hours from time of consult. Patients will be excluded if they are on anticoagulation due to admission of acute coronary syndrome. Data will be analyzed with the statistical software SPSS 17.0 (or most current) version. Statistics used in this study include: Descriptive statistical analysis, t test and chi squared test. All p values less than 0.5 will be considered statistically significant. The goal of the study is to provide information on the benefits of technology using the multi-patient task list and its influence on patient safety regarding the management of high-risk drugs. Results Presented at the 2014 Great Lakes Pharmacy Residency Conference. Conclusion Presented at the 2014 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Outline how information technology can improve time to therapeutic aPTT and response time to critical lab measurements for heparin and argatroban

Identify the importance of early goal directed therapy for antibiotics, particularly vancomycin

Self Assessment Questions:

Early goal directed therapy refers to:

A Time to emergency department arrival
B: Time to evaluation by physician
C: Time to first dose of antibiotics
D: Time to first dose of vasopressor in patients with septic shock

What is the importance of therapeutic aPTTs at 24 hours?

A To prove how well pharmacists can dose heparin
B To decrease morbidity and mortality
C To decrease hospital stay
D Both B and C

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-913 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

PREDICTORS OF HOSPITAL READMISSION IN PATIENTS RECEIVING OUTPATIENT PARENTERAL ANTIMICROBIAL THERAP

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Background: Outpatient Parenteral Antimicrobial Therapy (OPAT) is a common method for patients to receive intravenous antimicrobial treatment in outpatient settings. Potential benefits of OPAT include decreased length of hospitalization, decreased cost to both the patient and healthcare system, and decreased risk of nosocomial infections. Unfortunately, as much as 20% of patients on OPAT will be readmitted to the hospital. Few studies have been conducted to identify risk factors for readmission in patients receiving OPAT. Hypothesized potential risk factors include: the type of outpatient setting the antimicrobial infusion is being received, patient comorbidities, social history, the antimicrobial agent utilized and the frequency of administration, as well as the amount of follow-up and monitoring the patient receives. By investigating these characteristics in the patients that receive OPAT at the University of Illinois Hospital and Health Sciences System, patients can be better selected for OPAT and interventions can be targeted to help reduce readmission. Methods: This is a retrospective, observational, cohort study approved by the University of Illinois Institutional Review Board. Patients 18 years of age or older discharged from the hospital between January 1, 2008 and August 1, 2013 with a PICC line for treatment of an active infection with antimicrobials were included. Patients with cystic fibrosis were excluded. Data collected includes: patient demographics and comorbidities, the type of outpatient setting the antimicrobial infusion was received, the antimicrobial agent utilized and the frequency of administration, as well as the amount of follow-up and monitoring the patient received. The primary endpoint of the study is hospital readmission during receipt of OPAT. Predictors of readmission will be determined by comparing the characteristics of patients who experience readmission versus those who did not. The secondary endpoint will be infection outcome. Results/conclusions: Endpoints remain under investigation as data collection and analysis are currently being completed.

Learning Objectives:

Define outpatient parenteral antimicrobial therapy (OPAT)

Discuss factors associated with readmission of patients receiving OPAT

Self Assessment Questions:

Outpatient parenteral antimicrobial therapy (OPAT) is defined as which of the following?

A Oral antibiotics a patient receives after discharge from the hospital
B: Oral antibiotics a patient receives at a skilled nursing facility
C: Parenteral antibiotics a patients receives while in the hospital
D: Parenteral antibiotics a patient receives after discharge from the h

What are the potential benefits of OPAT?

A Decreased length of hospitalization
B Decreased cost to the healthcare system
C Decreased risk of nosocomial infections
D All of the above

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-528 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

RETROSPECTIVE EVALUATION AND OPTIMIZATION OF PHARMACIST WORKFLOW IN A PREOPERATIVE SURGICAL UNIT

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Statement of Purpose□Preoperative surgical units present challenges to complying with The Joint Commission (TJC) Standards related to prospective pharmacist medication order review, especially when institutions pre-admission process do not appropriately protect patients from avoidable medication errors by lacking this review. The purpose of this study is to determine the feasibility of a single pharmacist reviewing all medication orders in the preoperative unit based on compliance rate (e.g. number of orders reviewed/number of orders placed) as the primary outcome, as well as various secondary outcomes (e.g. drug allergies, missing information, time spent on interventions, etc.) related to pharmacist intervention.□□Statement of Methods Used□A retrospective single-center chart review of surgery patients who were admitted to the preoperative unit during a one month period following implementation of pharmacist medication order review at a tertiary, 1,000 bed teaching hospital in Columbus, OH. The design of the medication order review was to dedicate one full time equivalent (FTE) pharmacists to the preoperative unit in order to review all medication orders. The primary outcome of compliance rate was defined as number of orders reviewed / number of orders placed per day and over the entire course of the surveillance period of 20 days (Monday-Friday). Pharmacist interventions were compiled using Microsoft Office Excel spreadsheets and included collection of the following: drug allergy, allergy information missing, allergy reaction/clarification, dosing interventions, drug information/education, patient counseling, drug interactions, stat medication requests, Pyxis issues, and the time spent on interventions.□□Summary of (preliminary) results to support conclusion□Results are pending and will be presented at the Great Lakes Pharmacy Residency Conference. □□Conclusions reached□Conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss the importance of pharmacist prospective medication order review in preoperative surgical units.

Describe pharmacist workload and optimization of workflow on preoperative surgical units.

Self Assessment Questions:

According to the 2011 ASHP national survey of hospital pharmacy dispensing and administration, what overall percentage of surgery orders are reviewed and approved by pharmacists' before administration

A 2.9%
B: 8.4%
C: 15.4%
D: 28.1%

Based on The Joint Commission (TJC) Surgical Care Improvement Project (SCIP) core measure set, prophylactic antibiotics should be received within what time period prior to surgical incision?

A 15 minutes
B 30 minutes
C 1 hour
D 2 hours

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-797 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

IDENTIFYING BARRIERS THAT PREVENT OFFICE-BASED PRACTITIONER REFERRALS FOR COMMUNITY PHARMACIST-LED DIABETES EDUCATION PROGRAMS

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Purpose: To determine the barriers preventing office-based practitioner referrals for educational and clinical diabetes services provided by community pharmacists. The secondary objectives of this study are to: determine if responder demographics influence likelihood of referral; determine if education is needed to improve referral rates; and determine what types of patients practitioners would be willing to refer to community pharmacy diabetes education programs.□□Methods: This is a prospective, multi-centered, survey-based study. The top 100 prescribers will be identified in three different regions of the Chicagoland area and contacted via fax to complete a 12-item survey comprised of multiple-choice responses. Data collected will include: respondent demographics, knowledge about the role of the clinical specialist pharmacist, knowledge about community pharmacist-led diabetes education programs, types of patients likely to be referred into these programs, and barriers to referrals, if applicable. The survey will be available to participants for 6 weeks and completed anonymously. Surveys will be faxed at weeks 0, 2, and 4. Completed surveys will be interpreted through descriptive and comparative statistics. Two $50 gift cards will be raffled off as an incentive to participate.□□Preliminary Results: Pending□□Conclusion: The results of this study will be instrumental in determining barriers that may prevent office-based practitioner referrals, which will allow pharmacists to implement methods to increase volume of diabetes education provided and potentially expand education services to patients in the community setting. Based on the findings from this research, it is anticipated that new strategies can be developed to strengthen inter-professional relationships between community pharmacists and office-based practitioners, further enhancing patient care.

Learning Objectives:

Describe how diabetes self-management education impacts patients with diabetes.

List 3 barriers impacting office-based practitioner referrals into pharmacist-provided patient care services.

Self Assessment Questions:

Patients participating in Diabetes Self Management Education (DSME) have shown improvement in:

A Diabetes knowledge and self-care behaviors
B: Self-care behaviors and clinical outcomes
C: Clinical outcomes and diabetes knowledge
D: Diabetes knowledge, self-care behaviors, and clinical outcomes

All of the following barriers may impact office-based practitioner referrals to community pharmacist-provided services EXCEPT:

A Fear of lost services by the practitioner
B Lack of knowledge by the practitioner about the service
C Fear of not seeing the patient again
D Lack of follow-up by the pharmacist regarding patient visits

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-529 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

WARFARIN AS A RISK FACTOR FOR READMISSION WITHIN 30 DAYS OF HOSPITAL DISCHARGE

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Purpose: In the United States, it is estimated that 20% of hospitalized patients are re-admitted within 30 days of their discharge date. The disease states most associated with readmission are chronic heart failure, pneumonia, chronic obstructive pulmonary disease, and gastrointestinal problems. Adverse drug events (ADE) are another common reason for re-hospitalizations, with nearly 20% of discharged patients experiencing an ADE within 3 weeks of discharge. Common causes of ADE associated hospital readmissions are age, initiation of new medication(s) as well as total number of prescription medications. Warfarin is considered a high-risk medication due to having a narrow therapeutic range, multiple food and drug interactions, and requirement of frequent monitoring. The purpose of this study is to assess the impact of warfarin as a risk factor for 30-day hospital readmission.□□Methods: This IRB approved study will utilize a matched retrospective cohort comparing adult patients who were discharged home on warfarin with those not discharged home on warfarin from the University of Chicago Medicines cardiology and medicine services between August 2011 and August 2013. The primary outcome is to compare rates of 30-day readmissions between the study groups. Demographics, admitting diagnoses, indication for anticoagulation, pertinent lab values, time between readmissions, and plan for warfarin management at discharge for patients in the warfarin arm will be collected for the study population. Patients with a left ventricular assist device, those on warfarin for venous thromboembolism prophylaxis after orthopedic surgery, patients admitted for chemotherapy treatment or discharged on oral anticoagulants other than warfarin will be excluded. Secondary outcomes include rate and time between readmissions, major and minor bleeding, any form of thrombosis, number of patients who require anticoagulation reversal during their re-hospitalization and, number of patients who experience a delay in hospital discharge due to subtherapeutic or supratherapeutic INR.□□Results: In process.□□Conclusion: In process.

Learning Objectives:

Identify common reasons for hospital readmissions within 30 days of discharge.

Discuss risk factors that lead to warfarin being a high risk medication.

Self Assessment Questions:

Which of the following are disease states most associated with hospital readmission:

A Chronic obstructive pulmonary disease
B: Elective plastic surgery
C: Atrial fibrillation
D: Transient ischemic attack

Warfarin is a high risk medication because:

A It is a cytotoxic agent
B It can decrease respiratory drive
C It has a narrow therapeutic range
D It can cause renal insufficiency

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-798 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE IMPACT OF QUETIAPINE ON DURATION OF HYPOACTIVE DELIRIUM IN THE INTENSIVE CARE UNIT:

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Purpose: Delirium remains a common consequence of critical illness, and reducing its duration has been shown to positively impact patient outcomes during and after an Intensive Care Unit (ICU) stay. Data regarding pharmacologic management of delirium as a whole is scarce, and even less is known about its role in treating deliriums various subtypes (hyperactive, hypoactive, and mixed). This study sought to determine whether treatment of hypoactive delirium with quetiapine reduces duration of delirium compared to no pharmacologic treatment.□□

Methods: Patients from two medical/surgical ICUs with documented hypoactive delirium using the Confusion Assessment Method-ICU (CAM ICU) and the Richmond Agitation Sedation Scale (RASS) were retrospectively examined. Key exclusion criteria included ICU length of stay (LOS) < 72 hours, preexisting dementia or structural brain damage, chronic antipsychotic use, or delirium treatment with any non-quetiapine antipsychotic. Patients were stratified based on having received or not received quetiapine during their delirium course. The primary objective was time to first resolution of delirium, and secondary objectives included ICU and hospital LOS, and duration of mechanical ventilation.□□Results: To date, 131 patients with delirium have been evaluated with 26 (5 treated with quetiapine, 21 not treated) meeting criteria for inclusion. Analysis of this cohort found no statistical difference in median days to delirium resolution (3.0 vs. 2.0; p=0.52), mean ICU LOS (7.4 vs. 9.5; p=0.39), mean hospital LOS (11.4 vs. 13.9; p=0.32), or median duration of mechanical ventilation (4.0 vs. 5.0 days; p=0.67).□□Conclusions: This early analysis indicates pharmacologic treatment with quetiapine, apart from a trend towards reduced LOS, did not impact the study objectives compared to no pharmacologic treatment in this critically ill cohort. An estimated 116 patients are required to achieve statistical significance. Thus, interpreting this underpowered and skewed interim analysis places one at high risk for making a Type II error.

Learning Objectives:

Describe the role of the Richmond Agitation Sedation Scale (RASS) in classifying delirium motor subtypes.

Review literature regarding pharmacologic management of delirium and explain why quetiapine may be the agent of choice when medication is desired.

Self Assessment Questions:

The most widely recognized definition of hypoactive delirium requires a positive delirium screen by the CAM-ICU and a RASS score of:

A -5 to 0
B: -3 to 0
C: 0 to +3
D: -3 to _3

Regarding its use in ICU delirium management, quetiapine offers all the following advantages except:

A Short half-life to facilitate dose titration
B Reliably reduces mortality from delirium
C Tablets can be crushed and administered via feeding tube
D Lower propensity to alter the QTc compared to haloperidol

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-530 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PATIENT CHOICE OF WARFARIN OR RIVAROXABAN FOR NONVALVULAR ATRIAL FIBRILLATION: ASSESSMENT OF PATIENT PREFERENCES WHEN CHOOSING ORAL ANTICOAGULATION

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Purpose:□Current CHEST and American Heart Association (AHA)/American Stroke Association (ASA) guidelines recommend anticoagulation for patients with atrial fibrillation and a moderate to high risk of stroke. The importance of involving patients with nonvalvular atria fibrillation (NVAF) in their own care is demonstrated by numerous trials that use patient decision aids to allow patient participation in the clinical decision-making process. Studies show that patients who use decision aids have a better understanding of their risk of stroke and hemorrhage, are more knowledgeable about clinical issues with the drugs, and improve their understanding of risks versus benefits of the treatments. □□

With availability of novel oral anticoagulants, further emphasis needs to be placed on patient preference when selecting an anticoagulation strategy. The purpose of this study is to assess specific factors that influence patient choice between rivaroxaban and warfarin for stroke prevention, correlate patient demographics with their decision, and assess patient satisfaction and adverse events related to the therapy.□□Methods:□This single center, investigator initiated, prospective study conducted at the University of Cincinnati Medical Center aims to enroll 50 patients who are new to oral anticoagulation for NVAF. The study investigators provide the patient with unbiased counseling using a video plus a handout with information regarding safety and efficacy of warfarin and rivaroxaban. It includes visual aids to demonstrate the bleeding risk, information on reversibility, drug and fooc interactions, monitoring, dosing, and cost of the two drugs. After counseling is complete, the patient chooses which drug he/she prefers to take for prevention of stroke and takes a short survey assessing factors that led to his/her decision. A follow up phone call survey is performed after 30 days to evaluate patient satisfaction and adverse events.□□Results:□Data is currently being collected and analyzed.□□Conclusions:□Conclusions will be presented at the Great Lakes Pharmacy Resident Conference

Learning Objectives:

Describe the importance of patient preference when deciding on oral anticoagulation for patients with NVAF.

Explain the value of appropriate counseling with visual aids to ensure patient understanding of treatment with anticoagulation for NVAF.

Self Assessment Questions:

If the CHA2DS2-VASc score for a patient is 2 and the HAS-BLED score is 3, what do the guidelines suggest for anticoagulation?

A Aspirin as monotherapy

B: Dose adjusted warfarin with INR goal of 2-3

C: Not defined

D: Dabigatran 150mg BID

Current literature on patient preference for anticoagulation for NVAF shows that

A Patients prefer to prevent bleeding rather than stroke when decidir

B Patients are more knowledgeable about treatment options, benefit

C There are standard ways to describe stroke and bleeding to patien

D Patients do not display decisional conflict after being counseled wi

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-531 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSESSMENT OF VANCOMYCIN THERAPEUTIC DRUG MONITORING IN HEMODIALYSIS PATIENTS BEFORE AND AFTER IMPLEMENTATION OF A PHARMACY PROTOCOL

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Purpose: Vancomycin is a commonly used antibiotic in hemodialysis (HD) patients for gram-positive infections. Due to the prolonged half-life of vancomycin in end-stage renal disease and extensive removal by high flux dialyzers, dosing is more complex in this population. The Detroit Medical Center (DMC) has established therapeutic drug monitoring (TDM) guidelines for vancomycin but they do not specifically address HD patients. Vancomycin TDM in HD patients appears excessive and costly The primary goal of this study is to establish TDM guidelines for vancomycin in HD patients at DMC, improve target trough attainment pre-HD and reduce the costs associated with vancomycin TDM by 25%.□□Methods: Data will be collected from the electronic medical record (EMR) in 2 phases. First, a retrospective review of HD patients in any of 5 adult hospitals at DMC and receiving intravenous vancomycin for documented or suspected infection will be conducted. Patients who received at least 2 doses of vancomycin and are currently on HD using high-flux dialyzers will be included. Pharmacy must be consulted for dosing. Patient characteristics will be collected including: demographics, number of vancomycin levels ordered and documented, number of doses received, number of pharmacokinetic notes written in the EMR, duration of HD session and outcomes information including infection location, cultures, duration of therapy and length of stay. Any adverse effect will also be recorded. After analysis of the retrospective data, areas for improvement will be identified and staff will be educated on the findings. Guidelines on pharmacy dosing and TDM for vancomycin in HD patients will be developed. The second phase will include pharmacy staf education and review of recommendations with nephrology and infectious disease physicians. A prospective assessment of vancomycin TDM in HD patients will occur after implementation of the guidelines.□□Results/Conclusions: To be presented at the 2014 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe how end-stage renal disease and hemodialysis using high-flux dialyzers affect the pharmacokinetics of vancomycin

Discuss appropriate vancomycin therapeutic drug monitoring in hemodialysis patients

Self Assessment Questions:

Which of the following best describes how vancomycin pharmacokinetics are altered in hemodialysis patients using high-flux dialyzers?

A Prolonged half-life, extensively removed by hemodialysis

B: Shortened half-life, minimally removed by hemodialysis

C: Prolonged half-life, minimally removed by hemodialysis

D: Shortened half-life, extensively removed by hemodialysis

Which of the following is the preferred time to draw vancomycin serum concentrations in relation to a hemodialysis session?

A Immediately after hemodialysis

B One hour after hemodialysis

C Immediately before hemodialysis

D During hemodialysis

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-532 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PHARMACISTS ADVOCATING FOR THE IMPROVED USE OF NARCOTICS (P.A.I.N): IMPLEMENTATION OF A PHARMACIST PAIN MANAGEMENT INTEREST GROUP

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Purpose The objective of this study is to implement a pharmacist-run pain education module and to evaluate its effects on pharmacist knowledge and comfort with pain management pharmacotherapy. Methods This is a prospective, experimental study, with a pre-test/post-test design. Pharmacists employed at Henry Ford Hospital are eligible for inclusion in the study. Pharmacy residents and pharmacists unable to attend all required meeting dates and complete all required learning activities are excluded. Participants are required to complete a survey regarding their knowledge of and comfort with pain management. Following the completion of the module, a post-test will be administered which contains the same information as the pre test. The primary aims of this project are: 1.Develop and implement a standardized pain management module for pharmacists, and 2: Evaluate the effect of a pharmacy pain management education module on pharmacist confidence in understanding pain management. Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Describe the problem with current pain management strategies and opioid use across the United States.

Explain how a pain management module for pharmacists can address the need for improved pain management and opioid use methodology.

Self Assessment Questions:

Which of the following is true regarding pain management and opioid use?

A Pain management scores are not a component of the HCAHPS su

B: Healthcare providers generally receive an abundance of training in

C: According to data from the USP-ISMP Medication Errors Reporting

D: Pain management education is standardized and is a requirement

A pain management module developed by and implemented for pharmacists (select the most correct response):

A Provides a systematic approach to and may help to fill the gap in k

B Should only be offered to pharmacists who have completed a post

C Requires that pharmacist participants have substantial baseline kn

D Aims to decrease HCAHPS scores related to pain management.

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-533 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

RISK FACTORS FOR QTC PROLONGATION WITH HALOPERIDOL ADMINISTRATION IN THE ICU SETTING

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Purpose: Over the past 20 years, there has been an increased spotlight on the potential risk of medication-related QTc prolongation. This prolongation can potentially lead to the deadly ventricular arrhythmia, Torsades de Pointes (TdP). Due to this potentially deadly adverse reaction, drug-induced QT interval prolongation is believed to be the leading cause of drug withdrawal or relabeling of marketed drugs in the past decade. As more information becomes available, it is becoming more apparent that a rising number of non-cardiac medications are having detrimental effects, specifically QTc prolongation, on the heart. This includes antiarrhythmics, antipsychotics, antidepressants, macrolide antibiotics, fluoroquinolone antibiotics, methadone, ondansetron, and several others. This study will help determine what risk factors put patients at a higher risk of developing QTc prolongation while receiving haloperidol in the ICU setting Methods: A list of patients who were admitted to the MICU, SICU, or 10-CIU floor who received an order of haloperidol from January 1, 2011 - October 30, 2013 will be generated from the electronic medical record system. The investigators will then determine which patients received at least one dose of haloperidol rather than having an active PRN (as needed) order. The risk factors that will be evaluated include age, cumulative dose of haloperidol, hypokalemia, hypomagnesemia, and drug interactions. Hypokalemia will be defined as less than 3.5 mEq/L and hypomagnesemia will be defined as < 1.5 mEq/L. The drug interactions that will be assessed in this study include amiodarone, quetiapine, moxifloxacin, levofloxacin, azithromycin, methadone, citalopram, fluoxetine, and ondansetron. Multivariable logistic-regression models will be prepared to estimate the risk of significant QTc prolongation with the aforementioned variables. Appropriate QTc monitoring will also be analyzed using logistic regression to assess the aforementioned predictive variables. Results and Conclusion: Results and conclusion to be presented at Great Lakes Residency Conference.

Learning Objectives:

Discuss the most common factors , including medications and lab abnormalities, that put patients at an increased risk of developing QTc prolongation.

Identify the results of the study to develop a better monitoring system for patients in the ICU who have received haloperidol.

Self Assessment Questions:

Of the following, which class of medication has been shown to be an independent risk factor for QTc prolongation?

A Beta-lactams

B: Fluoroquinolones

C: Alpha-2 Agonists

D: Beta Blockers

Which electrolyte imbalances can potentiate the risk of QTc prolongation?

A Hyperkalemia

B Hypermagnesemia

C Hypokalemia

D Hyponatremia

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-914 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF A PHARMACY DRIVEN TRANEXAMIC ACID PROTOCOL IN A LEVEL 1 TRAUMA CENTER AND ITS EFFECT ON MORTALITY IN TRAUMA INDUCED HEMORRHAGE

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Purpose: The World Health Organization (WHO) currently recommends institutions keep a ready supply of tranexamic acid (TXA) on hand for trauma induced hemorrhage. Multiple trials have shown that TXA effectively and safely reduces mortality in the trauma population. Unfortunately, many institutions have yet to implement TXA as part of their trauma protocols because some clinicians are skeptical of the data from previous trials. The objective of this study is to determine if the implementation of a pharmacy driven protocol could increase the usage of TXA and decrease mortality at a Level 1 Trauma Center. Methods: This study will be submitted to the institutional review board for approval. A protocol for TXA use developed by pharmacy, in coordination with the trauma medical director, will be implemented in the emergency department and trauma operating room. Using the electronic medical record, patient outcomes will be evaluated prior to TXA formulary approval and compared to both pre- and post-implementation of the pharmacist driven TXA protocol. Patient demographics, initial vital signs, mechanism/type of injury, estimated blood loss, Glasgow Coma Score (GCS), injury severity score, need for surgical procedure, and level of patient dependence will be collected. Thromboembolic events, transfusion requirements, and length of stay will be evaluated as secondary outcomes. Patients who develop hemorrhage due to surgical complications will be excluded. All patient data will remain confidential. Results: This research is currently in the data collection phase. Results of this study and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify indications for tranexamic acid in traumatic injury

Recall the appropriate dose of tranexamic acid use for traumatic injury

Self Assessment Questions:

Which of the following is a contraindication for use of tranexamic acid?

A Tachycardia

B: Subarachnoid hemorrhage

C: Traumatic brain injury

D: Lack of physical signs of bleeding

What is the current dose of tranexamic acid used in traumatic injury?

A A 2 gram infusion run over 8 hours

B A 1 gram bolus of 1 hour followed by a 2 gram infusion over 8 hou

C A 1 gram bolus over 10 minutes followed by a 1 gram infusion ove

D A 1 gram bolus over 30 minutes

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-534 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF A PHARMACIST-MANAGED DIABETES CARE CLINIC AT A COLLEGE OF PHARMACY

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Objective: Pharmacist-managed clinics are well documented in the literature and have improved patient care in many settings. The objective of this study is to implement a pharmacist-managed diabetes care clinic at a college of pharmacy in order to provide screenings for employees through point-of-care testing and referrals for treatment of diabetes in accordance with current guidelines. Point-of-care testing will include hemoglobin A1c and blood glucose. Methods: A pharmacist-designed survey will identify employees who have been diagnosed with diabetes or those who may be at risk for developing diabetes. The survey will be distributed electronically and will collect the following data: previous diagnosis of diabetes, employee insurance company, age, gender, ethnicity, family history of diabetes, level of physical activity, symptoms of diabetes, description of overall health, and level of interest in a pharmacist-managed diabetes clinic. All data will be collected without employee identifiers and maintained confidentially. Data will be reviewed by pharmacists at the college and used to guide implementation of services to meet employee needs. Results and Conclusions: Data collection is currently in progress. Preliminary results and conclusions will be presented.

Learning Objectives:

Recall new and updated recommendations from the 2014 ADA Standards of Care

Describe the potential benefits of a pharmacist-managed diabetes care clinic

Self Assessment Questions:

According to the 2014 ADA Standards of Care, which of the following represents the target blood pressure for patients with diabetes?

A <130/<80 mmHg

B: <140/<80 mmHg

C: <130/<90 mmHg

D: <140/<90 mmHg

Which of the following is a potential benefit of a pharmacist-managed diabetes care clinic?

A Decreased hospitalizations

B Increased direct revenue

C Improved patient care

D All of the above are potential benefits

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-535 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATING INTENSIVE CARE NURSING INTERRUPTIONS AND DISTRACTIONS IN THE MEDICATION ADMINISTRATION PROCESS OF CRITICALLY ILL PATIENTS BEFORE AND AFTER IMPLEMENTATION OF STRATEGIES TO MINIMIZE EVENTS

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Purpose: It is estimated that at least 44,000 patients die in hospitals each year as a result of medication errors. An intensive care unit (ICU) faces more serious consequences than other units due to the acuity of patients and the high alert medications frequently administered. A recen study showed that nurses, on average, were interrupted three to six times every hour. These interruptions and/or distractions can impact the ability to remember deferred tasks, thus potentially leading to medicatior errors. Previous studies, although scarce, support the use of strategies to reduce the number of interruptions and distractions during the medication administration process. The purpose of this study is to evaluate the impact of the implementation of strategies to minimize nursing interruptions and distractions during the medication administration process of an ICU.□□Methods: A five day observational period was performed to assess the interruptions and distractions which occur in a 36-bed, open, mixed ICU. Additionally, a fourteen-question survey was provided to all nurses in the ICU after the one week observation period. The survey evaluated the nurses perception on how many times they are interrupted/distracted by certain events in the ICU. One week was allowed for survey completion. A multidisciplinary group developed strategies based upon the observations and survey results that were then implemented in order to decrease interruptions and distractions that occur during the medication administration process. A follow-up survey was then provided after implementation of strategies to decrease interruptions and distractions.□□Results and Conclusions: Data collection and analysis is in progress. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

List common interruptions and distractions which occur during the medication administration process which can potentially lead to medication errors

Describe strategies to decrease interruptions and distractions which occur during the medication administration process

Self Assessment Questions:

Per the nurse survey results, which of the following is the most frequent interruption/distraction that occurs during the medication administration process?

A Family interruptions
B: Physician rounding
C: Nursing distractions
D: Telephone calls

A high alert medications is defined as:

A Medications with a high risk of being administered in error
B Medications with a high risk of causing significant patient harm wh
C Medications with a high risk of causing respiratory depression
D Medications with a high risk of significant adverse events thus, req

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-915 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

INCIDENCE OF ADRENAL INSUFFICIENCY WITH DEXMEDETOMIDINE IN PEDIATRIC SEPTIC SHOCK

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Purpose: Dexmedetomidine is an alpha-2 agonist indicated for critical care sedation, fiber-optic intubation, and procedural sedation. Structurally, dexmedetomidine is an imidazole, which may induce HPA-axis suppression. While adrenal insufficiency is not listed as an adverse effect of dexmedetomidine, the drug is used at higher doses and longer durations than originally studied.□Methods: This is a retrospective study at Childrens Hospital of Illinois (CHOI). To assess baseline characteristics, age, gender, and PRISM II score are used. The primary outcome is incidence of hydrocortisone infusion and secondary outcomes include hospital and ICU length of stay, lowest mean arterial pressure after sedative infusion, and number of vasopressors required. Inclusion criteria are the following: admitted to the pediatric critical care unit of CHOI between August 1, 2010 - August 1, 2013; use of dexmedetomidine, midazolam, fentanyl, or propofol infusions; diagnosis of "sepsis" or "septic shock" on the ICU history & physical or progress notes. Exclusion criteria are: indication of sedative is comfort measures pre-existing adrenal dysfunction; etomidate or ketoconazole administration; systemic steroids in the week prior to the sedation infusion.□Results: Of the 61 patients who received dexmedetomidine, 15 (24.5%) were given hydrocortisone compared to 19 (32.8%) of 58 tha did not receive dexmedetomidine. Of the patients who received dexmedetomidine, the average ICU length of stay was 39.3 days and the average hospital length of stay was 50.9 days compared to 28 ICU days and 37.8 hospital days in those who did not receive dexmedetomidine. The lowest MAP after initiation of dexmedetomidine was 47 mmHg while the lowest MAP after initiation of other sedative infusions was 41 mmHg. Use of vasopressors was unchanged.□Conclusions: Dexmedetomidine does not appear to be associated with adrenal insufficiency, despite the structure-activity relationship noted with the imidazole ring. Further conclusions pending statistical analysis.

Learning Objectives:

Recognize drugs with an imidazole ring and the implication in treating shock

Recall the impact of dexmedetomidine to length of stay in respect to the population studied

Self Assessment Questions:

Which of the following drugs contain an imidazole?

A Dexmedetomidine
B: Acetaminophen
C: Etomidate
D: A and C

For pediatric patients with septic shock at Childrens Hosptial of Illinois, which statement is true regarding length of stay?

A Length of stay was approximately equal in both arms of the study.
B Length of stay was equal in the ICU for both arms of the study, but
C Length of stay was equal in the ICU for both arms of the study, but
D Patients in the dexmedetomidine arm had a longer length of stay i

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-536 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

SUSTAINABILITY OF ACHIEVED CARDIOVASCULAR GOALS FOLLOWING ENROLLMENT IN A SHARED MEDICAL APPOINTMEN PROGRAM

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Purpose: Shared medical appointment (SMA) programs have yielded improved intermediate outcomes for patients with chronic conditions, including cardiovascular disease (CVD). A cardiovascular risk reduction (CVRR) SMA was initiated at the Veterans Affairs Ann Arbor Healthcare System (VAAAHS) in May 2011 and recruited Veterans with low-density lipoprotein (LDL) cholesterol and blood pressure (BP) above their individual goals. Program coordinators provided education on heart disease, lifestyle changes, and goal setting as well as managed participants medications. The CVRR SMA program was discontinued in February 2013 due to patient recruitment difficulty. The primary objective of this study is to determine the LDL cholesterol and BP changes from Veterans final CVRR SMA program visit until up to one year after the final program visit. Secondary objectives include evaluating the change of LDL and BP from baseline to final CVRR SMA program visit; evaluating the change in Framingham Risk Score from baseline to final program visit and from final program visit until up to one year after final program visit; and determining the percentage of Veterans meeting their LDL and/or BP goals at each of these time points. Methods: A retrospective chart review will be conducted to evaluate the sustainability of the effects of the CVRR SMA at the VAAAHS. All patients enrolled in the program who attended at least one appointment will be included. Medical charts will be abstracted to identify patient demographics, past medical history, reason for CVRR SMA referral, clinic BP and heart rate, dates of patient encounters, emergency visits, and cholesterol and hypertension medication changes. Data will be collected from May 2011 through up to one year after the last patients last visit. The results reported will be descriptive and, if the sample size permits, analyzed for statistical significance Results & Conclusions: Will be presented at GLPRC

Learning Objectives:

Explain the concept of shared medical appointments and evaluate patient outcomes from shared medical appointments

Identify provider and patient characteristics necessary for a productive shared medical appointment program

Self Assessment Questions:

Which of the following health care providers is not usually involved in a SMA?

A Physician
B: Pharmacy
C: Dietician
D: Chiropractor

Which of the following patient characteristics should be required before a patient is referred to a SMA program?

A Motivated
B Easily distracted
C Frequently challenges health care provider recommendations
D Every other treatment modality has failed

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-537 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSESSING AND OPTIMIZING THERAPEUTIC DRUG MONITORING IN THE ICU

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Purpose: Therapeutic drug monitoring is a key component of drug therapy. This ensures patients receive appropriate medication doses, and protects patients from adverse drug events. A current initiative from the American Board of Internal Medicine Foundation is to decrease utilization of laboratory draws. The purpose of this initiative is to reduce laboratory utilization for patients receiving either propofol or vancomycin in the intensive care unit (ICU). Propofol is used routinely for patients who require sedation for mechanical ventilation. Currently, this health system obtains triglyceride levels at baseline and every three days after propofol initiation. Current literature allows for obtaining triglyceride levels 48 hours after propofol infusion initiation. Vancomycin is an antibiotic prescribed for patients with gram-positive infections. Vancomycin random levels are routinely monitored for patients with severe renal dysfunction to ensure safe and effective therapy.

Methods: IRB approval was not obtained for this quality assurance initiative. Baseline data will be collected as a retrospective one year chart review of patients admitted to the ICU who received medication orders for propofol. The electronic order set for propofol will be updated to remove all triglyceride levels. An alert will be created in the electronic medical record to notify pharmacists to order triglyceride levels when patients have received propofol for greater than 48 hours. Baseline data for vancomycin random level laboratory orders will be obtained from a six month chart review of patients admitted to the ICU. The pharmacy staff will be re-trained to improve adherence to the recently updated vancomycin random dosing guidelines, specific to the health system.

Finally, post-intervention retrospective chart review of ICU patients who received medication orders for vancomycin and/or propofol over a three month period will be collected. This post-intervention data will be compared to baseline data to assess differences in total laboratory utilization.

Learning Objectives:

Review current national initiatives and implications of over utilization of laboratory resources as it relates to patient care

Describe current literature supporting laboratory monitoring related to propofol and vancomycin therapy

Self Assessment Questions:

Patients that are receiving propofol infusion are at risk for developing which side effect related to the formulation of propofol?

A Hyperthyroidism
B: Hypertriglyceridemia
C: Ischemic Bowel
D: Hyperglycemia

According to this health system guideline, patients who are receiving vancomycin random dosing; should have random vancomycin levels drawn:

A Every morning with morning laboratory draws
B With morning labs on days patient is scheduled for dialysis
C Every 24 to 48 hours regardless of dialysis schedule
D After each dialysis session 2 hours after completion of therapy

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-538 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFECTS OF FLUCONAZOLE TREATMENT ON CLINICAL OUTCOMES IN INTENSIVE CARE UNIT PATIENTS WITH BRONCHOALVEOLAR LAVAGE CULTURES POSITIVE FOR CANDIDA SPECIES

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Purpose: The current Infectious Diseases Society of America (IDSA) guidelines for management of candidiasis and healthcare associated pneumonia recommend against treating immunocompetent patients with positive Candida respiratory cultures. Despite these recommendations, clinical practice varies. It has been observed at this institution that intensive care unit (ICU) patients frequently receive fluconazole therapy in response to positive bronchoalveolar lavage (BAL) cultures. The purpose of this study was to determine the effect of fluconazole treatment on clinical outcomes in ICU patients with BAL cultures positive for Candida species.□Methods: This was a retrospective, single centered, case control study approved by the Institutional Review Board on October 21, 2013. Patients included in the study had a BAL culture positive for Candida species and were located in the ICU during collection of the BAL sample. The case group included patients treated with fluconazole while the control group did not receive treatment. Exclusion criteria included age less than 18 years, a positive BAL culture for Candida glabrata or Candida krusei, an absolute neutrophil count (ANC) less than 1500 cells per microliter, cancer patients receiving radiation or chemotherapy, patients receiving other systemic antifungals patients receiving immunosuppressive therapy, and HIV patients. Primary outcomes investigated were the effects of fluconazole treatment on ICU and hospital length of stay. Secondary outcomes included ventilator days, Candida species clearance, positive cultures for Candida species from other sterile sites, positive cultures for multidrug resistant (MDR) organisms after initiation of fluconazole, Candida score, antibiotic regimen, and fluconazole dose and duration of therapy. □Results: To be presented at the Great Lakes Pharmacy Resident Conference (GLPRC)□Conclusion:To be presented at GLPRC

Learning Objectives:

Describe the incidence, etiology, diagnosis, and current guideline recommendations for treatment of pulmonary candidiasis

Discuss the evidence supporting and the risks of treating Candida colonization

Self Assessment Questions:

Which of the following is recommended by the current IDSA guidelines to treat immunocompetent patients with respiratory cultures positive for Candida species?

A Fluconazole 200 mg PO daily

B: Micafungin 100 mg IV daily

C: No treatment

D: Fluconazole 400mg IV daily

According to the literature presented, what are the potential risks of empiric fluconazole treatment?

A Increased hospital length of stay

B Decreased bacterial resistance

C Increased ICU length of stay

D A & c

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-539 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

UTILIZATION OF A POINT-OF-CARE DEVICE IN IDENTIFYING PATIENTS WITH PRE-DIABETES AND DIABETES WITHIN THE CHINESE AMERICAN IMMIGRANT COMMUNITY

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PURPOSE: The objective of this study is to assess the utility of a point-of-care (POC) A1c device in identifying pre-diabetes and diabetes in Chinese American patients in a low-resource, underserved community health center.□METHODS: Chinese American patients previously seen at the clinic, age 18 or older, with any of the following characteristics: triglycerides > 250 mg/dL, fasting plasma glucose (FPG) ≥ 100 mg/dL, BP ≥ 140/90 mmHg, and HDL < 35 mg/dL, and no previous diagnosis of diabetes, were identified and asked to return to clinic to receive POC A1c testing performed by a pharmacist. □RESULTS: Of the 270 patients contacted, 80 underwent a screening appointment. Thus far, 15 patients have been tested, of which 10 (66.7%) patients had an A1c of 5.7%-6.4% indicating pre-diabetes and none had an A1c indicating diabetes (≥6.5%). Of these 10 pre-diabetic patients, 6 (60%) were included due to elevated FPG alone, 1 was included due to both elevated FPG and elevated BP. The other 3 patients were included for other reasons including low HDL, high BP, and one patient for a combination of high BP and triglycerides. □CONCLUSIONS: Based on these preliminary results, the POC A1c device has proven useful to identify pre-diabetic patients in an underserved community clinic in those exhibiting either elevated blood glucose, triglycerides, BP, or low HDL. Most patients with an A1c indicating pre-diabetes were included due to an elevated FPG. However, many pre-diabetic patients were included for reasons other than FPG, indicating the importance of recognizing other clinical abnormalities for diabetes screening.

Learning Objectives:

Describe the utility of a point-of-care device to test hemoglobin A1c.

List characteristics that identify Asians as being high-risk for undiagnosed diabetes.

Self Assessment Questions:

The point-of-care device to test hemoglobin A1c may be best utilized in the following group of patients:

A Those followed every 3 months by their primary care physician.

B: Those with limited access to health care services.

C: Certain “at-risk” patient groups including children and the elderly.

D: None of the above.

The following characteristic puts Asians at high-risk for undiagnosed diabetes:

A Having insurance provided by an employer.

B Practicing complementary alternative medicine, e.g. acupuncture.

C Underutilization of healthcare services in the United States.

D Buying prescription medications and supplements from Asia instea

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-540 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF SLIDING SCALE INSULIN USE ON HYPOGLYCEMIA IN ELDERLY LONG-TERM CARE PATIENTS

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Background: Sliding scale insulin (SSI) has been added to the 2012 Beers Criteria for Potentially Inappropriate Medication Use in Older Adults because of the "higher risk of hypoglycemia." Despite this recommendation, limited data exist to support an increase in the risk of hypoglycemia with SSI use. The elderly patient population is more vulnerable to hypoglycemic episodes and a better understanding of the relationship between SSI use and hypoglycemia risk is needed to better serve this patient population. □□Purpose: The purpose of this study is to evaluate the impact of sliding scale insulin on hypoglycemic episodes in elderly long term care veteran patients with diabetes. □□Methods: This study is a retrospective chart review of patients with diabetes at the Community Living Center (CLC) at Edward Hines, Jr. VA Hospital. The primary outcome will be to assess the risk of hypoglycemia with the use of SSI in elderly veteran patients residing in the CLC at Hines. The secondary outcomes of the study include defining the prevalence of SSI use in the CLC, comparing the rates of hypoglycemia in patients prescribed aggressive versus conservative SSI, comparing the frequency of asymptomatic hypoglycemia to symptomatic hypoglycemia and evaluating the rates of discontinuation or change in SSI parameters within the 30 days after SSI initiation. Patients will be included if they are ≥65 years of age. Patients will be excluded if they did not receive at least one blood glucose measurement or if they received total parentera nutrition during the study period. □□Results and Conclusions: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

List the potential consequences of hypoglycemia

Identify factors that increase the risk of hypoglycemia in elderly patients

Self Assessment Questions:

Which of the following is a potential consequence of hypoglycemia?

A Falls

B: Improved glycemic control

C: Decreased length of long term care stay

D: Kidney failure

Which of the following increases the risk of hypoglycemia in elderly patients?

A Normal renal function

B Increase in fasting hepatic glucose production

C Poor appetite and nutrition

D Coronary artery disease

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-916 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

CLINICAL OUTCOMES COMPARING AMINOGLYCOSIDE VERSUS NON-AMINOGLYCOSIDE CONTAINING EMPIRIC SEPSIS REGIMENS

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Purpose: Sepsis related mortality and morbidity in patients remains high and can be directly affected by appropriate empiric antibiotic timing and choices. Aminoglycosides are commonly prescribed empirically with beta-lactams to ensure appropriate coverage of resistant gram-negative organisms. Aminoglycosides retain good susceptibility against gram negative infections and can act synergistically when paired with beta-lactams. Extended interval dosing for aminoglycosides has provided a better pharmacodynamic profile along with less incidence of nephrotoxicity. However, additional concerns for nephrotoxicity exist when combining an aminoglycoside with the renal hypoperfusive state of sepsis. Therefore, this study was undertaken to describe the effect of the addition of an aminoglycoside for the empiric treatment of septic patients admitted to the hospital. Aminoglycoside containing empiric regimens were compared to non-aminoglycoside regimens to determine if a difference in outcomes existed.□□Methods: Patients, ages 18 and above, who were admitted to Franciscan St. Francis Health with a DRG code of sepsis or severe sepsis with septicemia between January 2011 and December 2013 were assessed. Weight, renal function throughout hospital stay, length of stay, site of infection, and concomitant antibiotic use, as well as, use of other nephrotoxins were collected retrospectively. Specific data pertaining to antibiotic use included length of therapy, milligram per kilogram dosing, dosing interval, and courses of therapy. Patients were evaluated for acute kidney injury, length of stay, and clinical resolution of symptoms. Antibiotics were evaluated on appropriateness of therapy based on microbiologic data. Clinical outcomes were evaluated using categories of clinical cure, improvement or failure based on resolution of symptoms, discharge to a lesser care facility with or without continued need for antibiotics, and/or clinical documentation of such. □□Results/Conclusions: Results and conclusions will be presented at the Great Lakes Residency Conference

Learning Objectives:

Explain one benefit of aminoglycoside therapy

Recognize importance of appropriate antibiotic therapy in sepsis

Self Assessment Questions:

Which of the following is a benefit of aminoglycoside therapy?

A Rapid bactericidal agent

B: Nephrotoxicty

C: Pharmacist time associated with monitoring for levels

D: Gram positive coverage

Which of following statements is correct?

A Initial appropriate antibiotic therapy leads to lower mortality rates ir

B Initial appropriate antibiotic therapy leads to higher mortality rates

C Initial appropriate antibiotic therapy does not decrease length of st

D Initial appropriate antibiotic therapy has no proven benefit in septic

Q1 Answer: A Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-541 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PATIENT PERCEPTIONS AND THE EFFECTS OF PROMOTING THE USE OF A SINGLE COMMUNITY PHARMACY SYSTEM: A KEY ELEMENT FOR IMPROVED TRANSITIONS OF CARE

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Purpose: The primary objective of the study is to evaluate baseline patient perception on the use of single versus multiple community pharmacy systems. The secondary objective is to determine the effects of a community pharmacist provided educational intervention on the patient perception of using a single community pharmacy system.

Methods: This will be a prospective survey based study implemented in a single grocery store chain pharmacy site. The primary investigator or designated representative will administer an anonymous pre-survey to eligible patients who drop off or pick up prescriptions during the study period. The pre-survey is designed to collect demographic data and determine subject perception on the use of single versus multiple pharmacy systems at baseline. The pharmacist will then deliver a brief educational intervention, which will include the benefits of using a single community pharmacy system as well as the risks of using multiple community pharmacy systems. The educational component will emphasize the roles and responsibilities of community pharmacists, medication safety both at home and when transferring between healthcare systems, and services offered in the community pharmacy.An anonymous post-survey will be administered after the educational intervention with the pharmacist. The post-survey will be used to determine if there has been a change in the perception of the key components assessed in the pre-survey. Data will be analyzed utilizing descriptive statistics and SPSS. Preliminary results: It is anticipated that a brief pharmacist intervention will increase patients awareness on the benefits of using a single community pharmacy system. Using a single community pharmacy system will increase accuracy on the medication record and thus will position the community pharmacist for a key role in improved transitions of care. Conclusions reached: Research in progress.

Learning Objectives:

Identify reasons why patients utilize multiple pharmacies.

Recognize what pharmacists can do to promote safe practices in patients using multiple pharmacies.

Self Assessment Questions:

According to the information presented in the background, what is the most predominant reason patients use multiple pharmacies?

A Cost

B: Location

C: Insurance

D: Pharmacy personnel

Mr. Jones is a 67-year old male who presents to your pharmacy for the first time. He states that he would like his lisinopril transferred from his usually pharmacy to yours so that he is eligible for

A When you call Mr. Jones's pharmacy to transfer his lisinopril ask w

B Explain to Mr. Jones that medication accuracy is achieved when c

C Stress the importance of keeping Mr. Jones's medication records i

D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-799 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

PATIENT CENTERED MEDICAL HOME: DEVELOPMENT OF A PHARMACIST COLLABORATIVE CARE MODEL

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The primary objective of this project was to develop a community pharmacy based collaborative care model with the intent to improve clinical outcomes and satisfaction of care. In addition, our goal was to document the impact of community pharmacy based medication therapy management in patients with chronic disease states being provided care through the patient centered medical home.Patients within a local medical group and also filling prescriptions at two sites of a regional grocery store chain pharmacy were identified through a prescription claims dataset. During a consultation with the medical group-based pharmacist as part of a routine doctor visit, the identified patients were scheduled to complete a comprehensive medication review (CMR) with a community pharmacist. In keeping with the patient centered medical home model, details of the CMR session including suggested changes in therapy that resulted from this meeting were directly communicated back to the patients physician. Satisfaction data was gathered from both patients and physicians within the local medical group at baseline and at the end of the study period, and medication adherence data was gathered at baseline, 6 months and at the conclusion of research (one year) to gauge if integrating a community-based pharmacist into the patient centered medical home (PCMH) model impacted satisfaction and medication adherence.Five patients have participated in comprehensive medication reviews to date, with more participation anticipated throughout the next 5 months. Preliminary results indicate appropriate adherence to statin therapy. Results from baseline surveys indicate a high satisfaction of care. The most common disease states encountered to date include hypertension, diabetes, hyperlipidemia and osteoarthritis (n=5, n=4, n=5, n=4, respectively).Results will be utilized to measure the impact of the community pharmacist on medication therapy management as well as promote the collaboration between community pharmacists and physicians involved in the PCMH model of care.

Learning Objectives:

Describe the PCMH model and the potential role of the community pharmacist

Recognize the benefits of community pharmacist involvement in the patient centered medical home

Self Assessment Questions:

The patient centered medical home is designed to:

A Augment the patient load of urgent care centers

B: Provide continuous, comprehensive and integrated care to patients

C: Integrate outpatient services into the community pharmacy

D: Manage patient disease states through comprehensive medicatior

The potential role of the community pharmacist in the patient centered medical home is:

A To counsel patients on all medications prescribed by the participat

B To train physicians on how to conduct medication therapy manage

C To provide comprehensive medication reviews to patients and rep

D To recommend patients to participating healthcare providers as wa

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-800 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARISON OF POST-OPERATIVE PAIN MANAGEMENT BETWEEN LIPOSOMAL BUPIVACAINE AND BUPIVACAINE ELASTOMERIC PUMPS IN TOTAL KNEE REPLACEMENTS

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8372983399,ext.55482□mark.nessler@khnetwork.org□□Background: Appropriate postsurgical pain management is essential in total knee replacement patients. Elastomeric pumps utilizing bupivacaine provide continuous local anaesthesia but require patients to carry the pump for several days. Liposomal bupivacaine (LB) is a new formulation that provides analgesia for up to 72 hours after being infiltrated into the knee during surgery. □Purpose: The purpose of the study is to assess the difference in clinical and economic outcomes related to total knee replacement pain management between LB and elastomeric pumps containing bupivacaine. Primary outcome is cumulative area under the curve (AUC) pain scores with secondary outcomes of time to discharge, time to first opioid medication after procedure and total morphine milligram equivalency of opioids at 72 hours. □Methodology: This is a retrospective, single-center chart review of patients who received either liposomal bupivacaine or elastomeric pain pumps containing bupivacaine from April 1st 2013 to November 15th, 2013 at Kettering Medical Center for local anaesthesia for total knee replacements. Inclusion Criteria: age of 18-89 years of age, admitted for unilateral or bilateral total knee replacement surgery at Kettering Medical Center and received either LB or an elastomeric pump containing bupivacaine for post-operative analgesia. Exclusion criteria: Time to discharge >6 days, pregnancy at time of surgery or <2 numeric rating scale pain scores afte bupivacaine administration. The following data will be collected: patient age, gender, weight, height, BMI, dose of LB, dose of bupivacaine, unilateral or bilateral knee replacement, day and time of end of surgery, discharge day and time, and acquisition cost for study drugs and pain pumps. These parameters will be recorded for up to 72 hours administration of bupivacaine: post-surgical opioid consumption, and 11-point numeric rating scale pain scores.□Results and Conclusion: To be presented.

Learning Objectives:

Recall the maximum dose for liposomal bupivacaine.

Recognize a commonly use method for estimated the AUC of numeric rating scale pain scores.

Self Assessment Questions:

What is the maximum dose of liposomal bupivacaine?

A 133mg
B: 266mg
C: 532mg
D: 1gm

Which of the following is a common method to estimate the AUC of numeric rating scale pain scores?

A the pyramidal method
B the diagonal method
C the rectangular method
D the trapezoidal method

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-801 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

OPTIMIZATION OF THE PHARMACIST WORKSPACE IN THE ELECTRONIC HEALTH RECORD

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Purpose:□Pharmacists provide a variety of both operational and clinical services for patients. One tool which unifies many of the pharmacist duties is the electronic health record (EHR) through the access of information.□Usability of the EHR is a determining factor for satisfaction with the EHR. KLAS, a healthcare technology research organization defines usability as a combination of the subjective measure of user satisfaction and the objective measure of a time-based efficiency during a defined task. Additionally, proficiency of a user and time-to proficiency may factor into a users rating of usability.□□This institution recently underwent a version upgrade of its EHR, which contains many new features and tools available for the pharmacist workspace. Some of these features and tools may be able to help bring more timely and more relevant information to the user. Additionally, reconfiguration of existing features may also help in information management and presentation. The goal of this project is to increase user-satisfaction and perceived efficiency of the pharmacist workspace in the EHR. □□Methods:□A review of current literature and available functionality will be conducted. A user-satisfaction and perceived efficiency survey and a current EHR-use characteristic survey will be created and validated with a group of advanced EHR users. The user-satisfaction and perceived efficiency survey will be used to measure baseline and post-implementation user-satisfaction and perceived efficiency. The current EHR-use survey will assess utilized tools, utilities, and reports, and user-suggested areas of improvement. Utilizing feedback from the current EHR-use survey and current literature and available functionality, the features, tools, and reporting utilities of the EHR will be modified. This modified workspace will be tested with a group of advanced EHR users before eventually being implemented for all users. □□Results/Conclusion:□Collection and analysis of the data is ongoing. Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Describe EHR user satisfaction and perceived efficiency data specific fo pharmacists.

Describe user background and EHR user satisfaction specific for pharmacists.

Self Assessment Questions:

Which of the following describes a combination of the subjective measure of user satisfaction and the objective measure of a time-based efficiency during a defined task?

A Likability
B: Fulfillment
C: Usability
D: Proficiency

Which of the following describes currently available EHR usability and user satisfaction data specific for pharmacists?

A Very limited documentation and data is available.
B The effects of increased EHR user satisfaction for pharmacists are
C Extensive EHR usability testing data is available.
D Research groups are actively conducting usability testing for pharr

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-802 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSESSMENT OF THE USE OF METFORMIN IN PATIENTS WITH AND WITHOUT RENAL IMPAIRMENT AT A VETERANS AFFAIRS MEDICAL CENTER

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Purpose: Despite recent evidence for the safe use of metformin in patients with diabetes and renal impairment, providers continue to discontinue metformin based on serum creatinine as outlined in the prescribing label, leading to omission of a beneficial therapy. The purpose of this two-phase study is to evaluate metformin use at a veterans affairs medical center based on the 2013 VISN 11 Pharmacy Benefits Management (PBM) Guidelines for metformin in mild to moderate renal insufficiency, utilizing estimated glomerular filtration rate The first phase will evaluate metformin use since April 2013 and the second phase will evaluate metformin discontinuations prior to this date. Methods: After IRB approval, a list of type 2 diabetes patients ≥18 years old on metformin between January 2011 and December 2012 was generated and crossed with those on metformin between April 2013 and June 2013 to identify patients that were no longer on metformin on or prior to April 2013. This list was randomized to 150 patients. Patients were excluded if metformin discontinuation was unrelated to renal impairment. The list of patients that were still on metformin from April 2013 to June 2013 was also randomized to obtain 150 patients. Primary endpoints for the first and second phase of the study were the percentage of patients in compliance with the new PBM Guidelines and the percentage of patients who could be restarted on metformin, respectively. Secondary endpoints included the primary endpoints stratified by prescribing location and prescriber type, the percentage of patients with hemoglobin A1c at goal, the percentage of patients in compliance with the dosing guidance only or renal monitoring guidance only, the renal-related reasons for metformin discontinuation, and the percentage of patients initiated on new diabetic medication(s) and the medication(s) utilized. Results/Conclusions: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the relationship between the use of metformin and the development of lactic acidosis.

Discuss current recommendations for the use of metformin in patients with renal impairment based on recent practice guidelines and clinical evidence.

Self Assessment Questions:

Which of the following is true regarding the relationship between metformin use and the development of lactic acidosis?

A The incidence of metformin-associated lactic acidosis is rare in bo
B: Renal impairment is not associated with an increased risk of metfo
C: Patients with liver dysfunction or COPD are less likely to develop r
D: There is a definite correlation between metformin plasma levels ar

JM is a 55-year-old Caucasian male with type 2 diabetes and is currently taking metformin 1000 mg by mouth twice daily. Today, his serum creatinine was 1.5 mg/dL (baseline 1.3 to 1.5 mg/dL), estimated

A Reduce metformin to 500 mg by mouth twice daily.
B Discontinue metformin.
C Reduce metformin to 1000 mg by mouth daily.
D Continue metformin 1000 mg by mouth twice daily.

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-543 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF AN ANTIMICROBIAL STEWARDSHIP TEAM COMPREHENSIVE CARE BUNDLE ON MANAGEMENT OF STAPHYLOCOCCUS AUREUS BACTEREMIA

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Purpose: Staphylococcus aureus bacteremia (SAB) carries a high risk o complications for which suboptimal treatment may adversely affect patient outcomes and survival. Antimicrobial stewardship teams (AST) are well-situated to direct the evidence-based treatment of SAB. By implementing an AST-directed, comprehensive care bundle for the management of SAB, we hypothesize that adherence to the applicable bundle elements will increase. Methods: This is a quasi-experimental study of patients with SAB at the University of Michigan Hospital and Health System (UMHS) before and after implementation of a comprehensive care bundle directed by an AST. Bundle elements include: timely initiation of effective empiric antibiotics following positive gram stain, targeting therapeutic vancomycin levels (10-20mg/L), changing to -lactam therapy if MSSA, obtaining blood cultures every 24-48 hours until documented clearance, utilizing an appropriate treatment duration, identifying and controlling the source of bacteremia, obtaining echocardiography, and making adjustments to antibiotic therapy for patients with clinical failure, vancomycin MIC=2, and/or persistent bacteremia >5 days. Obtaining a formal ID consultation will also be recommended. Demographic, microbiologic, management, and outcomes data will be collected by review of the electronic medical record. Adherence to applicable bundle elements will be calculated and compared using a two tailed Chi-squared test. Secondary endpoints include length of hospital stay, length of ICU stay, time to microbiologic cure, incidence of recurrent bacteremia, 30-day readmission rate, and 30-day all-cause mortality. This study has been approved by the Institutional Review Board. Data collection and analysis are ongoing.

Learning Objectives:

Identify appropriate interventions for the management of Staphylococcus aureus bacteremia (SAB)

Describe the methods in which the SAB comprehensive care bundle will be implemented assessed at UMHS

Self Assessment Questions:

Which of the following are appropriate interventions for the management of a complicated MRSA bloodstream infection?

A Obtain repeat blood cultures every day until bacteremia has cleare
B: Start empiric antibiotics when susceptibilities return
C: Daptomycin is the first line agent for MRSA bacteremia
D: Obtain an echocardiography to rule out endocarditis

Which of the following are true regarding implementation and assessment of the UMHS SAB comprehensive care bundle?

A The Antimicrobial Stewardship Team will receive real-time alerts fo
B Pharmacists will recommend treatment with daptomycin for all pat
C Patients with SAB should receive treatment for a minimum of 6 we
D Compliance with bundle elements will be assessed using a randor

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-542 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF QUETIAPINE UTILIZATION TO ABATE OFF-LABEL PRESCRIBING FOR INSOMNIA (EQUAL-PI)

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Objectives: In 2004, The American Psychiatric Association and the American Diabetes Association developed a consensus position that addressed and confirmed the relationship between second-generation antipsychotics (SGAs) and obesity, diabetes and dyslipidemia. The primary objective of this study is to decrease the use of quetiapine (an SGA) for the non-FDA labeled treatment of insomnia in outpatients. The secondary objective is to evaluate metabolic syndrome risk factors (i.e., waist circumference, blood pressure (BP), fasting glucose (FPG), triglycerides (TG), high-density lipoprotein (HDL)) for those patients being prescribed quetiapine before and after intervention is made to recommend a change in therapy.□□Methods: A retrospective chart review of outpatients who are prescribed nightly quetiapine at a dose of ≤ 125 mg/day will be conducted. Prescribing physicians will be contacted via electronic medical note that recommends discontinuation of quetiapine. Replacement with an alternative, evidence-based sleep-aid based on US clinical guidelines will also be recommended if indicated. Eligible patients (1) have an active prescription for quetiapine, (2) have filled the prescription within the last 3 months, (3) are taking ≤ 125 mg/day at bedtime and the dose has not exceeded 125 mg/day in the previous year, and (4) have had relevant metabolic syndrome monitoring parameters (BP, FPG, TG, HDL) assessed at least 3 months after beginning therapy with quetiapine. Patients will be excluded if they (1) are taking another antipsychotic in addition to quetiapine, (2) have a documented psychotic disorder or PTSD on their problem list, or (3) are taking quetiapine during the day in addition to their bedtime dose. Follow up lab work will be encouraged and evaluated 3 months after intervention whether or not quetiapine was discontinued to identify improvement/worsening of metabolic syndrome parameters.□□Results: To be presented□□Conclusions: To be presented

Learning Objectives:

Recognize when a particular patient meets criteria for having metabolic syndrome given their waist circumference, blood pressure, high-density lipoprotein, triglycerides, and fasting glucose.

Select an appropriate medication for a patient suffering from insomnia based on current clinical guidelines.

Self Assessment Questions:

Which of the following patients is considered to have metabolic syndrome?

A AL, a 20 yo male with a WC=39 in, TG=100, HDL=27, BP 140/90,
B: JJ, a 47 yo male with a WC=50 in, TG=190, HDL=45, BP 130/84,
C: KG, a 33 yo female with a WC=34 in, TG=167, HDL=45, BP 120/8
D: MM, a 78 yo female with a WC=30 in, TG= 87, HDL=40, BP 120/7

Which of the following is considered a first-line pharmacologic treatment option for a patient with no history of substance abuse who comes into the doctors office complaining of insomnia?

A Clonazepam
B Diphenhydramine
C Mirtazapine
D Zolpidem

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-917 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

OPTIMIZATION OF EMERGENCY DEPARTMENT ADULT SEPSIS RECOGNITION & TREATMENT THROUGH ELECTRONIC MEDICAL RECORD ENRICHMENT & IMPLEMENTATION

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Purpose:□Severe sepsis & septic shock is associated with high mortality, and effective systems for triaging patients and ensuring best treatment practices may improve outcomes. The Surviving Sepsis Campaign (SSC) guideline "bundle" care has been previously shown to increase survival two-fold; however, a disappointingly low overall achievement has been noted among institutions. Related to value-based purchasing, the heralding of a future measure for hospital performance is evident through National Quality Forum (NQF) ratificatior of the SSC bundles in February 2013. The University of Wisconsin Hospital & Clinics (UWHC) uses Epic 2012 health system-wide and is developing an electronic medical record (EMR) alerting system with order set support for early recognition and standardization of treatment for patients presenting to the emergency department (ED) with severe sepsis or septic shock.□□Methods:□The ED EMR alerting system build process uses the PDCA cycle methodology consisting of multi-disciplinary workgroup meetings and process mapping, alert constructio and testing, and implementation with associated ED team education. After go-live, outcomes will be compared pre- and post-implementation via a retrospective chart review. Inclusion criteria will include patients presenting to the ED within six months before and after implementation; ICD-9s of 790.7 (bacteremia), 995.91 (sepsis), 995.92 (severe sepsis), 785.52 (septic shock). Patients less than eighteen years of age will be excluded.□□□Results:□Anticipated results related to the alerting systen functionality include overall effectiveness in terms of sensitivity and specificity for identifying patients with severe sepsis or septic shock. SSC bundle criteria will be compared pre- and post-implementation via percent overall 3-hour bundle compliance and percent of patients for which antibiotics were administered within 1 hour of presentation. Survival to admission, 24-hour survival, survival to discharge, ICU length of stay, and hospital length of stay will also be compared pre- and post-implementation.□□Conclusions: □To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

State initial resuscitation goals for patients with severe sepsis as described by the Surviving Sepsis Campaign (SSC) 2012 guidelines

Recall the evidence of impact for SSC bundles as well as the current estimated achievement rate among institutions

Self Assessment Questions:

Based upon the Surviving Sepsis Campaign (SSC) 2012 guidelines, which of the following is the goal time-to-administration of broad-spectrum antimicrobial therapy for patients with severe sepsis or sep

A ≤ 15 minutes
B: ≤ 30 minutes
C: ≤ 60 minutes
D: ≤ 180 minutes

Which of the following is the recently estimated "adherence" to SSC bundles among institutions?

A 5%
B 20%
C 30%
D 50%

Q1 Answer: C Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-803 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

A TEAM APPROACH TO MEDICATION OPTIMIZATION IN CHRONIC HEART FAILURE PATIENTS

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Purpose: Heart failure (HF) is the primary diagnosis for >1 million hospitalizations annually, and patients are at risk for re-hospitalization. Certain medications including angiotensin-converting-enzyme inhibitors (ACE-Is), angiotensin receptor blockers (ARBs) and beta-blockers (BBs) have been shown to decrease morbidity and mortality in patients with systolic dysfunction. Therefore, the American College of Cardiology Foundation (ACCF)/American Heart Association (AHA) guidelines recommend these medications as part of guideline-directed medical therapy (GDMT). The ACCF/ACA also advocates for multidisciplinary HF disease management programs. The Jesse Brown VA Medical Center (JBVAMC) opened the HF Disease Management Program (HFDMP) in October 2010 in an attempt to prevent readmissions. The HFDMP is multidisciplinary with a pharmacist added in April 2011. After initial enrollment into the HFDMP, appropriate patients are referred to the pharmacist for independent optimization of their therapy in the Pharmacy Medication Titration Clinic (PMTC). The JBVAMCs PMTC is unique in that it has a pharmacist with prescribing authority who interacts with patients during face-to-face appointments. The purpose of this study is to evaluate the effectiveness of a face-to-face pharmacist-managed medication titration clinic within a HFDMP. Methods: This study is a retrospective, electronic chart review of JBVAMC patients aged 18 years and older seen in the HFDMP between 04/15/2011 and 04/15/2013. Patients with an ejection fraction greater than 40 percent will be excluded. There will be two study groups: 1) those in the HFDMF enrolled in the PMTC and 2) those in the HFDMP not enrolled in the PMTC. The primary endpoint is the difference in the number of patients who achieve target BB doses and ACE-I or ARB doses between the study groups. Results and Conclusions: To be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the significance of HF hospitalizations.

Identify specific ACCF/ACA heart failure guideline recommendations for achieving guideline-directed medical therapy (GDMT).

Self Assessment Questions:

Which of the following is true regarding hospital admissions for heart failure (HF)?

A HF hospital admissions contributed to <$10 billion in the total cost
B: HF hospital admissions result in a 1-month readmission rate of 5%
C: Each HF hospitalization costs on average <$15,000
D: HF is the number one discharge diagnosis among Veterans treate

In order to achieve GDMT, it is recommended to:

A Uptitrate in large increments in order to achieve GDMT more quick
B Have infrequent clinic visits and laboratory monitoring during medi
C Enroll patients in a heart failure disease management program (HF
D Discontinue beta-blocker (BB) in order to obtain target angiotensin

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-544 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEXMEDETOMIDINE OR PROPOFOL IN NEUROSURGERY: THE DOPING STUDY

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Purpose Significant literature has been published examining the use of sedative agents in critically ill patients, though few specifically address the neurosurgical intensive care unit (NSICU) population.1-6 NSICU patients experience a unique level of distress due to the nature of their injuries. Significant cerebral metabolic demands make the use of sedation beneficial; however, these patients also require frequent neurologic examination and sedation can alter the ability to perform a thorough and reliable assessment. At the University of Illinois Hospital and Health Sciences System (UIHHSS), dexmedetomidine and propofol are the two predominant sedative agents used in the NSICU. Historically, propofol was primarily used, but due to past manufacturing shortages, use of dexmedetomidine has increased. Dexmedetomidine is an attractive alternative to propofol due to its ability to produce sedation without respiratory depression; prior literature in non-NSICU patients suggests that this may result in shorter periods of mechanical ventilation which may translate to shorter length of stay. Methods The current study is a retrospective chart review submitted and approved by the Institutional Review Board. The electronic medical record will be used to identify patients admitted to the NSICU, requiring sedation with either dexmedetomidine or propofol for at least 6 hours between January 1, 2007 and July 31, 2013. The primary outcome is duration of hospital length of stay. Secondary outcomes include: time to adequate sedation after initiation of sedative, discharge disposition, days on ventilator, incidence of ventilator associated pneumonia, number and type of adjunct sedative/opioid/vasoactive medications required, and mean daily changes in hemodynamic parameters. Data collection and statistical analysis are ongoing. Results/Conclusions Results are currently pending; therefore no conclusions have been reached at this time.

Learning Objectives:

State two benefits of sedation in neurosurgical intensive care unit patients.

Discuss the outcomes of utilizing propofol and dexmedetomidine in the neurosurgical intensive care unit.

Self Assessment Questions:

Which of the following pairs best describes the beneficial effects of sedation in NSICU patients?

A Improvement of the neurologic exam and reduction of cerebral der
B: Anxiolysis and reduction of systolic blood pressure
C: Reduction of cerebral demands and anxiolysis
D: Reduction of sympathetic hyperactivity and improvement of Glasg

Dexmedetomidine is proposed to be a preferential sedative agent to propofol in NSICU patients because:

A it possesses a hemodynamically neutral side effect profile
B it has a negligible effect on the level of patient arousal
C it had a rapid onset of action and long half life
D it is superior in lowering intracranial pressure

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-545 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFECT OF SEDATION IN INHALATION INJURY PATIENTS BEING TREATED WITH HYPERBARIC OXYGEN

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Purpose: The purpose of this study is to compare clinical outcomes in patients with inhalation injury and carbon monoxide poisoning that received analgesia and sedative agents via an as-needed basis and continuous infusions during hyperbaric oxygen therapy. Results of this study will provide direction in the management of sedation and analgesia for patients during hyperbaric oxygen therapy. Methods: This is a retrospective, cohort study of patients with a diagnosis of inhalation injury or carbon monoxide poisoning at Detroit Receiving Hospital from January 2008 to December 2013. Patients were identified using admission log books in the burn intensive care unit. Eligible patients were those that received analgesia and sedative agents during hyperbaric therapy. Patients were excluded if < 18 years of age, or if made do not resuscitate and/or palliative care within 24 hours of admission. Two groups were defined: patients who received analgesia and sedation via as-needed basis and via continuous infusions. Data collected includes patient demographics, pertinent laboratory data, total dose of opioids and sedatives received, PABS pain and RASS sedation scores, length of stay, mechanical ventilation duration, and disposition a discharge. Continuous data and nominal data will be compared using Students t-tests and Pearsons chi-square, respectively, using SPSS version 21. P-values < 0.05 will be considered statistically significant.

Results: A total of 228 patients were admitted during the IRB-approved study period, with 53 meeting the inclusion criteria and included in the study. Fire-related accidents were responsible for 90% of admissions, followed by accidental carbon monoxide exposure (8%), and suicide attempts (2%). Mean carboxyhemoglobin level on admission was 28.5% (range 7-50.7%). The majority of patients were African American (58%). Average length of stay was 16 days. Overall mortality was 6% during hospital admission. Conclusions: Final results and analysis are expected to be completed by April 2014.

Learning Objectives:

Explain the pathophysiology of carbon monoxide poisoning and inhalation injury and define the mechanism by which hyperbaric oxygen therapy reverses end organ damage.

Discuss the relationship between dosing strategies for sedation and analgesia to clinical outcomes in critically ill inhalation injury patients receiving hyperbaric oxygen therapy.

Self Assessment Questions:

What is the mechanism by which hyperbaric oxygen (HBO) therapy reverses neurological and cardiovascular damage?

A HBO slows metabolic processes within cells which will prevent furt
B: HBO competitively displaces carbon monoxide from hemoglobin to
C: HBO decreases free radical concentration in the blood, slowing the
D: HBO slows the excretion of carbon monoxide from the circulatory s

Which of the following factors was strongly associated with worsening patient outcomes?

A Use of high dose continuous infusion sedatives and opioids
B Decreased time on mechanical ventilation
C Low carboxyhemoglobin level at hospital presentation
D Younger patient age at time of injury

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-546 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF MEDICATION DISCREPANCIES WITH NURSE DRIVEN ADMISSION MEDICATION HISTORIES AFTER MODIFICATIONS TO CURRENT PRACTICE.

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Medication errors made during patient admission and discharge processes account for approximately 46% of all errors during hospitalization. This study aims to reduce medication discrepancies (errors, omissions, etc) by standardizing nurse processes when obtaining admission medication histories (AMH). Baseline data was collected to determine discrepancy rate and significance with current AMH practices. The Phase 1 intervention included deletion of existing home medication histories from the electronic health record, preventing flow of incorrect data from previous admissions. The Phase 2 intervention includes implementation of an algorithm and scripting for nurse utilization during AMH. Patients were randomly selected at baseline and after phased intervention for evaluation. Each AMH was reviewed by the investigator no later than the end of admission day one. Discrepancies were classified as significant or non-significant, based on institutional definitions. At baseline (n=31 patients), 328 medications were entered through AMH. A total of 448 discrepancies (mean 14.45 per patient) were identified; 411 (91.7%) of these were defined as significant. Among 60 patients evaluated following phase 1 intervention, 570 medications were entered. A total of 495 discrepancies (mean 8.25/patient) were identified, with 414 (92.2%) defined as significant. The number of medication omissions increased from baseline to phase 1 evaluation (12.5% to 16.9), yet the number of significant omissions decreased from baseline to phase 1 evaluation (55% to 22%). Unintentional medication discrepancies are common and are often related to errors in gathering accurate AMH. By our institutional definition, most medication discrepancies are significant and have the potential to cause harm. The Phase 1 intervention reduced the mean number of errors per patient and significant omission errors, but did not reduce overall medication omission errors during AMH. Phase 2 intervention continues, which includes nurse education with verification strategies and implementation of educational modules designed to reduce discrepancies and errors during AMH.

Learning Objectives:

Identify the impact of accurate and complete admission medication histories.

State barriers related to gathering an accurate and complete admission medication history.

Self Assessment Questions:

Which of the following is true regarding admission medication histories?

A They can be quickly completed upon admission by obtaining a me
B: Inaccuracies in admission medication histories can lead to incorre
C: Using open ended questions during collection of medication histor
D: Pharmacists are able to identify all errors in home medication cont

Which of the following is not a barrier to collecting accurate medication histories?

A Polypharmacy
B Inadequate patient health literacy
C Time
D Utilization of multiple sources to gather and verify information

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-918 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

INTERMITTENT IMIPENEM VERSUS EXTENDED-INFUSION DORIPENEM FOR THE TREATMENT OF GRAM-NEGATIVE INFECTIONS IN THE CRITICALLY ILL

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A lack in the development of novel antimicrobials and increasing resistance rates has made the optimization of currently available agents crucial. The bactericidal activity of beta-lactams is dependent on the fraction of time the unbound concentration is above the minimum inhibitory concentration (MIC) of an organism. Extended-infusions (EI) take advantage of this pharmacodynamic principle to improve clinical outcomes. The objective of this study is to assess the impact of intermittent infusion imipenem versus EI doripenem for the treatment of documented gram-negative infections in the critically ill.□□This is a single-center, retrospective, before-and-after study (April 1, 2007 to March 31, 2012) evaluating outcomes of adult intensive care unit (ICU) patients receiving intermittent-infusion imipenem versus EI doripenem for gram-negative infections. All patients 18 years or older with a documented infection by a gram-negative pathogen and receiving drug within 72 hours of infection and for at least 48 hours will be included; patients receiving greater than 48 hours of effective antibiotics before the initiation of study drug, infected with an organism resistant to the study drug, treated concomitantly with other antibiotics (excluding intravenous or inhaled aminoglycosides, fluoroquinolones, or colistin) or treated for a urinary tract infection will be excluded from the analysis. Baseline demographics, co-morbidities, antibiotic use, microbiology, vasopressor and ventilator use, ICU days and mortality will be collected. The primary end point will include in-hospital and 28-day mortality between groups. Secondary end points will include appropriateness of antibiotic selection, vasopressor, ventilator and ICU days. □□Statistical analysis will be performed using SPSS (version 19.0; SPSS Inc, Chicago, IL). Continuous variables will be analyzed using the Students t test or Mann-Whitney U tests, where appropriate. The Fishers exact or chi-squared tests will be used to analyze categorical variables. To adjust for confounders associated with mortality in the groups, a multivariate regression analysis will be performed.

Learning Objectives:

Describe the pharmacodynamic property responsible for the bactericidal activity of beta-lactam antibiotics.

Report on evidence for the use of extended-infusion doripenem for the treatment of gram-negative infections in the critically ill.

Self Assessment Questions:

Which of the following is responsible for the bactericidal activity of beta-lactam antibiotics?

A Minimum concentration of drug over the minimum inhibitory conce
B: Time unbound drug is above the minimum inhibitory concentration
C: Maximum concentration of drug over the minimum inhibitory conce
D: Area under the curve of the drug over the minimum inhibitory conc

Which population of patients has the strongest evidence supporting the use of extended-infusion beta-lactam antibiotics?

A Gram-positive infections in transplant patients
B Gram-negative infections in obese patients
C Gram-positive infections in immunosuppressed patients
D Gram-negative infections in the critically ill

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-547 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF A POST-DISCHARGE HEART FAILURE MEDICATION RECONCILIATION CLINIC

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Purpose: The emergence of the Centers for Medicare and Medicaid Services pay for performance standards has resulted in reduction in reimbursement rates for heart failure (HF) readmissions. This has led to various strategies being evaluated to reduce hospital readmissions in patients with HF. Many of the strategies associated with reduction in readmissions include early patient follow-up within seven days after discharge. At the Louis Stokes Cleveland Department of Veteran Affairs Medical Center (LSCDVAMC), the goal of the HF medication reconciliation clinic is early optimization of medication therapy after a HF hospitalization. The objective of this project is to compare the all-cause 30-day readmission rates in HF patients who are seen post-discharge at the HF medication reconciliation clinic to a control group of patients who receive usual post-discharge care.□□Methodology: This is a case-control retrospective chart review at LSCDVAMC. Patients will be identified via HF medication reconciliation clinic records from January 1, 2008 to March 1, 2013. Demographic data will be collected at the date o discharge in both groups. Outcome data collected will include the dates of the index hospitalization discharge and any readmissions and/or ED visits, reason for readmission or ED visit, total number of readmissions and ED visits, dates of follow-up visits, medication changes at each visit and death within 6 months following index HF discharge. Differences in categorical variables will be assessed with the Pearson Chi Squared test, and differences in continuous variables will be assessed with the Student T-test. To detect a 50% decrease in the primary endpoint with a power of 0.80, α =0.05, and effect size of 0.22, this study will require a total sample of 165 patients. The total anticipated sample size is 200 patients.□□Results/conclusions: Results pending, will be presented at Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss heart failure hospitalization, 30-day readmissions, and strategies to reduce readmissions.

Explain the role of pharmacists in the heart failure medication reconciliation clinic at LSCDVAMC.

Self Assessment Questions:

Which of the following organizations will reduce reimbursement rates for heart failure readmissions within 30 days?

A American Hospital Association
B: Centers for Medicare and Medicaid Services
C: Food and Drug Administation
D: Joint Commission on the Accreditation of Healthcare Organization

Which of the following statements is correct?

A Heart failure hospitalization is associated with high morbidity
B Heart failure hospitalization is associated with an increase in healt
C Patients admitted for heart failure are at high risk of readmission w
D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-548 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT OF A PHARMACIST-BASED MEDICATION EDUCATION PROGRAM FOR PATIENTS WITH SYSTOLIC HEART FAILURE

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Purpose: Several studies have been published illustrating the impact pharmacists can have on reducing hospitalizations and improving care in heart failure patients. The primary objective of this pilot project is to develop a pharmacist-based medication education program for heart failure patients and to determine the feasibility of adopting this program at Munson Medical Center. Methods: Chart review will determine the diagnosis of heart failure defined as a left ventricular ejection fraction < 0.40. Adult patients admitted to cardiac floors will be included. Exclusion criteria include adults unable to consent, pregnant women, prisoners, evaluation for cardiac surgery, non-cardiac illness likely to increase 6-month mortality or hospitalization risk, patients admitted from and returning to a nursing home, patients enrolled in a Heart Failure Clinic, patients under evaluation for transplant, patients enrolled in palliative care or hospice. The pharmacist will collaborate with the multidisciplinary team to make treatment and monitoring recommendations, and provide discharge medication reconciliation. The pharmacist will then follow the patient after discharge for a period of time to reinforce medication education. A measuring tool will be developed to assess patient knowledge of medication at baseline and at the end of the intervention period. Trends in readmission rates and length of stay will be compared using each patient as their own control. Resources and time dedicated to implementing this pilot program will also be recorded to determine the feasibility of continuing this program in the future. Conclusion: It is hypothesized that the overall benefit of pharmacist involvement in medication discharge counseling and follow-up will outweigh the costs of time and resources needed to complete the pilot. This will demonstrate that continuing this program will be feasible for the organization in the future.

Learning Objectives:

Recognize ways pharmacists can improve outcomes for systolic heart failure patients

List potential reasons why patients with heart failure are readmitted to the hospital

Self Assessment Questions:

Pharmacist-driven discharge programs have demonstrated benefits in which of the following areas?

A Hospital readmissions

B: Surgical interventions

C: Emergency department visits

D: A and C

Which of the following statements is correct?

A The transition of care period has a low susceptibility to medication

B Most post discharge adverse events in heart failure patients are nc

C Studies specific to heart failure have found that pharmacists contri

D Interventions surrounding the discharge period could prevent 100%

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-549 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

SICKLE CELL PAIN MANAGEMENT

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Purpose: Sickle cell disease is one of the most common genetic disorders. Although the underlying causes are well known, medical therapy targeting the specific physiology of this condition have not been adequately developed. As a result, clinical management of the disease is still evolving and variable. The purpose of this retrospective cohort study is to evaluate the current management of sickle cell pain crisis at this Mount Sinai Hospital in Chicago, IL. At minimum, an institutional guideline for the management of acute sickle cell crisis will be developed. The guideline will serve to decrease variability in and optimize patient care. Next, development of an order set will be targeted which would provide even greater assurance of standardization of care Methods: In this retrospective cohort study, 30 medical records of patients admitted for sickle cell pain crisis are being reviewed to determine the appropriateness of management of pain crisis at our institution. The primary objective is to determine the appropriateness of agent, dose and frequency of administration. The secondary objective is to measure the appropriateness of the assessment and re-assessment of pain, in terms of time. Other secondary objectives are measurement of the patients response to the analgesic, and the healthcare professionals response to that reassessment. Pain scores during the first 24 and 48 hours of hospitalization will be averaged. The data will then be summarized and analyzed to identify potential issues, trends, and omissions in the care of sickle cell crisis patients. Results/Conclusions: Data collection and analysis is currently being conducted. Completed results/conclusion of this study will be presented at Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss management of sickle cell pain crisis.

Identify areas for improvement for inpatient treatment of sickle cell pain crisis

Self Assessment Questions:

According to Elander et. al, what is the prevalence of opioid addiction in sickle cell patients

A 55-58%

B: 0.5-8%

C: 5-18%

D: 23-35%

Which of the following medications is dose appropriately for first line treatment of sickle cell pain crisis

A Hydromorphone 0.5mg IV

B morphine 5mg IV

C Tylenol #3 2 tabs po

D Ibuprofen 800mg po

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-550 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

REDESIGN AND IMPLEMENTATION OF THE UNIT DOSE CART FILL PROCESS AT A VA MEDICAL CENTER

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Purpose: The purpose of this research is to examine the current cart fill process for total time spent filling the carts prior to delivery, errors made during this process, and technicians views and attitudes towards this process. Based on our findings, the cart fill process will be redesigned to maximize efficiency and then be re-evaluated once the change has been implemented. The primary endpoint for this research is to determine the total time spent filling, updating, checking medication carts, and putting away discontinued medications within the inpatient pharmacy prior to the carts being delivered to the patient floors. Secondary endpoints include pharmacy technician satisfaction with the cart fill process, time spent charging medications to patients after cart fill updates have been completed, and medication filling errors which have occurred during the cart filling process. Methods: This prospective study will compare a two week time period pre- and post-redesign of the unit dose cart fill process. The time spent initially filling the carts, updating the carts, checking carts, and time putting away medications from updates will be recorded daily for a two week period. Any cart fill errors will also be documented during this time. A survey will be distributed to the pharmacy technicians to assess their perspectives and impressions towards the current cart fill process. The process will then be redesigned and implemented. One month after implementing the new process, the cart fill process time and medication errors will then be re-evaluated over a two week period. The survey will be redistributed to the pharmacy technicians to assess their attitudes and beliefs towards the new cart fill process. Results: Data is currently being collected and analyzed. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the role of the unit dose cart fill process within the medication delivery process at the Huntington VA Medical Center

Identify areas of improvement for the unit dose cart fill process

Self Assessment Questions:

Which of the following best describes the unit dose cart fill process?

A The process of a pharmacist verifying orders via Computerized Ph
B: The process of a technician loading the Pyxis machine upon gene
C: The process of a technician loading a medication cart with bulk me
D: The process of a technician loading a medication cart with patient-

Which of the following is not an important factor when analyzing the unit dose cart fill process?

A Time spent by technicians to fill the medication carts.
B Time spent by technicians charging medications to patients.
C Time spent by pharmacists delivering medication to the floor.
D Medication errors which occur as a result of cart fill errors.

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-804 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

OUTCOMES OF ORTHOPEDIC HARDWARE-RELATED OSTEOMYELITIS TREATED VIA A COUNTY HOSPITAL OUTPATIEN PARENTERAL ANTIMICROBIAL THERAPY (OPAT) PROGRAM

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Purpose: Outpatient parenteral antimicrobial therapy (OPAT) is a popular approach for treating complicated infections due to its obvious clinical advantages (decreased length of hospital stay and increased patient convenience). Limited published literature exists on the clinical outcomes of patients with orthopedic hardware-related osteomyelitis managed by an OPAT program. This study is being conducted to evaluate clinical outcomes, complications, and risk factors for treatment failure in patients with orthopedic hardware-related osteomyelitis managed by a county hospital OPAT program. Methods: Electronic and clinic records of patients who received OPAT for orthopedic hardware-related osteomyelitis from July 1, 2009 to June 30, 2011 will be retrospectively reviewed. Patient-specific (age; gender; race; medical/medication history; social history), infection-specific (infection being treated {site and infecting organism(s)}; inflammatory markers; radiographic results; culture/ susceptibility results) and treatment-specific (antibiotic regimen including dose/ duration; compliance; adverse events) information will be collected. Clinical outcome will be assessed for up to 24 months after OPAT completion and will be classified as cure (clinical improvement without signs/symptoms of infection, C-reactive protein (CRP) < 5 mg/L, radiographic stability/improvement, and hardware removed as planned) or failure. Failure will be further classified into early (within 4 weeks of OPAT completion) or late failure (≥ 4 weeks). The primary study endpoint is the number of patients who achieved clinical cure, while secondary endpoints include the incidence of treatment complications, the overall OPAT compliance rate, and risk factors associated with treatment failure. Data will be analyzed using descriptive statistics to delineate factors with the greatest influence on clinical outcome of orthopedic hardware-associated osteomyelitis. Results: Data has been collected for 32 of 48 patients meeting inclusion criteria. The median age of patients is 50.6 years and 46.2% are male. Treatment cure was achieved in 61.5% of patients, with 15.4% of patients experiencing an OPAT-related complication (rash, neutropenia, diarrhea, line infection).

Learning Objectives:

Define outpatient parenteral antimicrobial therapy (OPAT) and explain its utility in treating orthopedic hardware-related osteomyelitis.

Describe the benefits of OPAT as well potential barriers to cure using OPAT to treat orthopedic hardware-related osteomyelitis.

Self Assessment Questions:

Which of the following is an IDSA recommended outcome measure to be used in an OPAT program?

A Medication compliance
B: Payer source
C: Vascular access complications
D: Cost savings

Which of the following is a benefit of OPAT?

A Lower risk of MRSA
B Lower rate of nosocomial infections
C Decreased patient convenience
D Increased medication compliance

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-551 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

VANCOMYCIN SERUM TROUGH CONCENTRATION ATTAINMENT AND TIME TO BLOOD CLEARANCE OF METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS BACTEREMIA.

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Purpose: Staphylococcus aureus (SA) is responsible for 20% of hospital acquired bacteremia. Methicillin-resistant Staphylococcus aureus (MRSA) causes up to 50% of SA bacteremia. MRSA bacteremia carries roughly twice the mortality rate as methicillin-sensitive SA bacteremia. Vancomycin is the antibiotic of choice in treatment of MRSA bacteremia at many institutions. Vancomycin is commonly associated with treatment failure and requires close monitoring due to the potential for nephrotoxicity and to ensure attainment of target serum trough concentrations. A local healthcare system has guidelines in place to assist with initial dosing of vancomycin for suspected SA infections. This study will assess whether the initial vancomycin trough concentration affects the time to clearance of MRSA from blood cultures and whether the guidelines should be altered to better achieve appropriate trough concentrations. Methods: A retrospective chart review of the electronic health record will be completed in patients with an initial episode of MRSA bacteremia who received vancomycin as primary treatment between January 2006 and September 2013. The primary outcome is to ascertain if an initial vancomycin serum trough concentration >15mcg/mL is associated with a decreased length in time to blood culture clearance of MRSA compared to trough concentrations of 10-15mcg/mL or <10mcg/mL in non-hemodialysis patients. Our secondary objectives will include the primary outcome in hemodialysis patients in reference to random levels, assessing nephrotoxicity and comparing all-cause 30 day and in-hospital mortality between groups stratified to hemodialysis and non-hemodialysis patients. Patients will be excluded if they are <18 years of age, pregnant, undergoing continuous renal replacement therapy during treatment or if the vancomycin trough concentration is not at steady-state. This study will be reviewed by the Institutional Review Board of the organization. Approximately 45 patients in each vancomycin concentration group will achieve 80% power to detect a 48-hour difference between groups regarding the primary outcome.

Learning Objectives:

Explain the epidemiology of MRSA bacteremia

Review the use of vancomycin in MRSA bacteremia

Self Assessment Questions:

1.In MRSA bacteremia, vancomycin blood trough concentrations are monitored in order to achieve an appropriate:

A AUC/MIC ratio
B: concentration/time ratio
C: initial concentration
D: time above MIC

Vancomycin acts by inhibiting:

A 30S ribosomal subunit
B cell wall synthesis and repair
C DNA gyrase
D 50S ribosomal subunit

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-552 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PAIN AND AGITATION TREATMENT FOR MECHANICALLY VENTILATED ADULT PATIENTS: A PRE AND POST EVALUATION O GUIDELINE BASED PROTOCOLS

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Purpose: Pain and sedation protocols have been considered standard of care and best practice in the intensive care unit (ICU) after the Societ of Critical Care Medicine (SCCM) Guidelines for the sustained use of sedatives and analgesics in the critically ill patient were published in 2002. Important progress has been made since SCCM updated their recommendations with the release of pain, agitation, and delirium guidelines in 2013. The most significant changes include new pain and agitation assessment tools, non-benzodiazepines as first line agents for continuous sedation, and an emphasis on delirium prevention. To reflect these important changes, St. Vincent Indianapolis Hospital revised and implemented a new protocol in August 2013. Our study evaluated the clinical outcomes of the original St. Vincent pain and sedation protocol compared to the revised protocol. The primary objective of this study compared surrogate markers associated with complications of prolonged mechanical ventilation, which include patient discharge disposition as well as the overall use of opioids and sedatives between the two protocols. Secondary objectives include comparison of ICU length of stay, overall hospital length of stay, mechanical ventilation days, need for tracheostomy procedure, the administration of antipsychotics, and the cost of care. Methods: A retrospective cohort study of patients between September 1 - October 31, 2012 (control) and September 1-October 31, 2013 (study) was conducted at St. Vincent Indianapolis Hospital. Patients included were at least 18 years of age, admitted from home, placed on the pain and sedation protocol in the medical intensive care unit and mechanically ventilated for ≥48 hours. Patient demographics, opioid and sedative use, and pre-identified data was collected through a retrospective chart review of patient medical records

Results/Conclusions: Final results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Recognize the changes in pain, agitation, and delirium guidelines.

Recall the potential risks associated with prolonged benzodiazepine use

Self Assessment Questions:

Which agent is considered a first line option for unresolved agitation in a mechanically ventilated patient?

A Lorazepam
B: Propofol
C: Midazolam
D: Ketamine

Which of the following is a complication of prolonged benzodiazepine use in mechanically ventilated patients?

A Venous thromboembolism
B Delirium
C Renal failure
D Status epilepticus

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-553 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF AN INTERDISCIPLINARY APPROACH TO ADDRESSING FEMALE VETERANS WITH ELEVATED LOW-DENSIT LIPOPROTEIN CHOLESTEROL

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Purpose: The purpose of this project is to determine the interventions made by an interdisciplinary team approach in addressing female Veterans with ischemic heart disease (IHD) or diabetes mellitus (DM) whose low-density lipoprotein cholesterol (LDL-C) was above goal. This project will also help determine the proportion of female Veterans reaching LDL goal of ≤100 mg/dl or being on a moderate dose statin after these interventions were made.□□Methods: In January of 2013, the Womens Health Clinic at the Madison VA identified female Veterans with IHD or DM whose LDL-C was ≥100 mg/dl or not on a moderate dose statin. Women whose hemoglobin A1C was ≥9% were also identified. This led to a quality improvement project to improve quality measures for female Veterans. The interdisciplinary team that made interventions for these Veterans included a physician who is the Assistant Director of Womens Health, the Womens Health Clinic nurse case manager, and a pharmacy resident. Though patients were added throughout the year, this project will evaluate the interventions for the initial patients identified. It will evaluate the interventions made between 01/02/2013 and 01/02/2014 for those patients with elevated LDL-C. The primary study outcome is the proportion of female Veterans with IHD or DM reaching LDL goal ≤100 mg/dl or being on moderate dose statin during the study period. The secondary outcomes include: proportion of patients reaching LDL goal ≤100 mg/dl, proportion of patients being on a moderate dose statin, interventions made, and time to reach primary outcome.□□Results: To be presented at the 2014 Great Lakes Pharmacy Resident Conference.□□Conclusions: To be presented at the 2014 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review the various gender disparities between men and women in healthcare.

Describe how statin therapy can potentially be an issue for female patients.

Self Assessment Questions:

Which of the following is a disparity that exists between men and women in healthcare?

A Invasive procedures are more frequently offered to female patients
B: Female Veterans have less aggressive lipid therapy in comparisor
C: Most women do find cardiovascular disease as a major health con
D: Female patients are more likely to be placed on aspirin and statin

Which of the following statements that may affect statin therapy in women is true?

A There is no difference between men and women in regards to this.
B Women have higher levels of Coenzyme Q-10.
C Since females have more body fat, lipophilic statins may potentiall
D Female patients tend to describe pain as less severe than men.

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-554 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE IMPLEMENTATION AND EVALUATION OF A CLINICAL PATHWAY FOR THE TREATMENT OF URINARY TRACT INFECTIONS

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Purpose: Our institution does not currently utilize a standardized clinical pathway for the empiric treatment of urinary tract infections (UTIs). According to the local antibiogram, there has been a pattern of increasing fluoroquinolone resistance against E. coli, one of the primary pathogens of UTIs. Furthermore, fluoroquinolones account for one of the institution's highest utilized antibiotics and are associated with collateral damage such as C. difficile-associated diarrhea. The primary objectives of this project are to design and implement a clinical pathway for the empiric treatment of uncomplicated and complicated UTIs that supports antimicrobial optimization and to evaluate its impact on antibiotic consumption and length of stay. As secondary objectives, I wi assess adherence to the pathway, appropriate de-escalation of antibiotics, and duration of treatment. Overall, I hope to observe a decrease in the utilization of fluoroquinolones for the treatment of UTIs. □□

Methods: Literature evaluation, guideline review, and the local antibiogram support the design of a clinical pathway for the treatment of UTIs. Multiple physician groups, including emergency medicine, interna medicine, family medicine, and medical residents, were instructed on the use of the pathway and the projects objectives. Additionally, inpatient clinical pharmacists were apprised on the projects objectives and clinica pathway and were instructed to make interventions for non-adherence to the pathway. The clinical pathway was implemented, and retrospective data collection is currently being completed to evaluate its impact on antibiotic consumption and length of stay. In addition, adherence to the clinical pathway, appropriate de-escalation of antibiotics, and appropriate duration of therapy will be assessed.□□Results/Conclusions: Data collection is in progress. Results and conclusions will be presented at Great Lakes Residency Conference.

Learning Objectives:

Describe the risks of collateral damage associated with the use of fluoroquinolones.

Identify appropriate treatment options for the treatment of urinary tract infections based on patient-specific factors.

Self Assessment Questions:

Which of the following is a risk of collateral damage associated with the use of fluoroquinolones for the treatment of urinary tract infections?

A C. difficile-associated diarrhea
B: Increasing resistance of pathogens
C: Decreased patient adherence
D: A & b

According to the designed clinical pathway, which of the following would be an appropriate empiric agent for a catheter-associated urinary tract infection with no previous history?

A Ertapenem
B Fosfomycin
C Ceftriaxone
D Levofloxacin

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-555 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFECTIVENESS OF AN ANTIMICROBIAL STEWARDSHIP TEAM IN REDUCING INAPPROPRIATE USE OF SELECTED ANTIBIOTICS IN A RURAL COMMUNITY HOSPITAL

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Purpose: Research has shown a strong correlation between inappropriate antimicrobial use, the emergence of resistant organisms and increases in healthcare costs. In recent years, a rise in Clostridium difficile and multi-drug resistant organisms has been observed and thought to be a direct result of inappropriate use of antimicrobial agents. In May of 2003 Ephraim McDowell Regional Medical Center (EMRMC) established an interdisciplinary Antimicrobial Management Team (AMT) to provide antimicrobial stewardship, cost effective healthcare, and prevent further emergence of resistant pathogens. The team meets on a weekly basis to review patients receiving antimicrobials included in the established restricted antimicrobial policy. The AMT makes recommendations based on defined parameters for the appropriate use of restricted antimicrobials, IDSA guidelines, and patient specific variables. The purpose of this study is to review the effectiveness of the AMT in reducing the inappropriate use of selected antibiotics at EMRMC. Methods: A retrospective chart review from July 1, 2012 to June 30, 2013 was conducted on patients prescribed a restricted antimicrobial and reviewed by the Antimicrobial Stewardship Team. Patients 18 years of age and older who received policy defined restricted antimicrobials were included in the study. The proportion of patients that received restricted antimicrobial therapy in accordance with the policy and whose duration of therapy, based on agent and indication, did not exceed recommended guidelines as defined by IDSA was determined and compared to those patients that were prescribed restricted agents outside of established guidelines. Results: Analysis of the data is still being performed Conclusion: The results will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss the current standards of antimicrobial stewardship practices and their importance.

Explain current recommendations for duration of therapy of restricted antibiotics based on clinical guidelines.

Self Assessment Questions:

Which of the following are practices that can be employed for antimicrobial stewardship?

A Post-prescription review

B: Pre-prescription approval

C: Education

D: All of the above are common practices

The inappropriate duration of antimicrobial therapy may lead to:

A Improved clinical outcomes

B Development of antimicrobial resistance

C Decreased toxicity

D Decreased healthcare costs

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-556 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

INHALED HEPARIN IN CRITICALLY ILL PATIENTS WITH SMOKE INHALATION INJURY

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Purpose Smoke inhalation injury (SIJ) is the leading cause of death due to fires and is associated with mortality rates of up to 80%. Strategies in the management of SIJ include the use of nebulized albuterol, ipratropium, acetylcysteine, and heparin. The purpose of this study is to evaluate the outcomes of patients with SIJ treated with nebulized heparin. Methods This is a retrospective evaluation of patients with SIJ admitted to Detroit Receiving Hospital between January 2008-December 2011. Inclusion criteria: age ≥ 18 years, admission to BICU >72 hours, confirmed SIJ by bronchoscopy and requiring mechanical ventilation (MV). Do not resuscitate patients were excluded. Patient demographic information, MV parameters, medication compliance, and burn injuries were collected. Lung Injury Scores (LIS) and Inhalation Injury Scores (IIS) were calculated to assess severity of injury. Patients were divided into heparin (HEP) and non-heparin groups (NHEP). The primary outcome was duration of MV. Secondary outcomes included length of stays and mortality. Statistics performed using SPSS v 21.0. P values ≤ 0.05 considered statistically significant. Results Thirty-four patients were included in HEP v. 32 in NHEP. The mean age in years was 47.5 15.6 HEP and 56.4 16 NHEP, p = 0.02. LIS 2.42 1.08 HEP v 1.93 0.91 NHEP, p = 0.06. Mortality rates were not significantly different. There were no differences in LOS and duration of MV among surviving patients. Patients with LIS score of <2.5, ICU LOS was 17.5 12.1 HEP v. 23.7 12.1 NHEP, p=0.14, and duration MV in days was 13.1 10.3 HEP v. 18.4 10.9 NHEP, p=0.15. Conclusions Patients with SIJ have significant issues with ventilation. In our SIJ patients who had a LIS < 2.5, patients had shorter LOS and duration of MV.

Learning Objectives:

Review smoke inhalation injury pathophysiology

Discuss pharmacologic management of smoke inhalation injuries

Self Assessment Questions:

Smoke inhalation injuries:

A Do not significantly affect patient mortality

B: Are primarily caused by direct thermal injury to lower airways

C: Decrease pulmonary compliance and may result in bronchial cast

D: Are best managed by administration of surfactant and hypertonic s

Nebulized heparin may help improve lung function by

A Scavenging free radicals

B Dilation of airways, thinning of secretions, inhibition of clot formatic

C Decreased fibrin formation

D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-557 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF A WEB-BASED APPLICATION FOR CONTINGENCY DRUG INVENTORY MANAGEMENT

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Purpose: Research has shown that pharmacy oversight of medications in all care locations can provide substantial improvement in safety and quality. The execution of this task in large hospitals, however, has been difficult due to the complexities of the medication use process. Timely removal of expired medications, required by law and The Joint Commission, has also become another challenge for personnel once medications leave the pharmacy. Currently, the Cleveland Clinic Pharmacy Department supplies and oversees more than 400 drug boxes for the Main Campus. Medications within these boxes are used for advanced cardiac life support, rapid-sequence intubation, public sporting events, and adverse reactions to contrast dyes. PharmacyKeeper-Carts is an electronic inventory management system designed to improve inventory control of drug boxes through the use of bar code technology and electronic record keeping. The web-based system electronically stores the NDC, lot number, and expiration information for medications contained within drug boxes. Radiofrequency identification (RFID) technology has been integrated to locate drug boxes on campus. Additionally reports can be utilized to determine medication use history for billing and for drug utilization purposes.□□Objectives: Implement a web-based contingency inventory management program. Determine cost effectiveness of removing items from drug boxes due to non-utilization and improving cost capture of medications used on unidentified patients.□□Methodology: Quality improvement project within the Department of Pharmacy at Cleveland Clinic Main Campus. Medication, location, and box library were created based on needs of the facility. Barcode training was facilitated to train the system to recognize medications. Personnel were trained to use the system properly. Implementation of PharmacyKeeper-Carts is complete, but enhancements to the product are ongoing.□□Results and Conclusions: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the process of implementing PharmacyKeeper-Carts to manage emergency drug inventory

Discuss improved inventory management, productivity tracking, and billing as a result of implementation

Self Assessment Questions:

PharmacyKeeper-Carts is what type of program?

A software-as-a-solution (SaaS)

B: software-as-a-service (SaaS)

C: software-as-a-device (SaaD)

D: software-as-a-gadget (SaaG)

Cleveland Clinic uses which RFID system to track emergency drug boxes?

A eTrace

B eLocate

C eFind

D eTrak

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-805 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

TOXICITY COMPARISON OF PRE-ENGRAFTMENT UTILIZATION OF INTRAVENOUS VERSUS ORAL TACROLIMUS IN ADULT BLOOD AND MARROW TRANSPLANT RECIPIENTS

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Purpose: Historically, tacrolimus has been administered intravenously to blood and marrow transplant recipients at initiation of therapy and changed to oral administration upon neutrophil engraftment. Our institution began using oral tacrolimus upon initiation of therapy in September 2012 due to lower cost and ease of administration. The primary objective of this study is to determine whether there is a difference in composite tacrolimus toxicity with pre-engraftment utilization of intravenous versus oral tacrolimus for graft-versus-host-disease prophylaxis in adult blood and marrow transplant recipients. Secondary objectives include determining the difference in tacrolimus related hypertension and nephrotoxicity separately and cost difference in intravenous versus oral therapy.□Methods: This is a retrospective, observational, single center chart review. This study was approved by the Institutional Review Board. Adult patients who have undergone allogeneic hematopoietic stem cell transplant and received tacrolimus for graft-vs.-host-disease prophylaxis were reviewed. Patients were placed into intravenous or oral tacrolimus groups based on which route of administration they received prior to neutrophil engraftment. Patients were followed from day of transplant through neutrophil engraftment or discharge, whichever came first. Data collection included age, gender, weight, indication for transplant, source of hematopoietic stem cells, donor type, transplant date, and information relating to tacrolimus toxicity, including new onset hypertension and nephrotoxicity. Nephrotoxicity was defined as serum creatinine greater than or equal to 2 mg/dL or an increase of at least 0.5 mg/dL above baseline. New onset hypertension was defined as hypertension requiring use of additional antihypertensive agents for at least three consecutive days. Incidence of new onset hypertension and nephrotoxicity was compared between study groups. Cost of therapy for each group was evaluated using institutional drug acquisition cost.□Results and Conclusion: Research in progress. Results will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify pertinent monitoring parameters for common adverse effects of tacrolimus

Identify specific patient characteristics and drug interactions that affect the pharmacokinetics of tacrolimus

Self Assessment Questions:

A patient on tacrolimus has the following abnormal lab values. Which one is most likely related to an adverse effect of tacrolimus?

A Ast/alt – 1338/2792 u/l

B: Wbc – 0.9 k/µl

C: Mg – 1.1 mg/dL

D: Ca – 13.8 mg/dL

For a patient on tacrolimus, starting which of the following medications would require an empiric dose reduction of tacrolimus?

A Amoxicillin

B Voriconazole

C Phenytoin

D Fluoxetine

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-558 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

OPTIMAL STATIN THERAPY IN PATIENTS WITH PERIPHERAL ARTERY DISEASE

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Purpose: Peripheral arterial disease (PAD) is a group of disorders characterized by progressive stenosis and altered structure and function of non-coronary arteries that supply the brain, visceral organs and limbs The use of statin therapy in this patient population has been shown to improve mortality and morbidity and is considered the standard of therapy in these patients with no contraindications. The purpose of this study is to assess the number of patients at The University of Chicago Medicine with PAD on statin therapy in accordance with the ACC/AHA guidelines.□□Methods: This study is a retrospective review of patients eighteen years or older who have peripheral arterial disease at the University of Chicago Medicine between May 1, 2008 to December 31, 2012. All patients with liver disease, myopathy, elevated creatinine kinase, triglycerides, pregnancy, concurrent use of cyclosporine, niacin greater than 1 gram, or fibrates will be excluded. Basic demographic data will be collected plus compelling indications for lower low density lipoprotein (LDL) goal including diabetes, coronary heart disease, symptomatic carotid artery disease, and abdominal aortic aneurysm. The primary endpoint is the proportion of patients on statin therapy with an LDL goal of < (less than) 100 mg/dL without compelling indications. Secondary endpoints include the proportion of patients without compelling indications on statin therapy not at goal LDL of <100. We will also assess the proportion of patients with a compelling indication on statin therapy and at an LDL goal of < 70. The proportion of patients with a compelling indication on statin therapy not at an LDL goal of < 70 will be assessed. The proportion of patients not on statin therapy will be collected. The statins used will be collected to associate their implications to the new hyperlipidemia guidelines. Data will be analyzed with descriptive statistics.□□Results/Conclusion: to be presented

Learning Objectives:

Identify the compelling indications that stratify patients to a lower LDL-C goal.

Recognize the complications of untreated peripheral arterial disease

Self Assessment Questions:

Which of the following is a compelling indication for a lower LDL goal for patients with PAD?

A Hypertension

B: Systemic Lupus Erythematosus

C: Symptomatic carotid artery disease

D: Intracranial hemorrhage

What percentage of patients with untreated PAD develop complications such as myocardial infarction, stroke, or cardiovascular death within 1 year of diagnosis?

A 1-2%

B 10-25%

C 22-50%

D 15-21%

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-559 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ANTI-XA MONITORING OF ENOXAPARIN FOR VENOUS THROMBOEMBOLISM PREVENTION IN HIGH-RISK TRAUMA PATIENTS

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Purpose: Emerging data for venous thromboembolism (VTE) prophylaxis in trauma patients suggests standard enoxaparin 30 mg subcutaneously (SQ) every 12 hours may be suboptimal. Increased metabolism and higher volumes of distribution following resuscitation are postulated to contribute to low serum drug concentrations. Trough serum anti-factor Xa (anti-Xa) concentrations are undetectable (e.g., < 0.1 IU/mL) in 50% with a subsequent increased risk for VTE. At the University of Cincinnati Medical Center, a level 1-trauma center, high-risk patients are initiated on enoxaparin 30 mg every 12 hours. Recently, the protocol was changed to assess serum anti-Xa 30 minutes prior to the 4th dose with dose titration if serum level is undetectable. The purpose of our study is to describe the characteristics of patients with low anti-Xa requiring dose titration.□Methods: This retrospective, single center, cohort study will include high-risk patients admitted to the trauma service between March 1, 2013 and April 1, 2013. Demographic data will be collected including incidence of low serum anti-Xa. The data collected will be analyzed for patient specific associations with safety or efficacy to allow for better treatment guidance. This retrospective observation will serve as a pilot study prior to a future prospective evaluation of other regimens in this patient population. It will aid in our ability to attain the best efficacy and safety profile in trauma patients.□Results: Data collection and analysis are on-going.

Learning Objectives:

Explain the risk factors that place trauma patients at increased risk for venous thromboembolism (VTE) compared to other patient populations.

Discuss the evolution of data and guidance for monitoring anti-Xa concentrations of enoxaparin for VTE prophylaxis in trauma patients.

Self Assessment Questions:

What is the anti Xa: anti IIa ratio for low-molecular weight heparin (LMWH) agents?

A 1:1

B: 2-4:1

C: 6-8:1

D: 10:1

What are some of the potential contributors to subtherapeutic concentrations of LMWH in trauma patients?

A Edema

B High body weight

C Critical Illness

D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-560 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF A STEROID TAPER ON REJECTION RATES IN KIDNEY TRANSPLANTS WITH BASILIXIMAB INDUCTION

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Purpose: A variety of immunosuppressive regimens have been used to avoid acute graft rejection in kidney transplant recipients. The combination of induction, long-term immunosuppressive therapy and short-term (<7 days), extended (>3 months), or indefinite corticosteroids have been studied to determine the most effective regimen at preventing graft rejection. The use of corticosteroids long-term is associated with significant adverse effects in some patients. Conversely, post transplan steroid avoidance may lead to increased rates of acute rejection in kidney transplant patients. The 2009 Kidney Disease Improving Global Outcomes (KDIGO) guidelines suggest that in patients who are at low immunological risk and who receive induction therapy, corticosteroids could be discontinued during the first week after transplantation. The kidney transplant protocol at our institution originally elected to eliminate steroids post transplant in patients who received basiliximab induction. The protocol was then changed on June 1, 2012 to include a short, seven day steroid taper post transplant. The objective of this study is to assess whether the addition of a seven day steroid taper to patients who received basiliximab induction for kidney transplant reduced rejection rates at 30 days and six months post-transplant. □□Methods: This retrospective cohort study will be conducted utilizing the electronic healtl record to identify de novo kidney transplant patients who received basiliximab for induction, plus or minus a seven day steroid taper, at Northwestern Memorial Hospital from July 2011 through December 2013. Patients are excluded from the study if they are under 18 years of age, underwent desensitization or required steroids that could not be discontinued. Biopsy proven acute rejections (BPAR) will be collected from the patients health record. Study endpoints include BPAR at 30 days and six months post-transplant, patient and graft survival at 6 months, and adverse effects associated with steroid use including infections requiring hospitalization.

Learning Objectives:

Recognize the role of steroids in kidney transplant regimens.

Describe the risks associated with prolonged steroid use in kidney transplant patients.

Self Assessment Questions:

The role of steroids in kidney transplants includes:

A Induction, desensitization, immunosuppression

B: Antagonize IL-2 receptors

C: Pre-op infection prophylaxis

D: Post-op nausea/vomiting symptom control

Adverse effects associated with long-term steroid use in kidney transplant patients include:

A Hypotension

B Dry mouth

C Increased risk of infection

D Hyperkalemia

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-806 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARING VANCOMYCIN MICS: A RETROSPECTIVE EVALUATION OF CLINICAL OUTCOMES IN VETERANS WITH MRSA INFECTIONS AMONG VETERAN AFFAIRS (VA) HOSPITALS

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Purpose: Poor clinical outcomes have been documented in the literature for methicillin-resistant Staphylococcus aureus (MRSA) bacteremia with a susceptible minimum inhibitory concentration (MIC) of less than or equal to two but few studies have evaluated susceptible vancomycin MICs from other sources of infections such as the lung, bone, or urine. The primary objective of this study is to evaluate the relationship between all-cause mortality and treatment failure to susceptible high vancomycin MICs compared to susceptible low vancomycin MICs in patients with MRSA infections. Secondary objectives include length of hospital stay, ICU admissions, and escalation of therapy between the groups.□□Methods: A retrospective review will be conducted of patient data on those patients, age 18 and older, admitted within any of the seven hospitals in the VA Mid-South Health Network between January 01, 2000 and September 01, 2013. Subjects that received vancomycin therapy for 24 hours or more and had a documented MRSA infection wil be included. Subjects will be identified and data extracted from the VA Informatics and Computing Infrastructure (VINCI). Subjects will be divided into two subgroups based on their vancomycin MICs: high susceptible group (MIC=2) and low susceptible group (MIC<1). All-cause mortality and treatment failure defined as readmission for the same infection 30 days after the first positive blood culture for MRSA will be compared between the two groups as the primary outcomes. Length of hospital stay, ICU admissions, and escalation of therapy will be evaluated as secondary outcomes. Categorical variables will be compared by chi-squared or Fishers exact test and continuous variables will be compared using the student's t test. Bivariate logistic regression analysis for clinical response and all-cause mortality will also be performed. This study has been approved by the institutional review board. □□Results/Conclusions: To be presented at Great Lakes Residency Conference

Learning Objectives:

Explain how vancomycin susceptibility testing should guide therapy.

Identify an appropriate vancomycin dose based on the IDSA Vancomycin guidelines.

Self Assessment Questions:

The IDSA MRSA Infection guidelines recommend an alternative to vancomycin should be used at what vancomycin MIC?

A MIC less than 1mcg/mL

B: MIC equal to 1 mcg/mL

C: MIC equal to 2 mcg/mL

D: MIC greater than 2 mcg/mL

In a patient with normal renal function, which of the following doses would likely be required to achieve trough serum vancomycin concentrations of 15-20 mg/L when the MIC is less than or equal to 1 m

A 10-15 mg/kg Q 8-12 hours

B 15-20 mg/kg Q 8-12 hours

C 10-15 mg/kg Q 24 hours

D 15-20 mg/kg Q 24 hours

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-807 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTING A MULTIDISCIPLINARY BUNDLE FOR THE MANAGEMENT OF DIABETIC FOOT INFECTIONS (DFI) IN THE EMERGENCY DEPARTMENT (ED)

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Purpose: DFIs remain a major cause of lower extremity amputation which results in poorer quality of life, increased medical costs, and increased 5-year mortality. Evidence suggests that outcomes can be optimized with the implementation of a multidisciplinary approach to the management of DFIs. This study will develop and implement a multidisciplinary bundle for the management of DFI patients. The primary outcome is to assess compliance with bundle components before and after development and education. Secondary outcomes will look at the impact of the care bundle on hospital length of stay and 30 day readmission rates.s.□□Methods: This study has been approved by the Investigational Review Board. A DFI bundle was developed for ED practitioners to utilize for management of patients presenting with DFI. The bundle components are: (1) appropriate selection and timing of empiric antibiotic therapy, (2) adequate debridement, (3) appropriate culture collection, (4) appropriate consultation of specialties when warranted, and (5) appropriate wound care. The analysis will compare two cohorts: patients with DFI before and after implementation of the bundle. Patients included in the study will be those with an ICD-9 or ICD 10 diagnosis of diabetes and the documented presence of new or existing foot infections. Exclusion criteria are age less than 18 years and patients requiring antibiotic therapy for other disease states. Data collection will include: patient demographics, comorbid conditions, antibiotic therapies, drug allergies, surgical interventions, microbiologica data, consultations entered and performed, and wound care. The key metrics analyzed will be the rate of compliance to the individual components of the bundle and the impact of this on secondary outcomes. □□Results/Conclusions:□Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Describe the impact of diabetic foot infections on morbidity and mortality

Discuss how multidisciplinary care bundles impact clinical outcomes for patients with diabetic foot infections

Self Assessment Questions:

What percent of moderate and severe diabetic foot infections result in lower extremity amputations?

A <10 %

B: 15-25 %

C: 40-50 %

D: 70-80 %

What impact on amputation rates has been observed from the utilization of multidisciplinary foot care teams in patients with diabetic foot infections?

A Decrease in amputation rates

B No significant change in amputation rates

C Increase in amputation rates

D Amputation rates has not been studied as a clinical outcome

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-561 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DELAY IN ANTIBIOTIC ADMINISTRATION IN SEPTIC PATIENTS WITH ATYPICAL PRESENTATION

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Purpose: □The presence of fever often prompts clinical evaluation for sepsis and empiric administration of antibiotics. Atypical presentation of sepsis (e.g. lack of fever) may result in patients experiencing a delay in therapy. Current literature identifies atypical presentations of sepsis in various cohorts of patients, such as pneumonia, but does not address patients with bacteremia. Our primary aim is to evaluate the difference ir time to antibiotic administration in this patient population. The null hypothesis is that there is no difference in the time to antibiotics betwee febrile and afebrile septic patients with bacteremia. □□Methods: □The study design will evaluate a retrospective cohort of inpatients greater than 18 years old hospitalized at an academic teaching hospital with sepsis and positive blood cultures admitted from January 1, 2010 until August 30, 2013. Febrile patients with positive blood cultures will serve as the control group. Baseline demographics, vitals, and pertinent laboratory parameters will be recorded. □□The primary outcome to be assessed will be the time to the first antibiotic dose (TFAD) in bacteremic patients with and without fever. Secondary outcomes are time to appropriate antibiotic therapy (TAAT), need for intensive care uni (ICU) admission, use of antipyretics, cooling and warming measures, duration of mechanical ventilation, the use of vasopressors, ICU and hospital length of stay (LOS), mortality, and other prognostic factors. □□

Data will be evaluated between groups using the Students t-test (for continuous parametric data) or the Mann Whitney-U test (for continuous non-parametric data). Dichotomous data will be compared using either Pearsons chi-square or Fishers exact test. A p-value of 0.05 will determine statistical significance. □□Results: □Data currently under review, results to be presented at Great Lakes Pharmacy Resident Conference. □□Conclusion: □Data currently under review, conclusion to be presented at Great Lakes Pharmacy Resident Conference

Learning Objectives:

Describe the causes of atypical presentation of sepsis

Discuss the literature regarding delays in antibiotic therapy and effects on patient outcomes

Self Assessment Questions:

1) In septic patients with hypotension, every hour of delay in antibiotic therapy results in a mean survival decrease of:

A 1.3%

B: 7.6%

C: 25%

D: 13.4%

Which of these presentations has been shown to result in a delay in antibiotic therapy?

A Fever

B Leukocytosis

C Hypoxia

D A and C

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-562 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF PEER-ASSESSMENT WITHIN A DRUG LITERATURE EVALUATION COURSE

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Purpose: To evaluate pharmacy students knowledge, experience, and perceptions of peer assessment before and after implementation of this activity within a didactic course. Methods: Second professional year student pharmacists were invited to complete an electronic survey instrument designed to collect information about their knowledge of and previous experiences with peer assessment. This was followed by a 30-minute instructional lecture that described appropriate methods for conducting peer assessment. Students were then required to complete three written critiques of a published journal article. For each assignment, students were instructed to bring their first draft to class one week prior to the due date. Time was set aside to allow students to assess each others work and ask course faculty for feedback. After all assignment grades were posted, students were invited to complete an electronic post-survey to determine any potential changes in students perceptions of peer assessment and assess potential strengths and limitations of incorporating this activity within the course. The Purdue University IRB approved the project with exempt status for human subjects research. Results: The response rate was 75% (N=108/144). At baseline, 38% (N=41) of students reported that they had received previous training on providing feedback and constructive criticism, while 87% (N=94) stated that they had used peer assessment in previous experiences. Students either strongly agreed (31.48%, N=34 or agreed (43.52%, N=47), that pharmacists provide or receive peer assessment throughout their career. Results of the post-survey will be presented at the 2014 Great Lakes Conference in West Lafayette, Indiana. Conclusion: Pharmacy students reported having previous experience with peer assessment and believed it is a skill used by pharmacists. The results from this study will provide an insight into the value of implementing peer assessment activities prior to experiential rotations and graduation.

Learning Objectives:

Review the importance of peer assessment for pharmacists.

Identify the value of implementing peer assessment activities within didactic course work.

Self Assessment Questions:

Peer assessment activities may promote the growth in which area for a pharmacy student?

A Memorization skills
B: Social skills
C: Critical thinking skills
D: Therapeutic knowledge

Which of the following statements is correct?

A The majority of pharmacy students reported that use of peer asses
B The majority of pharmacy students reported that use of peer asses
C The majority of pharmacy students reported that they had no previ
D A & c

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-808 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

RENEWAL OF SCHEDULE II OPIOID ANALGESICS: RESULTS AFTER IMPLEMENTATION OF ELECTRONIC PRESCRIBING (PART

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Purpose: The goal of this process improvement initiative was to compare the old Schedule II renewal process with the newly implemented electronic-prescribing (E-prescribing) program and review benefits and disadvantages of each system. It is also to determine additional areas of improvement in the renewal process. Methods: A retrospective, review of written and computerized records at the Richard L. Roudebush VAMC was conducted. Data was obtained from the VISN 11 Pharmacy Call Center Computerized Record Management (CRM), computerized patient record system (CPRS), decentralized hospital computer program (DHCP), and Opti-Fill prescription filling system, as well as actual written prescription forms. Data was collected and reviewed both before initiation of E-prescribing and after implementation. The total time required for dispensing a C-II opioid analgesic beginning from initiation of call by patient to time of prescription mailing as well as time data for each step of the process was collected. In addition to total times for the refill process, the total number of people involved both pre and post E-prescribing as well as if the prescription was issued late due to the process was also reviewed. Conclusions: The implementation of electronic-prescribing of Schedule II opioid analgesics significantly reduced the total time from patient renewal request until mailing of the prescription. The number of people involved in the renewal process was also reduced. Potential areas for improvement identified were earlier verification of electronic prescriptions during clinic hours and extension of vault hours for prescription processing.

Learning Objectives:

Describe the Schedule II opioid analgesic renewal process before and after electronic-prescribing implementation at the Roudebush VA Medical Center.

Identify two areas of improvement after implementation of electronic prescribing at the Roudebush VA Medical Center.

Self Assessment Questions:

Which of the following steps has been eliminated with the implementation of E-prescribing?

A CPRS note entry
B: Fax and signature of LPN on CPRS note
C: Verification of prescription by pharmacist
D: Release of order by vault technician

Which of the following areas in the renewal process demonstrated statistically significant improvement after implementation of E-prescribing?

A Length of time from patient request to prescription mailing
B Number of people involved in process
C Total time during processing phase
D A and B

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-809 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF AN INTERDISCIPLINARY TRAINING PROGRAM IN PRIMARY CARE MENTAL HEALTH INTEGRATION; CLINICIAN AND TRAINEE PERCEPTIONS AND OUTCOMES

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Purpose: In an integrated patient care model, professionals from multiple disciplines apply their knowledge and professional expertise to provide quality patient care. Although patients are more likely to present to their primary care provider with mental health concerns, providers may feel uncomfortable or lack the time to identify and manage these concerns. To address the needs of the provider and patient, primary care is becoming more of an integrated model of delivery. Studies that integrate primary and on-site mental health care have shown improvements in patient outcomes, treatment, costs, and provider and patient satisfaction. However, integrated programs are yet to be the standard of practice in all institutions and when such programs are in place the degree of collaboration varies greatly. In July 2013, the William S. Middleton Memorial Veterans Hospital implemented an interdisciplinary training program (ITP) for social work interns, first and second year pharmacy residents, and psychiatry residents with the focus to work collaboratively with primary care providers. Through evaluation of provider and trainee perceptions of the program, ITP coordinators will optimize the program to maximize benefit to the primary care providers, and ultimately, the patients. We also hope to provide a framework for other institutions to implement successful interdisciplinary training programs.□□Methods: Primary care providers participating in the ITP will be asked to complete a survey and participate in a focus group, which will be used to further evaluate perceptions regarding trainee competence, interdisciplinary team dynamics, communication and overall satisfaction with the program. Trainees will be similarly assessed to evaluate trainee perceptions regarding confidence in their clinical abilities, interdisciplinary team dynamics, communication, and overall benefit of participation the ITP.□□Results and Conclusions: To be presented

Learning Objectives:

Define an integrated patient care model

Identify potential benefits of Primary Care Mental Health Integration

Self Assessment Questions:

Which of the following are positive qualities of an integrated patient care model?

A Colocation of services

B: Provider-centric views

C: Limited patient/family contact

D: Intermittent patient monitoring

Which of the following is true of Primary Care Mental Health integration (PCMHI)?

A PCMHI reduces access to mental health services

B PCMHI increases the number of patients lost to care during a refe

C PCMHI improves detection of mental health problems

D PCMHI stigmatizes mental health care

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-810 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF A PHARMACIST-LED ANTICOAGULATION EDUCATION SERVICE

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Purpose: Anticoagulants are commonly initiated in the inpatient setting. Patients discharged on anticoagulants are at high risk for complications due to complex dosing, insufficient monitoring, and inconsistent patient compliance. The Joint Commission, recognizing the increased risk for harm, has targeted anticoagulation therapy as a Hospital National Patient Safety Goal. Patient education has been pinpointed as a vital component for safe anticoagulation therapy. The objective of this study is to determine if initiation of a pharmacist-led anticoagulation education service improves Centers for Medicare and Medicaid Services (CMS) compliance scores, reduces readmission rates for anticoagulation related adverse events, and increases patient satisfaction.□□Methods: A pharmacist-led anticoagulation education service will be implemented hospital-wide. The decentralized pharmacist managing each patient care unit will identify patients on anticoagulants using a report generated from the electronic medical record. Pharmacists will be responsible for educating all patients with anticoagulation orders prior to discharge. Education will follow a template created to comply with The Joint Commission recommendations. A note will be attached to the anticoagulant order in the electronic medical record indicating to other pharmacists that education has occurred. Once complete, education will be documented in the patients medical record. Prior to implementation, pharmacists will be educated on the purpose of the service, the elements of anticoagulation education, and the procedure for documenting education. Nurses will be educated on the service and asked to inform pharmacists of pending discharges to help pharmacists triage patients. The primary endpoint will be CMS compliance scores for patient education following a 3-month trial period. Readmission rates for anticoagulation related adverse events and patient satisfaction scores will be assessed as secondary endpoints. □□Results/Conclusions: Research is ongoing and preliminary results will be presented at the 2014 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify the four essential components of warfarin discharge education according to CMS

Recognize the ways to measure efficacy of a pharmacist anticoagulation discharge education

Self Assessment Questions:

What are the four essential components of warfarin discharge education according to CMS?

A The importance of follow-up monitoring, compliance, drug-food int

B: The importance of follow-up monitoring, compliance, limiting vitam

C: The importance of weekly INR monitoring, compliance, drug-food i

D: The importance of follow-up monitoring, compliance, drug-drug int

Pharmacist warfarin discharge education can affect compliance with which of the following CMS Core Measures?

A Vte-1

B Vte-2

C Vte-4

D Vte-5

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-919 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

APPROPRIATENESS OF ANTI-PLATELET FACTOR-4 LABORATORY TEST ORDERING IN THE CARDIOVASCULAR ICU AT THE CLEVELAND CLINIC

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Background: Heparin-induced thrombocytopenia (HIT), an immune-mediated reaction, results in thrombocytopenia in the setting of heparin exposure. Diagnosis of HIT is based on both clinical and serologic findings. The validated 4Ts scoring system helps clinicians determine the probability of HIT in their patients. Patients with low pretest probability do not require lab testing for serologic markers and may continue heparin therapy. Lab tests include the anti-platelet factor-4 (ant PF4) test and serotonin release assay (SRA). The limitation of the anti-PF4 test is its relatively low specificity for platelet-activating antibodies and consequential risk of false-positive results. The limitations of the SRA are its relatively low sensitivity, cost, and delayed results. Despite validation of the 4Ts scoring system and established guidelines, clinical practice seems to vary with regards to the approach in the diagnosis of HIT in the CV-ICU at the Cleveland Clinic.□□Objectives: Determine the appropriateness of anti-PF4 lab test ordering based on pre-test probability of HIT and evaluate cost implications with unnecessary lab tests and use of HIT agents□□Methodology: A retrospective chart review was conducted to determine the appropriateness of anti-PF4 lab test ordering from August 2012-2013. The inclusion criteria consisted of adult post-cardiac surgery patients in the CV-ICU exposed to any form o parenteral heparin and ordered an anti-PF4 lab test. The exclusion criterion consisted of any patient in whom history of heparin exposure could not be determined. Data was collected regarding demographics, cardiac surgery, heparin exposure, platelet count, other 4Ts criteria, and HIT diagnosis and therapy. A 4Ts score was calculated for each subject using the scoring system in the 2012 CHEST guidelines. The anti-PF4 test was deemed appropriate if the 4Ts score was intermediate or high. Results will be reported in aggregate using descriptive statistics.□□Results and Conclusions: To be presented at the Great Lakes Pharmacy Resident Conference

Learning Objectives:

Discuss potential causes of thrombocytopenia after cardiac surgery

Explain how the 4Ts score can be utilized in the diagnosis of HIT

Self Assessment Questions:

All of the following are potential causes of thrombocytopenia following cardiac surgery except:

A ECMO support
B: Exposure to high doses of heparin intra-operatively
C: Multiple blood transfusions
D: Exposure to chemotherapy one year ago

If a patient has a low 4Ts score (≤3), the clinician should:

A Order an anti-PF4 test to confirm HIT diagnosis
B Order the serotonin release assay (SRA) to confirm HIT diagnosis
C Monitor the patient closely and consider other causes of thromboc
D Stop all routes of heparin and begin a HIT agent

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-563 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

USING THE RIGHT ANTITHROMBOTIC IN THE RIGHT PATIENT

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Background□Standard of care for venous thromboembolism (VTE) includes warfarin with heparin or enoxaparin. The current therapy is a burden to patients, health care providers, and costly for the health care system. The EINSTEIN studies found the new anticoagulant rivaroxaban to be non-inferior to standard therapy and was FDA-approved for this indication. Currently, it is unknown whether rivaroxaban is a viable option for most hospitalized patients with VTE and what the cost implications would be for use of rivaroxaban over standard therapy in the hospitalized patient.□Purpose□The purpose of this study is to implement a systematic strategy for health care providers to optimize antithrombotic therapy for patients with VTE in order to minimize costs and maximize patient outcomes. □Methods□This is an IRB-approved quasi-experimental study evaluating patients with a primary diagnosis of VTE prior to and after implementing a systematic strategy for optimizing antithrombotic selection. The control group (n=25) will be derived from a retrospective chart review of patients who were treated with warfarin from January to June 2013. The experimental group (n=25) will be obtained through prospective evaluation of patients receiving rivaroxaban for VTE from January to March 2014. Data will be collected from the electronic medical record. The aim of this study is to determine the cost implications of the systematic strategy for antithrombotic prescribing and to identify the benefits and challenges associated with its use. The primary outcome is average drug cost per patient pre and post the systematic strategy. Secondary endpoints include length of stay, percent of VTE patients eligible for rivaroxaban, and daily time required to manage the systematic approach. □Results and Conclusions will be presented at the Great Lakes Residency Conference

Learning Objectives:

Identify eligibility criteria for using rivaroxaban in patients with venous thromboembolism

Describe the benefits and challenges of implementing a systematic strategy for optimizing antithrombotic selection in patients with venous thromboembolism

Self Assessment Questions:

1.AB is a 65 year old African-American female recently diagnosed with a pulmonary embolism. Her past medical history includes hypertension, diabetes, and seizures. Her home medications include lisi

A Age ≥ 65 years
B: CrCl of 35 ml/min
C: Concomitant use of lisinopril
D: Concomitant use of phenytoin

2.What is a/are challenge(s) associated with a screening tool for determining if a patient with venous thromboembolism is eligible for rivaroxaban?

A Physician prescribing
B Cost
C Time
D All of the above

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-564 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF MEDICATION EDUCATION ALERTS FOR NURSES TO IMPROVE PATIENT HEALTH CARE MEASURED BY HCAHPS SURVEY SCORES

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Purpose: Hospital consumer assessment and healthcare provider and systems (HCAPHS) survey scores are used by many health systems to assess patient care during their hospital stay. One aspect of the HCAPHS survey is medication communication. Health systems continuously evaluate efforts to improve these scores and to facilitate patients receiving the best health-care possible. Creating medication education alerts in the computer system can make the information more readily available to nurses during administration to facilitate education with ease. The purpose of this study is to determine how education alerts for new medications in the information technology system can improve HCAPHS scores and ultimately patient medication awareness and health care. Methods: Columbus Regional Hospital uses Cerner information technology systems for medication orders, administration and to maintain patient records. Alerts containing the drug name, common indications and some possible side effects were created in Cerner for formulary medications. The medication education alerts will appear in Cerner and prompt the nurse at scanning during medication administration. The computerized medication education alerts for nurses project was approved by the appropriate hospital committee and was implemented in the beginning of November 2013. The study outcome will be measured using the medication communication section of the HCAPHS survey scores. Preliminary and post-implementation data will be collected and evaluated monthly from August 2013 to March 2014. As a secondary outcome, data will also be collected and compared from the corresponding month a year ago. Results and Conclusions: Preliminary results of the HCAHPS survey scores focusing on the medication communication section from August, September and October 2013 were 66%, 73% and 95% respectively. Collection and analysis of data is ongoing. Final results and conclusions will be presented at the Great Lakes Conference.

Learning Objectives:

Outline the benefits of providing nurses with the most concise drug information at the time of medication administration.

Report the effectiveness of medication education on patient care by studying HCAHPS scores.

Self Assessment Questions:

What benefit(s) does providing nurses with medication information during administration offer?

A The information is readily available during administration

B: Increased opportunities for medication education

C: Concise delivery of accurate drug information

D: All of the above

Which of the following is a medication communication domain question on the HCAHPS survey? "Before giving you any new medicine, how often did hospital staff "

A Tell you the name of your medicine?

B Describe possible side effects in a way you could understand?

C Explain the way your medicine works?

D Tell you how many times a day they will give you the medicine?

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-811 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

CLINICAL OUTCOMES OF GRAM-NEGATIVE INFECTIONS STRATIFIED BY CARBAPENEM MIC

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Purpose: The Clinical and Laboratory Standards Institute recommended lowering the minimum inhibitory concentration (MIC) breakpoints for meropenem and imipenem from 4 mcg/ml for all gram-negative bacteria to 1 mcg/ml for Enterobacteriaceae and 2 mcg/ml for Pseudomonas. Implementing lower breakpoints will eliminate the need for confirmatory testing of extended spectrum beta-lactamase and Carbapenem-Resistant Enterobacteriaceae. However, there is limited data evaluating clinical outcomes of the affected breakpoints, and the breakpoint changes may increase the use of colistin, aminoglycosides and tigecycline. Therefore, the objective of this study is to evaluate the difference in clinical outcomes of patients with gram-negative infections stratified by carbapenem MIC. Methods: This study is a single center retrospective matched cohort analysis conducted at the University of Michigan Health System (UMHS). Patients will be matched based on age, charlson comorbidity index score, disease severity, source of infection, and pathogen. Patients will be included if they are ≥18 years old with a positive culture for Enterobacteriaceae or Pseudomonas and received a minimum of 48 hours of meropenem, imipenem, or doripenem. Patients will be excluded if they have documented bacterial colonization, transferred from an outside hospital with incomplete records, or if their gram-negative infection was treated with ertapenem. Information will be obtained from the patients medical record at UMHS and will be maintained confidentially. Data collected for each patient will include demographic, clinical and microbiological information. The primary outcome of this study will be all-cause 30-day mortality stratified by carbapenem MIC. Secondary outcomes include length of hospitalization, recurrence of bacterial infection, and hospital readmission stratified by carbapenem MIC. Additionally, patients will be evaluated for clinical and microbiologic cure as evidenced by temperature < 38C, WBC < 10,000 cells/mm3, and hemodynamic stability. Results: In progress. Conclusions: In progress.

Learning Objectives:

Identify the reasons why CLSI recommended lowering the susceptibility breakpoints for carbapenems.

State the potential impact of lowering the susceptibility breakpoints for carbapenems.

Self Assessment Questions:

Which of the following statements is true regarding CLSIs recommendation to lower the susceptibility breakpoint for carbapenems?

A Recommendation was based on several years of clinical outcomes

B: Recommendation was solely based on PK/PD data from mathema

C: Recommendation was based on a variety of reasons including red

D: CLSI did not recommend to lower the susceptibility breakpoint for

What is the potential risk of implementing the lower susceptibility breakpoints for carbapenems into clinical practice with the available outcomes data?

A Modified Hodge Test will be performed for every isolate

B Increase use of suboptimal and more toxic antimicrobial therapies

C Increase overall carbapenem use

D There are no potential risks associated with making this change

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-565 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF FLAP OUTCOMES WITH PREOPERATIVE ADMINISTRATION OF ANGIOTENSIN CONVERTING ENZYME INHIBITORS OR ANGIOTENSIN RECEPTOR BLOCKERS AND INTRAOPERATIVE VASOPRESSOR AGENTS.

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Purpose: Poor flap outcomes are complications of microvasculature flap procedures that can lead to postoperative morbidity, mortality and increase in medical costs. Such complications include free flap rejection, arterial or venous thrombosis, hematoma, infection and wound dehiscence. In order to prevent such outcomes, some clinicians may advocate against the use of intraoperative agents that may potentially decrease flap perfusion, such as vasopressors. Studies have shown tha intraoperative vasopressor use induces changes in flap metabolic demands and reduces perfusion to flap sites resulting in increased risk of flap failure. In patients undergoing anesthesia, previous studies have proven an increased vasopressor requirement secondary to hypotensior caused by preoperative administration of angiotensin converting enzyme inhibitors (ACE-I) and angiotensin receptor blockers (ARB). Therefore, the debate surrounding the omission of antihypertensives preoperatively is important to investigate to further clarify the controversy of vasopressor use by reconstructive surgeons and anesthesiologists. The purpose of this study is to assess flap outcomes after exposure to ACE-I/ARB and vasopressors, to determine if there is an association between poor flap outcomes and the use of aforementioned medications.□□Methods: This is a retrospective chart review of all patients eighteen years of age or older who underwent a free or swing flap procedure at the University of Chicago Medicine between September 1, 2010 and November 31, 2013. Data collection includes patient demographics, preoperative and intraoperative medications administered, hemodynamic data and outcomes of flap procedures as defined by ICD-9 codes. The primary objective is to compare the rates o poor flap outcomes amongst groups with exposure to and groups withou exposure to ACE-I/ARB and vasopressors. The secondary objective is tc evaluate if there is a difference in rates of flap outcomes based on amount of fluids administered intraoperatively. Data will be evaluated using chi squared analysis.□□Results and conclusion: To be presented

Learning Objectives:

Identify 6 common complications, also known as poor flap outcomes, of reconstructive flap procedures.

Describe the effect of vasopressors on flap procedures and the potential risk associated with use.

Self Assessment Questions:

Which of the following is a common poor flap outcome?

A Line infection

B: Arterial thrombosis

C: Slow wound healing

D: Phlebitis

Intraoperative vasopressor use induces changes in flap metabolic demands and can lead to _____ perfusion to flap sites resulting in _____ risk of flap failure:

A increased, increased

B reduced, reduced

C reduced, increased

D increased, reduced

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-812 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

INTEGRATION OF APPE STUDENTS INTO AN INPATIENT PHARMACY DEPARTMENT

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Background: Aurora Health Care (AHC) has partnered with Concordia University Wisconsin (CUW) to integrate advanced pharmacy practice experience (APPE) students into an inpatient pharmacy department. Aurora St. Luke's Medical Center (ASLMC) is a tertiary care center located in Milwaukee, WI and the largest hospital in the Aurora Health Care (AHC) system. CUW is currently in candidate accreditation with the first class graduating in May 2014. ASLMC serves as an inpatient rotation site for over 50 CUW APPE students for the 2013-2014 school year. □□Purpose: To assess the activities performed by advanced pharmacy practice experience students and their integration into the daily workflow of inpatient pharmacists. □□Methods: Utilize a random pager system and original standard data collection form to record activities performed by APPE students. Record student activities completed during weeks two and five of each six-week APPE student rotation block. Utilization of the same standard data collection form for all inpatient APPE students on acute care, central pharmacy, and elective rotations. Students given a pre and post survey to assess change in self-assessment of completing activities over the course of the rotation. Completion of surveys done with use of an electronic questionnaire utilizing logic based algorithm and a 5-point Likert scale. □□

Results/Conclusion: Data collection is currently in progress. Results wil be used to refine future APPE rotations at ASLMC. Results and conclusions will be presented at Great Lakes Residency Conference.

Learning Objectives:

Describe three activities that APPE students spend the most time on during an inpatient pharmacy rotation.

Identify the change in APPE student self-assessment of major activities from the beginning to end of each inpatient rotation.

Self Assessment Questions:

What was the key reason as to why an assessment of APPE student activities was identified as a need at ASLMC?

A APPE students requested additional assessment

B: Increased need to refine future APPE rotations

C: To make more work for the department

D: The preceptors needed more work to do

What tool was utilized for APPE students' self-assessment of rotation activities?

A Student led discussion at the end of the rotation

B Student written reflections of abilities

C Electronic questionnaire using a 5-point Likert scale

D Student feedback at the completion of the rotation

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-813 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

ANTIBIOTIC STEWARDSHIP AND RAPID DIAGNOSTIC TESTING IN AN ACADEMIC EMERGENCY DEPARTMENT: OPPORTUNITIES FOR GONORRHEA AND CHLAMYDIA

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Emergency departments provide a key role in diagnosis and treatment o gonorrhea and Chlamydia. However, patients who receive presumptive treatment for these sexually transmitted diseases (STDs) typically have left the emergency department before diagnostic test results are available. This results in antibiotic exposure to patients who often do not have gonorrhea or Chlamydia. Such unnecessary antibiotic exposure drives antibiotic resistance in the community. Rapid diagnostic testing that can provide sensitive and specific results in 90 minutes or less is currently available. The purpose of this study is to examine the potential impact of rapid diagnostic testing on antibiotic treatment of Chlamydia and gonorrhea in an academic emergency department should rapid diagnostic testing be used instead of current methods.□□Patients discharged from the Emergency Department (ED) between July 1, 2012 and June 30, 2013 who were tested for gonorrhea and/or Chlamydia were eligible for screening against inclusion and exclusion criteria. The primary objective of our study is to determine the magnitude of overtreatment and undertreatment of gonorrhea and Chlamydia in our ED that would be eliminated should a rapid diagnostic method be used. □□

Results and conclusions remain under investigation.

Learning Objectives:

Define the potential impact of rapid diagnostic testing on decreasing antibiotic exposure to patients tested but not positive for gonorrhea/Chlamydia.

State potential harms associated with unnecessary antibiotic exposure for presumptive STD treatment.

Self Assessment Questions:

Presumptive treatment of STDs drives:

A Increased rates of STDs in the community

B: Increased antibiotic resistance

C: Increased high-risk behavior

D: Increased testing for STDs

Rapid diagnostic testing for gonorrhea and Chlamydia can provide results in _____ or less.

A 90 minutes

B 30 minutes

C 15 minutes

D 5 minutes

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-814 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PHARMACISTS PERCEPTIONS OF THE ROLE OF COMMUNITY PHARMACISTS IN WEIGHT MANAGEMENT

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Statement of Purpose: To determine pharmacists perception of the role of community pharmacists in weight management, knowledge of treatment and guidelines, and comfort level in discussing weight management with patients. □□Statement of Methods Used: Pharmacists will be contacted via email using an Indianapolis area Walgreens listserv and the Indiana Pharmacists Alliance listserv to participate in a Qualtrics electronic survey. Demographic data including gender, number of years in practice, and practice setting will be collected from all survey participants. A branched survey will be used based on response about current practice setting. Community pharmacists will be surveyed about comfort level discussing weight management with patients, knowledge of treatment and guidelines, and the community pharmacists role in the providing weight management services. Pharmacists in non-community settings will be surveyed about comfort level in recommending that patients discuss weight management with their community pharmacist and the need for community pharmacists to provide these services. A five point Likert - type scale and yes/no questions will be used to assess responses, where appropriate. All participants will also be asked a free response question about barriers to community pharmacist initiated weight management services. The survey was distributed on January 8, 2014 to 944 pharmacists and will close February 7, 2014. Data will be analyzed using appropriate non-parametric tests. □□Results: As of February 1, 2014, there were 130 survey responses submitted. Results will be presented at the 2014 Great Lakes Conference in West Lafayette, Indiana.□□Conclusion: Using results from the survey, a training program will be developed that gives community pharmacists the ability to effectively be a part of patients weight management. Training will include education on effective interaction with patients, over-the-counter and prescription medications, diet and exercise recommendations, and incorporation of weight management into practice.

Learning Objectives:

Describe the prevalence of overweight and obesity in the United States.

Identify potential roles for community pharmacists in patients' weight management.

Self Assessment Questions:

According to the National Center for Health Statistics, what percentage of Americans age 20 years and older had a BMI of 25kg/m2 or greater in 2009/2010?

A 80.4%

B: 69.2%

C: 44.7%

D: 31.6%

According to the 2013 AHA/ACC/TOS Obesity Guideline, high intensity comprehensive lifestyle intervention is defined as how many in-person weight loss intervention sessions?

A greater than or equal to 14 sessions in 6 months

B greater than or equal to 8 sessions in 6 months

C greater than or equal to 12 sessions in 12 months

D greater than or equal to 6 sessions in 12 months

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-566 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PHARMACIST-MANAGED HEART FAILURE CLINIC: ASSESSMENT OF AMBULATORY CARE CLINICAL PHARMACY SERVICES

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Purpose: Overwhelming evidence has shown that guideline-directed medical therapy decreases morbidity and mortality related to heart failure. Pharmacists can play a major role in improving patient outcomes with medication and educational interventions in the outpatient setting. The purpose of this study is to assess the impact of one or more patient visits to the Pharmacist-Managed Heart Failure Clinic (PMHFC) at the St. Vincent Joshua Max Simon Primary Care Center on medication adherence and patient outcomes. □□Methods: The pharmacists within the PMHFC provide standardized education to patients with heart failure and adjust medications to target doses per protocol if indicated. This IRE approved study is a retrospective chart review evaluating patients attending at least one appointment at the PMHFC between October 1, 2013 and February 1, 2014. Patients will be excluded if younger than 18 years of age, pregnant, incarcerated, or non-English/Spanish speaking. The following data will be collected for each patient: demographic information, Morisky Medication Adherence Scale score at baseline visit and at each subsequent visit, 30-day hospital admission, 30-day emergency department (ED) visit, medication use/dose pre- and post-PMHFC visit, and number of patient visits and phone follow-ups performed. The primary outcome is the impact of the PMHFC on patient medication adherence. The secondary outcomes include impact of one or more patient visits to the PMFHC on 30-day heart failure admissions, 30-day ED visits, medication use and target dose achievement in heart failure with reduced ejection fraction (HFrEF), and target heart rate and blood pressure goals reached in heart failure with preserved EF (HFpEF). □□Results: Throughout the study period, a total of thirteen patients were referred to the PMHFC, with five patients attending at leas one clinic session. Data analysis is ongoing and results will be presente at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Review the 2013 American College of Cardiology Foundation/American Heart Association (ACCF/AHA) Heart Failure guideline recommendations for medication management of heart failure with reduced or preserved ejection fraction.

Explain the impact of outpatient pharmacy interventions on clinical outcomes for patients with heart failure.

Self Assessment Questions:

Which of the following is guideline-directed medical therapy for heart failure with reduced EF, ACCF/AHA Stage C, and NYHA Functional Class III patient?

A Lisinopril 40 mg daily, metoprolol succinate 200 mg daily, furosem
B: Lisinopril 10 mg daily, metoprolol succinate 200 mg daily, furosem
C: Lisinopril 40 mg daily, metoprolol tartrate 25 mg BID, furosemide 2
D: Losartan 100 mg daily, furosemide 20 mg daily, spironolactone 25

Which of the following is true as to why pharmacists can make an impac in the outpatient setting regarding heart failure management?

A Medication adherence is a major issue in heart failure patients due
B Several drug-related problems often exist with heart failure patient
C A number of studies have been published supporting the benefit o
D All of the above

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-567 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

TRANSVERSUS ABDOMINIS PLANE (TAP) BLOCK WITH LIPOSOMAL BUPIVACAINE VERSUS ELASTOMERIC CONTINUOUS INFUSION PUMP FOR POSTSURGICAL ANALGESIA

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PURPOSE: Regional agents used for analgesia are the core of a multimodal approach to pain management. Bupivacaine delivered via liposome or ropivacaine delivered via elastomeric pump are potential options for use in TAP blocks. Comparative data between liposomal bupivacaine and local anesthetic delivered by elastomeric pump is nonexistent. Our retrospective analysis sought to determine which of th delivery systems should be considered first line to control pain, for up to 96 hours post surgery, considering opioid, acetaminophen and nonsteroidal anti-inflammatory drug (NSAID) use and pain scores. □□

METHODS: Adult patients receiving a TAP block after January 1, 2012 were identified retrospectively. Patients were stratified into those receiving TAP block via elastomeric pump versus those receiving TAP block via liposomal bupivacaine. The primary objective was to compare opioid requirements, in oral morphine equivalents (OME), following TAP block with liposomal bupivacaine versus elastomeric continuous infusior pump. Secondary objectives included time to first dose pro re nata (PRN) analgesia, pain scores, acetaminophen requirements and NSAID requirements, in oral ibuprofen equivalents (OIE).□□RESULTS: To date 20 patients have been reviewed. Nine patients received a TAP block via liposomal bupivacaine and 11 received ropivacaine via elastomeric pump. Patient demographics were similar. No significant difference wa seen in total opioid use when comparing liposomal bupivacaine to elastomeric pump (242 mg OME vs. 140.5 mg OME, p=0.38). Comparing liposomal bupivacaine to elastomeric pump there was no significant difference in time to first PRN analgesia (9.7 hours vs. 9.27 hours, p=0.82), average pain score (3.69 vs. 3.75, p=0.39), total acetaminophen use (2619 mg vs 4847 mg, p=0.16) or total NSAID use (312 mg OIE vs. 181 mg OIE, p=0.41).□□CONCLUSIONS: Based on preliminary data and a small sample size, no difference was found between liposomal bupivacaine and ropivacaine via elastomeric pump.

Learning Objectives:

List the adverse effects associated with narcotics.

Explain possible benefits of using a multimodal approach for postsurgical pain.

Self Assessment Questions:

Possible benefits associated with the use of a multimodal approach to postsurgical pain include:

A Increased narcotic requirements
B: Decreased narcotic adverse events
C: Increased hospital length of stay
D: Reduced pain control

Which of the following is an adverse effect associated with the use of narcotics:

A Diarrhea
B Tachypnea
C Hypertension
D Nausea

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-815 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF A WEIGHT-BASED DOSING REGIMEN FOR RABBIT ANTI-THYMOCYTE GLOBULIN INDUCTION IN ADULT KIDNEY TRANSPLANT RECIPIENTS

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Rabbit anti-thymocyte globulin (rATG) induction is commonly used to prevent rejection after kidney transplantation. Contrary to previous studies showing comparable short-term outcomes among various dosing regimens of rATG (3-10.5 mg/kg cumulative dose), a recent report observed significantly greater incidence of biopsy-confirmed acute rejection (BCAR) with < 6 mg/kg cumulative rATG dose. According to the current institution protocol, 5 mg/kg cumulative rATG dose is administered. However, due to dose capping at 500 mg, overweight patients may receive < 5 mg/kg. This investigation will evaluate the efficacy and safety of total rATG doses < 5 mg/kg compared to ≥ 5 mg/kg. This investigation is a single-center retrospective cohort study and has received Institutional Review Board approval. The study population will include adult kidney transplant recipients between July 2010 and December 2012 that receive rATG induction with standard maintenance immunosuppression including tacrolimus, mycophenolate and steroids. Patients with positive crossmatch, receiving multiple organ transplants, alternative induction therapy or investigational medications, and who underwent desensitization will be excluded. Patients that received < 5 mg/kg, based on actual body weight, cumulative rATG dose will be compared to those that received ≥ 5 mg/kg. The primary endpoint of this study will be BCAR rate at 12 months post-transplant. Secondary endpoints will include incidences of cytomegalovirus (CMV) and BK virus (BKV) infection and absolute lymphocyte counts. Patient data including age, race, gender, actual and ideal body weight, rATG dose, previous transplantation, panel reactive antibody, donor type, donor/recipient HLA mismatch, white blood cell, absolute lymphocyte and platelet counts, serum creatinine, kidney biopsies, CMV and BKV infection, concomitant immunosuppression and tacrolimus levels will be obtained from institutional electronic medical records. Incidences of BCAR, CMV and BKV will be compared using chi-square test and mean absolute lymphocyte counts will be compared using Student t-test with a significance level of 0.05.

Learning Objectives:

Recognize potential complications of sub and supratherapeutic rATG dosing.

Discuss data regarding safety and efficacy of various rATG dosing strategies.

Self Assessment Questions:

Which of the following have been associated with higher cumulative doses of rATG?

A Thrombocytopenia

B: BKV infection

C: Infusion-related reactions

D: Both A and B

A recent investigation of kidney transplant patients receiving rATG induction in combination with steroid-free maintenance immunosuppression reported that lower cumulative doses of rATG were associate

A Increased incidence of CMV

B Decreased incidence of lymphopenia

C Increased incidence of biopsy-confirmed acute rejection

D Decreased incidence of biopsy-confirmed acute rejection

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-568 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF A PHARMACIST-DRIVEN ANTIBIOTIC STEWARDSHIP EDUCATIONAL INTERVENTION ON URINARY TRACT INFECTION TREATMENT IN THE EMERGENCY DEPARTMENT

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Purpose: The Infectious Diseases Society of America (IDSA) practice guidelines for acute uncomplicated cystitis and pyelonephritis emphasize the use of local resistance rates to determine the best empiric treatment of patients with a urinary tract infection (UTI). The purpose of this study is to determine if education and feedback to the Emergency Department (ED) increases adherence with recommendations for the treatment of acute uncomplicated UTIs based on local resistance. Methods: This is a single center, controlled, before and after experimental study. Education was provided on institution-specific recommendations for the treatment of UTIs based on IDSA guidelines and local resistance. Provider audit and feedback regarding adherence to the guidelines will occur during the post-education period. Patients will be included if they were evaluated and discharged home from the ED with uncomplicated UTIs during four month periods starting November 2012 (pre-education) and November 2013 (post-education). Adherence to recommendations will be assessed by reviewing the drug, dose, frequency, and duration of prescribed regimens in the pre- and post-education group. Additionally, agreement between the isolated pathogen susceptibilities and empiric antibiotic will be compared. Results: During the pre-education study period, there were 106 patients with uncomplicated cystitis and 68 with pyelonephritis. In patients with cystitis, the most common antibiotics prescribed were trimethoprim-sulfamethoxazole (TMP-SMX) (53%), followed by fluoroquinolones (FQs) (33%). The median duration of treatment for both agents was 7 days. The most common antibiotics used for pyelonephritis were FQs (47%) and TMP-SMX (43%) with a 10 and 7 day median duration, respectively. Overall guideline adherence was 3% for cystitis and 2% for pyelonephritis, and the most common discrepancy was duration of therapy. There was 74% and 90% agreement between the isolated pathogen susceptibilities and empiric antibiotics for cystitis and pyelonephritis, respectively. Post-education results will be presented. Conclusions: To be presented

Learning Objectives:

Identify the IDSA guideline-recommended treatments for uncomplicated urinary tract infections based on local resistance patterns

List antimicrobial stewardship strategies that may be employed in the emergency department

Self Assessment Questions:

1.Which of the following is the best initial treatment for a patient who has uncomplicated cystitis, with a local resistance rate of TMP-SMX to E. co is >20%?

A Ciprofloxacin

B: Nitrofurantoin

C: Tmp-smx

D: Doxycycline

2.Which of the following antimicrobial stewardship strategies is the easiest to implement in the emergency department?

A Streamlining or de-escalation of therapy

B Rapid diagnostic testing

C Education

D Antimicrobial order forms

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-569 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARISON OF DEXAMETHASONE AND PREDNISOLONE FOR THE TREATMENT OF CROUP

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Purpose: Croup is a frequent childhood illness and is characterized by symptoms such as hoarse voice and stridor resulting from inflammation of the upper airway. Corticosteroids are effective in managing mild to severe croup. Single doses of oral dexamethasone and oral prednisolone have been proven effective in the management of croup symptoms. However, current evidence has not clearly demonstrated superiority of one agent over another. This descriptive study will aim to identify if there are any trends towards re-treatment with additional treatment courses of corticosteroids when a patient is initially prescribed dexamethasone or prednisolone for the treatment of croup.□□Methods: Prior to data collection, approval will be acquired from the institutional review board at Gundersen Health System. Patients eligible for this review will be children between the ages of 6 months to 6 years diagnosed with croup (identified by ICD-code 464.4) from September 1, 2012 to November 30, 2012, at Gundersen Health System (including clinic appointments and emergency service visits) treated with either prednisolone or dexamethasone. Data collected from each patient will include age, sex, medical record number, weight, presence of pre-existing asthma, dosage of corticosteroid prescribed at initial encounter, number of additional encounters due to croup within 10 days of original diagnosis, and name and dosage of corticosteroid prescribed at additional encounters (if any). □□Results: Data collection is ongoing. Appropriate statistical analysis as defined by a biostatistician will be employed. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the difference in pharmacokinetics of dexamethasone and prednisolone.

Recognize appropriate dosing of dexamethasone and prednisolone in the treatment of croup.

Self Assessment Questions:

Which of the following statements regarding corticosteroid pharmacokinetics is correct?

A Dexamethasone has a longer half-life than prednisolone.

B: Prednisolone has a longer half-life than dexamethasone.

C: Dexamethasone and prednisolone have approximately the same h

D: Dexamethasone has more mineralocorticoid activity than predniso

What is the lowest effective dose of dexamethasone to be used for treating croup?

A 0.25 mg/kg

B 0.3 mg/kg

C 0.9 mg/kg

D 0.15 mg/kg

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-571 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

LAMIVUDINE OR EMTRICITABINE IN ADDITION TO THREE DRUG CART CONTAINING ABACAVIR AND TENOFOVIR IN HIV-1 INFECTED PATIENTS WITH M184I/V IN THE CORRECTIONAL SETTING

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Background: The development of drug resistant mutations is a major cause of virologic failure for patients with HIV-1 on combination antiretroviral therapy (cART). The M184I/V mutation, a single primary drug mutation, confers resistance to the nucleoside reverse transcriptase inhibitors lamivudine and emtricitabine. Abacavir also selects for M184V mutations both in vitro and in vivo, however, the clinical relevance of this mutation for abacavir resistance is controversial. Several studies have shown that M184I/V mutation alone results in reduced sensitivity to abacavir, however, this is generally considered to represent only a low level of resistance. The presence of the M184V mutation can also enhance the susceptibility to other antiretroviral agents including tenofovir. Maintaining the M184V mutation by continuing lamivudine or emtricitabine can result in potential benefits including decreased reverse transcriptase fitness and increased fidelity compared to wild-type virus. Enhanced fidelity of the virus has the possible benefit of preserving future drug options in patients. The clinical benefit of continuing lamivudine or emtricitabine in addition to three drug cART is unknown. □Purpose: The primary objective of this study is to evaluate whether 3 drug cART containing abacavir and tenofovir, given in addition to lamivudine or emtricitabine in HIV positive patients in the correctional setting with a documented M184I/V mutation is associated with virologic suppression at 12, 24, 48, and 96 weeks. □Methods: A retrospective electronic chart review will be conducted for HIV positive patients in the Illinois Department of Corrections receiving medical care provided by the telemedicine healthcare team at the University of Illinois Hospital (Chicago) between July 10, 2010 and October 1, 2013. Adult HIV positive prisoners incarcerated with a documented M184I/V genotype and receiving combination antiretroviral therapy containing lamivudine or emtricitabine with abacavir and tenofovir will be included.□Results and Conclusion: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify the impact of the M184V mutation on various antiretroviral agents.

Identify potential benefits of maintaining the M184V mutation.

Self Assessment Questions:

The M184V mutation confers high-level resistance to the following antiretroviral agents:

A Abacavir and lamivudine

B: Abacavir and tenofovir

C: Emtricitabine and lamivudine

D: Emtricitabine and tenofovir

Which of the following is a potential benefit of maintaining the M184V mutation?

A Decreased reverse transcriptase fidelity

B Decreased reverse transcriptase processivity

C Increased HIV spontaneous mutagenesis

D Increased viral replication fitness

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-693 -L02-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF INDUCTION CHEMOTHERAPY DOSING IN ACUTE MYELOID LEUKEMIA PATIENTS

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In 2012, the American Society of Clinical Oncology published practice guidelines on appropriate chemotherapy dosing for obese cancer patients. The panel recommends full-dose chemotherapy based on actual body weight rather than limiting the dose using an adjusted or ideal body weight. However, the evidence presented is primarily based on studies of solid tumor malignancies. Thus, it is unclear if the same recommendations should be applied in the hematologic malignancy setting. Purpose: The objective of this study was to evaluate the effects of differing practices for induction chemotherapy dosing in acute myeloid leukemia patients. Methods: This retrospective cohort study was approved by the IRB at St. Vincent Health. Adult patients with a diagnosis of acute myeloid leukemia receiving induction chemotherapy with an anthracycline (idarubicin or daunorubicin) and cytarabine at St. Vincent Indianapolis Hospital from January 2008 to August 2013 were included in the study. Patients who received radiation therapy or were pregnant during therapy were excluded. Chemotherapy agents and their respective doses administered to all eligible patients were identified, and demographic and clinical characteristics were collected from the electronic health record. The primary outcome was the overall incidence of adverse effects during admission, which included: episodes of febrile neutropenia, mucositis, positive blood culture, vomiting, and nausea. Secondary endpoints included time to neutrophil recovery post chemotherapy, length of stay, evidence of residual leukemia induction chemotherapy, and whether patients received reinduction treatment. Patients were categorized and outcomes were compared between three groups: those with body surface area (BSA) values>2m2 that received empirically reduced chemotherapy doses, those with BSA>2m2 that received full actual body weight calculated doses, and those with BSA<2m2. Results/conclusions: Final results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Recall the rationale of empirical chemotherapy dose reductions in patients with high body surface areas

Recognize current recommendations of calculating dosage of chemotherapy agents for obese patients

Self Assessment Questions:

Which of the following reasons explain why clinicians typically empirically reduce chemotherapy doses in obese patients?

A To reduce the potential toxicities associated with higher doses
B: Due to anecdotal evidence of favorable outcomes associated with
C: Current data suggests overall better survival rates when adjusted
D: To account for the reduced drug clearance often displayed in obes

The American Society of Clinical Oncology recommends which of the following weight scalars for calculating body surface areas when determining chemotherapy doses in an obese patient?

A Ideal body weight
B Adjusted body weight
C Actual body weight
D Capped BSA of 2 m2

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-572 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF CYTOMEGALOVIRUS PROPHYLAXIS REGIMEN IN HIGH AND MODERATE-RISK HEART TRANSPLANT RECIPIENTS AT CLEVELAND CLINIC

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Background: Risk of developing cytomegalovirus (CMV) infections after heart transplant is determined by the CMV status of the donor and recipient. Patients are at a high risk for developing CMV if they are CMV negative and receive a heart from a CMV positive donor. Recipients that are CMV positive are at a moderate risk of developing CMV regardless of the donors CMV status. The International Society of Heart and Lung Transplantation (ISHLT) recommends CMV prophylaxis for the first three months after transplant utilizing valganciclovir or ganciclovir in high and moderate-risk recipients. At Cleveland Clinic, valganciclovir prophylaxis is only prescribed in high and moderate-risk patients for the first month post-transplant followed by two months of acyclovir prophylaxis. The effect of this shortened duration of valganciclovir prophylaxis has not been studied. Objective: To determine the incidence of CMV in high and moderate-risk heart transplant recipients at Cleveland Clinic.

Methodology: This study is an IRB-approved non-interventional retrospective chart review. Adult heart transplant recipients that received post-transplant care at Cleveland Clinic from January 1, 2008 to December 31, 2012 and are high or moderate-risk for CMV infection will be included. Data will be collected for one year post-transplant. Patients that are low-risk for CMV infection will be excluded. Data describing demographic characteristics, CMV episodes, and risk factors for CMV infection and rejection will be collected. The primary objective is to determine the incidence of CMV in high and moderate-risk heart transplant recipients. Secondary objectives include determining the time to CMV development post-transplant, comparing the incidence of CMV infection and disease at Cleveland Clinic to rates reported in the literature and describing the rate of rejection. Descriptive statistics will be utilized for the primary and secondary objectives. Results and Conclusions: To be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify the appropriate duration of cytomegalovirus prophylaxis based on the International Society of Heart and Lung Transplantation guidelines.

Describe the risk of CMV infection based on donor and recipient CMV status.

Self Assessment Questions:

According to the International Society of Heart and Lung Transplantation, what is the recommended duration of cytomegalovirus prophylaxis in heart transplant recipients?

A 1 month
B: 3 months
C: 6 months
D: 12 months

Which of the following donor/recipient matches is at the highest risk of developing CMV?

A Donor negative/Recipient positive
B Donor negative/Recipient negative
C Donor positive/Recipient negative
D Donor positive/Recipient positive

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-573 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EXPANDING THE ROLE OF THE PHARMACIST IN THE CARDIOLOGY CLINIC

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Purpose: The objective of this project is to establish and evaluate pharmacist services throughout the cardiology clinic to improve outcomes, enhance patient and provider satisfaction and provide cost savings. Methods: Pharmacists are involved in an ongoing pilot evaluating patient outcomes, pharmacist interventions and cost-effectiveness of pharmacist services in the cardiology clinic at Froedtert Hospital. Patients are referred to the pharmacist by four different mechanisms: cardiology provider-identified, patient self-identified through survey, patients recently discharged from the hospital, new patients, and patients with twenty or more medications. The primary objective is to describe the development and implementation of a sustainable pharmacist service within the clinic. Results:

Cardiology pharmacists were able to complete an average of 9.4 touches per day during November and December of 2013. Most common reasons for pharmacist visits were medication questions (19%, including self-identified patients though the questionnaire) and post discharge visits (12%). During clinic visits, 349 medication discrepancies were found on the medication list; an average of two discrepancies found per clinic visit. Seventy-six patients with a total of 92 significant drug related problems were identified during the pilot. The most common drug related problems included: effect of drug treatment not optimal (33%), adverse drug event: non-allergic (20%), and patient dissatisfied with treatment despite optimal clinical and economic treatment outcomes (12%). Pharmacists helped patients better understand their medications, demonstrated by the self-identification pre (7.6 out of 10) and post survey (9.5 out of 10), as well as education documented by the pharmacist. During the two months of the pilot, a total of 255 medications were referred to Froedtert Hospital Pharmacies for a total reimbursement of $24,388.59 over the two months.

Conclusion: Pharmacists are offering a valuable service to the cardiology patients. We are striving to hardwire scheduled appointments so the pharmacists role can continue to grow and be utilized efficiently.

Learning Objectives:

Explain the different referral mechanisms used by the pharmacist to increase the number of patients touched in cardiology clinic.

Describe the common drug related problems that were discovered by the pharmacist and what interventions the pharmacist made.

Self Assessment Questions:

What type of referral mechanism was the most successful at increasing the number of patients seen by the pharmacist?

A Provider referrals
B: Self-identification tool
C: Medication number tool/Pharmacist-identified
D: Nurse/MA referral

What was the most common drug related problem that the pharmacist discovered while in the cardiology clinic?

A Patient's dissatisfied with treatment despite optimal clinical and ec
B Untreated indication
C Effect of drug treatment not optimal
D Unnecessary drug treatment

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-574 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DESIGN AND IMPLEMENTATION OF A PREDICTIVE TOOL FOR FLEXIBLE PHARMACY STAFFING

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Purpose: Hospital pharmacist and technician staffing models have evolved to adapt to new job responsibilities and practice models. Recen changes in healthcare financing and consequent reimbursement reductions challenge pharmacy management to re-evaluate services an staffing needs. Multiple studies have developed internal benchmarking and surveying tools to measure pharmacist productivity and accordingly allocate employee resources. Accurate reflections of contributions were underscored due to limited ability to capture clinical services and associated time commitment. As a result, additional studies developed new staffing-to-demand models to include measures such as census, anticoagulation management, education involvement, and use of high priority medications. Utilizing these workload metrics, pharmacy departments were able to reduce the number of staffed shifts and ultimately labor costs. The purpose of this project is to develop and implement a tool that captures workload drivers that predict imminent pharmacy staffing needs in order to most efficiently use employee resources. Methods: A pharmacy taskforce will be created to identif pharmacy productivity measurements based on key daily responsibilities of the pharmacist and technician. Examples of pharmacist workload drivers include patient census, medication reconciliation, pending admissions, and precepting. Technician workload is predominantly measured by number of doses, cart fill, and batch quantity. The top three factors are weighted and incorporated into an equation for each inpatien pharmacy to account for overall workload drivers specific to that site. Half-way through the day shift, the manager will utilize the equation to determine if a reduction in workforce hours is necessary according to pre determined cut-offs. A pharmacy policy and rolling monitoring system will be developed to fairly identify and compensate employees sent home. Efficacy of this tool will be measured through employee expense reduction, as well as manager and employee satisfaction based on survey responses. Results/Conclusion: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss different mechanisms for measuring productivity and which workload factors influence pharmacy staffing needs.

Describe the process of implementing a tool of tailoring staffing according to key workload factors and identify potential barriers.

Self Assessment Questions:

Which of the following factors has the greatest contribution to pharmacy workload?

A Census
B: Patient education
C: Medical rounds
D: Precepting

All of the following would be considered challenges to implementation of a flex staffing model, except

A Long-term feasibility
B Measuring workload factors
C Employee engagement
D Hospital administration support

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-816 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF HEMODYNAMIC AND ADVERSE EFFECTS OF KETAMINE VERSUS ETOMIDATE FOR RAPID SEQUENCE INTUBATION

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Purpose□Etomidate, the current gold standard induction agent for rapid sequence intubation (RSI), is known to cause temporary adrenal suppression through inhibition of 11-beta-hydroxylase. This effect may be deleterious in critically ill patient populations, such as severe sepsis and trauma. Ketamine is a dissociative sedative agent utilized for RSI and is considered to be an alternative to etomidate in appropriate patients for induction, particularly in hypotensive patients. Recent studies have demonstrated no difference in maximum sequential organ failure assessment scores between critically ill patients receiving etomidate versus ketamine for RSI. The purpose of this study is to compare morbidity and all-cause mortality between trauma patients receiving either etomidate or ketamine for RSI. □Methods□This study is a single center, investigator-initiated, retrospective chart review. Adult patients admitted to the University of Cincinnati Medical Center Emergency Department from June 1, 2008 to June 30, 2013 with a primary diagnosis of trauma who were intubated utilizing rapid sequence intubation facilitated by the use of either ketamine or etomidate will be screened for inclusion. The primary outcome will compare seventy-two hour fluid resuscitation and blood product requirements between groups Secondary endpoints include all-cause mortality, drug-related adverse effects and a pre-defined subgroup analysis of traumatic brain injury patients. Continuous variables will be analyzed using the Student t-test or Wilcoxon Rank-Sum test as appropriate for parametric and non-parametric data. Categorical data will be analyzed using a Chi-squared or Fishers exact test as appropriate.□Results□Data is currently being reviewed and analyzed. □Conclusions□Conclusions will be made at the end of data analysis and will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe hemodynamic impact of both ketamine and etomidate when used for rapid sequence intubation

Identify potential benefits of ketamine over etomidate for rapid sequence intubation in trauma patients

Self Assessment Questions:

What is the mechanism by which ketamine acts as a dissociative sedative agent?

A What is the mechanism by which ketamine acts as a dissociative s

B: Competitive inhibition of the N-methyl-D-aspartate receptor

C: Potent central alpha-2 receptor agonism

D: Non-competitive inhibition of the N-methyl-D-aspartate receptor

Through what mechanism does etomidate inhibit cortisol?

A Direct inhibition of the peripheral cortisol tissue receptor

B Inhibition of cortisol synthesis through 11-beta-hydroxylase

C Direct inhibition of adrenocorticotrophic hormone

D Inhibition of corticotrophic releasing hormone release

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-575 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSESSMENT AND IDENTIFICATION OF INFECTION RISK FACTORS IN POST-CARDIAC ARREST PATIENTS AFTER THERAPEUTIC HYPOTHERMIA

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Purpose□Therapeutic hypothermia is widely utilized in patients after cardiac arrest to improve mortality and neurologic outcomes. Unfortunately, its use is associated with higher rates of infection. Previous studies have demonstrated that common markers of infection have limited diagnostic utility for identifying true infection in this patient population. The mixed clinical picture, altered inflammatory response, and critical nature of these patients make it difficult for the clinician to appropriately identify and treat true infections. □□The objectives for this research are to identify risk factors and signs of infection that incentivize providers to start antibiotics and that most strongly correlate with true infection. Data will be used to develop a scoring system for infection risk assessment in this patient population.□□Methods□This is an investigator initiated, single-center, retrospective, cohort study to be conducted through chart review at the University of Cincinnati Medical Center. Patients included will be eighteen years of age or older, status post cardiac arrest, and will have received therapeutic hypothermia. Reasons for exclusion are: prescribed antibiotics at the time of arrest, antibiotic administration before rewarming is complete, death prior to goal rewarmed temperature, or less than twelve hours of therapeutic hypothermia. □□Data to be collected includes the Simplified Acute Physiology Score (SAPS II), comorbidities and medical history, risk factors for infection, details of cardiac arrest, and therapeutic hypothermia administration. Vital signs, infectious markers, microbiologic culture results, and antibiotic administration will be followed for seven days from cardiac arrest. Logistic regression analyses will be used to determine the relationships between patient characteristics and positive cultures, and also between patient characteristics and the initiation of antibiotic therapy. Factors with the strongest correlation will be incorporated into the risk assessment scoring system.□□Results□Data analysis is in process and will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the limitations of common infectious markers in diagnosing tru infection in patients undergoing therapeutic hypothermia after a cardiac arrest.

Identify risk factors and signs of infection that incentivize providers to start antibiotics in therapeutic hypothermia patients and that most strongly correlate with true infection.

Self Assessment Questions:

What is the mechanism by which therapeutic hypothermia increases the risk of infection?

A Immunosuppression

B: Decreased cellular metabolism

C: hyperglycemia

D: hemodynamic instability

Which of the following statements is true about fever, white blood cell count, procalcitonin, and C-reactive protein in cardiac arrest patients who have undergone therapeutic hypothermia?

A They strongly correlate with culture-positive infection in that patien

B They are unreliable markers of infection in that patient population.

C There is strong data supporting their use in diagnosis of infection i

D Several of them have been shown to have good diagnostic utility ir

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-576 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT AND IMPLEMENTATION OF A TWELVE-WEEK PHARMACY RESIDENCY WELLNESS PROGRAM

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Purpose: The stress of pharmacy residency training can lead to unhealthy dietary choices, sleep deprivation, reduced levels of physical activity, decreased social activity, and a reduction in overall quality of life. Literature regarding physician resident wellness suggests that improved physician wellness may lead to the delivery of higher quality care. The implementation of a pharmacy residency wellness program would provide a valuable component to resident education. Program topics will teach residents the importance of developing healthy work-life balance and prioritizing personal health. These skills will lead to improved resident satisfaction and the delivery of higher quality patient care.□□Methods: This study was approved by the appropriate Institutional Review Board. Since there are no standards for the development of a residency wellness program, the program is modeled from employee health promotion programs. The Centers for Disease Control and Prevention (CDC) Workplace Health Model will be utilized with the four main steps of assessment, planning, implementation, and evaluation. The assessment stage of the project was completed to determine the interests of pharmacy residents. Current post-graduate year one and year two pharmacy residents are enrolled into the twelve-week program. Baseline data was obtained for the following parameters: dietary intake, physical activity, sleep hygiene, caffeine, alcohol, and tobacco use. Upon enrollment, residents were provided a wellness packet with guideline-based health information. Each week of the program has a different wellness theme. A blog website is available for group communication and posting throughout the program. Health behaviors will be assessed on a monthly basis via online submission to the program coordinator. Pre and post clinical measures will be evaluated via participant surveys.□□Results/Conclusion: This program is currently in process. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss the potential benefits associated with the implementation of a pharmacy residency wellness program

Describe the four steps associated with the implementation of an employee health promotion program according to the Centers for Disease Control and Prevention Workplace Health Model

Self Assessment Questions:

Which of the following is/are potential benefits associated with the implementation of a pharmacy residency wellness program?

A Improved resident satisfaction

B: Higher quality patient care

C: Increased resident salaries

D: A and B only

Which of the following is/are incorporated into the Centers for Disease Control and Prevention Workplace Health Model?

A Assessment

B Health screenings

C Evaluation

D A and C only

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-817 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

A RETROSPECTIVE REVIEW OF A RENAL SPARING PROTOCOL IN ORTHOTOPIC LIVER TRANSPLANTATION

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Purpose: Renal dysfunction is a common complication of liver disease which may persist post transplant. The presence of renal dysfunction has been associated with many negative outcomes including longer hospital stays and significant increases in morbidity and mortality. Calcineurin inhibitors are a potent component of the immunosuppressior regimen, but as nephrotoxins themselves, can increase the risk of renal injury. In an effort to preserve renal function, patients with pre-existing renal insufficiency are placed on a renal sparing protocol which consists of delayed initiation of low-dose tacrolimus in addition to the use of high-dose mycophenolate and corticosteroids. The purpose of this study is to evaluate the efficacy, safety concerns, and tolerability of the renal sparing protocol compared to the standard immunosuppression regimen □□

Methods: This study will be a retrospective chart review of patients who have received orthotopic liver transplants at Northwestern Memorial Hospital between January 1, 2009 and December 31, 2013. Patients ≥18 years old who received a liver transplant alone will be included. Patients will be excluded if they received a prior organ transplant, a concomitant organ transplant, were on chronic immunosuppression prior to transplant, or were lost to follow up. The primary objective of this study will be to evaluate whether liver transplant recipients placed on the renal sparing protocol experience higher rates of biopsy-proven acute rejection within the first year following transplant than patients on the standard immunosuppression protocol. Secondary objectives will assess the occurrence of adverse effects associated with the use of high-dose mycophenolate including neutropenia, thrombocytopenia, and gastrointestinal intolerance. This study was approved by the investigational review board.□□Results: Data collection currently in progress.□□Conclusions: To be presented at Great Lakes Pharmacy Resident Conference

Learning Objectives:

Discuss the rationale for minimizing calcineurin inhibitor exposure.

Identify common side effects that may occur with high-dose mycophenolate

Self Assessment Questions:

Which of these immunosuppressive agents can cause renal toxicity?

A Mycophenolate mofetil

B: Tacrolimus

C: Thymoglobulin

D: Prednisone

Which of these is a side effect that may be caused by mycophenolate?

A Tremor

B Hyperglycemia

C Neutropenia

D Constipation

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-577 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF INITIATION OF ANTIMICROBIAL THERAPY AND TIMING ON SURVIVAL IN PATIENTS WITH SEPTIC SHOCK

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Purpose: Current evidence suggests the most important interventions fo a septic patient are to initiate early goal-directed therapy (EGDT), obtain cultures, and begin early and appropriate antimicrobial therapy within the first hour of recognition. The timing of antimicrobial initiation upon recognition of sepsis has been published; however the appropriateness of antimicrobials has not been evaluated in literature. The aim is to review appropriate initiation, timing and selection of antimicrobial therapy in subjects that present with septic shock based on our current empiric use guideline at Advocate Lutheran General Hospital (ALGH). Methods: A 2:1 comparative analysis of retrospective subjects presenting to the ED that have a suspected infection meeting 2 or more of the SIRS criteria with an admitting diagnosis of sepsis that survived (n=125) and those that expired (n=65). The primary objective is to determine if the empiric use guidelines are adhered to with appropriate selection of antimicrobial initiation in the ED. Our secondary objectives include mortality, length of stay, and transfer to the ICU, appropriate antimicrobials based on culture and sensitivity data, and antimicrobial initiation and continuation after transfer from the ED. Results: A total of 190 subjects were reviewed and 153 had a primary diagnosis of sepsis, 22 with septic shock, and 15 with unspecified septicemia. The appropriate antimicrobial was given to 174 patients (91.6%) and empiric guidelines were followed in 184 (96.8%) of the subjects. The majority of subjects (n=62) were administered antimicrobials within 2.01-3 hours from presentation to the ED (32.6%), whereas only 12.2% (n=23) of subjects received antimicrobials between 0-1 hours. The effect of appropriate antimicrobials administered on mortality did not show statistical significance (p = 0.401). There was also no difference in timeliness to initial antimicrobial on mortality (p= 0.453). Conclusion: Ou preliminary analysis showed that antimicrobial administration and timing did not affect mortality in the septic patient.

Learning Objectives:

Recognize the most important interventions necessary for septic patients who present to the emergency department.

Identify the current Surviving Sepsis Campaign recommendations for administering effective intravenous antimicrobials after recognition of septic shock.

Self Assessment Questions:

All of the following are interventions to be made when a patient arrives to the emergency department presenting with signs and symptoms of sepsis except:

A Obtain cultures
B: Start early goal-directed therapy
C: Begin early and appropriate antimicrobial therapy
D: Wait for final culture data before giving antimicrobials

Which of the following times listed is recommended for initiation of appropriate intravenous antimicrobials in patients presenting with sepsis

A Within 1-2 hours after recognition
B Within the first hour of recognition
C Between 2-3 hours after recognition
D Greater than 4 hours after recognition

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-578 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF IMPLEMENTATION OF THE PRESCRIPTION DRUG MONITORING PROGRAM AT ONE VA FACILITY

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Evaluation of implementation of the prescription drug monitoring program at one VA facility Purpose: When used appropriately, controlled substances can significantly improve the health of patients. Controlled substances can also introduce public health risks when used inappropriately or in excess. VA policy now allows query of state maintained Prescription Drug Monitoring Programs (PDMP) without the Veterans consent to determine if a Veteran has received controlled substance prescriptions and non-controlled substance drug prescriptions if available from the state PDMP. The state PDMP in Wisconsin went live in June 2013 and the William S. Middleton Veterans Affairs Hospital has developed guidelines for primary care provider and outpatient pharmacist use of the database. Use of the PDMP database began January 2014. The purpose of this quality improvement project is to assess employee satisfaction, impact on workflow, and practice impact from use of the PDMP database. Methods: An inter-professional focus group consisting of primary care leadership, pharmacy leadership, nurse representation from pain clinic, and a pain programs coordinator was created. This focus group was created to discuss how to implement and operationalize use of the prescription drug monitoring program database. In this initial evaluation of program implementation, a survey was sent to 15 purposefully selected primary care providers and pharmacists. Individuals were selected based on their use of the database. The survey consisted of questions assessing employee satisfaction, impact on workflow, and practice impact.

Results/Conclusion: Data collection and analysis are currently ongoing. Final results and conclusions will be presented at Great Lakes Residency Conference.

Learning Objectives:

Identify the primary purpose of the PDMP database.

Recognize the medications that are monitored in the PDMP database.

Self Assessment Questions:

What is the primary purpose of the PDMP database?

A To decrease the prescribing of controlled substances
B: To improve patient care and reduce abuse/diversion while ensurin
C: To decrease the dispensing of controlled substances
D: To catch "doctor shoppers"

Which of the following medications is tracked in the PDMP database?

A cyclobenzaprine
B warfarin
C digoxin
D tramadol

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-920 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF AN I-VENT TOOL: DOCUMENTING PHARMACIST INTERVENTIONS

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Purpose: Pharmacists play an essential role in impacting both economic and patient care outcomes in the hospital setting by optimizing medication use, monitoring patient therapy, and providing medication information to patients and healthcare providers. Implementation of an i-Vent documentation tool within the electronic health record provides a practical, convenient method for capturing pharmacist interventions related to improving patient care and cost savings. The purpose of this study is to implement a pharmacist documentation system that will help justify pharmacist-staffing positions, monitor pharmacist productivity, and maintain or expand clinical pharmacy programs in a community hospital

Methods: A prospective analysis of pharmacist interventions at a 440-bed institution was conducted. Thirty-one intervention types were identified for the study. Pharmacist in-services were held to educate staf on the documentation process. Pharmacists on all shifts throughout the hospital documented interventions using an i-Vent tool within the electronic health record for a one-month period. All patients receiving care at St. Marys Hospital were included in the study. Intervention data was collected, categorized, and analyzed after the documentation period to determine the total number of interventions documented, the total time spent on interventions, and the potential cost savings associated with intervention types. Results and Conclusions: To be presented at the Great Lakes Residency Conference.

Learning Objectives:

Describe the value of implementing a pharmacist intervention documentation system

Identify information that can be captured in the i-Vent documentation too

Self Assessment Questions:

Which of the following statements is correct?

A Documenting pharmacist interventions can justify pharmacist-staff

B: Documenting pharmacist interventions can be inconvenient and tir

C: Documenting pharmacist interventions can be instrumental in mon

D: Both A and C

Which of the following statements is correct regarding the i-Vent documentation tool?

A It is not part of the patient's electronic health record.

B It captures intervention details including intervention type, interven

C It allows a pharmacist to link a patient and medication to an interve

D Both B and C

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-818 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

A STANDARDIZED APPROACH FOR MANAGING CHEMOTHERAPY-INDUCED RASH

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Purpose: The objective of this study is to develop, implement, and assess a standardized algorithm for the management of rash caused by select chemotherapy agents based on current evidence for use in the Aurora Cancer Care Clinics to ultimately improve patient care.

Methods: An algorithm for rash management will be created based on current evidence for best management in the literature for selected chemotherapy agents. A retrospective chart review will be performed at selected clinics from August 2013-September 2013 to determine the incidence of rash, current rash management, dose reductions, and discontinuation of therapy due to rash for the selected agents. The rash management algorithm containing preventative and treatment recommendations will be set up in the clinics electronic medical record (EMR) software and an electronic alert will advise providers to implemer the electronic rash management supportive plan for the selected agents Pharmacists will receive an electronic message when the selected agents are ordered to ensure the supportive plan is utilized. The nurses will provide patients with a rash information sheet and preventative prescriptions. Providers and nurses will assess patients for rash during follow-up visits and the rash treatment supportive plan will be instituted i indicated. The providers, nurses, and pharmacists at the selected clinics for the pilot will be educated on the supportive plan in the EMR. The algorithm will be evaluated by doing a chart review of patients on the selected agents at these clinics. Efficacy of the algorithm will be assessed by determining if proper preventative and treatment selections for rash were made based on the algorithm. The incidence of rash, dose reductions, and discontinuation of therapy due to rash will also be determined for patients who have been receiving the rash management supportive plan. Results/Conclusion: To be presented at the Great Lakes Pharmacy Resident Conference

Learning Objectives:

Explain why rash management with Epidermal Growth Factor Receptor Inhibitors is important.

List the steps involved in creation of an evidence-based algorithm for rash management.

Self Assessment Questions:

The incidence of rash with Epidermal Growth Factor Receptor Inhibitors can be as high as:

A 90%

B: 80%

C: 70%

D: 60%

Appropriate rash management is important because untreated rash can lead to:

A Diminished quality of life

B Dose reductions in therapy

C Discontinuation of therapy

D All of the Above

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-579 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ENOXAPARIN PROPHYLAXIS INTERRUPTION AND RISK OF VENOUS THROMBOEMBOLISM IN ADULT TRAUMA PATIENTS

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Evidence supports routine venous thromboembolism (VTE) prophylaxis with low molecular weight heparins in all major trauma patients, but the optimal dosing regimen is controversial. An acute rise in VTE rate was observed in adult trauma patients on benchmark reports following a 40mg subcutaneous once daily enoxaparin protocol at an academic leve one trauma center. Suspicion that prolonged anticoagulant free intervals were associated with increased incidence of VTE resulted in a protocol change to enoxaparin 30mg subcutaneously twice daily. This study investigates the impact of the protocol change on enoxaparin prophylaxi interruption in adult trauma patients. Our investigation is part of an ongoing, IRB approved study on outcomes in trauma, burn, and general surgery patients. This is a retrospective review of all trauma patients older than 18 years of age admitted to a level one trauma center between May 1, 2010 through April 30, 2011 and May 1, 2012 through April 30, 2013 who received at least one dose of enoxaparin for VTE prophylaxis and had at least one dose of enoxaparin held for a surgical procedure. Exclusion criteria include Injury Severity Score less than 5, discharge or death within two days of admission, receipt of more than one medication or dosing regimen for VTE prophylaxis during hospitalization, or development of VTE within 24 hours of admission. The following data will be collected: basic demographics, dose, timing, and frequency of each enoxaparin dose, diagnosis of VTE, laboratory measurements of renal function, blood products administered, and hemoglobin, hematocrit, and platelet counts. The primary outcome is duration of enoxaparin interruption per surgical procedure. Secondary outcomes include incidence of VTE, incidence of major bleeding and drug cost. We will perform a multivariate analysis to examine risk factors for VTE, including number of events and duration of enoxaparin interruption. Data collection and analysis are ongoing.

Learning Objectives:

Describe factors influencing risk of venous thromboembolism in adult trauma patients

Discuss efficacy of once versus twice daily prophylactic enoxaparin dosing in adult trauma patients as it relates to interruption in therapy

Self Assessment Questions:

Regarding venous thromboembolism (VTE) in adult trauma patients, which of the following is correct?

A Major trauma patients are at low risk for VTE

B: VTE prophylaxis with sequential compression devices is sufficient

C: Because of cost considerations, low-dose unfractionated heparin is

D: Low-molecular weight heparins are preferred to low-dose unfractio

What enoxaparin dosing regimen has the FDA approved for deep venous thromboembolism prophylaxis in adult patients with normal renal function?

A 0.5mg/kg SC every 12 hours

B 30mg SC once daily

C 40mg SC once daily

D 40mg SC every 12 hours

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-580 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARISON OF AMIODARONE MONITORING COMPLIANCE: USUAL CARE, ELECTRONIC TEMPLATE PRESCRIBING, AND PHARMACIST-MANAGED CLINIC

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Background: Amiodarone is one of the most commonly prescribed antiarrhythmic medications in the United States. Its complex pharmacokinetics, numerous organ toxicities and complicated dosing regimens make careful patient monitoring and follow-up necessary throughout the course of therapy. Despite published consensus statements recommending these requirements, patients receiving amiodarone may not always be appropriately followed. Several studies have also been published describing the need for amiodarone drug monitoring; however, no universally accepted and feasible approach is available. In an effort to fill this gap, both a pharmacist-managed amiodarone monitoring service (AMS) and a restricted ordering template were established at the VA Ann Arbor Healthcare System (VAAAHS) in January 2010 and May 2011, respectively. Purpose: The objective o this study is to assess whether adherence to amiodarone monitoring differed post-amiodarone restriction template and for patients enrolled in the pharmacist-managed AMS at the VAAAHS.

Methods: Veterans with an active prescription for amiodarone for at least 60 days between January 1, 2009 to August 31, 2013 and receiving primary care at the VAAAHS will be eligible for inclusion in the study. Using a minimum 15% difference among rates in adherence to amiodarone monitoring, alpha level 0.05, and 80% power, the required sample size is 300 total patients. Data collected will be from the computerized patient record system (CPRS), Vista Imaging and Vista Web. Descriptive statistics will be used to report demographic information and results. If the number of monitoring rates and amiodarone-related adverse events allow, further statistical analysis with significance tests (Pearsons chi-squared test or Fischers exact test) will be performed. Results/Conclusions: Data collection and analysis are currently in progress. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the recommended monitoring parameters and screening frequency for patients receiving amiodarone.

Recognize the need for minimum baseline evaluation, as well as ongoing surveillance, in patients receiving amiodarone.

Self Assessment Questions:

The Heart Rhythm Society recommends which of the following be performed at baseline and then yearly in patients receiving amiodarone?

A Liver function tests, Thyroid function tests, Electrocardiogram

B: Thyroid function tests, Chest x-ray, Pulmonary function tests (inclu

C: Electrocardiogram, Chest x-ray, Pulmonary function tests (includin

D: Ophthalmologic evaluation, Electrocardiogram, Chest x-ray

What percentage of patients starting amiodarone receive minimum baseline evaluation?

A 30%

B 50%

C 70%

D 90%

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-581 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

CONVERSION FROM MOMETASONE AND FORMOTEROL TO BUDESONIDE/FORMOTEROL (SYMBICORT) FOR CHRONIC OBSTRUCTIVE PULMONARY DISEASE IN A VETERAN POPULATIO

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Background/Purpose: Chronic obstructive pulmonary disease (COPD) is characterized by persistent/progressive airflow limitation caused by a combination of obstructive bronchiolitis and parenchymal destruction. As COPD progresses, patients may experience an increase in acute exacerbations (dyspnea, cough and/or purulent sputum production). Currently, the combination of long acting 2 agonists and inhaled corticosteroids (ICS) is recommended for patients at a higher risk for exacerbations. The combination of ICS and bronchodilator therapy is considered to be more efficacious than individual agents (from different therapeutic classes) in improving lung function, health status, and reducing exacerbations in moderate to very severe COPD. The purpose of this study is to evaluate the effects of converting patients with COPD from dual agents mometasone and formoterol to single administration agent therapy budesonide/formoterol (Symbicort). This study will investigate the difference in acute COPD exacerbations, clinic/emergency department visits, hospital admissions, steroid/antibiotic use, adverse drug reactions, and changes in therapy before and after conversion. To date, no study has evaluated COPD patients specifically converted from dual inhalers mometasone and formoterol to single inhaler Symbicort (budesonide/formoterol).

Methods: This is a retrospective, electronic chart review of veterans with a COPD diagnosis between October 1, 2010 to September 30, 201 receiving formoterol and mometasone dual agents ≥1 year prior to conversion to budesonide/formoterol single administration agent, and converted from medium potency mometasone (440 mcg/day) to budesonide/formoterol (160 mcg/4.5 mcg, 2 puffs BID). Patients will be followed for a maximum of 1 year prior to conversion of treatment to maximum 1 year post conversion. Results and Conclusions: Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference taking place April 23-25, 2014.

Learning Objectives:

Describe the pathophysiology of chronic obstructive pulmonary disease (COPD) and define an acute COPD exacerbation.

Describe the optimal treatment for reducing COPD exacerbations in moderate to very severe COPD.

Self Assessment Questions:

Which of the following is/are characteristics of chronic obstructive pulmonary disease (COPD)?

A Persistent/progressive airflow limitation

B: Reversible airway remodeling

C: Parenchymal destruction and obstructive bronchiolitis

D: A and C

The combination of inhaled corticosteroids and bronchodilator therapy is more efficacious than individual agents (found in different therapeutic classes) in reducing exacerbations in:

A Mild COPD

B Moderate-Very Severe COPD

C Only Severe COPD

D Only Very Severe COPD

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-582 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF PHARMACIST INVOLVEMENT WITH THE STROKE RESPONSE TEAM

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Purpose: Delivery of thrombolytic therapy within three hours of time last known well to acute ischemic stroke patients is a core measure set by the Centers for Medicare and Medicaid Services. Administration of alteplase within this timeframe may help reduce patient morbidity and mortality. The purpose of this study is to determine if direct pharmacist involvement with the stroke response team will decrease the door to needle time for administration of alteplase for eligible ischemic stroke patients. Additionally, the study will also determine if pharmacist involvement aids in waste aversion and improves patient morbidity and mortality. Methods: Patients 18 years and older who received alteplase for an acute ischemic from January 2011 through study conclusion will be included for analysis by retrospective and prospective study design. Retrospective data will be identified via a search of quality databases and billing, pharmacy, and medical records during the specified study period. When available, competent pharmacists will respond to the initial stroke alert with the materials necessary to appropriately compound, dispense, and document administration of alteplase at the patients bedside, as opposed to the current practice of mixing the drug product in the inpatient pharmacy. Retrospective and concurrent patient data to be collected will include: gender, age, height, weight, date of admission, diagnosis, risk factors for stroke, time last known well, time of brain imaging, time alteplase ordered, time alteplase administered, NIHSS scores (initial, pre alteplase, post alteplase, on admission, 24 hours post admission, at discharge/transfer), dosing of alteplase, amount of alteplase wasted, length of stay and patient outcome. A random patient number will be assigned to the data collection forms and maintained confidentially. Results and Conclusions: Results and conclusions to be presented at Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the eight stroke core measures that have been shown to improve patient outcomes

Explain how to appropriately dose and administer alteplase for acute ischemic stroke patients

Self Assessment Questions:

Which of the following statements are part of the core measures for stroke?

A Ischemic/hemorrhagic stroke patients should not receive VTE prop

B: If indicated, intravenous alteplase should be administered within 3

C: Stroke patients should be prescribed antithrombotic therapy by the

D: Stroke patients should be prescribed a statin by the end of hospita

A 67 year old, 80 kg male is brought to the emergency room exhibiting signs of stroke. His symptoms began approximately 45 minutes prior to arrival. After review of his head CT and medical history i

A Alteplase 72 mg infused over 1 hour

B Alteplase 15 mg IV bolus over 1-2 minutes, followed by infusions o

C Alteplase 7.2 mg IV bolus over 1 minute followed by 64.8 mg infus

D Alteplase 9 mg IV bolus over 1 minute followed by 81 mg infused o

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-819 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATING THE EFFICACY OF REDUCED DOSE ZOLPIDEM FOR TREATMENT OF INSOMNIA: A RETROSPECTIVE REVIEW

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Purpose: Insomnia is a frequently reported medical problem, nearly 35% in the general population. Uncontrolled insomnia can lead to fatigue, impaired memory, irritability, decreased quality of life, and risk for psychiatric illness. Additionally, insomnia may increase risk for hypertension, cardiac disease, and diabetes. Current guidelines suggest cognitive behavioral therapy, pharmacotherapy (zolpidem most commonly), or the combination as first line treatment. In January 2013, the FDA required the manufacturers of zolpidem to lower the recommended dose due to detectable drug levels the following morning causing impaired driving. The FDA stated that the 5mg dose should be effective for most patients, but there are not studies to support this statement. The purpose of this study is to assess the effectiveness of zolpidem 5mg. The primary objective is to assess the treatment failure rates among patients using zolpidem 5mg. Secondary objectives include adverse reactions, conversion to an alternative medication, failure rates of zolpidem 10mg after 5mg trial, and differences in efficacy based on demographics.□Methods: This single center, retrospective, cohort analysis includes patients meeting the inclusion criteria between March 1, 2012 to March 1, 2013. Inclusion criteria are comprised of all patients 18 years of age or older diagnosed with primary or unspecified insomnia who received zolpidem 5mg. Exclusion criteria consist of patients taking less than 5mg or more than 10mg zolpidem, using the controlled release, using zolpidem less than 30 days, insomnia from other causes, documented hypersensitivity to zolpidem, alcohol abuse, severe hepatic disease, and concurrent sleep aid utilization. Laboratory data, progress notes, and outside medical records will be reviewed to determine if patients experienced a treatment failure, defined as: a prescription for an increased dose of zolpidem, discontinuation of zolpidem due to lack efficacy, or a prescription for a different sleep aid.□Results: to be presented□Conclusion: to be presented

Learning Objectives:

List potential complications of uncontrolled insomnia.

Identify current prescribing recommendations for zolpidem tartrate for all patient populations

Self Assessment Questions:

Which of the following is a potential complication of uncontrolled insomnia?

A Asthma

B: Cardiovascular Disease

C: Weight loss

D: Restless Leg Syndrome

Which of the following would be the most appropriate treatment for a 56 year old male patient with insomnia?

A Zolpidem 10 mg every night at bedtime

B Zolpidem 5 mg every night at bedtime

C Cognitive Behavioral Therapy with zolpidem 5 mg at bedtime as ne

D Drug therapy should be avoided first line in treatment naïve patient

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-583 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF PHARMACIST-LED BEDSIDE DISCHARGE COUNSELING FOR PEDIATRIC PATIENTS WITH TYPE 1 DIABETES AND THEIR CAREGIVERS

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PURPOSE: Type 1 diabetes (T1D) affects 5% of the population worldwide and 1 out of 300 children in the United States. Patients with T1D have significant prescription burdens. Currently, discharge prescriptions for patients with T1D at Nationwide Childrens Hospital (NCH) are dispensed, after counseling, from the outpatient pharmacys pick-up window. However, pharmacist-led bedside dispensing and counseling is hypothesized to offer improved comprehension of medication use. The comfort and knowledge of the caregiver to manage all home prescriptions will be measured before and after a pharmacist dispenses and counsels at the bedside.□METHODS: Pharmacist-led discharge counseling for patients with T1D received expedited approval from the Institutional Review Board. The pharmacist communicates with the endocrinology team regarding planned discharges of patients with T1D. Discharge prescriptions are filled in the NCH outpatient pharmacy. At a scheduled time, the pharmacist brings the prescriptions to the patients bedside. The caregiver completes a pre-counseling survey measuring comfort and knowledge of home prescriptions. The caregiver then completes the survey again post-counseling. One month after discharge, the pharmacist calls patients who received discharge counseling to measure retention of prescription knowledge. The pharmacist also calls patients who did not receive discharge counseling one month after discharge to serve as the control group. The control group completes the same survey. All patient interaction is documented in the patients electronic medical record. The primary outcome is to compare the pre- and post-counseling survey to determine the significance of pharmacist-led discharge counseling at the bedside. Secondary outcomes will compare retention of prescription knowledge o counseled and non-counseled patients.□PRELIMINARY RESULTS: Patients will receive pharmacist-led bedside discharge counseling from November 2013 to May 2014. Preliminary results will be presented at the Great Lakes Resident Conference. □CONCLUSION: Study results will show the impact of pharmacist-led discharge counseling on caregivers comfort and knowledge of prescriptions.

Learning Objectives:

Explain the role of a transition of care pharmacist during the discharge process.

Identify the perceived impact of pharmacist-led bedside discharge counseling.

Self Assessment Questions:

What is a role of a transition of care pharmacist?

A Fill inpatient orders

B: Ignore home medication lists

C: Provide education for new prescriptions

D: Fill according to hospital formulary

What is a perceived impact of pharmacist-led bedside discharge counseling?

A Increase patient wait time

B Improved knowledge of prescriptions

C Decrease in discharge prescription capture

D Reduce pharmacist follow-up with patient

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-820 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF A PHARMACIST DIRECTED INTERVENTION ON DURATION OF AMINOGLYCOSIDE EMPIRIC THERAPY FOR HEALTHCARE-ASSOCIATED PNEUMONIA

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Purpose: Healthcare-associated pneumonia (HCAP) is associated with an increased risk for multidrug-resistant organisms and a twofold increase in mortality. In patients with suspected HCAP, professional guidelines recommend empirically treating with dual antipseudomonal antibiotics and an agent targeting methicillin-resistant Staphylococcus aureus. Norton Healthcare adopted system-wide order sets which guide physicians to choose therapeutic regimens based on clinical practice guidelines. The HCAP emergency room and admission order sets include cefepime, tobramycin and vancomycin with optional azithromycin if atypical organisms are suspected. Observations at Norton Audubon Hospital suggest that many patients continue to receive the empiric triple antibiotic regimen without timely de-escalation despite clinical improvement and negative microbiological cultures. Also, there is concern that unnecessary use of tobramycin increases the risk of nephrotoxicity. The purpose of this study is to determine the impact of a pharmacist directed intervention on days of tobramycin therapy.

Methods: This is a prospective, interventional, single center study with a historical control. The intervention group consists of thirty patients empirically treated using the emergency room or inpatient admission HCAP order sets. Each patient is evaluated daily by a clinical pharmacist as a potential candidate for de-escalation of tobramycin therapy. Patients are not candidates for de-escalation if they have positive cultures for an infection where no alternative to tobramycin is appropriate due to susceptibilities or contraindications. After 3 days of empiric therapy, a clinical pharmacist contacts the prescribing physician to recommend de-escalation of tobramycin as appropriate. The historical control group consists of thirty patients treated from the same HCAP order sets prior to initiating the pharmacist intervention. Comparing the two groups, the primary endpoint is total days of tobramycin therapy and secondary endpoints include hospital length of stay, incidence of nephrotoxicity, and survival to discharge. Results and conclusions to be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss the benefits of de-escalation of an empiric antibiotic regimen containing an aminoglycoside.

Explain the process of evaluating a patient for de-escalation of empiric tobramycin therapy for HCAP.

Self Assessment Questions:

Which of the following is a potential benefit of de-escalation of tobramycin empiric therapy?

A Decreased risk of nephrotoxicity

B: Decreased risk of hepatotoxicity

C: Increased hospital costs

D: Increased length of stay

Which of the following should be evaluated prior to recommending de-escalation of empiric tobramycin therapy for HCAP?

A White blood cell count

B Culture data including susceptibilities

C Temperature

D All of the above

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-584 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF LIPOSOMAL BUPIVACAINE FOR POST-SURGICAL ANALGESIA IN ORTHOPEDIC SURGERIES

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Background: Adequate post-operative pain management with minimal side effects from opioids are key factors in improving patient satisfaction after a procedure. Opioids are a mainstay of therapy, but cause side effects such as nausea, vomiting, constipation, urinary retention, apnea, and sedation. These side effects can lead to injury, increased length of stay, and increased healthcare costs all while decreasing patient satisfaction. A new formulation of local analgesia has recently been introduced into practice called liposomal bupivacaine. Randomized controlled trials have concluded that this liposomal formulation with additional multi-modal drug therapy is superior to the standard of care. Surgeons at Mercy Health Muskegon have begun to use liposomal bupivacaine in total hip and knee arthroplasty and in back surgeries. This new formulation is more costly than a continuous bupivacaine nerve block; however studies claim that its benefits can actually decrease a patients total healthcare costs for a procedure. Purpose: To compare costs, pain control, and safety of liposomal bupivacaine treatment versus standard of care in orthopedic surgeries. Methods: This is a retrospective chart review of hip, knee, or back surgical patients. Patients receiving standard post-surgical care were compared to patients administered liposomal bupivacaine. The primary endpoint evaluated was pain scores. Secondary endpoints evaluated included length of stay, post-surgical opioid use, post-surgical average pain scores, time to first opioid relief, and reported fall data. Opioid use was compared using calculated intravenous morphine equivalents.

Results/Conclusions: Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify the potential benefits of utilizing a multi-modal approach for post operative pain management

Describe the characteristics of the liposomal formulation of bupivacaine

Self Assessment Questions:

Which of the following is the main type of pain targeted by local analgesics?

A Visceral

B: Neuropathic

C: Somatic

D: Chronic

How long does liposomal bupivacaine provide post-surgical analgesia?

A 24 hours

B 36 hours

C 48 hours

D 72 hours

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-585 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ANALYZING THE FEASIBILITY OF RESTRICTING PATIENTS OWN MEDICATION USE DURING HOSPITAL STAYS

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Purpose: According to the Centers of Medicare and Medicaid (CMS) and the Joint Commission (TJC), each hospital is to determine whether to permit patient-supplied medications. TJC specifies that the hospital must (1) define when medications brought into the hospital can be administered, (2) properly identify and evaluate medication integrity prior to use, and (3) inform the prescriber and patient if the medication brought into the hospital is not permitted. At Aurora Health Care (AHC), the current practice is to allow patient-supplied medications if they are classified in "observation" status. This practice was adopted because CMS does not reimburse observation patients for "self-administrable" medications. AHC safety measures such as barcode scanning and drug interaction checking are not feasible with patient-supplied medications, thus increasing the chance for medication errors. Furthermore, a survey by AHC pharmacists identified that restricting patient-supplied medications could improve caregiver workflow. The survey identified that pharmacists spent up to 25% of each shift modifying medication orders. Further analysis was completed and strategies were put in place to reduce pharmacist time. One area identified was the time spent modifying orders for patients who were using patient-supplied medications (i.e. observation status patients). Restricting patient-supplied medications will help to simplify caregiver workflow and improve patient safety. The objective of the project is to determine the feasibility of restricting patients own medication use during hospital stays, regardless of patient status. Methods: Initial steps of the project involved exploration and familiarization of AHCs current charging and information system applications. A retrospective review of medication orders and medication order charges from 15 AHC hospitals was conducted. Information gained from data review and analysis will be used to formulate financial models aimed at minimizing an impact on revenue and cost. Results/Conclusion: Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Define a self-administrable medication.

Recall three of the Joint Commission standards regarding patient-supplied medications.

Self Assessment Questions:

What is considered a self-administrable medication according to CMS?

A Oral agents.

B: Suppositories.

C: Subcutaneous injections.

D: All of the above.

Which standards are enforced by the Joint Commission regarding patient-supplied medications?

A Proper identification and evaluation of the medications integrity pri

B Informing the prescriber and the patient if the medication brought i

C Defining when medications brought into the hospital can be admin

D All of the above.

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-821 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

QUALITY IMPROVEMENT OF ANTIMICROBIAL TRANSITIONS AND THE PHARMACIST IMPACT ON READMISSION RATE

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Background: The Centers for Medicare and Medicaid Services has implemented a value-based purchasing system with the purpose of improving quality of care and reducing costs. One in five Medicare patients is readmitted to the hospital following discharge and as a result, Medicare provides reduced reimbursement for hospitals with excess readmissions. Unintentional medication discrepancies during transitions in care are very common, with advanced care nursing transitions representing a particularly significant threat to patient safety. Pneumonia, urinary tract infection, and septicemia are among the top reasons for Medicare readmissions, and patients with these infections are an important high risk population. Previous studies have demonstrated the benefit of pharmacist intervention at discharge on patients with cardiovascular disorders. There is limited research evaluating pharmacist impact on appropriate antimicrobial prescribing during transitions of care with a focus on key aspects of antimicrobial stewardship. Purpose: The purpose of this project was to evaluate pharmacist intervention and impact on readmission rates for Medicare and Medicaid patients discharged with advanced nursing care following pharmacist assessment of antimicrobial therapy. Methods: This two-phase study included Medicare and Medicaid patients discharged to a nursing home or skilled nursing facility on oral/intravenous antimicrobial therapy, as well as patients discharged with home health care to receive intravenous antimicrobial treatment. Phase 1 was a retrospective chart review of patients discharged from 4/2013-5/2013, while phase 2 included patients with prospective pharmacist intervention from 11/2013-1/2014. Pharmacist interventions on antimicrobial therapy included evaluation of appropriate dose, frequency, and presence of a duration of therapy. The primary outcome measure was 30-day readmission rate, with secondary endpoints including type of interventions required and medication adherence at discharge facilities. This was a quality improvement project and is therefore exempt from review by the Institutional Review Board. Results/Conclusions:

Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Recognize risk factors associated with hospital readmission.

Describe the principles of antimicrobial stewardship.

Self Assessment Questions:

Which of the following is a risk factor for hospital readmission?

A Thorough discharge counseling and instruction

B: Psychosocial support from a case manager or social worker

C: Poorly executed transition of patient care

D: Comprehensive medication reconciliation

Which of the following describes a key aspect of antimicrobial stewardship?

A The best clinical outcome for the patient with a negative impact on

B The optimal selection, dosage, and duration of antimicrobial treatm

C The use of broad-spectrum antibiotics without appropriate de-esca

D Treatment and prevention of infection with significant toxicity to the

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-921 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFECTIVENESS OF A RETROSPECTIVE DRUG UTILIZATION REVIEW ON POTENTIALLY UNSAFE OPIOID AND CENTRAL NERVOUS SYSTEM (CNS) COMBINATION THERAPY

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Background: Drug overdose deaths are the second leading cause of unintentional deaths in the United States, three fourths of which involve opioid analgesics. Benzodiazepines (BZDs) and antidepressants (ADs) are the next most common drugs involved in overdose deaths and often used in combination with opioids. The objective of this study is to determine the effectiveness of a retrospective drug utilization review (DUR) program among members whose claims history suggested potentially unsafe opioid and central nervous system (CNS) combination therapy. Methods: Among a 3.2 million commercially-insured population, members with pharmacy claims during a 4-month period for high dose opioids [daily morphine equivalent dose (MED) ≥200 mg] and concomitant claims for another opioid, BZD, or AD were identified. Members with claims indicating presence of HIV, AIDS, or malignancy o belonging to groups requiring permission on data analyses were excluded. A one-time letter regarding the potentially unsafe therapy and satisfaction survey were sent to the most recent prescriber of the high dose opioid. After four months post mailings, claims will be reexamined to measure changes in total unique opioids, total MED, dose, and therapy. Survey results will be analyzed to determine the provider-perceived clinical utility of the DUR program. Inclusion criteria include members targeted for the DUR program and continuous enrollment August 2013 to February 2014. Paired t-test will evaluate changes pre and post DUR. Results: A total of 980 members were targeted for the DUR (50% male). Mean age was 52.1 years. Oxycontin was the most common high dose opioid (27.6%). Family physicians were the most frequent high dose opioid prescriber (25.9%). Distribution of groups included opioid+opioid (29.5%), opioid+BZD (20.7%) opioid+AD (30.6%) and opioid+BZD+AD (19.2%). Members were taking 1.80.7 total unique opioids and daily MED was 446.0272.7 (meanSD). Conclusions: Prescriber-directed interventions may identify high risk use of medications among a health plans members.

Learning Objectives:

Explain the role of health plans to identify potentially unsafe drug combinations

Identify opioids most commonly prescribed at high doses among a commercially insured population

Self Assessment Questions:

The role of health plans to identify potentially unsafe drug combinations includes

A Use of predictive analytics to target individuals at greater risk for d
B: Review of pharmacy claims data to identify high doses or unsafe c
C: Allowing all providers to prescribe any drugs for any patient as lon
D: Denying coverage for any opioid analgesic

In a commercially insured adult population, the most common opioids prescribed at high doses (daily morphine equivalent dose (MED) ≥200 mg) are

A Methadone, OxyContin, Hydrocodone-Acetaminophen
B Oxycodone, OxyContin, Tramadol
C OxyContin, Morphine Sulfate ER, Fentanyl Patch
D Morphine Sulfate ER, Fentanyl Patch, Hydrocodone-Ibuprofen

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-922 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF CLINICAL OUTCOMES AND PROVIDER ACCEPTANCE RATES OF PHARMACIST RECOMMENDATIONS IN A DIABETES MEDICATION THERAPY MANAGEMENT CLINIC

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Purpose: Diabetes mellitus is the seventh leading cause of death in the United States. Educational and medical intervention by health care providers helps patients with diabetes improve glycemic control, which reduces morbidity and mortality. However, improvements in diabetes management decline shortly after intervention cessation. Regular meetings between patients and pharmacists create opportunities to prevent or resolve medication-related errors, optimize medication therapy, improve adherence, and teach self-management skills. The objective of this study was to determine the provider acceptance rates o pharmacist recommendations in a diabetes medication therapy management (MTM) program and analyze clinical outcomes. Methods: This was a retrospective, cohort study involving review of patient charts from a diabetes MTM program from January 2010 to August 2013. Pharmacists in the MTM clinic perform clinical assessments, evaluate blood glucose levels and other laboratory results provide individualized diabetes education and coaching, establish patien goals and action plans, and assess the need for care referral. The primary endpoint was provider acceptance rates of pharmacist recommendations in the program. Pharmacy prescription records, clinical reports, and MTM clinical chart notes were used to determine if a recommendation was accepted. Types of recommendations included dose adjustments, medication initiation, and medication discontinuation. Clinical outcomes were also analyzed. Patients 18 years old or greater with type 1 or type 2 diabetes that were enrolled in the diabetes MTM program were included in the study. Patients with less than 6 months enrollment in the program were excluded. Outcome measures consisted of provider acceptance of pharmacist recommendations, glycosylated hemoglobin (HbA1c), blood pressure, triglycerides, and low-density lipoprotein. Results: To be presented at the Great Lakes Pharmacy Resident Conference (GLPRC). Conclusions: To be presented at GLPRC.

Learning Objectives:

Describe the clinical and economic impact of diabetes in the United States.

Discuss the effectiveness of diabetes education and management from health care professionals.

Self Assessment Questions:

What percent of the US population is currently diagnosed with diabetes?

A 5%
B: 10%
C: 20%
D: 30%

Improvements in diabetes management decline within _____ months of intervention cessation

A 1
B 3
C 6
D 12

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-822 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFECTS OF PHARMACIST-COMPLETED ADMISSION MEDICATION RECONCILIATION IN THE EMERGENCY DEPARTMENT

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At Baptist Health Madisonville, medication histories are briefly collected at admission by a nurse, and a pharmacist clarifies missing information (such as strength, route, etc.) from these medication lists. The purpose of this trial was to assess the effects of pharmacist completion of medication reconciliation (med rec) at admission.□□Objectives:□The primary objective was to determine the average number of interventions made per patient medication history at admission from the emergency department (ED). Secondary objectives were to determine average time per med rec encounter in the ED, compare average discharge times in trial patients versus non-trial patients, assess what types of interventions are made when a pharmacist performs med rec at admission, and compare length of stay (LOS) between trial patients and non-trial patients.□□Methods:□This was a prospective observational trial that included patients admitted through the ED from October 7 to October 25 2013 between the hours of 1400 and 2200. When admission status was determined for each patient, a pharmacist would gather in a good faith effort a complete and accurate home medication list using all available resources (such as pill bottles, list, retail pharmacy, etc.). □□Summary and Conclusions:□Between 8 and 9 interventions were made per patient encounter when a pharmacist conducted med rec upon admission. Types of interventions made included added medications, discontinued medications, and dose clarifications. Average time per patient encounter was 21.6 minutes, but pharmacist-completed med rec at admission may slightly reduce discharge process time. There appears to be a small difference in length of stay between trial and non-trial patients (5.54 versus 6.37 days).□□Medication reconciliation at admission affects the treatment a patient receives during the entire length of a hospital stay. Pharmacist-completed med rec achieves a more accurate record of wha a patient takes at home than current admission processes at BHM.

Learning Objectives:

Define medication reconciliation according to The Joint Commission.

Identify potential areas for pharmacist contribution to the med rec process at admission.

Self Assessment Questions:

According to The Joint Commission, medication reconciliation is defined as "the process of comparing a patient's medication orders to all of the medications that the patient _____. This reconciliat

A enjoys, side effects

B: has been taking, errors

C: needs, issues

D: is allergic to, problems

In what ways can a pharmacist contribute to medication reconciliation at admission?

A Ask the nurse what the patient takes

B Don't ask patients when they took their last dose of medications

C Clarify medication strengths and frequencies

D Use old medication lists from patients' previous hospital stays

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-923 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

RETROSPECTIVE EVALUATION OF ACUTE KIDNEY INJURY: EXTENDED INFUSION VERSUS STANDARD INFUSION PIPERACILLIN/TAZOBACTAM WITH VANCOMYCIN

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Purpose: The primary objective of this study is to evaluate the incidence of acute kidney injury in patients receiving: the combination of standard infusion piperacillin/tazobactam and vancomycin versus the combinatior of extended infusion piperacillin/tazobactam and vancomycin, in order to determine which administration method will have a higher incidence of acute kidney injury. □Methods: This study was granted exempt status by the St. Elizabeth Institutional Review Board. All patients receiving combination piperacillin/tazobactam and vancomycin therapy were identified during a retrospective review using the hospitals electronic medical record system. Non-ICU patients greater than 18 years old, who received combination piperacillin/tazobactam and vancomycin for a minimum of 48 hours, were included in the study. Excluded patients comprised: patients with a baseline serum creatinine (SCr) greater than 2 mg/dL, receiving peritoneal or hemodialysis, an ICU stay, pregnancy, concomitant use of defined nephrotoxic agents (aminoglycosides, IV contrast dye, amphotericin B, cyclosporine, tacrolimus, or vasopressors) as well as, those who received both formulations of piperacillin/tazobactam therapy due to IV access and compatibility issues. Acute kidney injury was defined as an absolute increase in SCr of 0.5 mg/dL or a 50% increase from baseline. Data collected on all patients, if available, included: demographics (age, sex, ethnicity, height weight); use of angiotensin-converting enzyme inhibitors, angiotension receptor blockers, diuretics or NSAIDs; vancomycin trough levels; baseline SCr and highest SCr during treatment or up to 72 hours after completion of specified antibiotic therapy. □Results/Conclusion: Data collection is currently ongoing. Final results will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Review the mechanisms of action for piperacillin/tazobactam and vancomycin nephrotoxicity.

Identify potential risk factors leading to the development of acute kidney injury with piperacillin/tazobactam and vancomycin.

Self Assessment Questions:

What is the proposed mechanism of action for piperacillin/tazobactam nephrotoxicity?

A Tubular Cell Toxicity

B: Acute Interstitial Nephritis

C: Nephrolithiasis

D: Glomerulonephritis

Which of the following is a possible risk factor for developing acute kidney injury with piperacillin/tazobactam and vancomycin?

A Sub-therapeutic vancomycin trough levels

B Lower doses of piperacillin/tazobactam and vancomycin

C Higher number of nephrotoxic agents used simultaneously

D Patient age less than 40 years old

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-586 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

INTERVENTION TO OPTIMIZE THE USE OF COLONY-STIMULATING FACTORS WITHIN AURORA HEALTH CARE

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Background: Granulocyte-colony stimulating factors (G-CSF), filgrastim and pegfilgrastim, are FDA approved for use in the prevention of chemotherapy-induced neutropenia. Prophylactic use of G-CSF has shown to reduce the incidence, length and severity of chemotherapy-related neutropenia. Colony-stimulating factors have consistently been within the top 25 drugs that contribute to half of the drug cost per month at Aurora Health Care. The current utilization of colony-stimulating factors has not been evaluated previously, and the optimization in the use of colony-stimulating factors can significantly reduce drug cost. Tbo-filgrastim, a recently FDA approved G-CSF, may also have potential cos reduction. □□Objective: The objective of this project is to characterize and optimize the current utilization of colony-stimulating factors throughout the Aurora Health Care. The secondary objective is to evaluate the use of tbo-filgrastim as a potential alternative agent and the associated cost-reduction using the current utilization data.
□□

Methodology: Current utilization and economic impact of colony-stimulating factors will be characterized. This will be done through literature evaluation of current guidelines and recommendations, interventions for optimizing use, and assessment of an alternative therapy. A retrospective chart review will be performed with defined improvement measures and data collection parameters for both inpatien and outpatient use of colony-stimulating factors. Once the data has beer collected, data will be analyzed to develop an intervention for appropriate use of colony-stimulating factors. Feedback from other caregivers (pharmacists, physicians, nurses) and approval from the collaborative groups will be obtained. Updates to the current policies and procedures will be considered. An intervention will be implemented and caregivers will be educated. Reassessment of the intervention will involve a chart review in which data collection will reassess the improvement measurements. □□Results and Conclusions: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recognize the difference in dosing frequency of the FDA-approved colony-stimulating factors.

State the neutropenia definition as defined by National Comprehensive Cancer Network (NCCN) Clinical Practice Guidelines in Oncology.

Self Assessment Questions:

Which of the colony-stimulating factors is a longer-acting agent, and therefore does not require daily administration?

A filgrastim
B: tbo-filgrastim
C: pegfilgrastim
D: sargramostim

Neutropenia, in accordance with NCCN guidelines, is defined as

A ANC < 500 or ANC < 1000 but expected to drop to < 500 in next 4
B Anc < 1000
C ANC < 1500 or ANC < 2500 but expected to drop to < 1500 in nex
D Anc < 2500

Q1 Answer: C Q2 Answer: A

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Activity Type: Knowledge-based Contact Hours: 0.5

VANCOMYCIN DOSING IN OBESITY: SHOULD WE STILL BE USING ACTUAL BODY WEIGHT?

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Purpose: Vancomycin pharmacokinetics have been widely studied, however, data are conflicting with regard to whether actual body weight (ABW) or adjusted body weight (AdjBW) is more likely to achieve target trough concentrations when dosing vancomycin in obese patients. The goal of this cohort study is to determine whether ABW or AdjBW provides more predictable vancomycin serum trough concentrations in overweight, obese, and morbidly obese patients compared to non-obese patients. Unlike previous studies, this study will utilize Body Mass Index (BMI), the World Health Organization (WHO)-recognized weight classification framework, rather than a percent value over actual body weight to categorize obese and non-obese patients.□□Methods: This IRB-approved, prospective, observational cohort study is being conducted using the Mercy Health Saint Marys (MHSM) electronic medical record. Adult patients admitted to MHSM are eligible for study inclusion if they receive vancomycin for the treatment of suspected or known uncomplicated cellulitis or pneumonia. Excluded patients are those who are pregnant, have a BMI > 50 kg/m2 or <18.5 kg/m2, have a serum creatinine of > 2 mg/dL or < 0.6 mg/dL, AKI, or are receiving rena replacement therapy. Study duration is from December 16, 2013 until the goal sample size of 96 patients is achieved. Patients included in the final analysis are required to have one steady-state serum vancomycin concentration during their treatment course. Outcomes will be assessed using the Chi-square test for nominal data and Mann-Whitney U test or Students t test for continuous data where appropriate. A subgroup analysis will be done comparing trough attainment for targets of 10-15 Mcg/mL vs. 15-20 Mcg/mL. Correlation analysis will be conducted for suspected relationships between weight and vancomycin trough concentrations. □□Results: Data collection and analysis are currently in progress.□□Conclusions: To be presented at the Great Lakes Pharmac Resident Conference

Learning Objectives:

Identify the alterations that occur in vancomycin pharmacokinetics in obese patients.

Review the current evidence regarding vancomycin dosing in obese and non-obese patients.

Self Assessment Questions:

Which vancomycin pharmacokinetic property is influenced by difference in body weight?

A Half life
B: Volume of distribution
C: Desired Cmax
D: A & b

According to the most recent IDSA/ASHP/SIDP guidelines, initial vancomycin dosages for all weight categories should be determined using which body weight measurement?

A Actual Body Weight
B Ideal Body Weight
C Adjusted Body Weight
D No recommendations are made

Q1 Answer: D Q2 Answer: A

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COMPARISON OF DIABETES MANAGEMENT BY PHARMACISTS TO USUAL CARE IN A VETERANS AFFAIRS MEDICAL CENTER: PART 2 OF 2

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Purpose: Although studies have determined that collaboration with a pharmacist leads to increased HbA1c lowering, there is little information regarding independent management of Type 2 Diabetes Mellitus (T2DM by a pharmacist compared to a primary care provider (PCP). Additionally, it is not currently known if pharmacist managed care increases medication adherence when compared with care managed by the PCP. Pharmacists, as medication experts, may be able to more adequately explain the importance of medications to treat diabetes, which may thereby lead to increased adherence. However, data to support this claim are lacking. This study will assess the rate of medication adherence in patients managed by pharmacists versus usua care by a PCP in a Veterans Affairs Medical Center.□□Methods: Institutional Review Board approval has been granted. This study is a retrospective chart review comparing patients in selected primary care clinics whose diabetes is managed by the PCP to those patients who are referred to and managed independently by clinical pharmacists. A targe of 400 patients will be identified via the computerized patient record system at the point of initiation of insulin or a third oral antihyperglycemic agent between January 2010 and December 2012. Refill history data will be collected for one year from the date of initiation of the aforementioned therapies. The primary outcome is medication adherence, which will be assessed by calculating the medication possession ratio (MPR). MPR will be calculated as the total days of supply of medication divided by 365 days. □□Summary of Preliminary Results/Conclusions: Preliminary results of 125 patients reveal well-balanced baseline characteristics between the two groups. The majority of patients are white males with an average age of 60 years. Final results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify potential barriers which may lead to medication non-adherence.

Describe a pharmacists role in increasing medication adherence.

Self Assessment Questions:

Which of the following may contribute to medication non-adherence?

A Complicated medication regimens
B: Low cost of medications
C: Knowledge of potential adverse drugs events
D: Understanding the long-term benefits of disease state manageme

A pharmacists role in increasing medication adherence includes which o the following?

A Short appointment times
B Longer duration between follow-up appointments
C Increased opportunity for counseling on medication regimens
D Routine prescribing authority for pharmacists

Q1 Answer: A Q2 Answer: C

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Activity Type: Knowledge-based Contact Hours: 0.5

EFFECT OF JOINT PHARMACY AND RESPIRATORY THERAPY INTERVENTION ON 30 DAY READMISSION RATES FOR PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)

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Purpose:□Patients with Chronic Obstructive Pulmonary Disease (COPD often experience repeated readmissions to the hospital due to acute exacerbations. The objective of this study is to demonstrate a reduction in 30 day readmission rates for patients with COPD and improve their level of care through joint pharmacy and respiratory therapy interventions.□Methods:□Prior to commencement, the study was submitted to the Institutional Review Board for approval. Control data or 30 day readmission rates was retrospectively collected from the hospital electronic medical record (EMR). The health systems EMR was used daily to identify patients who are in the hospital with a diagnosis of COPD. Data collected on each patient included age, gender, co-morbidities, current medications, vaccination status, smoking status, and provider documentation. Patient medications were reviewed and any recommendations to optimize drug therapy were made by the clinical pharmacist. Each patient received orders for education by respiratory therapy on correct inhaler technique and was evaluated for pulmonary rehabilitation as appropriate. Prospective data was collected on patients during the intervention period. Data from the results will be used to evaluate the effectiveness of the pharmacy and respiratory therapy interventions on the reduction in 30 day readmission rates in COPD patients.□Results and Conclusions:□Final results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Describe the difficulty in preventing COPD exacerbation readmissions.

Explain the importance of working with multidisciplinary teams.

Self Assessment Questions:

Which of the following is a risk factor for COPD hospital readmission according to the 2013 GOLD guidelines?

A Medication non-adherence
B: Previous hospital admission
C: Continued smoking
D: Pneumonia

Why is it important to have a multidisciplinary approach when implementing a new protocol?

A Improves patient care by ensuring everyone is on the same page
B Enhances continuity of care both in the hospital and outpatient
C Increases the number of practitioners involved in care
D A and B

Q1 Answer: B Q2 Answer: D

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EXPOSURE-INFORMED MODEL OF MORTALITY FOR CEFEPIME-TREATED GRAM-NEGATIVE BLOODSTREAM INFECTIONS.

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Purpose: Increasing minimum inhibitory concentrations (MICs) for beta-lactams have complicated the treatment of serious Gram-negative infections. Increased MICs can lead to decreased time that free drug remains above the MIC (fT>MIC), thus negatively affecting achievement of pharmacokinetic-pharmacodynamic (PK-PD) goals and potentially leading to worse outcomes. Data from modeling and simulation studies suggest that several cefepime strategies can provide a high likelihood of PK-PD target attainment. However, studies reviewing patient outcomes and cefepime exposure have been less prevalent. The primary aim of this study is to assess the impact of cefepime exposure on Gram-negative bloodstream infections in a clinical model of mortality.□Methods: A retrospective, cohort study of 91 patients with Gram-negative bloodstream infections (GNBSI) between September 1, 2006 and August 31, 2012 at Northwestern Memorial Hospital will be completed. Cefepime dose, interval, and duration were collected from pharmacy records. Patient covariates including gender, age, serum creatinine, and body weight (ideal, actual, and adjusted) were collected from the medical record. A previously published population pharmacokinetic model will be used to complete robust Monte Carlo simulations (n=1000) of cefepime exposure in the cohort. Patients will be randomly selected to represent cefepime MIC categories. A maximum o 4 bloodstream isolates with a cefepime MIC ≤ 1 mg/L will be included fo every isolate with a cefepime MIC ≥ 2 mg/L to balance power. Predictors significant in the univariate analysis will be evaluated for multivariate model inclusion. Multivariate logistic regression will be conducted to define the incremental contribution of fT>MIC to the binary outcome of in hospital mortality.□Results / Conclusions: Results and conclusions will be presented at the Great Lakes Residency Conference pending data collection and analysis.

Learning Objectives:

Identify features of cefepime associated with efficacy and failure in blooc stream infections.

Explain how pharmacokinetic variation can be used to simulate exposure in diverse populations.

Self Assessment Questions:

Which of the following statements regarding cefepime treatment is false?

A Requires greater than 50% fT%>MIC of the dosing interval for bac

B: May be inactivated by some types of beta-lactamases leading to c

C: Elevated cefepime MICs have not been associated with worse clin

D: Prolonged or continuous infusions of cefepime may salvage drug a

Pharmacokinetic variability in an evaluated cohort can be useful in which of the following ways?

A It allows for robust simulations and predictions of future concentrat

B It can help to quantify exposure in a small sample, but it is less us

C It should be minimized in the non-parametric adaptive grid approac

D It can be used to make better assessments of exposure in the sam

Q1 Answer: C Q2 Answer: A

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Activity Type: Knowledge-based Contact Hours: 0.5

OUTCOMES OF HISPANIC KIDNEY TRANSPLANT RECIPIENTS UNDER A CYCLOSPORINE VERSUS TACROLIMUS BASED IMMUNOSUPPRESSION PROTOCOL

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Purpose: In 2005, an internal retrospective study at our institution showed a higher incidence of post transplant diabetes mellitus (PTDM) in our Hispanic kidney transplant recipients on tacrolimus (TAC)/prednisone regimen. Around this same time, we implemented a steroid avoidance program and changed our maintenance immunosuppression to a cyclosporine (CSA) based regimen in our Hispanic recipients. The objective of this study was to compare the renal function, graft and patient survival of Hispanic kidney transplant recipients who received CSA to Hispanics on a TAC based regimen at 1 3, and 5 years post transplant. Additionally, we assessed the incidence of PTDM in this population. Methods: This was a retrospective review of electronic medical records of all adult Hispanic patients (age ≥18 years old at transplantation) that received a renal transplant from January 200 to July 2009. Hispanics who received multiple organ transplants, were ABO incompatible or had a positive cross-match were excluded. Results: We identified 130 Hispanic kidney transplant recipients for our cohort of which 73 were in the TAC group and 57 were in the CSA group. The glomerular filtration rate and graft survival at 1, 3, and 5 years post transplant were similar between the two groups. Patient survival with TAC was 93%, 89%, 82% and with CSA 100%, 98%, 94% at years 1, 3, and 5 respectively. The incidence of acute rejection was 32.8% in the TAC group compared to 24.6% in the CSA group in the firs year post transplant. The incidence of PTDM in the first year post transplant was 16% in the TAC group and 21% in the CSA group. Conclusion: The renal function and graft survival in our Hispanic kidney recipients on CSA based maintenance immunosuppression are similar to TAC based regimen. There was no difference in the incidence of PTDM between the two groups.

Learning Objectives:

Review Hispanics health issues and renal transplant outcomes in this patient population based on literature

Discuss the incidence, causes, and mechanism of post transplant diabetes mellitus (PTDM) and its impact on transplantation

Self Assessment Questions:

Which of the following statement(s) is/are true?

A Hispanics have higher incidence of end stage renal disease (ESRI

B: Hispanics have lower incidence of ends stage renal disease (ESRI

C: Patient and graft survival for Hispanic renal recipients are equivale

D: A and C

Which of the following immunosuppression agents is most associated with development of post transplant diabetes mellitus (PTDM)?

A Sirolimus

B Cyclosporine

C Tacrolimus

D Mycophenolate

Q1 Answer: D Q2 Answer: C

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EVALUATION OF A HYDROMORPHONE DOSE SUBSTITUTION POLICY AND THE EFFECTS ON PATIENT SAFETY AND PAIN MANAGEMENT

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Purpose: Hydromorphone is a semisynthetic opioid-receptor agonist and a derivative of morphine. It is estimated to be 7.5 times more poten than morphine when given intravenously. The current literature fails to recommend a consistent starting dose for hydromorphone. Starting doses range from 1 to 2 mg IV every four to six hours as needed or ever 0.2 to 1 mg every 2-3 hours as needed. Dosing such potent pain medications can be difficult for patients when considering their past opioid use and co-morbidities. The goal of practitioners is to target adequate pain control, while assuring the dose of hydromorphone is safe for the patient. There are many risk factors that place patients at higher risk of overdose when receiving opioids. Currently, there are a lack of published trials that assess the safety and efficacy of implementing a hydromorphone dosing protocol. The purpose of this study is to determine if implementing a dose substitution policy for hydromorphone has an effect on patient safety and pain management. Methods: This retrospective, single-center, observational cohort study will include patients who have received hydromorphone from January 2013 to March 2014. Adverse effects will be compared between patients that were pre-implementation and post-implementation of the hydromorphone dose substitution protocol. Data will be collected using electronic medical records and recorded utilizing a data collection form and Microsoft Excel. Results and Conclusions: Results are pending and will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify the difficulty in dosing hydromorphone.

Recognize the risk factors that predispose patients to potential for overdose with opioids.

Self Assessment Questions:

What challenges do physicians face when dosing hydromorphone for patients?

A There are multiple different starting dose recommendations for hyc

B: The exact potency of hydromorphone is unknown

C: Physicians must consider a patient's tolerance to opioids when do

D: All of the above

What risk factors put patients at higher risk for opioid overdose?

A Co-morbid conditions (ex: COPD, asthma, kidney disease etc.)

B Obesity

C Patients who are opioid naive

D All of the above

Q1 Answer: D Q2 Answer: D

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PHARMACIST IDENTIFICATION OF MEDICATION TRIGGERS AND THEIR ROLE WITHIN THE RAPID RESPONSE TEAM (RRT)

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The rapid response team (RRT) is an interdisciplinary group of healthcare providers that are responsible for identifying and possibly treating patients at risk for cardiopulmonary arrest. Medication-related adverse events are often the cause for activation of the RRT; however, pharmacists are rarely associated with the RRT. Research providing evidence of pharmacist influence on the RRT is minimal, although clinical pharmacy services have been proven to positively impact medical care in other areas of the hospital. Pharmacists are the medication experts in the hospital and their role within the RRT needs to be established. Purpose: To evaluate whether there is a need for a pharmacist on the RRT, and to determine what benefit their expertise may have for the RRT. Methods: This study consists of both retrospective and prospective data collection. IRB approval was obtained through the Borgess Research Institute prior to study initiation and consent was waived. A retrospective chart review was completed from January-March 2013. Data collection included: 24-hour medication administration of opiate analgesics, benzodiazepines, hypnotics, reversal agents, serum creatinine, age, and gender. Findings will be used to identify correlations between medication administration and rapid response calls. The prospective portion will take place from February-March 2014. A pharmacist will join the RRT as an active team member and respond to RRT calls. The goal will be to assist the RRT with recognizing medication related events that may be responsible for the patients clinical deterioration as a way of detecting serious events before they occur. Medication triggers determined from retrospective data will also be utilized to identify at-risk patients during a rapid. All interventions made during rapid calls will be recorded and evaluated to determine whether there is a role for pharmacist involvement on the RRT. Results/Conclusions: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss the role of the rapid response team (RRT) in the care of hospitalized patients.

Identify opportunities for pharmacist interventions as a member of the rapid response team (RRT).

Self Assessment Questions:

What is a dangerous adverse effect of opiate analgesics that the RRT can monitor for in the hospital setting?

A Increased urine output

B: Respiratory Depression

C: Decreased temperature

D: Headache

What are possible interventions that a pharmacist can make while participating in a rapid response?

A Determine if medication administration may have contributed to pa

B Facilitate medication administration as needed at the bedside

C Ensure safe and accurate medication administration

D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-925 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPLIANCE WITH THE SURVIVING SEPSIS CAMPAIGN BUNDLE: COMPARING OUTCOMES BEFORE AND AFTER THE 2012 GUIDELINES

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Purpose: Early goal directed therapy (EGDT) has been associated with decreased mortality in patients with septic shock. The Surviving Sepsis Campaign (SSC) guidelines have promoted EGDT by including a bundle of interventions for early sepsis management, and the most recent SSC guidelines have streamlined EGDT into a 3 and 6 hour bundle. No studies exist comparing outcomes associated with bundle compliance from the previous guidelines to those of the current guidelines. The purpose of this study is to evaluate compliance with the SSC bundles to determine any interventions associated with favorable patient outcomes. Methods: This is a retrospective cohort study examining two equal time periods before and after the implementation of the 2012 SSC guidelines through educational sessions and active interventions. Patients were included if they had both the ICD-9 code for septic shock and requirement for vasopressor initiation. Patients were excluded if they were less than 18 years old, pregnant, denied consent to a central line, and had a hospital stay less than 6 hours with comfort care or mortality during that time frame. Baseline characteristics and data relating to the bundle components will be collected. Measurements include CVP, MAP, SCVO2, appropriateness of antibiotics, fluid resuscitation, lactic acid levels, choice of vasopressors, and appropriateness of hydrocortisone use. Timing of the interventions will be assessed, with onset of sepsis-induced hypoperfusion representing time zero, which is defined as either SBP <90 mm Hg, MAP <65 mm Hg, or an initial lactic acid >4, whichever is achieved first. The primary outcome is the rate of in-hospital mortality. Secondary outcomes include compliance rate with the SSC bundle, time on vasopressors, time on ventilator, length of stay and identification of risk factors associated with mortality. Summary of results: Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify the components of the 2012 Surviving Sepsis Campaign bundle, including the appropriate time frames, for the treatment of patients with septic shock.

Explain the evidence behind why norepinephrine is recommended as the first-choice vasopressor for septic shock.

Self Assessment Questions:

According to the Surviving Sepsis Campaign bundle, which of the following interventions should be completed within 3 hours of onset of sepsis-induced hypoperfusion?

A Measure central venous pressure

B: Measure central venous oxygen saturation

C: Measure lactate level

D: Initiate vasopressors

What is one of the reasons norepinephrine is now recommended over dopamine as the first choice vasopressor for patients with septic shock?

A Norepinephrine is less potent than dopamine making it more effec

B Norepinephrine is more likely to cause tachycardia than dopamine

C Norepinephrine is more effective in patients with compromised sys

D Norepinephrine is associated with decreased mortality compared t

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-593 -L01-P

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KETAMINE AND PROPOFOL VERSUS PROPOFOL MONOTHERAPY FOR PROCEDURAL SEDATION IN THE EMERGENCY DEPARTMENT

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Purpose: Determine if the combination of ketamine and propofol ("ketofol") is associated with less respiratory depression than propofol monotherapy for procedural sedation (PS) in the Emergency Department (ED). Background: Propofol is a commonly used medication for PS in the ED. Dose-limiting adverse effects of propofol include hypotension and respiratory depression, which may require additional monitoring, medications, or respiratory support. Ketamine is an analgesic and dissociative sedative with sympathomimetic properties that can help maintain blood pressure and respiratory drive. Ketofol may provide a more balanced respiratory and hemodynamic profile in patients undergoing PS. Methods: Staff education was provided in November 2013 to improve understanding of propofol and ketofol. We performed a retrospective chart review of patients undergoing PS in the Meriter Hospital ED between May 2013 and March 2014. All patients undergoing PS post-education phase were studied and compared to an equal number of pre-education phase patients as historical controls. Patients included were at least 18 years of age and underwent PS in the ED with either propofol or ketofol. Patients were excluded if they underwent sedation for any reason other than PS, were less than 18 years of age, or received monotherapy treatment with ketamine, etomidate, or methohexital during their ED stay. Primary endpoint was the rate of respiratory depression of patients receiving ketofol versus propofol for PS. Respiratory depression was defined as: oxygen saturation less than 90 percent, use of bag-valve-mask (BVM) or manual head manipulation to maintain oxygen saturation above 90 percent, or end tidal carbon dioxide (ETCO2) reading greater than 50 mmHg. Secondary endpoints included rates of hypotension, total propofol dose required, total opioid dose required, adverse effects attributed to ketamine, duration of procedure, and specific procedure performed. Results/Conclusions: Results and conclusions will be presented at the 2014 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe potential benefits and risks of using ketofol for procedural sedation.

Explain ketofol dosing strategies and monitoring parameters.

Self Assessment Questions:

For which of the following patients would ketofol be most appropriate?

A 27 year old female with a history of schizophrenia and hypothyroid

B: 39 year old male with a history of epilepsy and hydrocephalus

C: 33 year old female with a history of opioid and tobacco dependenc

D: 73 year old male with a history of hypertension and glaucoma

Which adverse effect of ketamine may be reduced when used in combination with propofol?

A emesis

B laryngospasm

C hypotension

D nystagmus

Q1 Answer: C Q2 Answer: A

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EFFECT OF PHYSICIAN EDUCATION ON THE MANAGEMENT OF PATIENTS WITH CHRONIC NON-CANCER PAIN IN THE PRIMARY CARE SETTING: IMPLICATIONS FOR A PHARMACIST-BASED OPIOID MANAGEMENT CLINIC

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The 2009 American Pain Society/American Academy of Pain clinical guidelines highlight the importance of prescriber education for identification of opioid misuse in high-risk patients treated with chronic opioid therapy (COT) for chronic non-cancer pain (CNCP). Increased COT prescribing parallels increased incidence of opioid diversion, overdoses, addiction, and death. CNCP management is complex and often impeded by inconsistent, inadequate provider education, lacking adherence to guideline-based assessment and monitoring. The primary study objective will evaluate prescriber adherence to COT prescribing guidelines. Secondary objectives will assess opioid utilization, pain diagnosis, prescriber and clinic variation, and concomitant benzodiazepine use.□□Retrospective chart review of Cincinnati VA Medical Center (CVAMC) patients receiving high-risk COT defined as requiring greater than 120 daily morphine equivalents (DME) for greater than three months. Patients must have been managed by a primary care physician from the CVAMC or affiliated community-based outpatient clinic. The study period will evaluate patients one-year prior to and following implementation of prescriber education. Study exclusion includes active cancer diagnosis, hepatic impairment, VA opioid substitution program enrollment or death. Physician compliance will be assessed using the Office of Inspector General (OIG) criteria checklist evaluating pain diagnosis, non-opioid treatment trials, opioid treatment agreement, biannual urine drug screening, baseline and annual methadone EKG monitoring, and reassessment at least every six months. Outcomes will be assessed by treatment site, individual provider, duration of stable of dose, long vs. short acting opiate use, and concomitant benzodiazepine use. Statistical analyses utilized will include descriptive and inferential statistics, and logistic regression analyses for associations with individual characteristics. Patient data will remain confidential, recorded indirectly using medical record numbers. The study protocol has gained IRB approval. Study results will aid with implementation of a primary care pharmacy run opioid management clinic.□□Results will be presented at the Great Lakes Pharmacy Residency Conference

Learning Objectives:

Define chronic non-cancer pain (CNCP) and discuss the role of chronic opioid therapy in the treatment of patients with CNCP.

Review risk reduction strategies for chronic opioid therapy and identify the Office of Inspector General (OIG) criteria for safe opioid prescribing.

Self Assessment Questions:

1.According to the American Pain Society/American Academy of Pain Medicine (APS/AAPM), chronic non-cancer pain is defined as:

A a.□Pain that persists beyond normal tissue healing time, which is
B: b.□Pain that persists beyond normal tissue healing time, which is
C: c.□Pain that persists beyond normal tissue healing time, which is
D: d.□Pain that persists beyond normal tissue healing time, which is

2.Which of the following are appropriate risk reduction strategies used for patients receiving chronic opioid therapy for chronic non-cancer pain?

A Have an active pain diagnosis, use of only short acting opioid ager
B Avoidance of methadone use, active pain diagnosis, patient treatr
C Patient treatment agreement plans, only use long acting opioid ag
D Routine urine drug screens, patient treatment agreement plans, ro

Q1 Answer: A Q2 Answer: D

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LIVER TRANSPLANT DRUG UTILIZATION

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Purpose□Liver transplants are high-cost procedures with medications as a driving factor in the overall cost for the initial admission. In order to decrease expenses associated with this procedure, data must first be collected on cost distribution. By assessing how medications are used a our institution compared to other healthcare systems, our center may be able to change our liver transplant practices and procedures to minimize drug related expenses.□□Methods□Subjects will include adult orthotopi liver transplant (OLT) recipients between April 1, 2011 and March 30, 2012 and from July 1, 2012 to June 30, 2013. These time points were selected as the implementation of specialized transplant pharmacists began in April of 2012. Demographic, laboratory, and donor data will be collected and analyzed to determine which factors influence cost.□□Cost of all medications initiated from the time of transplant until discharge will be obtained through patient account charges. Medication cost will also be assessed through obtaining information on the medications used from the subjects electronic medical record and attaching a value based on price per unit data from purchase orders. By obtaining medication cost information in this way, assessment of cost from both the patient and institution perspective can be performed.
□□
Median direct medication cost will be compared between time points within our institution as well as against similar time points from the University HealthSystem Consortium benchmark group. The primary endpoint is median direct medication cost per patient during initial admission for OLT. Secondary endpoints will include donor and recipien characteristics that influence cost and institutional procedural characteristics that influence cost.□□Results□Preliminary results reveal that UCM has a higher cost per patient for liver transplants versus institutions of similar size. Data collection is still ongoing.
□□
Conclusions□Final results will be presented after completion of data analysis.

Learning Objectives:

Recall the factors that influence cost of orthotopic liver transplant

Discuss the medications that most impact overall cost of OLT

Self Assessment Questions:

What factors influence the cost of orthotopic liver transplant?

A Multiple comorbidities in recipient
B: Older recipients
C: MELD or Child-Pugh score prior to transplantation
D: All of the above

Which medications have the highest impact on overall drug cost for OLT

A Basiliximab
B Antithymocyte globulin
C Tacrolimus
D A and B

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-595 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

OUTCOMES OF A PHARMACY PRACTICE MODEL CHANGE IN TRANSITIONS OF CARE

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Purpose: Drug related problems often occur during transitions of care. Pharmacists are poised to smooth care transitions using problem solving and patient education skills. The pharmacy department in a large teaching hospital instituted a practice change implementing pharmacist performed medication histories and post-discharge telephone follow-up. The purpose of our study is to describe the impact of pharmacy involvement during transitions of care on patient and healthcare level outcomes and to describe student pharmacist, technician and pharmacist knowledge and satisfaction with a practice model change.

Methods: All patients who were cared for in the new practice model from July 2013-Decemeber 2013 were included as study patients. Comparator patients were selected from patients who were admitted six months prior to the practice model change and were matched using number of admissions in the previous year in a 2:1 fashion. Baseline demographics, previous hospital utilization, and interventions associated with medication histories were collected using the electronic medical record. Hospitalizations within fourteen and thirty days of the index admission are being evaluated and compared to pre-practice model change matched data. The difference in rate of readmissions will be analyzed using the chi-squared test. Pharmacist interventions, as a result of the medication history, will be evaluated using descriptive statistics. Pharmacist, student pharmacist, and technician attitudes were measured one year after the implementation of the practice model change using anonymous surveys. Results: Post-practice model change patients (n=683) are being compared with pre-practice model change patients (n=1366) and analysis is ongoing. Pharmacists performed 2280 medication histories during the study period. Discrepancies to the medication history pharmacy identified and corrected included dose changed/added (1128), drug formulation changed (151), frequency changed/added (690), medication added (5129), and medication deleted (3035). Conclusions: Primary and secondary outcome conclusions to be presented at the Great Lakes Residency Conference.

Learning Objectives:

Identify drug-related problems that can occur at transitions of care.

Discuss the ways pharmacists can make an impact on patient care during transitions of care.

Self Assessment Questions:

Which of the following are areas for pharmacy involvement in transitions of care?

A Compile best possible medication list

B: Identify drug-related problems

C: Reinforce adherence of medications via post-discharge follow-up

D: All of the above

Which of the following actions were made by pharmacists the most frequently during the pharmacy practice model change?

A Dose changed or added

B Dose formulation changed

C Frequency changed or added

D Medication added

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-824 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

DECREASING IMMUNIZATION ERRORS ACROSS THE CONTINUUM OF CARE IN A PEDIATRIC HEALTH-SYSTEM

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Background: Immunization errors continue to be a challenge in pediatric and adult patients due to the complexity of vaccine schedules, product changes, and educational deficiencies. The Institute for Safe Medication Practices (ISMP) conducted their first annual review of data submitted to the National Vaccine Error Reporting Program that highlighted on these challenges in 2013. In an effort to reach zero preventable harm, Nationwide Children's Hospital (NCH) has a voluntary reporting system for medication errors and follows up on immunization event reports. Purpose: The purpose of this quality improvement project is to reduce the number of prescribing immunization errors from twenty-four in quarter four (October- December) of 2013 to zero in quarter one (January-March) of 2014 in NCH. Methods: The quality improvement project was conducted through several key interventions to impact the overall number of both inpatient and outpatient prescribing errors within NCH. The primary intervention was designed to improve the clinical decision support with development and implementation of age specific immunization alerts in the electronic medical record. Furthermore, an order comment for all live vaccines was implemented to remind prescribers to check for live vaccines administered in the last 28 days. The secondary intervention was to enhance awareness of errors and mandatory prescriber education. The vaccination error rate will be measured based on voluntary error reporting and compared the two time periods to determine the impact of the interventions on prescribing immunization errors. Results/Conclusion: The quality improvement project is in the data collection phase. Final results with conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recognize common factors contributing to immunization errors in a pediatric health-system

Discuss the importance of age restrictions on prescribing immunizations

Self Assessment Questions:

Which of the following is a common risk factor for DTaPs errors in a primary care clinic?

A Confusion between numerous age-dependent formulations

B: Unfamiliarity with dosing and timing of vaccines based on patient's

C: Failure to verify the patient's age prior to administration

D: All of the above

Which of the follow is NOT a reason to decrease immunization errors in a pediatric setting?

A Decrease unnecessary injury to a patient

B The risk for vaccine errors is low

C Ensure patients are being appropriately immunized

D Cost savings

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-926 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

IDENTIFICATION AND EVALUATION OF HYPOGLYCEMIC ADVERSE DRUG EVENTS IN A COMMUNITY TEACHING HOSPITAL

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Purpose: Treatment of hyperglycemia with insulin and other antidiabetic therapies are used to achieve glycemic control while minimizing the risk of hypoglycemia. Proper administration of medications, adequate diet, sufficient glucose monitoring, and identification of risk factors are essential to prevent hypoglycemic events. Hypoglycemia results in serious health and financial consequences that may be avoidable. The purpose of this project is to evaluate the occurrence of hypoglycemic events and assess appropriate use of insulin therapies. Hypoglycemia will be assessed with an emphasis placed on potential interventions in order to prevent these events from occurring. Research Design and Methods: A retrospective evaluation will be completed to determine the rate of hypoglycemia in the inpatient population. Patients included in this chart analysis consist of hospitalized patients who experienced a severe hypoglycemic event that required reversal with 50% dextrose or glucagon while on previous insulin therapy. Severe hypoglycemia will be defined as a blood glucose value less than or equal to 50 mg/dL. The following data will be collected: patient demographics, length of stay, location, other antidiabetic medications, plasma blood glucose, glycated hemoglobin, frequency of plasma glucose monitoring, date of adverse drug event, and insulin dosing patterns. Collected data will be evaluated to determine the incidence of hypoglycemic adverse events and assess whether these events were preventable. Results/Conclusion: Will be presented at Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recognize risk factors for inpatient hypoglycemia.

Identify various strategies to prevent hypoglycemia.

Self Assessment Questions:

Which of the following is/are risk factors for inpatient hypoglycemia?

A Septic shock

B: Tight glycemic control

C: Renal insufficiency

D: All of the above

Which of the following is a potential strategy for prevention of inpatient hypoglycemia?

A Use of long acting sulfonylurea agents

B Establish tight glycemic controls

C Utilize hypoglycemia risk assessment questionnaire

D Limit the number of standard concentrations used for insulin infusi

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-596 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

USE OF OMALIZUMAB IN PEDIATRIC PATIENTS WITH MODERATE TO SEVERE PERSISTENT ASTHMA

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Background: Omalizumab is a recombinant humanized monoclonal antibody that binds to free Immunoglobulin E (IgE). Current asthma guidelines include the use of omalizumab as a treatment option for select patients with moderate to severe persistent allergic asthma. Several studies demonstrate the safe and efficacious use of omalizumal to decrease asthma exacerbations in patients with hard to control asthma. Significant improvements in quality of life and decreased inhaled corticosteroid use have also been reported. Purpose: The primary objective of this study is to evaluate the effectiveness of omalizumab in pediatric patients as a component of their asthma treatment regimen. The secondary objective is to develop criteria to assess other pediatric patients who may benefit from omalizumab therapy. Methods: This study is a retrospective and prospective chart review of all current Akron Childrens Hospital patients receiving omalizumab therapy at either the Boardman or Akron, Ohio outpatient clinic. To be eligible, patients must have received their first dose of omalizumab prior to November 29, 2013. Patients will receive standard asthma care, with no changes in therapy based on study involvement. The following data will be collected: patient demographics; start date of omalizumab treatment; baseline laboratory values, including pre-therapy IgE level, eosinophil and neutrophil percentage, and allergy test results; pre- and post-therapy pulmonary function test (PFT) results; Pediatric Asthma Score (PAS); current medications; and number of asthma-related hospitalizations. Provider documentation will be reviewed to determine patient-reported use of rescue medications, exacerbations, and various quality of life indicators. Data collection and analysis is currently ongoing. Results and conclusions: To be presented at the Great Lakes Residency Conference.

Learning Objectives:

Classify asthma as moderate or severe persistent.

Identify the role of omalizumab in the treatment of asthma in pediatric patients.

Self Assessment Questions:

Which component of severity would you expect to see in a patient who is classified as having severe persistent asthma?

A Nighttime awakenings ≤2 times per month

B: Minor limitations to normal activity

C: Use of a short-acting β2-agonist several times daily for symptoms

D: Normal FEV1 between exacerbations

Omalizumab has been FDA approved for use in which asthma indication?

A Allergic type moderate to severe persistent asthma

B Exercise-induced asthma

C Intermittent asthma

D Intrinsic, non-allergic type asthma

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-597 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

CALCIUM USE IN HYPOTENSIVE ATRIAL FIBRILLATION PATENTS PRIOR TO DILTIAZEM ADMINISTRATION

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Background: Intravenous diltiazem, a non-dihydropyridine calcium channel blocker (NDP-CCB), is frequently utilized for management of atrial tachyarrhythmias. Its favorable pharmacokinetic and pharmacodynamic characteristics make it an ideal agent. However, its use is limited by its propensity to induce or worsen hypotension. Calcium salts have hemodynamic and electrophysiological effects that have been shown to eliminate or attenuate hypotensive effects of verapamil, a similar NDP-CCB, without adversely affecting its ability to control heart rate. To date, there is only one study evaluating the effects of calcium administration prior to diltiazem for treatment of atrial fibrillation (AF). This study showed no benefit in preventing hypotension but included patients who were normotensive. Purpose: The purpose of this study was to evaluate the effectiveness of calcium in preventing further reduction in blood pressure when given prior to diltiazem for treatment of AF in patients who have low pre-treatment blood pressure. Methods: This was a single-center, retrospective chart review of adults presenting to the emergency center at our institution between January 2009 and November 2013 for AF with rapid ventricular response who had a systolic blood pressure (SBP) ≤ 110 mmHg prior to receiving diltiazem, with or without calcium. Data collection included patient demographics and all blood pressure and heart rate readings within the hour prior to and following administration o either drug (i.e. calcium or diltiazem). The primary endpoint was evaluation of the effectiveness of calcium in preventing further reduction in blood pressure when given prior to diltiazem for treatment of AF in patients who have low pre-treatment blood pressure. Secondary endpoints included the effect of calcium on heart rate and adverse reactions associated with calcium and diltiazem. Results/Conclusions: Data collection and analysis are currently being conducted. Final results and conclusions will be presented at the 2014 Great Lakes Residency Conference.

Learning Objectives:

Describe the objectives for management of acute and chronic atrial fibrillation.

Explain the rationale of administering calcium salts prior to NDP-CCB in patients with AF.

Self Assessment Questions:

According to ACC/AHA/ESC guidelines, which of the following is not a consideration when managing patients with atrial fibrillation?

A Control of ventricular rate

B: Prevention of thromboembolism

C: Correction of rhythm disturbance

D: Administration of calcium salts for cardioprotection

When given prior to verapamil, calcium salts are thought to:

A Prevent loss of bone mineral density

B Augment the hypertensive effects provided by NDP-CCB

C Prevent hypotensive effects of the verapamil without negatively aff

D Alleviate constipation commonly associated with NDP-CCB

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-598 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

OUTCOMES IN TOTAL HIP AND TOTAL KNEE ARTHROPLASTY USING TRANEXAMIC ACID: A RETROSPECTIVE SEQUENTIAL COHORT

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Purpose: Tranexamic acid (TXA) has been recognized as an effective agent in reducing surgical bleeding. Conservation of blood is a significant benefit due to limited availability of blood for transfusion, cost and potential complications of transfusion. TXA is a lysine analogue tha inhibits fibrinolysis by interacting with the lysine receptor of plasminogen. Inhibition of fibrinolysis could in theory propagate the formation of clots. The purpose of this study is to determine the safety and efficacy of TXA in surgery patients receiving total hip arthroplasty (THA) or total knee arthroplasty (TKA) at a 539 bed regional teaching hospital. A secondary purpose is to conduct a cost-benefit analysis of TXA utilization in this population. Methods: This study has been approved to proceed by the Institutional Review Board. This is a single-center, retrospective sequential cohort study of patients who underwent a THA or TKA. Group 1 (the control group) underwent surgery between October 1, 2012 and March 31, 2013 and did not receive TXA; Group 2 (the intervention group) underwent surgery between April 1, 2013 and September 30, 2013 and received TXA; and Group 3 (an additional intervention group) will be patients who undergo surgery after implementation of a TXA protocol, pending institution approval. Safety data includes incidence of deep vein thrombosis, pulmonary embolism, stroke, myocardial infarction or death within 30 days of surgical procedure. Efficacy data includes total quantity of blood transfusions or packed red blood cell units required and change in hemoglobin pre- and post-procedure. Other data collected include patient demographics, orthopedic surgery type, American Society of Anesthesiologists score, and treatment costs. Results/Conclusion: Data collection and analysis in progress. To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Define the mechanism by which tranexamic acid conserves blood loss but may also potentiate clots.

Explain the benefits of tranexamic acid use in total hip and total knee arthroplasty.

Self Assessment Questions:

Choose the answer that best defines the mechanism by which tranexamic acid (TXA) conserves blood during surgical procedures allowing blood to more effectively clot.

A Direct inhibition of plasmin and plasminogen

B: Binds to fibrin clots preventing fibrinogen from lysing fibrin

C: Depletion of the body's store of thrombin

D: Stimulation of clotting factors causing increased affinity for binding

Which of the statements below explain a potential benefit of TXA utilization in total hip and total knee arthroplasty?

A Decreased length of hospital stay

B Decreased need for blood transfusion

C Decreased incidence of venous thromboembolism

D Increased monitoring of hemoglobin titers

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-599 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT AND IMPLEMENTATION OF AN INVENTORY CONTROL SYSTEM WITHIN THE UW HEALTH RETAIL PHARMACIES

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Purpose: Pharmaceutical inventory is one of the largest expenses within a pharmacy, and when mismanaged may result in undesirable downstream financial outcomes and unnecessary waste. The purpose of this project was to develop, implement, and evaluate a standardized inventory control system across twelve retail pharmacies. Objectives were to decrease total excess inventory on-hand and inventory costs, increase monthly inventory turns, and standardize the inventory management workflow. Methods: The project was granted exemption from the UW Health Science System Institutional Review Board. A team of stakeholders was organized to review the proposed project and monitor progress throughout the year. Three pharmacies were chosen to pilot the project. Data were pulled from the retail pharmacy management system for all medications dispensed in each pilot pharmacy for the prior fiscal year and included: total quantity purchased, purchasing cost, number of prescriptions dispensed, average quantity dispensed per prescription, and the minimum and maximum par levels for each medication. Inventory for each of the sites was categorized using the ABC Classification Method, with the top 70% of inventory expenditures (Class A medications) targeted for inventory optimization. Inventory management workflows were directly observed and surveyed within the UW Health system. A team was organized to review the data and establish best practices for ordering and receiving inventory and inventory management. The workflow was standardized and a training manual for inventory management was created. Additionally, a plan to roll out the inventory control system across all UW Health retail pharmacies was developed. Summary of Results: Results will be presented at the Great Lakes Pharmacy Residency Conference. Conclusions: Conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Define the inventory turnover ratio

Describe the ABC Classification System and its utility

Self Assessment Questions:

What is a common metric for assessing the effectiveness of inventory management?

A Minimum and maximum par level

B: Inventory turnover ratio

C: Number of monthly partial fills

D: Daily prescription volume

According to the ABC Classification System, Class A medications account for the top ____ percentage of inventory costs for a pharmacy?

A 50

B 60

C 70

D 80

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-825 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF A PHARMACIST-DRIVEN CLOSTRIDIUM DIFFICILE TREATMENT PROTOCOL IN A COMMUNITY HOSPITAL

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Purpose: The purpose of this project is to evaluate the length of stay, time to symptom improvement, and rates of recurrence and readmission in patients at Vista Medical Center East receiving therapy for Clostridium difficile infection (CDI) in a retrospective analysis and following the implementation of a pharmacist-driven Clostridium difficile standardized treatment protocol. Methods: A retrospective chart review was conducted including patients > 18 years of age with an ICD-9-CM diagnosis code for Clostridium difficile from January 1, 2013 through June 30, 2013. Exclusion criteria: patients not identified as having a positive PCR for toxigenic Clostridium difficile during hospital stay. Charts were reviewed on 41 patients meeting inclusion criteria with the following information collected: patient age, intensive care unit admission, white blood cell count, serum creatinine, serum albumin, temperature, vital signs, serum lactate (if available), length of stay, stool sample results, abdominal CT results(if available), and date of documented symptom improvement or worsening. Severity of CDI was evaluated based on a treatment protocol derived from the IDSA guidelines and clinical trials and appropriateness of treatment was determined. IRB approval was obtained. The retrospective data revealed that 46.3% of Clostridium difficile cases were treated inappropriately, with the majority of these cases due to under treatment. Patients with CDI classified as severe were most commonly inappropriately treated. Length of stay and time to symptom improvement trended higher in patients treated inappropriately. Daily reviews of patients with a positive Clostridium difficile PCR are being conducted by pharmacy, with the evidence-based treatment protocol implemented by the clinical pharmacist as appropriate. Per protocol, oral vancomycin is automatically initiated by the pharmacist for CDI assessed as severe and verbal or written recommendations are made to the physician for CDI assessed as complicated or recurrent. Results/Conclusion: Will be presented at the Great Lakes Pharmacy Resident Conference

Learning Objectives:

Classify the severity of Clostridium difficile infections according to demographic, clinical, and lab values

Identify an optimal treatment plan for patients diagnosed with severe Clostridium difficile infection

Self Assessment Questions:

What patient factor is associated with severe Clostridium difficile infection?

A Pseudomembranous colitis

B: Requiring treatment in the intensive care unit

C: White blood cells >15,000cells/mm3 AND age>60 years

D: All of the above

Which of the following is an appropriate treatment regimen for severe Clostridium difficile infection?

A Metronidazole 500mg PO q 8 hours x14 days

B Vancomycin 500mg IV q 6 hours x14 days

C Vancomycin 125mg PO q 6 hours x14 days

D Tigecycline 50mg IV q 12 hours x14 days

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-600 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF MRSA TREATMENT FAILURES ASSOCIATED WITH ELEVATED VANCOMYCIN MINIMUM INHIBITORY CONCENTRATIONS IN A RURAL, NONACADEMIC HOSPITAL

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Purpose: Currently at St. Claire Regional Medical Center (SCR), 60% of Staphylococcus aureus isolates are methicillin-resistant (MRSA). Several clinical studies done in academic medical centers have demonstrated increasing vancomycin treatment failures and negative outcomes in patients infected with MRSA isolates that have minimum inhibitory concentrations (MIC) near the Clinical and Laboratory Standards Institute breakpoint. This study examines whether the correlation between vancomycin MIC and clinical outcomes at a rural community hospital are similar to previous studies.□Methods: All patients with cultures positive for MRSA from 7/1/12 to 6/31/13 were identified by the laboratory software and divided into two groups, MIC <1 and > 1 mg/L. Data collected from the electronic record includes: age, gender, comorbid conditions, culture results, antibiotic therapy, pharmacokinetic variables, and laboratory values to assess treatment response. Provider documentation is reviewed for validation of treatmen outcomes. Treatment failures are defined as: continued fever, continued elevated white blood cell counts, or the persistence of symptoms of infection such as wound drainage or purulent sputum for 120 hours after the initiation of vancomycin. Failure rates will be calculated for both MIC groups. The difference in treatment failure rate and baseline characteristics between groups will be compared with a chi square test. For both groups, pharmacokinetic variables, when available, will be analyzed to assess pharmacodynamic target attainment of MIC to area under the curve ratio greater than 400.□Results/Conclusions: In the study time period, 47% of all MRSA isolates (outpatient and inpatient) had vancomycin MICs of greater than 1 mg/L. Out of the inpatients included in this study, only 32% were infected with MRSA isolates with elevated vancomycin MICs, suggesting that there is a significant numbe of outpatient MRSA cases with elevated vancomycin MICs. No significant differences in baseline characteristics have been identified. Review of clinical outcomes is pending.

Learning Objectives:

Identify appropriate pharmacokinetic targets for vancomycin

Discuss importance of correlation between outcomes and elevated vancomycin MICs in the study population

Self Assessment Questions:

Which of the following is an appropriate target for an MRSA isolate with a vancomycin MIC of 2 mg/L?

A 90 % time above MIC

B: AUC to MIC ratio of 800

C: AUC to MIC ratio of 400

D: 75% time above MIC

Which of the following accurately describes the mortality rate for patients with MRSA with elevated vancomycin MICs?

A 1.54%

B 32%

C 12%

D 6.45%

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-826 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

A MULTI-DISCIPLINARY APPROACH TO IMPLEMENTATION OF A DISCHARGE MEDICATION RECONCILIATION TOOL AT A VA HOSPITAL

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Purpose: Hospital discharge is a vulnerable time for medication errors at the Clement J. Zablocki Veterans Affairs (VA) Medical Center. As a multi-disciplinary team, our aims are to decrease medication errors, and increase discharge satisfaction among different healthcare disciplines, by trialing and implementing a provider-based discharge medication reconciliation tool.□ □Methods: Providers, nurses, and pharmacists were interviewed and observed to map the current discharge process for each healthcare discipline. After identifying discharge medication reconciliation as an impact area for improvement, the multi-disciplinary team contacted other VA hospitals to determine the processes or tools that were being used at other VA sites. A tool that was in use at another VA hospital was reviewed by the multi-disciplinary team and advocated for local implementation at the Clement J. Zablocki VA Medical Center. □

The multi-disciplinary team worked with information technology specialists to import the tool, and it is scheduled to be active for its pilot phase on February 1, 2014. The pilot phase will incorporate two internal medicine teams, and the pharmacists that are involved in the corresponding teams patient discharges. In conjunction with the pilot phase, the multi-disciplinary team will provide educational sessions to both providers and pharmacists.□Prior to the pilot phase, surveys were sent to the providers and pharmacists to assess satisfaction with the current discharge process. Follow-up surveys will be sent to the same individuals after completion of the pilot phase to compare responses.□Data on pharmacist interventions for one of the involved patient care units will also be assessed for changes as a result of the discharge medication reconciliation tool.□□Preliminary Results: Baseline data and final results to be presented at Great Lakes Pharmacy Resident Conference.□□Conclusions: Conclusions to be presented at Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the barriers to performing discharge medication reconciliation

List the medication types necessary to perform a discharge medication reconciliation

Self Assessment Questions:

What is the most significant perceived barrier to discharge medication reconciliation to Clement J. Zablocki VA Medical Center providers?

A Time constraints

B: Technology limitations

C: Competency

D: Low clinical significance

Which types of medications are necessary to perform a complete discharge medication reconciliation at the Clement J. Zablocki VA Medical Center?

A Outpatient

B Non-VA

C Remote VA

D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-927 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFICACY AND SAFETY OF U-500 INSULIN AS COMPARED TO HIGH DOSE CONVENTIONAL INSULIN THERAPY: A RETROSPECTIVE CHART REVIEW

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Purpose: Patients with insulin resistance often require large volumes of insulin to maintain glycemic control. However, total daily doses greater than 200 units can negatively impact adherence and absorption. Conversion to U-500 insulin allows for fewer daily doses, more predictable absorption, and has been shown to improve glycemic control. The primary objective of this study is to determine if patients converted to U-500 insulin therapy have demonstrated improved glycemic control compared to patients maintained on high dose U-100 insulin regimens. Secondary objectives include evaluation of severe hypoglycemic or hyperglycemic events, change in body weight, total daily insulin dose, classes of concomitant non-insulin diabetes medications, and identification of reasons for discontinuation of U-500 insulin in patients trialed on this therapy. Methods: The computerized patient record system will be utilized to conduct a retrospective chart review of all patients who received at least one prescription for U-500 insulin or high dose conventional therapy between January 1, 2008 and December 31, 2012. High dose conventional therapy will be defined as 200 units or more of U-100 insulin per day. Patients will be excluded if they do not have a diagnosis of type 2 diabetes mellitus or at least 6 months of baseline data prior to conversion to U-500. Data collected and analyzed will be de-identified and include: age, sex, weight, type and total daily dose of insulin and duration of therapy, classes of concomitant non-insulin diabetes medications, hemoglobin A1C, and severe hypoglycemic or hyperglycemic events as defined by documented blood sugar readings <50mg/dL or >500mg/dL, emergency room visits, or hospital admissions. Results and Conclusion: Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference in April 2014.

Learning Objectives:

Review benefits and risks associated with conversion to U-500 insulin

Identify the impact of conversion to U-500 on patient and medical center outcomes

Self Assessment Questions:

Conversion to a U-500 insulin regimen may offer the following benefit(s)

A Enhanced glycemic control

B: Fewer injections per day

C: More predictable absorption

D: All of the above

Which of the following patients is a good candidate for conversion to U-500 insulin?

A A patient suffering from glaucoma

B A patient with a history of hypoglycemia

C A patient using 300 units of insulin aspart and glargine

D A patient with a refill history indicating poor adherence to conventi

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-601 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF SURGICAL SITE INFECTION RISK FACTORS, MICROBIOLOGY, AND PATIENT OUTCOMES IN NATIONAL HEALTHCARE SAFETY NETWORK REPORTED SURGERIES

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Purpose Surgical site infections (SSI) increase patient morbidity, healthcare costs, and can adversely affect hospital microbiologic flora. As such, adherence to SSI reduction strategies is essential for healthcare systems to improve patient care. SSI associated morbidity and mortality can potentially be reduced with risk factor mitigation, but few studies have evaluated adherence to recommended SSI prevention strategies and SSI risk factors. Risk factor identification can influence many perioperative measures (i.e., antibiotic choice, dose, duration; minimizing endogenous and exogenous risk factors) to further reduce SSI. The purpose of this study is to identify and compare risk factors for the development of SSIs in National Healthcare Safety Network reportable surgeries versus patients without SSI in a similar surgery. In addition, the collected data will provide insight into microbiologic etiologies and resistance patterns, especially in comparison to hospital specific antibiograms. Methods This study is a single center, case control, retrospective chart review. Adult patients admitted to the University of Cincinnati Medical Center from January 1, 2009 to December 31, 2013 will be evaluated for inclusion. The primary outcome will be to compare whether patients with surgical site infections (SSI) will have similar risk factors, adherence to SSI prophylaxis measures, and outcomes to patients without a SSI with a similar surgery. The secondary outcome measured will evaluate whether patients with culture positive SSI have similar sensitivity patterns to the hospital wide antibiogram. Continuous variables will be analyzed using student t test or Wilcoxin rank sum, as appropriate. Discrete variables will be analyzed using chi-squared or Fisher exact test, as appropriate. Univariate and multivariate logistic regression will be used for exogenous and endogenous risk factors for patients with SSI versus matched control patients. Incidence of antimicrobial resistance in patients with SSI with repeat infection will also be reported. Results Data collection and analysis are on-going.

Learning Objectives:

Discuss the endogenous and exogenous risk factors that have been identified with surgical site infections.

Recognize the pathogens most commonly associated with surgical site infections.

Self Assessment Questions:

Which risk factor for surgical site infection is classified as exogenous?

A Obesity

B: Older age

C: Impaired glucose control

D: Prolonged procedure duration

Which pathogen has been reported to have the highest incidence in surgical site infections?

A Klebsiella pneumoniae

B Staphylococcus aureus

C Pseudomonas aeruginosa

D Streptococcus pneumoniae

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-602 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PROSPECTIVE EVALUATION OF FREE CARE PRESCRIPTIONS BY CLINICAL PHARMACISTS

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Purpose: Northwestern Medicine (NM) includes Northwestern Memorial Hospital (NMH) along with many outpatient clinics. In December 2011, the NM follow-up clinic was created to aid transition of underinsured patients to a primary care provider. Patients are referred to the clinic at discharge after an inpatient admission or emergency room visit. At discharge, the majority of underinsured patients receive free medications through a process that typically only requires social work assessment. Without evaluation for affordability, patients may refuse to refill prescriptions once their free supply is exhausted due to cost, which may lead to an inability to reach therapeutic goals and potentially increase re-admissions. Clinical pharmacists can play a large role to assure the most cost-effective therapy by prospectively assessing discharge medications to determine appropriateness of both initiation of patients in medication assistance programs as well as therapeutic equivalence switches. The purpose of this project is to evaluate the benefit of prospective evaluation of free care prescriptions by clinical pharmacists. Methods: This is a prospective cohort study including patients discharged from selected general medicine floors between February 10 and March 14, 2014. At the time of patient discharge, clinical pharmacists and/or pharmacy students will use a pre-defined formulary to recommend, when appropriate, therapeutic changes to more affordable products. With the help of social workers, patients will also be enrolled in available pharmaceutical assistance programs. Data variables collected will include number and type of interventions recommended, number of interventions accepted, and cost difference due to interventions. A subset of prospectively reviewed patients treated at the Follow-Up Clinic will be compared to patients whose prescriptions went through standard procedure. In this subset, pharmacists at the Follow-Up Clinic will evaluate adherence and medication access through standardized patient interview. Results/Conclusions: Results and conclusions to be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Explain the role of ambulatory care pharmacists and potential impact on patient outcomes

Describe common barriers to patient adherence in the ambulatory care setting.

Self Assessment Questions:

Which of the following examples of ambulatory pharmacy roles is most likely to affect patient adherence?

A Medication Reconciliation

B: Providing drug information for clinic staff

C: Cost reduction assistance

D: Chart Review

Which of the following is likely the most common barrier to adherence for patients in the ambulatory setting?

A Lack of specialty providers

B Inability to afford medications

C Lack of pharmacy access to refill medications

D Misunderstanding the importance of medication

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-827 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF INTRAVENOUS (IV) MAGNESIUM SHORTAGE ON POTASSIUM DOSES IN ADULT SURGICAL PATIENTS RECEIVING PARENTERAL NUTRITION

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Purpose Shortages of parenteral nutrition (PN) ingredients, including macronutrients, electrolytes, vitamins and trace elements have been common. Despite the impact of drug shortages on clinicians and patients, the effects on patient management and outcomes have not been quantitated. The objective of the current research is to determine the effect of a parenteral magnesium shortage requiring removal of magnesium from adult PN admixtures on total daily potassium doses required by adult patients receiving PN. Methods This is a retrospective case-control study. The electronic medical record system will identify adult patients on surgical services who received parenteral nutrition during two six-month study periods, prior to the magnesium shortage (2011) and during the magnesium shortage (2012). Patients with renal insufficiency or receiving continuous infusion diuretic therapy will be excluded. The relationship between daily potassium doses and presence or absence of magnesium in PN will be evaluated using a repeated measures analysis of variance. Serum potassium concentrations, daily magnesium doses, and serum magnesium concentrations will also be analyzed. Preliminary Results During the shortage, patients received more supplemental magnesium sulfate (0.12 mEq/kg/day , P<0.0001) but received less total daily magnesium (-0.10 mEq/kg/day, P<0.0001) and achieved lower serum magnesium concentrations (-0.2 mg/dL, P<0.0001). Patients received slightly less potassium in their PN during the magnesium shortage (0.067 mEq/kg/day less, P=0.01) but received similar amounts of supplemental potassium (0.012 mEq/kg/day less, P=0.59) and achieved similar serum potassium concentrations (0.02 mM less, P=0.50).

Conclusions Intermittent magnesium supplementation may be less effective in raising serum magnesium as compared to magnesium provided within PN. The presence or absence of magnesium in PN did not correlate with increased potassium requirements in PN or as supplements, and did not correlate with decreased serum potassium values.

Learning Objectives:

Explain the ways in which drug shortages have impacted our ability to optimize parenteral nutrition.

Recognize what kind of data is available regarding the secondary or downstream effects of shortages of parenteral nutrition components.

Self Assessment Questions:

Which of the following describes the overall impact of drug shortages on the components of parenteral nutrition?

A A few components are not available. There is consistent availabilit

B: Many components are not available. There is consistent availabili

C: A few components not available. There is inconsistent availability

D: Many components not available. There is inconsistent availability

What kind of data has been published regarding the secondary or downstream effects of shortages of parenteral nutrition (PN) components?

A Retrospective case report of electrolyte shortages correlating with

B Retrospective cohort study comparing the use of individualized PN

C Randomized controlled trial comparing PN with multivitamins daily

D Retrospective cohort study comparing the use of daily IV lipids and

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-603 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DECREASING READMISSION RATES THROUGH FOLLOW-UP MEDICATION EDUCATION: A MULTIDISCIPLINARY COLLABORATION

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Purpose: This project was designed to determine the effects of pharmacist participation in medication education aspects of transitions o care, both acutely and in the clinic setting, on readmission rates and reimbursement. Methods: Stage one: The pharmacy resident will educate patients with heart failure (HF), acute myocardial infarction (AMI), and pneumonia (PN) upon discharge from the hospital. Patients will then be contacted by phone within 2 business days to ensure new medications have been filled, a follow-up physician visit is made, and new medications are understood. Stage two: The pharmacy resident will educate all Family Medicine Clinic patients upon discharge from the hospital. Patients will be contacted by phone within 2 business days, and will also be made a follow-up appointment with a Clinic physician within 14 days, incorporating transitional care billing codes. The goal of the clinic visit to ensure continued care by the medical team and ease of transition for the patient. The pharmacists will track the affected patient population to measure trends in readmission with pharmacist and physician intervention. Pharmacists will compare the impact of pharmacists' collaborative medication education efforts on readmission rates and a potential financial benefit to the hospital. Results: Stage one readmission rates for HF, AMI and PN during the study months was 392 in 2012 and 362 in 2013. The readmission rates, however, in 2012 and 2013 were 12.54% and 12.53% respectively. Stage two readmission rates for HF, AMI and PN decreased by 22.9% from last year, though rates for all disease states increased by 2.6%. Conclusion: The addition of pharmacy lead transition of care services may have decreased readmission rates of patients with HF, AMI or PN during the 3 month test period for both study groups. Additional studies are needed to assess the true impact over a longer time period.

Learning Objectives:

Explain the transition of care model utilized in this project.

Recognize areas of cost savings and income provided by reducing readmission rates through transition of care models.

Self Assessment Questions:

Transition of care CPT billing codes may be utilized if the initial phone call is made within ___ Days.

A 2
B: 7
C: 14
D: 30

In the fiscal year 2014, hospitals with poor readmission rates, could lose up to _% of Medicare dollars at the highest penalty rate.

A 1%
B 2%
C 3%
D 4%

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-604 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

ANALYZING THE USE OF HOME BULK MEDICATIONS IN THE INPATIENT SETTING

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Purpose: There will be an increased importance to control costs and waste as health care moves toward the Accountable Care Organization model. The purpose of the project was to analyze the economic and workflow impact of allowing patients to use their home bulk medications while in the inpatient setting at an Aurora Health Care hospital. Specific inhalers were the focus of the analysis as they make up a large percentage of total inpatient bulk product count and cost. Methods: The policies and procedures outlining the use of home bulk products at other health care systems were investigated. Furthermore, cost-savings opportunities and impact on revenue were analyzed via charge reports. Finally, the impact of allowing the use of home bulk products on ordering and dispensing time was determined by eliminating the unnecessary workflow steps. Results: Preliminary results have shown that other health systems have processes in place that allow the use of bulk medications in the hospital. Furthermore, the project has shown great opportunity for cost-savings in terms of reduced product cost. Finally, several inefficiencies have been identified with the current workflow process, many of which would be eliminated under the newly proposed workflow. Conclusions: This project has shown that allowing patients to use their home bulk products while inpatient can result in the more efficient use of resources, both human and financial.

Learning Objectives:

Explain one reason why inhalers were the focus for the project.

Identify one area of inefficiency that would be eliminated with the proposed workflow process allowing inpatients to use home bulk products.

Self Assessment Questions:

Inhalers were the focus for the project because:

A There was a large patient demand requesting the use of home inh
B: Inhalers made up almost 50% of total inpatient bulk cost.
C: Inhalers made up almost 50% of total inpatient bulk count.
D: Inhalers were randomly chosen as a group of medications.

Which of the following areas of inefficiency was shown to be eliminated with the newly proposed workflow process?

A Medication reconciliation pharmacist or nurse would ask if patient
B If patient is from a facility, the hospital will supply any necessary in
C The inhaler will be ordered by the physician and verified by pharma
D The pharmacy will prepare and send the ordered inhaler to the pat

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-828 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION AND EVALUATION OF A MEDICATION TRACKING SYSTEM IN AMBULATORY CLINICS AND INFUSION CENTER

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As the healthcare environment commands higher quality with reduced operating costs, pharmacy department operations must become more efficient. Medications that require manual delivery with multiple hand-offs from a centralized location are prone to delayed delivery. Managing delivery delays introduces waste into the system, requiring pharmacy technician and pharmacist time via location of missing medications and rework to prepare a new medication dose. These additional tasks reduce efficiency and increase costs associated with the medication distribution process. A method to mitigate these issues is utilization of a real-time medication tracking system in which barcode scanning points identify medication location.□□Purpose: The purpose of this project is to implement a medication tracking system for patient-specific medications administered in ambulatory clinics and an infusion center at the University of Wisconsin Hospital and Clinics (UWHC) and evaluate the impact on pharmacy staff efficiency, labor and medication costs, and staff satisfaction.□□Methods: A resident-led work group was developed to implement and evaluate the impact of the medication tracking system. Pharmacy technician and pharmacist workflows were redesigned to facilitate revised processes related to barcode scanning within the medication tracking system. Computer-based and in-person training sessions were developed to educate staff. Analysis of the medication tracking system included pre and post implementation data collection via self-reporting of pharmacy technician and pharmacist time related missing medications including phone calls, location of missing medications, and rework to prepare new medication doses. Additional outcomes measured included labor and product costs associated with missing medications. Surveys are being administered to pharmacy technicians, pharmacists, and nurses to evaluate staff satisfaction before and after implementation.□□Results & Conclusions: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the benefits of implementing a web-based medication tracking system.

Outline the operational considerations for implementing a medication tracking system within ambulatory clinics and an infusion center.

Self Assessment Questions:

What is an anticipated benefit of implementing a web-based medication tracking system?

A Increased missing medication doses

B: Enhanced communication of medication location

C: Medication tracking is unnecessary

D: Decreased pharmacy and nursing interaction

Within the medication tracking system implementation at UWHC, who is the primary user of the system?

A Nurses

B Transportation staff

C Physicians

D Pharmacy staff

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-829 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

TREATMENT OF MIGRAINES IN PEDIATRIC PATIENTS: EVALUATING THE EFFICACY AND SAFETY OF REPETITIVE DOSE DIHYDROERGOTAMINE MESYLATE.

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Purpose: Current data evaluating dihydroergotamine mesylate use in pediatric patients is limited. This review is being performed to evaluate the efficacy and safety of repetitive dosing dihydroergotamine mesylate in patients less than 18 years of age. The primary objective of this study is to determine if the use of repetitive dose dihydroergotamine mesylate intravenous injection is effective in the treatment of both migraines and abdominal migraines in pediatric patients. Dihydroergotamine mesylate is an ergot alkaloid with known vasoconstrictive effect on vascular smooth muscle. Historically, this medication was used as a one-time only injection to treat an active migraine event.□Methods: The results of this review are based on a retrospective chart review and a concurrent observational study. Children between the age of 1 year and 18 years o age who received multiple dose dihydroergotamine mesylate while admitted between January 1, 2012 and March 31, 2014 were included in the review. Research methods were approved by the primary hospitals institutional review board. The primary outcome of this review will evaluate the basic descriptive statistics associated with each course of therapy. Number of doses administered after initiation of therapy, frequency of dose changes, and ranges of administered doses will be collected. Secondary outcomes will evaluate the rate of adherence to the established hospital protocol including: proper administration of premedications, proper dose escalation, proper administration procedures, and proper monitoring procedures. Adverse events reported, as well as associated interventions, will also be recorded as part of this review. Additional outcomes are based on changes to home medications and the initiation of additional medications during therapy.□Results/Conclusions: Data analysis is ongoing, and final conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss the treatment options available for pediatric migraines.

Recognize the contraindications to starting repetitive-dose dihydroergotamine therapy.

Self Assessment Questions:

What role does repetitive-dose dihydroergotamine therapy play in the treatment of pediatric migraines?

A Repetitive-dose dihydroergotamine can be considered as a first-lin

B: Repetitive-dose dihydroergotamine may be considered for patients

C: Repetitive-dose dihydroergotamine should only be used in patients

D: Repetitive-dose dihydroergotamine should only be considered in p

Which of the following is a reason to not initiate a course of dihydroergotamine therapy in a patient?

A History of nausea and/or vomiting with previous dihydroergotamine

B Use of serotonin-agonist (ie. sumatriptan) within the previous 24 h

C Use of opioid analgesic medications within the previous 24 hours.

D Concurrent use of CYP2D6 inhibitors.

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-605 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PHARMACIST IMPACT ON HEART FAILURE PATIENT READMISSION AND ADVERSE EVENT RATES: A PILOT PROGRAM USING DISCHARGE MEDICATION RECONCILIATION AND TELEPHONE COUNSELING

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Purpose: It has been estimated that approximately 17% of patients will experience an adverse drug event in the first few weeks following discharge from the hospital. One study, by Walker et al, suggests 60% of these adverse drug events could be prevented or ameliorated. The purpose of this project is to determine the impact pharmacists can have on heart failure patient readmissions and adverse event rates when integrated into the discharge medication reconciliation process along with the addition of a pharmacist-driven post-discharge follow up program. Methods: This project has been deemed exempt by the Institutional Review Board. Patient charts and electronic health records will identify patients with a current or previous diagnosis of heart failure. Prior to discharge, the nurse will fax the completed discharge medicatior reconciliation forms to the pharmacist for review. The pharmacist will focus on new medications, dose or frequency changes, omissions, and therapeutic duplications. The nursing staff will also notify the pharmacis upon completion of the discharge medication plan so it may be reviewed for accuracy compared to the discharge medication reconciliation forms. Once the review has been completed, the pharmacist will inform the nurse of proposed changes and contact the prescriber if necessary. Prior to discharge, the pharmacist will document the patient account number, list of interventions made, and time to complete medication reconciliation. Within one week following discharge, the pharmacist will contact the patient to assess compliance and understanding of medications, barriers to obtaining medications, and answer questions. The pharmacist will document interventions made and encounter duration. The impact of the program will be assessed by comparing readmission rates and potential adverse events prevented after program initiation to baseline data from the previous discharge medication reconciliation process. Results/Conclusion: To be presented at Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe potential benefits of pharmacist involvement in heart failure patient discharge medication reconciliation

Identify the Joint Commission core measures for heart failure

Self Assessment Questions:

Which of the following is a potential benefit resulting from pharmacist involvement in the discharge mediation reconciliation process?

A Reduction in hospital readmissions

B: Improvement in left ventricular function

C: More complete discharge summary

D: Decreased ICU length of stay

Which of the following is one of the Joint Commissions heart failure core measures?

A All patients with left ventricular dysfunction should be prescribed a

B All patients who presented to the hospital with fluid overload shoul

C All patients with left ventricular dysfunction (EF<40%) should be pr

D All discharge medication reconciliations for patients with left ventri

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-606 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF STANDARDIZED MEDICATION EDUCATION BY INPATIENT PHARMACISTS

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Purpose: One of The Joint Commission's National Patient Safety Goals is to reduce the likelihood of patient harm associated with the use of anticoagulant therapy. Patient education is vital to achieving this goal. Before leaving the hospital, patients should have a thorough understanding of the risks, precautions, and monitoring associated with anticoagulant use. As current literature shows, effective patient education can lead to increased adherence, fewer hospital readmissions, and improved patient satisfaction. Pharmacists are well-positioned to provide medication education for patients taking high-risk medications such as anticoagulants. Moreover, pharmacy departments are integral to organizational achievement of medication-related quality measures. The objective of this project is to design, implement, and assess a system-wide process to standardize pharmacist-provided patient education for selected high-risk medications prior to discharge.

Methods: Warfarin was targeted as a prototype for the creation of a standardized medication education process which could be replicated fo other high-risk medications. A reference was created which reviewed ke warfarin education points to ensure consistent delivery of medication education by pharmacists and pharmacy students. In order to achieve 100% compliance with the VTE-5 core measure outlined by The Joint Commission, Aurora Health Care clinical quality experts were consulted. A customized documentation space was created within the electronic medical record, and collaboration with the pharmacy IT team was necessary to create a seamless pharmacist workflow for identification of patients taking warfarin who require education. The process was implemented in January, 2014, and a one-week snapshot will be conducted in late February to examine pharmacist time commitment and adherence to the education process for patients discharged on warfarin.

Results/Conclusions: Data collection is currently underway. Results will be used to refine the warfarin education process and determine the feasibility of expanding pharmacist-provided patient education. Results will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

List two components that should be considered in the design of a standardized process for pharmacist-provided warfarin education.

Identify two metrics that can be used to help refine a newly implemented process for medication education provided by pharmacists.

Self Assessment Questions:

All of the following are areas that should be addressed in the design of a standardized process for pharmacist-provided warfarin education, excep

A Warfarin education content

B: Compliance with the VTE-5 core measure

C: Discharge prescription capture

D: Optimization of pharmacist workflow within the EMR

Which of the following may be useful in the assessment of a newly implemented process for medication education provided by pharmacists

A Pharmacist adherence to documentation procedures

B Pharmacist time commitment

C Direct feedback from pharmacists

D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-830 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE EFFECTS OF PROCALCITONIN LEVELS ON PHYSICIAN PRACTICES OF ANTIBIOTIC TREATMENT: A RETROSPECTIVE COHORT

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Purpose: Procalcitonin (PCT) is a calcitonin precursor that is markedly elevated at the onset of infections. PCT has been studied as a surrogate biomarker to assess the likelihood of bacterial infection and its severity. Numerous studies have used PCT-guided treatment algorithms to decrease antibiotic use and duration. Literature has shown that PCT-guided antibiotic therapy is not associated with increased mortality or treatment failure. In a meta-analysis of 14 randomized controlled trials o acute respiratory infections and the use of PCT to guide initiation and duration of antibiotic treatment, common algorithms of initiation and discontinuation of antibiotics were found. For instance, 12 of the 14 studies recommended against antibiotics if PCT levels were <0.25 mcg/L and recommended antibiotics if PCT levels were ≥0.25 mcg/L. PCT-guided antibiotic therapy can lead to potential benefits, such as decreased antibiotic resistance, costs, and antibiotic-caused adverse events. However, if PCT levels are ordered and merely ignored, then PCT levels lead to increased costs for the institution. The purpose of this retrospective research is to evaluate the association between PCT levels of less than 0.25 mcg/L and the discontinuation of antibiotic therapy. Methods: Patients who were admitted to Akron General Medical Center and had at least one PCT level reported between September 2012 to November 2013 will be included. Patients <18 years old or patients who were discharged within 48 hours of the PCT level report will be excluded. In the primary analysis, patients will be classifiec into two groups: PCT levels <0.25 mcg/L and ≥0.25 mcg/L. The data will be analyzed to determine if there is an association between PCT levels <0.25 mcg/L and the discontinuation of antibiotics within 3 days of PCT level report. Results and Conclusions: Will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify the role of procalcitonin in infections

Describe the procalcitonin-guided treatment algorithms that have been used in clinical trials

Self Assessment Questions:

Procalcitonin is used as a surrogate biomarker for which of the following infections?

A Bacterial
B: Fungal
C: Parasitic
D: Viral

Antibiotics are NOT recommended at which of the following procalcitonir levels?

A <0.1 mcg/L only
B <0.25 mcg/L only
C ≥0.25 mcg/L only
D ≥0.5 mcg/L only

Q1 Answer: A Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-831 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF PHARMACIST MEDICATION EDUCATION ROUNDING ON PATIENT SATISFACTION SCORES

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Purpose: The Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey has become an important measure of patient satisfaction. Opportunity exists for improvement in the HCAHPS measures for communication about medications to patients at a tertiary care teaching center. The primary objective is to assess the impact of pharmacist communication about medications on HCAHPS scores. Secondary objectives include assessing the percentage of patients who have documented medication education and describing the resource utilization needed to support the intervention. Methods: This project has been identified as a quality improvement initiative and thus exempt from review by the Institutional Review Board. Currently at our institution nursing associates are primarily responsible for informing patients about their medications prior to administration. Opportunity exists to improve patient understanding of medications during hospitalization though intervention from inpatient pharmacy staff. Pharmacist medication education rounding was conducted on a cardiac based, general medicine unit. All patients admitted or transferred to the cardiac medical unit beginning November 1, 2013 through December 31, 2013 were considered for inclusion. A pharmacist or designee performed all interventions to include education on chronic medications added within the last 72 hours. Clinical documentation software was used as a tool fo tracking the education and pharmacist intervention during the study. Impact was evaluated on unit specific HCAHPS data and on the documented education rate. Analysis of resource utilization will also be performed through tracking time invested by pharmacy team members.

Results: Final results and conclusions will be presented at the 2014 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss the opportunities that a pharmacist can have in impacting HCAHPS at Ministry Saint Josephs Hospital on a cardiac medical unit

Recognize the HCAHPS survey questions that relate to pharmacists and medication education

Self Assessment Questions:

Which of the following HCAHPS survey questions relates directly to medication education?

A Before giving you any new medicine, how often did hospital staff te
B: Before giving you any new medicine, how often did hospital staff d
C: During this hospital stay, how often did nurses treat you with court
D: A and B

Which of the following is/are a limitation(s) in improving HCAHPS scores relating to medications?

A Limited staffing resources
B The need for a team approach
C Providing real time service (e.g. first dose education)
D All the above

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-832 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

N-ACETYLCYSTEINE: CLINICAL EVALUATION IN PATIENTS WITH NON-ACETAMINOPHEN INDUCED ACUTE LIVER FAILURE

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Purpose Acute liver failure (ALF) is a rare yet severe life-threatening syndrome characterized by coagulopathy and encephalopathy. ALF is defined as a decline in liver function occurring within the last 6 months. The benefits of N-acetylcysteine (NAC) have been well established in patients with acetaminophen-induced acute liver failure, however evidence for use in patients with non-acetaminophen induced acute liver failure (NAI-ALF) remains questionable. Currently, patients are treated with symptomatic care and no standard of therapy exists for improvement in liver function. The objective of this project is to determine the benefit of NAC use in patients with NAI-ALF.

Methods This is a retrospective, chart review evaluating the benefits of NAC on liver function in patients diagnosed with NAI-ALF. From July 2008 - July 2013, patients were evaluated from one of two groups: those who received NAC versus those who did not receive NAC, after the diagnosis of NAI-ALF. ICD-9 codes were utilized to identify patients. Improvement of liver function, determined by a change in AST, ALT and MELD score, after the use of N-acetylcysteine, was the primary outcome measured. Secondary outcomes include mortality rate during hospital stay, length of stay in the intensive care unit and hospital, N-acetylcysteine dose, improvement in grade of encephalopathy and child-pugh score (A, B or C) and number of patients listed for liver transplant. Fishers exact test will be the statistical test used for the nominal data, students t-test for the continuous data, and cox-proportional hazard model test for the mortality rate. Baseline characteristics will be compared using descriptive statistics. Results/Conclusions:

Analysis of results is ongoing. A total of 67 charts were reviewed, from which 7 patients were included. Final results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Describe the possible mechanisms of action for benefit of NAC use in patients with NAI-ALF

List the changes seen in liver function before and after NAC initiation

Self Assessment Questions:

Evidence of acute liver failure was determined by which of the following:

A Inr > 1.5

B: AST and ALT > 1000

C: Presence of encephalopathy

D: A, B, and C

NAC use in NAI-ALF has found to be potentially beneficial due to which of the following mechanisms of action

A Increase in oxygenation via enhanced effects of nitric oxide

B Increase in inflammatory markers

C Decrease in toxic metabolite production

D A & c

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-609 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

SAFETY AND EFFICACY OF ADDING A GLUCAGON-LIKE PEPTIDE-1 RECEPTOR AGONIST (GLP-1 RA) TO A BASAL-BOLUS INSULIN REGIMEN IN VETERANS WITH TYPE 2 DIABETES MELLITUS (T2DM

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Purpose: To evaluate the safety and efficacy of adding a GLP-1 RA to a basal-bolus insulin regimen in Veterans with T2DM. GLP-1 RAs have been approved for use with basal insulin with data showing improved HbA1c, decreased insulin requirements, and decreased body weight when used in combination with primarily basal insulin. However, there are no similar studies examining GLP-1 RAs in combination with a basal bolus insulin regimen. Methods: Veterans with T2DM prescribed a GLP-1 RA (exenatide or liraglutide) between January 2007 and December 2013 were identified. Subjects who used GLP-1 RAs in combination with basal-bolus insulin regimens for at least 3 months and had a HbA1c available at baseline (within 6 months of GLP-1 RA initiation) were included. The primary endpoint was change in HbA1c from baseline (defined as initiation of GLP-1 RA) to 3 months. Secondary endpoints included change in HbA1c from baseline to 6 months and 12 months, change in body weight, change in total daily basal insulin dose, change in total daily bolus insulin dose, and incidence of hypoglycemia 6 months before and after initiation of GLP-1 RA. Results/Conclusion: Data collection is ongoing. Results and conclusions will be presented at the 2014 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

List the clinical effects of GLP-1 RAs in T2DM management.

Explain the effect of adding a GLP-1 RA to a basal-bolus insulin regimen on HbA1c in Veterans with T2DM and identify Veterans that would most likely benefit from the addition of a GLP-1 RA to a basal-bolus insulin regimen.

Self Assessment Questions:

Which of the following mechanisms is NOT a mechanism for clinical effect of GLP-1 RAs?

A Decreased gastric motility

B: Decreased glucagon production

C: Improved insulin uptake by cells

D: Increased glucose-dependent insulin secretion

Which of the following patients with T2DM, currently managed with a basal-bolus insulin regimen, would most likely have a favorable risk-benefit ratio for the addition of a GLP-1 RA?

A Patient with HbA1c 9.9% (goal < 7%) and stage 4 CKD

B Patient with HbA1c of 8.2% (goal < 8%) and gastroparesis

C Patient with Hb A1c 7.6% (goal < 7%) and obesity

D Patient with HbA1c 8.1% (goal<7%) with frequent hypoglycemia

Q1 Answer: C Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-607 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PATIENTS PERCEPTIONS OF A COMMUNITY PHARMACY-BASED FRACTIONAL EXHALED NITRIC OXIDE (FENO) SCREENING PROGRAM AND THE EVALUATION OF PATIENT FOLLOW-UP WITH THEIR PHYSICIAN BASED ON PHARMACIST INTERVENTI

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Background: A fractional exhaled nitric oxide (FeNO) screening is a non-invasive test that provides a quantitative value for airway inflammation. This value can aid in the assessment and management of patients with asthma and COPD. Pharmacist interventions can result in an improvement in patient health outcomes and an enhancement in overall quality of life. Purpose: The objectives of this study are to assess patients perceptions of a community pharmacy-based FeNO screening program and to evaluate whether patients followed-up with their physician based on pharmacist intervention. Methods: This survey-based, prospective, single-site study involves the implementatior of a FeNO testing program in a community pharmacy setting. Inclusion criteria: 18 years of age or older and have a diagnosis of asthma or COPD. Exclusion criteria: an exacerbation of asthma or COPD, pregnan or planning to become pregnant, and unable to commit to a follow-up phone call. Patients will be recruited by the pharmacy staff via advertisement of the program throughout the store. At the initial appointment, patients will complete a pre-survey, which will gather demographic data, baseline knowledge about asthma and COPD, and baseline status of their medication adherence. The service will consist o an educational session with the pharmacist, where the relevance of FeNO testing will be covered, followed by the patient performing a FeNC test. Additional pertinent counseling will be provided. The patient will then be advised to see a physician if evaluation, treatment, or change in treatment is needed based on test results. Patients will complete a post-survey, similar to the pre-survey, after the educational session. If the patient is advised to see a physician, a follow-up phone call will be scheduled two weeks from the initial screening day. Descriptive analysis will be utilized to analyze the data. Results: Conclusions to be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify patients who would benefit from a fractional exhaled nitric oxide (FeNO) screening program

Describe appropriate recommendations and educational points to provide patients after evaluating the results of a FeNO screening

Self Assessment Questions:

Which of the following patients is the BEST candidate for a fractional exhaled nitric oxide (FeNO) screening program?

A 4-year-old male with asthma currently only using albuterol

B: 6-year-old female with asthma currently using albuterol and flutica

C: 25-year-old female with asthma currently only using albuterol

D: 58-year-old male who states that he has been experiencing increa

Patient SJ states that he has been coughing a lot more at night, wheezing, and feeling short of breath. He reports that he uses his albuterol about twice a day most days of the week. After completing

A Ask the patient to come back in 20 minutes to recheck his FeNO.

B Advise the patient to go see his physician. The patient may benefi

C Advise the patient to go see his physician. An adjustment in therap

D No action is needed at this time. Reinforce adherence and proper

Q1 Answer: C Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-608 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF A DECENTRALIZED EMERGENCY DEPARTMENT PHARMACIST ON TIME TO INITIATION OF ANTIBIOTIC

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Purpose: Emergency Department (ED) crowding has been identified as a critical factor affecting patient care. Longer length of stay in the ED is linked to lower hospital survival rates in critically ill patients, worse outcomes in critically ill stroke patients, and pneumonia in intubated blunt trauma patients. In addition, early antimicrobial therapy initiation ir certain diseases has been associated with improved patient morbidity and mortality. The purpose of this study is to assess the impact that the introduction of a decentralized ED pharmacist may have on time from physician order to antibiotic initiation. In order to study this, services the ED pharmacist provides were also reviewed. Methodology: Starting in August 2013, a pharmacist was available in the ED at a 313 bed community hospital. Study data were collected from August 15th, 2013 to November 15th, 2013 and compared to data collected from August 15th, 2012 to November 15th, 2012 constituting the historical control group. All patients older than 19 years of age, who received an antibiotic in the ED were eligible. The hospital IRB has approved this retrospective data collection study. Data collected for the antibiotic initiation component of the study included: medical record number, antibiotic order time, antibiotic administration start time, age, gender, antibiotic type, Emergency Severity Index level, site of infection, time of ED arrival and time of transfer/discharge. Descriptive statistics will be used to analyze the data. To describe the services that the pharmacist a this institution provides in the ED, data collection included: the number and types of pharmacist interventions, time per intervention, time spent by the ED pharmacist attending codes, number of orders processed, an activities dedicated to consults. Results/Conclusions: Data analysis is currently in progress; results and conclusions will be presented at GLPRC.

Learning Objectives:

Discuss the benefits of early antimicrobial therapy in septic patients.

Describe the services that an emergency department pharmacist may provide.

Self Assessment Questions:

Which of the following statements are true:

A Initiation of antibiotic therapy within six hours of signs and symptor

B: Time to initiation of antibiotic therapy in patients with signs and sy

C: Earlier initiation of antibiotic therapy in patients with signs and sym

D: Initiation of antibiotic therapy should start at the first sign of fever i

Which of the following services, identified in the literature, are provided by the emergency department pharmacist?

A Bedside drug compounding, resuscitation response, transition care

B Resuscitation response, transition care coordination, complete phy

C Obtaining intravenous access, transition care coordination, bedsid

D Resuscitation response, complete physical examination, bedside c

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-833 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF A DISCHARGE PRESCRIPTION PROCESS FOR HIGH COST OR RISK EVALUATION AND MITIGATION STRATEGY MEDICATIONS

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Purpose: Hospitals nationwide are looking at ways to reduce length of stay. Currently, the national average length of stay (LOS) for a hospitalized patient is 4.5 days. It is not uncommon for health systems to face cases of increased length of stay due to delay in filling complicated discharge prescriptions, either due to medication access issues or extremely high cost. Risk Evaluation and Mitigation Strategy (REMS) medications are often associated with high cost or require additional elements to assure safe use due to difficulty in obtaining the medication and associated high cost of these medications. The objective of this project is to implement a process to facilitate discharge medications that have potential to increase hospital length of stay due to high cost or REMS requirements. Methods: This project is exempt from the Institutional Review Board because it is a quality improvement process. Medications were identified as complicated discharge prescriptions through evaluation of high-cost medication reports within the health system and the elements to assure safe use REMS criteria. After target medications were identified, an educational in-service was provided to all pharmacists to explain these medications and goals of this initiative. Hospital purchase history and discharge prescriptions were reviewed to quantify the current use of these medications within the hospital system. Surrounding local retail pharmacies will be screened to inventory these medications to determine accessibility. The long term goal of this initiative is to implement a multidisciplinary workflow to help facilitate timely filling of complicated discharge prescriptions using a computer based tool that identifies patients with active orders of the target medications. Data will be assessed by monitoring pharmacy prescription count, tracking pharmacist interventions, and analyzing LOS data. Descriptive statistics will be used to assess this data.

Results/Conclusion: Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Identify medications that have the potential to delay discharge and increase length of stay.

Explain a discharge process involving a multidisciplinary team to provide optimal patient care.

Self Assessment Questions:

What category of REMS criteria was utilized in identifying pertinent medications for this project?

A Medication guide
B: Implementation system
C: Communication plan
D: Elements to assure safe use

Which of the following barriers may contribute to a delay in discharge with high-cost or REMS medications?

A Cost of medication
B Medication availability at time of discharge
C Insurance or specific program requirements of medication
D All of the above

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-834 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

PROCALCITONIN GUIDED EARLY CESSATION OF ANTIBIOTIC TREATMENT IN COPD EXACERBATIONS

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Purpose: Patients who present with acute exacerbation of chronic obstructive pulmonary disease (AECOPD) have multiple factors that car cause their symptoms. In bronchoscopic studies done on AECOPD patients, approximately 50% had infections, bacterial or viral, in their lower respiratory tract. Other possibilities for exacerbation include environmental triggers such as pollutants. Patients with AECOPD may also be experiencing other ailments with similar symptoms, such as congestive heart failure, pulmonary embolism, or arrhythmias. Current Global Initiative for Chronic Obstructive Lung Disease (GOLD) guideline recommend giving patients antibiotics in moderate to severe AECOPD. A biomarker such as procalcitonin could be useful to rule in bacteria related AECOPD. Procalcitonin levels are elevated in the presence of bacterial products such as endotoxins. This study will evaluate whether a procalcitonin cut-off level of 0.25 g/L can aid in early cessation of antibiotic therapy for AECOPD patients. Methods: This retrospective chart review evaluated patients admitted with a diagnosis of AECOPD. All study patients had at least one procalcitonin level drawn within approximately 24 hours of their admission. The control group included patients for whom antibiotic therapy was continued despite a procalcitonin level of less than 0.25 g/L. The study group included patients for whom the physician discontinued antibiotic therapy after a procalcitonin level of less than 0.25 g/L. The primary outcome was the length of antibiotic treatment. Secondary outcomes include length of hospital stay and the validity of a procalcitonin cut-off level of 0.25 g/L to detect bacterial infection. The latter was measured by antibiotic therapy restart rate and elevation of banded neutrophil counts in the study group. Results and conclusions: Data collection and analysis are currently being conducted. Final results and conclusions will be presented at Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Explain the mechanism of action that causes elevated levels of procalcitonin in the presence of a bacterial infection.

Review the available evidence supporting the use of a procalcitonin cut-off level of 0.25 g/L to limit antibiotic therapy.

Self Assessment Questions:

Elevated procalcitonin levels can be seen in which type of infection?

A Pneumonia
B: Influenza
C: Fungal Infection
D: All of the above

What recommendation should be considered for patients with no comorbidities presenting with acute exacerbation of COPD and no signs/symptoms of bacterial infection? Procalcitonin level: <0.1 g/L (dra

A Discontinue antibiotic therapy
B Continue antibiotic therapy
C Obtain a second procalcitonin level
D Disregard procalcitonin level

Q1 Answer: A Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-610 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

SAFETY AND EFFICACY OF INTRAOPERATIVE TOPICAL APPLICATION OF TRANEXAMIC ACID FOR TOTAL HIP REPLACEMENT OR REVISION, A RETROSPECTIVE OBSERVATIONAL REVIEW

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Purpose: The number of total hip replacement procedures performed in the United States was greater than 460,000 in 2011 and this number continues to increase. The estimated blood loss associated with these procedures is between 1000-1500 ml. A 1000 ml blood loss is associated with a 3 g/dL drop in hemoglobin, which can lead to post-operative complications. Tranexamic acid is an antifibrinolytic agent that has been shown to reduce post-operative bleeding and need for transfusion in orthopedic surgeries. Topical administration of tranexamic acid may provide an effective approach to reducing blood loss while decreasing safety concerns associated with systemic exposure. The purpose of this study is to determine the difference in total blood loss in patients who received topical tranexamic acid intraoperatively for total hip replacement or revision compared to patients who did not receive topical tranexamic acid. Methods: This retrospective, multicenter analysis includes patients greater than 18 years who have undergone total hip replacement or revision at Franciscan St. Francis Health between September 1, 2011 and November 30, 2013; patients with an allergy to tranexamic acid, defective color vision, clotting disorders, subarachnoid hemorrhage, or preoperative anemia were excluded. Electronic medical records were used to collect patient demographics, admission data, and outcomes data. Results: Results are pending and will be presented at the Great Lakes Pharmacy Residency Conference. Conclusion: To be presented.

Learning Objectives:

Describe the role of tranexamic acid in orthopedic surgeries.

Identify the benefits of using topical tranexamic acid rather than intravenous tranexamic acid.

Self Assessment Questions:

Which of the following is a significant risk associated with blood transfusions?

A Coagulopathy

B: Immunological reactions

C: Transmission of disease

D: All of the above

Which of the following is not a safety concern associated with tranexamic acid?

A Thrombosis

B Renal impairment

C Hypertension

D Decreased seizure threshold

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-835 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE IMPACT OF ADDRESSING ADHERENCE IN PHARMACY MANAGED PHARMACOTHERAPY CLINICS

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Purpose: The primary objective of this study is to determine the change in the adherence survey score from the initial distribution to 60-90 days after distribution. The secondary objective of this study is to investigate the impact of the type of pharmacist intervention performed. Methods: Administration of an adherence survey has become the standard of care for all patients seen by a pharmacist at the Family Medicine Clinic, Community Health Physicians of Noblesville, and Jane Pauley Community Health Center at Shadeland. For this project, patients who participated in the survey between November 4, 2013 and January 15, 2014 will be included in this study. These patients will be targeted to receive a second survey 60-90 days after the first survey to identify any changes resulting from the pharmacists intervention. A scoring system will be utilized to quantify patients responses to both the pre-intervention and post-intervention surveys. Patients who respond to any of survey questions with a score of 1 or 2 will be targeted for a pharmacists intervention. The type of intervention completed will be at the pharmacists discretion Preliminary results: The first survey interventions have been completed. Patient specific interventions made include providing medication information, disease state or general health education, social work referral for non-medication related assistance, medication technician referral for patient assistance, assistance with medication reminder plan, and pillbox education, simplification of medication regimen, assisting with insurance plans, referring to a discount program, and making a therapeutic interchange. The second set of survey data collection began January 15, 2014. Conclusions:

Conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss common reasons patients may not be adherent to their medications.

Describe the financial impact of nonadherence on the healthcare system

Self Assessment Questions:

Which of the following may be reasons a patient would not be adherent to their medication regimen:

A Cost of medications

B: Complex medication regimens

C: Unwanted side effects

D: All of the above

Nonadherence to medications has been reported to cost the healthcare system which of the following amounts annually?

A $290 Billion

B $29 Billion

C $2.9 Billion

D $290 Million

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-611 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

DISCHARGE MEDICATION RECONCILIATION: IMPACT OF INSTITUTING A PHARMACIST-DRIVEN REVIEW PROCESS

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Purpose: To conduct a retrospective review of data collected by a pharmacist discharge medication review service to determine the impact of service implementation on medication discrepancy rates.□□Methods: On June 24 2013, an intervention was initiated at OSF Saint Francis Medical Center to involve pharmacists in the discharge medication reconciliation workflow; this intervention is currently ongoing. The intervention involves pharmacists notifying providers of identified discharge medication discrepancies and offering recommendations and education to correct the current discrepancy as well as to reduce the likelihood of a future discrepancy of a similar type. Any identified discrepancies are clarified with the nurse and/or provider prior to patient discharge. A retrospective review of data collected from intervention implementation through November 30 2013 was conducted to assess the impact of the pharmacist-driven discharge medication review service on medication discrepancy rates. Pharmacists documented the completion of a discharge medication review using the intervention documentation tool within the electronic medical record (EMR). The number of medications with a discrepancy and time spent were recorded. Discrepancies were stratified as critical, high, or medium risk according to the likelihood of causing an adverse drug event in a patient Pharmacists were given guidelines on documentation of discrepancies, including selection of severity for the identified discrepancy. Data was collected utilizing the reports function within the EMR. The data is currently undergoing analysis in an attempt to identify trends in the types of discrepancies identified, as well as trends in overall discrepancy rates

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□Results: Data analyses are ongoing. Results will be presented at Great Lakes Pharmacy Resident Conference in April 2014. □

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Conclusion: Conclusions are pending. They will be presented at Great Lakes Pharmacy Resident Conference in April 2014.

Learning Objectives:

Define medication reconciliation and explain a pharmacists role in this process.

Discuss the impact of initiating a pharmacist-driven discharge medication review service in regards to patient safety.

Self Assessment Questions:

Which of the following is a definition of medication reconciliation?

A Unexplained differences among documented regimens across diff

B: A formal process for identifying and correcting unintended medicat

C: The movement of a patient from one setting of care (hospital, amb

D: The process of documenting a patient's home medication list in th

What percentage of medication discrepancies are thought to have the potential to cause patient harm?

A 37%

B 13%

C 72%

D 59%

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-928 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF A PILOT HOME-BASED INR SELF-TESTING POINT-OF-CARE PROGRAM IN TELEHEALTH WARFARIN PATIENTS

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Objective: To implement a pilot home-based INR point-of-care patient self-testing program using Telehealth technology in warfarin patients at the Richard L. Roudebush VAMC.□□Methods: The Telehealth Health Buddy System and CoaguChekXS INR self-testing devices were selected based on current VA contracts. Ideally, the telehealth and INR self-testing device would interface to allow data to be directly uploaded for pharmacist assessment removing the potential for patient self-reporting error. However, no interface currently exists between the devices. A proposal to develop an interface was submitted to and accepted by the device manufacturers, but the target completion date is the end of 2014. Therefore, the pilot was changed to limit enrollment to patients with Medicare Part B coverage which pays for the testing device and supplies. A list of patients on warfarin with Medicare Part B was generated. Inclusion/exclusion criteria were developed based on Medicare guidelines and previous clinical trials. Patients who met criteria were contacted to determine interest. A physician order form was submitted to Roche to provide the device, supplies, and education on proper use for enrollees.□□Results: The eligibility criteria, education materials, and barriers throughout implementation will be described. Data collection, contacting patients, and data analysis are in progress. Preliminary analyses reveal 842 patients have Medicare Part B and are enrolled in the VA anticoagulation clinic. Of the 842 patients, 393 (42%) were excluded due to time in therapeutic range (TTR) <60%. The remaining patients will be reviewed and contacted if inclusion criteria are met. Fifteen patients have been contacted to date and three patients requested to be enrolled.□□Conclusion: Based on feedback during initia phone conversations, patients are receptive to the idea of self-testing. The goal is to expand access to care, encourage patient empowerment, and improve adherence. Final conclusions will be presented at the Great Lakes Conference.

Learning Objectives:

Identify patients who are eligible for home-based INR self-testing based on CMS criteria.

Discuss benefits and barriers in the process of implementing a pilot home-based INR self-testing point-of-care program in telehealth warfarin patients.

Self Assessment Questions:

Which one of the following indications is NOT covered by Medicare for home INR patient self-testing?

A Atrial fibrillation

B: Deep Vein Thrombosis

C: Pulmonary Embolism

D: Antiphospholipid antibody syndrome

Which of the following is a potential benefit from home INR patient self-testing?

A Increased financial burden

B Increased bleeding events

C Increased overall patient satisfaction

D Decreased time in therapeutic range

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-836 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

ACID SUPPRESSION THERAPY USE IN NON-CRITICALLY ILL GENERAL MEDICINE PATIENTS IN A COMMUNITY HOSPITAL

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Purpose: Acid suppression therapy (AST) use among non-critically ill general medicine patients has become widespread while the evidence to support such use is lacking. As a result, some patients are receiving AST without any acceptable indication. This leads to an increased risk for the development of adverse effects associated with AST, including Clostridium difficile colitis. The purpose of this study is to determine the percentage of patients receiving inappropriate AST and to determine the economic impact incurred by both the patient and institution. In addition, this study will explore the incidence of Clostridium difficile colitis in patients using AST. Methods: This was a retrospective, observational chart review on patients admitted to the institution between June 2012 and June 2013 who had active orders for AST. Patients were included in a singular fashion and were not counted for multiple admissions. Inclusion criteria include all patients admitted or transferred to our general medicine units with an active order for AST. All patients discharged from the ICU were excluded. Patient records were reviewed for AST use and indication in the following instances: prior to admission, inpatient, and upon discharge. Acceptable indications for AST include those approved by the FDA as well as additional indications supported by medical literature. The economic impact for patients inappropriately discharged on AST was estimated using the average wholesale price of the selected medication extrapolated to reflect one year of prescriptions. The economic impact on the institution was estimated using the hospitals acquisition cost for the selected medication. Patients included also had an additional retrospective review looking for any 90 day readmissions with a diagnosis of Clostridium difficile colitis. Results: Results and conclusions to be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify accepted indications which warrant the use of acid suppression therapy

Review the adverse effects associated with acid suppression therapy

Self Assessment Questions:

Which of the following is considered an accepted indication for acid suppression therapy use in non-critically ill general medicine patients?

A Lower gastrointestinal bleed
B: Hiatal hernia
C: Gastroesophageal reflux disease
D: Stress ulcer prophylaxis

Adverse effects which may be associated with acid suppression therapy use include

A Clostridium difficile colitis
B Hypermagnesemia
C Urinary tract infection
D Bradycardia

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-837 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PHARMACIST GUIDED METHADONE OPIOID ROTATION IN HOSPICE PATIENTS THROUGH AN INTERDISCIPLINARY METHADONE FOLLOW-UP PROGRAM

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Purpose: Methadone can be used effectively for pain management in patients with a poor response to other opioids; however, despite the potential clinical and economic benefits, methadone is used less commonly than other opioids in the hospice setting. Review of existing literature reveals limited studies regarding the efficacy of conversion to methadone in hospice patients, and no studies exist describing a methadone follow-up program in the hospice setting. The purpose of this study is to evaluate methadone opioid rotation in hospice patients who were referred to a methadone follow-up program. Methods: This was a retrospective study at a national pharmacy benefits management company which has an established methadone follow-up program. Pre-methadone and post-methadone pain scores were used to determine if conversion to methadone was successful which was defined as at least a 33% decrease from the patients baseline pain score following initiation of methadone. Data regarding the acceptance rate of the pharmacists dosing recommendations for methadone was also collected.

Preliminary Results: A total of 344 patients were referred to the program between May 1, 2013 and November 30, 2013, and methadone was initiated in 285 of these patients. Pre-methadone and post-methadone pain scores were documented in 110 patients, and 76 (69.1%) patients met the definition for successful conversion. Overall, pharmacists methadone dosing recommendations were fully accepted 71% of the time. Conclusion: The preliminary results of this study provide support to methadone opioid rotation in hospice patients as well as the role of pharmacists in an interdisciplinary methadone follow-up program.

Learning Objectives:

Describe potential advantages and barriers to using methadone for pain management in hospice patients

Discuss the impact of a multidisciplinary methadone follow-up program on pain management for hospice patients

Self Assessment Questions:

Which of the following is a disadvantage of methadone for pain management?

A Less expensive than other long-acting opioid medications
B: Multiple methadone dosing protocols
C: Lack of active metabolites
D: Effectiveness against neuropathic pain

Which of the following are potential barriers to the use of methadone as an analgesic?

A Stigma associated with methadone
B Concerns regarding patient monitoring upon initiation of methadon
C Lack of understanding regarding the role of methadone in pain ma
D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-838 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

VALIDATION AND EXPANSION OF HOME INTRAVENOUS ADMINISTRATION OF CONTINUOUS INFUSION, MULTIDAY CHEMOTHERAPY REGIMENS

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PURPOSE: There has been unprecedented growth in the oncology service line at Froedtert Hospital and Clinical Cancer Center over the past 5 years. As a result, oncology services need to adapt to the increased demand and patients expectations. Expansion of treatment options must occur to provide safe and efficient services. The purpose o this study is to validate the transition of (R)EPOCH (etoposide, prednisone, vincristine, cyclophosphamide, and hydroxydaunorubicin with or without rituximab)to home administration. The second phase of the project will include expansion of AIM (Adriamycin [doxorubicin], ifosfamide, and mesna). □□METHODS: This is a retrospective review and cost comparison with validation of current practices and plan for expansion. The primary objective is to quantify the number of inpatient bed days avoided by transitioning (R)EPOCH to home administration. Secondary outcome measures include assessment of patient safety outcomes, quantification of patients transitioned to home infusions, and evaluation of opportunities for cost savings. Additional analysis of primary and secondary outcome measures will occur with expansion. □□

PRELIMINARY RESULTS: From March 2013 through July 2013, 2 of 8 possible patients transitioned to home (R)EPOCH administration. A tota of 9 cycles were completed successfully, resulting in 45 inpatient bed days saved. No additional safety concerns were identified. Over $29,000 in drug costs were saved over the 5 month period between the 2 patients. The expansion of an additional regimen will take place in February with additional results to be presented.□□CONCLUSION: Home administration of (R)EPOCH was successfully implemented, resulting in a significant number of inpatient bed days saved, despite only a 25% transition rate in the first 5 months. The transition also resulted in drug cost savings, due to lower costs in the outpatient setting These benefits came with no appreciated increased safety risk to the patient. Additional conclusions will be drawn following the expansion.

Learning Objectives:

Review potential benefits of transitioning patients from inpatient to home therapy for continuous infusion, multiday chemotherapy.

Identify potential challenges of transitioning patients from inpatient to home therapy and methods to overcome these barriers.

Self Assessment Questions:

Which of the following statements is true?

A There are few cost savings opportunities when transitioning patien
B: The initial review of the (R)EPOCH patients who made the transitic
C: Both AIM and (R)EPOCH regimens are able to be administered in
D: Every eligible patient receiving AIM will be transitioned from inpatie

Which of the following are potential methods for overcoming challenges when transitioning treatment to home infusion?

A Ignoring inclusion and exclusion criteria to transition as many patie
B Working closely with an interdisciplinary team to develop protocols
C Focusing only on the potential pharmacy impact.
D Avoid transitioning any additional regimens as there are too many

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-839 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF PHARMACIST IMPROVEMENTS IN CARE AT DISCHARGE: MEDICATION RECONCILIATION, DISCHARGE COUNSELING, AND BEDSIDE DELIVERY OF MEDICATIONS (E.P.I.C.-DISCHARGE STUDY)

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Purpose: One of the largest problems facing patient care today is the lack of smooth transitions from the hospital to the community. Bronson Methodist Hospital recently implemented a pharmacy-based program fo medication reconciliation, patient discharge counseling, and bedside delivery of medications at discharge. The goal of this program was to explore whether pharmacist interventions at discharge would improve patient medication outcomes through error prevention and increased patient knowledge of medications. The secondary goals were to increase patient satisfaction with pharmacy services at the hospital and to increase the revenue and number of prescriptions obtained for filling at the Bronson outpatient pharmacy. The goal was that beside delivery of outpatient prescriptions may remove barriers to obtaining prescriptions for patients in the community.□□Methods: This study was a retrospective chart review examining the impact of pharmacists on medication reconciliation, discharge counseling, and bedside delivery of medications in the orthopedic surgical unit at Bronson Methodist Hospital from October 1st through 31st, 2013.□□Results: 157 patients received discharge medication reconciliation during the month of October. 33% of the finalized medication lists were found to have an error upon discharge. The most common type of error was an unnecessary medication prescribed/continued upon discharge. Seven patients had an error classified at a level of severity which could have contributed to patient harm if not discovered. A total of 102 prescriptions were filled by the outpatient pharmacy, with an average revenue of $14.30 per prescription. HCAHPS scores regarding medication communication surpassed the threshold for value based purchasing in the last quarter, only after implementation of this program.□□Conclusions: Pharmacists discharge services improved transition of care for patients at Bronson through identification of errors, medication counseling, and facilitation of filling outpatient prescriptions. Patient satisfaction with the program improved medication-related HCAHPS scores. Revenue was generated for the organization.

Learning Objectives:

List some possible benefits of implementing a pharmacy-based program for medication reconciliation, patient discharge counseling, and bedside delivery of medications at discharge.

Identify some barriers to implementing pharmacist services at discharge and some solutions to overcoming those barriers.

Self Assessment Questions:

Which of the following is a possible benefit of pharmacist involvement in the discharge process?

A Increase in medication errors upon discharge
B: Increased patient satisfaction with pharmacy services at the hospi
C: Decreased patient knowledge and awareness of new medication r
D: Decreased accessibility to obtaining medications in the outpatient

Which of the following is a possible barrier to implementation of pharmacist discharge services?

A Insufficient staffing
B Efficient use of technology
C Supportive interdisciplinary teams
D Good communication between pharmacy and nursing

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-840 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF A CLINICAL TOOL TO ASSIST PHARMACISTS AND PROVIDERS IN ASSESSING AND MANAGING DRUG INTERACTIONS THAT CAN PROLONG THE QT INTERVAL

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Prolongation of the QT interval, particularly beyond 500 milliseconds, is associated with increased risk of arrhythmias, most notably torsade de pointes. Over 100 medications are implicated in QT prolongation including antiarrhythmics, antipsychotics, antihistamines, and antimicrobials. The purpose of this project is to develop and present education for pharmacists and providers on managing medications in patients at risk for prolonged QT intervals and to develop a decision support tool within the electronic medical record (EMR) to facilitate appropriate drug therapy management to mitigate that risk. To establish a baseline of current practice for monitoring and management of patients at risk for developing prolonged QT intervals, a retrospective review of patients who received two high risk medications, one high risk medication combined with a moderate risk medication, or two moderate risk medications will be conducted. Risk level will be determined based on literature review. Quality indicators including electrolyte monitoring, QT interval monitoring, and number of QT prolonging agents will be assessed. A decision support tool will be developed to provide guidance on appropriate management of drug therapy in patients receiving QT prolonging medications. In addition, the current drug interaction notification system within the EMR will be assessed for clinical utility of warnings and updated appropriately to support clinical decision making. Education will also be developed and provided to pharmacists and providers on how to utilize the decision support tool as well as how to manage medication alerts. To assess the impact of the decision support tools and education, a retrospective review of patients on QT prolonging medications, as described above, will be conducted after implementation at a future time. Data collection is ongoing. Results will be presented a the Great Lakes Pharmacy Resident Conference

Learning Objectives:

Identify ways to monitor and manage interactions between QT prolonging medications.

Recognize medications with high, moderate, and low risk potential of QT prolongation.

Self Assessment Questions:

Which of the following are risk factors for QT prolongation?

A Female Gender

B: Hypokalemia

C: Heart Failure

D: All of the Above

Which of the following combinations of medications are most likely to prolong the QT interval?

A Sotalol and Metformin

B Lisinopril and Amiodarone

C Clarithromycin and Methadone

D Ondansetron and Ceftriaxone

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-929 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

INCIDENCE AND PREVALENCE OF DIABETES IN RENAL TRANSPLANT PATIENTS RECEIVING MAINTENANCE IMMUNOSUPPRESSIVE AGENTS AT JESSE BROWN VA MEDICAL CENTER

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Background/Purpose: Long standing diabetes, hypertension and glomerulonephritis are the most common causes of Stage 5 CKD (chronic kidney disease) accounting for 70% of all patients who require kidney transplantation. Renal transplant is the preferred treatment for most of these patients due to the significant improvement in quality of life. According to the Kidney Disease: Improving Global Outcomes (KDIGO) clinical practice guidelines, the backbone of the current maintenance immunosuppressive(IMS) regimen consists of a calcineurin inhibitor (CNI) such as cyclosporine, sirolimus or tacrolimus and an antimetabolite agent such as mycophenolate or azathioprine, with or without corticosteroids. Although there has been an increase in graft survival rates with these agents, they can also cause complications such as new onset diabetes after transplantation (NODAT), dyslipidemia, hypertension, post transplantation anemia, electrolyte abnormalities, neurological complications, cardiovascular complications and malignancy. Diabetes has shown to be associated with cardiovascular morbidity and chronic allograft dysfunction, therefore proper management in post renal transplant patients is imperative. The lack of standardized guidelines has challenged clinicians on how to manage complications including diabetes resulting from the use of IMS agents. The objective of the study is to evaluate the incidence and describe the current management of NODAT and if needed guide the development of new recommendations for managing diabetes in post renal transplant patients. Data from this study may help minimize hospitalizations, health care costs, and graft failures. Methods: This is a retrospective electronic chart review of veterans with an International Statistical Classification of Diseases and Related Health Problems (ICD-9) code diagnosis for renal transplant. Patients who have received a kidney transplant and who take maintenance IMS agents, filled at least twice between 1/1/1997 and 9/1/2013 at Jesse Brown VAMC were included in the study. Results and Conclusions: Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference (April 23 25, 2014).

Learning Objectives:

Describe the pathophysiology of side effects associated with calcineurin inhibitors and how these can lead to long term complications.

Recognize the combination of immunosuppressive agents that are typically used in renal transplant patients.

Self Assessment Questions:

Which of the following is not one of the side effects associated calcineurin inhibitors?

A Electrolyte abnormalities

B: Leukopenia

C: Nephrotoxicity

D: Neurotoxicity

Which of the following combinations of immunosuppressive agents is considered as the standard of care in renal transplant patients?

A Cyclosporine and azathioprine

B Sirolimus and mycophenolate

C Tacrolimus and mycophenolate

D Tacrolimus and azathioprine

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-612 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF THE RATE AND IMPLICATIONS OF VANCOMYCIN TROUGHS DRAWN EARLIER THAN CURRENT GUIDELINES IN HOSPITALIZED PATIENTS

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Purpose: Current Infectious Diseases Society of America (IDSA) guidelines recommend the use of trough measurements to monitor intravenous (IV) vancomycin treatment. Troughs should be obtained in steady state conditions, usually just prior to the next dose. The primary objective of this study is to measure the rate of early trough measurements and their effect on changes in vancomycin regimens. Secondarily, it will examine the rate of repeat vancomycin trough level orders in early versus correctly timed samples. □□Methods: Patients were identified through a Computerized Patient Records Systems (CPRS) search for laboratory vancomycin level measurements between July 1, 2009 and July 1, 2013. The following information will be gathered from CPRS: age, gender, type of clinical infection and desired trough level, sample collection time, vancomycin administration time, clinical actions taken during the dosing interval immediately following sample collection (continued same dose, held dose, decreased dose, and discontinued dose), and repeat vancomycin trough level orders. Genera observations from data gathering will be recorded. Clinical actions taker following a trough reading and repeat vancomycin trough orders will be compared between early and correctly timed trough measurements. □□

Summary of Results: Data has not been collected. Information will be presented at Great Lakes.□□Conclusions Reached: To be presented at Great Lakes.

Learning Objectives:

Outline current IDSA guidelines for monitoring of vancomycin.

Describe the possible outcomes of early vancomycin trough measurements.

Self Assessment Questions:

According to the IDSA, what is the most "accurate and practical method to monitor vancomycin?"

A Peak serum concentrations at steady state starting just after the fi
B: Multiple serum vancomycin concentrations are used to calculate th
C: Trough serum concentrations at steady state starting just before th
D: Trough serum concentrations at steady state starting just before th

If a vancomycin level is drawn prior to steady state, does this affect how the level is interpreted?

A No. The steady state level will usually be the same as what was m
B Yes. The steady state level will usually be higher than what was m
C Yes. The steady state level will usually be lower than what was m
D Yes. Due to the complicated kinetics of vancomycin, it is unclear v

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-613 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

VANCOMYCIN DOSING IN OBESE PATIENTS

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Purpose: Vancomycin is utilized for the treatment of gram-positive bacterial infections. The pharmacokinetics of vancomycin have been extensively studied and the kinetics vary in the obese population. Obese patients may require vancomycin dosing that is inconsistent with current guidelines; however there is a lack of data in this area. This study is designed to investigate empirically dosed vancomycin in obese patients. We hypothesize that the percentage of obese patients within the goal trough range upon first appropriate trough draw will be less than the percentage of non - obese patients.□Methods: This study will be a retrospective chart review at the Louis Stokes VAMC (LSCDVAMC). The primary objective is to compare percentage of first appropriately collected vancomycin troughs within the goal therapeutic range in obese versus non - obese patients. All inpatients on general medicine floors between October 3, 2010 and August 31, 2013 who meet the inclusion criteria will be evaluated. Approval from the Institutional Review Board has been obtained. Inclusion criteria include: 18 years of age or older, inpatient at LSCDVAMC, at least 1 appropriately collected vancomycin level, and at least 3 consecutive doses of vancomycin therapy. Exclusion criteria are as follows: any dialysis, acute renal failure, creatinine clearance less than 30 mL/min, goal vancomycin trough other than 15-20 mg/L, or any repeat patient who was previously included in the study. Data collected includes demographics, initial dose and length of duration of vancomycin therapy, trough levels, and renal function. A sample size of 126 patients is needed to meet power. P values < 0.05 are statistically significant. Comparisons between two groups will use a student t-test for continuous variables and chi-square tests for nominal variables. Comparisons of three or more groups will use ANOVA tests. □

Results and Conclusions: Results and conclusions to be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review current vancomycin dosing and monitoring guidelines and recommendations in the obese population.

Discuss literature that evaluates vancomycin - dosing in the obese population

Self Assessment Questions:

What is the goal AUC/MIC ratio to maximize bacterial killing if the MIC < 1?

A >150
B: >400
C: >700
D: >1000

Which of the following is true regarding vancomycin pharmacokinetics in obese patients?

A Decreased half-life
B Increased nephrotoxicity
C Decreased vancomycin clearance
D Decreased volume of distribution

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-614 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DIABETIC KETOACIDOSIS IN PEDIATRIC PATIENTS: A SURVEY OF GUIDELINE COMPLIANCE AND A RETROSPECTIVE REVIEW OF A GUIDELINE BASED APPROACH TO MANAGEMENT

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Purpose: Diabetic ketoacidosis (DKA) is characterized by hyperglycemia, acidosis, and ketonuria. Improper management may result in detrimental consequences. The International Society for Pediatric and Adolescent Diabetes (ISPAD) has published guidelines for the proper management of DKA in children and adolescents with diabetes. The purpose of this study was to assess understanding and compliance of these guidelines within Huntington, WV and the surrounding area as well as to assess the outcomes of pediatric patients treated with a guideline based approach to DKA management. Methods: This study was approved by the Marshall University Institutional Review Board. A questionnaire was mailed to emergency department physicians that practice in hospitals surrounding Huntington, WV. The survey assessed their awareness of pediatric DKA clinical practice guidelines, which specific protocols the physicians utilized, and the current management of pediatric DKA in hospitals surrounding Huntington, WV. Additionally, a retrospective chart review was performed on pediatric patients, ages 0-18 years of age, who were admitted to the pediatric intensive care unit (PICU) with a diagnosis of DKA between January 2010 and June 2013 at our institution. Pregnant patients were excluded. The primary endpoint was time to resolution of DKA. Secondary endpoints included length of stay in the PICU, total length of stay in the hospital, severity of DKA upon admission, incidence of adverse effects, and time to resolution of DKA components including: hyperglycemia, anion gap and acidosis. The management of DKA at our institution and the survey results were compared to the recommendations provided by the ISPAD to assess outcomes as well as to identify areas for improvement and education. Results and Conclusions: To be presented at the Great Lakes Pharmacy Residency Conference

Learning Objectives:

Identify appropriate management strategies for diabetic ketoacidosis in pediatric patients

Recall causes of morbidity and mortality in pediatric patients who present with diabetic ketoacidosis

Self Assessment Questions:

Which of the following is recommended for the management of pediatric DKA?

A potassium should only be replaced in symptomatic patients

B: crystalloid solutions should be utilized for water and salt replaceme

C: sodium bicarbonate should be administered once arterial pH <7.3

D: all patients should receive an insulin bolus followed by a high dose

Which of the following is the leading cause of mortality in pediatric DKA?

A hyperkalemia

B hypoglycemia

C cerebral edema

D sepsis

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-615 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PHARMACIST-INITIATED PSYCHOTROPIC MEDICATION REVIEWS TO ASSURE OPTIMAL SAFETY MONITORING IN PATIENTS RECEIVING BEHAVIORAL HEALTH SERVICES IN A FEDERALLY QUALIFIED COMMUNITY HEALTH CENTER.

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STATEMENT OF PURPOSE: As a quality improvement (QI) project, pharmacists perform electronic health record (EHR) reviews of psychiatrically-complex patients to provide recommendations regarding appropriate monitoring of psychotropic medications to primary care providers (PCP). Objectives are to: eport change in percentage of patients up-to-date on recommended laboratory monitoring and Abnormal Involuntary Movement Scale (AIMS) assessment for psychotropic medications, and minimize percentage of patients at risk of clinically relevant drug interactions. STATEMENT OF METHODS:

Pharmacists quarterly receive a list of patients from behavioral health team who received one-time consultation with the clinic psychiatrist. Pharmacists review the EHR, and document and route recommendations to the PCP. Data for each patient will be recorded in a de-identified database that specifies whether laboratory monitoring and AIMs assessment were up-to-date, and whether drug interactions were present at time of pharmacy review (pre-data set). A second retrospective EHR review will be performed for the same patients 2 months following initial pharmacy review to evaluate the same parameters (post-data set). Data will be used to evaluate impact of the QI project by comparing percentage of patients up-to-date on laboratory monitoring and AIMS assessment, and at risk for drug interactions following pharmacists recommendations. McNemar test will be used to evaluate for statistically significant differences. Feedback will be collected from PCPs via survey to evaluate the utility of the QI project. SUMMARY OF PRELIMINARY RESULTS: Reviews for 4 quarters are targeted for QI project, currently pre-data for three quarters has been collected (154 patients). Post-data collection for 4 quarters will be completed to report improvement in parameters being evaluated and results from statistical analysis using McNemar test. CONCLUSIONS

Evaluation of the QI project will determine if pharmacist initiated chart review increases monitoring of psychotropic medications and decreases possibility of drug related adverse effects and drug-drug interactions.

Learning Objectives:

Identify a process to initiate chart reviews by pharmacists to improve safety of psychotropic medication use in primary care.

Report impact of chart reviews by pharmacists on percentage of patients up-to-date on recommended monitoring parameters.

Self Assessment Questions:

What is being evaluated in the retrospective analysis?

A What is being evaluated in the retrospective analysis?

B: Whether patients are up-to-date on AIMS assessment

C: Whether drug interactions are present

D: All of the above

What percent of patients were up to date on laboratory monitoring at baseline?

A <25%

B 26-50%

C 51-75%

D >75%

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-616 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DAPTOMYCIN VERSUS VANCOMYCIN FOR THE TREATMENT OF METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS BLOOD STREAM INFECTIONS WITH VANCOMYCIN MINIMUM INHIBITORY CONCENTRATION GREATER THAN OR EQUAL TO 2 MG/L

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Purpose: Daptomycin has been studied as a potential alternative to vancomycin for the treatment of methicillin-resistant Staphylococcus aureus (MRSA) bacteremia when the vancomycin minimum inhibitory concentration (MIC) is greater than or equal to 2 mg/L; however, studies thus far have had mixed results as to which option has improved clinical cure rates. The purpose of this trial is to compare clinical outcomes of treatment with daptomycin versus vancomycin for patients with MRSA bacteremia with a vancomycin MIC greater than or equal to 2 mg/L.

Methods: This retrospective, single-center, cohort study was approved by the University of Louisville Investigational Review Board on December 17, 2013. Inpatients between June 2008 and June 2013 were included if they were at least 18 years old, had positive MRSA blood cultures with vancomycin MIC greater than or equal to 2 mg/L, received greater than 72 hours of daptomycin or vancomycin, and had a target vancomycin trough of 15 to 20 mg/L. Patients were excluded from the trial if the primary source of bacteremia was pneumonia, if they received more than 72 hours of alternative MRSA coverage prior to initiation of vancomycin or daptomycin, or if their renal function did not allow for scheduled dosing of vancomycin. The primary outcome was clinical failure, defined as persistent bacteremia or in-hospital mortality; secondary outcomes included time to negative blood culture, reoccurrence of infection, or hospital readmission within 30 days. Safety endpoints included nephrotoxicity or creatine kinase elevations. Economic outcomes included length of stay, cost of therapy, and total cost of hospitalization. Categorical variables were analyzed using the ch squared test or Fishers exact test, while continuous variables were analyzed using the Students t test or the Mann-Whitney U test.

Results: To be presented at Great Lakes Pharmacy Resident Conference.Conclusion: To be presented at Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Explain the current guideline recommendations for the treatment of MRSA bacteremia.

Identify the CLSI breakpoints for MRSA susceptibility to vancomycin.

Self Assessment Questions:

Which of the following is appropriate first line treatment for uncomplicated MRSA bacteremia?

A Vancomycin, goal trough 10-20 mg/L

B: Vancomycin, goal trough 15-20 mg/L

C: Daptomycin, 10 mg/kg

D: Daptomycin, 12 mg/kg

Which of the following is the CLSI breakpoint for MRSA susceptibility to vancomycin?

A 1 mg/L

B 1.5 mg/L

C 2 mg/L

D 4 mg/L

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-617 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPROVEMENT IN PATIENT SATISFACTION AND COMMUNICATION WITH THE PHARMACIST DURING WALKING APPOINTMENTS VERSUS STANDARD SITTING APPOINTMENTS

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Purpose: Bridges to Health is a pharmacist-run disease state management program through Community Health Network for patients with diabetes, dyslipidemia and asthma. The pharmacists provide education on disease states, lifestyle modifications and medication management. In this study, we are evaluating if changing the appointment setting to walking appointments improves patient communication and satisfaction. Previous studies with walking appointments have looked at improvement in outcomes with physical activity. Our goal is to improve communication based on the study of interactions by Deborah Tannen, PhD. Dr. Tannen observed the alignment of bodies can affect how comfortable a person is in conversation with another person, especially men. Typical squared-off shoulders, face-to-face interaction can produce intimidation for the patient, and it is suggested a side-by-side interaction can improve communication. Methods: Patients were recruited through the Bridges to Health diabetes and dyslipidemia program. Two patient groups were created from the two residents patient population. Criteria for inclusion include 18 years or older and a new patient to the Bridges to Health program. The patient population of the primary investigator (resident A) was given the option to participate in walking appointments. The second group of patients was seen by resident B in a standard appointment setting. This population was used as control data. The beginning of all patient appointments remained the same, in which the patient presents to the providers office and basic information is gathered. After this information is obtained, resident A and the patient began the 20-30 minute walking appointment. Standard documentation in the EPIC CareConnect electronic medical record system remained the same between the two groups. Preliminary data: Data collection is ongoing through a patient satisfaction survey. Conclusions: Results and conclusions will be presented at the 2014 GLPRC

Learning Objectives:

Identify a potential method to improve patient communication and satisfaction

Discuss common barriers to patient communication

Self Assessment Questions:

Which patient population may benefit the most from side-by-side interactions based on observations by Dr. Tannen?

A Women

B: Men

C: Children

D: Elderly

Which of the following could be identified as a barrier to patient communication?

A Sitting behind a desk

B Maintaining eye contact

C Actively listening

D Using patient-friendly terms

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-618 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF THE SAFETY AND EFFICACY OF A COLISTIN DOSING PROTOCOL

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Background: Originally introduced in the 1950s, the polymyxins were quickly replaced by efficacious antimicrobial agents with superior safety profiles. The increase in multi-drug resistant organisms, in particular Pseudomonas aeruginosa, Acinetobacter baumannii, and Klebsiella pneumoniae, has brought about a reemergence of polymyxin use. Colistin, also known as polymyxin E, is an inactive prodrug approved before the FDA mandated rigorous dosing and pharmacokinetic investigations. Based upon recently published pharmacokinetic data, Norton Healthcare implemented a colistin dosing protocol to standardize dosing and minimize adverse effects. The purpose of this study is to validate the safety and efficacy of the colistin dosing protocol.

Methods: This retrospective study included patients admitted to Norton Healthcare hospitals between August 2011 and July 2013. Patients were excluded if they were pregnant, had cystic fibrosis, received less than 48 hours of colistin, or received inhaled colistin only. The colistin dosing protocol was implemented in July 2012. Two groups were compared. The control group consisted of patients before implementation of the protocol; the treatment group consisted of patients after implementation of the protocol. The primary endpoint compared the incidence of nephrotoxicity and clinical response rate between the control and treatment group. The secondary endpoints compared the safety and efficacy of colistin in patients who received colistin monotherapy versus combination therapy and the safety and efficacy of the colistin dosing protocol in patients on renal replacement therapy

Results/Conclusions: Data collection is currently in progress. Results and conclusions will be presented at 2014 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Define the spectrum of activity of colistin

Describe how a colistin dosing protocol maximizes the kinetic parameters of colistin

Self Assessment Questions:

Which Gram-negative organism is intrinsically resistant to colistin?

A Pseudomonas aeruginosa
B: Acinetobacter baumannii
C: Moraxella morganii
D: Klebsiella pneumoniae

Which of the following is a limitation of a standardized colistin dosing protocol?

A Universal loading doses
B Dose maximum of 300 mg per day
C Renal dose adjustments
D Variability in units of measure ordered

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-619 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PHARMACY FACILITATION OF GLYCEMIC CONTROL: EXPANSION OF A BASAL BOLUS PROTOCOL

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Purpose: Proper glycemic control has been shown to decrease wound healing time, length of stay, and mortality. In anticipation of core measures tracking glycemic control, Ingalls Memorial Hospital has expanded its basal bolus insulin protocol to comprise all diabetic surgica patients requiring a planned overnight stay. The objective of this study was to evaluate the safety and efficacy of the basal bolus protocol in this patient population. Methods: This study was exempt from the Institutional Review Board. All diabetic patients who underwent surgery requiring a planned overnight stay at Ingalls Memorial Hospital after October 13th, 2013 had a pharmacist initiated and managed basal bolus insulin protocol to achieve recommended glycemic control. Eligible patient lists were generated by HER workflow prior to surgery. Prior to admission, selected patients received a phone call from a pharmacist explaining the protocol, as well as discussing which of the patients diabetic medications were to be taken or held prior to admission. Multiple stratifications were used to further evaluate if adjustments should be made to the current protocol. The number of documented hypoglycemic events, the amount of time spent by pharmacy, and the number of patients with 0600 blood glucose measurements on post-operative day 1 and 2 less than 200 were assessed. Results/Conclusions Results and conclusions to be presented at Great Lakes Residency Conference

Learning Objectives:

Explain the role of basal insulin in coordination with basal bolus regimens.

Review the American Diabetes Association's definition of hypoglycemia

Self Assessment Questions:

The basal aspect of a basal bolus insulin regimen is:

A long-acting and given on a scheduled basis.
B: long-acting and given on an as needed basis.
C: short-acting and given on a scheduled basis.
D: short-acting and given on an as needed basis.

The American Diabetes Association defines hypoglycemia as blood glucose reading less than:

A 80 mg/dL
B 140 mg/dL
C 70 mg/ dL
D 120 mg/dL

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-620 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

AGE ADJUSTED VANCOMYCIN DOSING PROTOCOL FOR THE ELDERLY

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Purpose: Current methods utilized to initiate renally adjusted medications at our institution are based on weight and estimated creatinine clearance (CrCl) using the Cockcroft and Gault equation. Factors such as age, body composition and disease can also play a role in a patients ability to renally eliminate medications. Elderly patients display a combination of these factors which make dosing for this population more difficult. Currently there is a lack of literature to support measures that involve modifying values in an attempt to account for these factors, and many rely on practices that are handed down in training. One of these practices involves rounding serum creatinine (SCr values when calculating a CrCl for a patient. The concern is by utilizing this practice this may lead to subtherapeutic serum levels of initial and maintenance therapy. In an effort to account for such changes, the purpose of this study is to determine if a standardized, age adjusted vancomycin dosing protocol for patients 75 years and older will yield consistent serum vancomycin levels of 10-20 mcg/mL. Methods: This is a prospective study that will consist of collecting vancomycin data from individuals receiving an age adjusted dosing protocol at Hillcrest Hospita from January 2014-March 2014. This data will be compared to baseline data collected October 2013-January 2014. EPIC will be utilized to identify patients 75 years and older that received vancomycin during the study time frame and information collected will include demographics, cc morbidities relevant to renal function, concomitant use of nephrotoxic agents, CrCl calculation methods, vancomycin levels, and assessment of pharmacist intervention. Data will be analyzed using descriptive statistics. IRB approval was obtained. Results: In progress.

Learning Objectives:

Review creatinine clearance methods for dosing vancomycin.

Discuss therapy goals for elderly patients on vancomycin.

Self Assessment Questions:

Which equation is used as a gold standard when calculating CrCl?

A Jellife

B: Cockcroft and Gault

C: Mdrd

D: Salazar-Corcoran

What is the target serum level for vancomycin therapy?

A 5-10 mcg/mL

B 20-30 mcg/mL

C 10-20 mcg/mL

D 30-40 mcg/mL

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-841 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

INSTITUTION OF A PHARMACIST IN A PATIENT-CENTERED MEDICAL HOME: THE BENEFIT ON PATIENT OUTCOMES

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The purpose of this project was to identify the pharmacists role in a Patient Centered Medical Home (PCMH) that is also an Accountable Care Organization (ACO). The program is a 6-month pilot study utilizing a pharmacist in a PCMH to improve patient outcomes. IRB approval was obtained through Butler University. The first 2 months of the program, pharmacists identified high risk patients or those patients not meeting therapeutic goals, contacted the patient, and scheduled an appointment for the patient to see the pharmacist prior to the appointment with their physician. The medication reconciliation and char review were completed, and the recommendations identified were provided to the physician. Additionally, the pharmacists were available tc provide new medication education at the physicians requests. Physicians could also refer patients to the pharmacist for disease state management or poly-pharmacy simplification. Due to a low acceptance rate of the recommendations, it was decided to change the pharmacists role. Beginning the third month of the program, pharmacists will complete the Medicare Annual Wellness Visit (AWV) to help formulate preventive plans for patients and identify patients who are not currently up to date on screenings/vaccinations. Patients will be identified utilizing the Medicare CMS Secure Net Access Portal. These appointments will include completion of full medication reconciliation, medication-related education, and disease state management recommendations to the physician. Recommendations made since initiation of the program and percent of recommendations accepted will be recorded in a Microsoft Excel spreadsheet for review. Change in hemoglobin A1C, blood pressure, and lipid levels will be reviewed in the electronic medical record for those patients seen by the pharmacist. For patients completing the AWV, all recommendations, preventive screenings, and labs that were ordered will be recorded. The acceptance rate of recommendations made during the AWV will be analyzed. Complete results are expected in June 2014 after the pilot completion.

Learning Objectives:

Identify challenges commonly encountered during implementation of a pharmacist in a Patient-Centered Medical Home.

Explain the possible roles of a pharmacist in a PCMH and in the completion of the Medicare Annual Wellness Visit.

Self Assessment Questions:

Which of the following is a common challenge encountered in the implementation of a pharmacist in a PCMH?

A Physician support and acceptance of recommendations

B: Identification of recommendations by the pharmacist

C: Pharmacist knowledge of medications and disease states

D: Patient agreement in participating in a pharmacist ran appointmen

What should be a primary role of a pharmacist in a PCMH?

A Acquire a patient's height and weight upon checking into their app

B Perform disease state management utilizing a collaborative practic

C Update the patient's PMH before seeing the physician.

D Diagnose the patient with new problems during their appointment v

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-621 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

THERAPEUTIC DRUG MONITORING OF AZOLE ANTIFUNGALS IN PATIENTS WITH ACUTE LEUKEMIA OR MYELODYSPLASTIC SYNDROMES

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Background: Nearly all patients diagnosed with a hematologic malignancy will develop significant neutropenia. Prolonged neutropenia could occur because of the disease itself or secondary to chemotherapy and may last a few days to weeks, even indefinitely, depending on the patient and disease. This state of prolonged and profound neutropenia places patients at high risk for the development of invasive fungal infections (IFI). The Infectious Diseases Society of America (IDSA) currently recommends therapeutic drug monitoring (TDM) for patients receiving voriconazole and posaconazole that meet certain disease state criteria; however, these are not specific and include most patients that would be found to have an invasive fungal infection.□□Objectives: The primary objective is to determine the percentage of time TDM led to a change in therapy. Secondary objectives are to determine the percentage of patients who underwent TDM, to evaluate TDM procedures for accuracy, to identify predictive factors of performing TDM, and to assess incidence of toxicity in patients that underwent TDM. □□Methods: A retrospective chart review of adult acute leukemia and myelodysplastic syndrome patients will be conducted to characterize the use of TDM of voriconazole and posaconazole. Patients must be treated by the leukemia service and be receiving voriconazole or posaconazole for the treatment of or prophylaxis against an IFI to be included. Patients will be excluded if they are undergoing hematopoietic stem cell transplantation at the time of TDM. Data to be collected includes: demographics (gender, height, weight, smoking history), underlying malignancy, chemotherapy regimen, suspected site of infection, determination of fungal infection, azole drug, azole dose, interacting medications, and adverse events (if patient underwent TDM).□□Results and Conclusions: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe patient populations IDSA recommends for therapeutic drug monitoring of voriconazole and posaconazole

Identify drug interactions that make therapeutic drug monitoring of azole antifungals challenging

Self Assessment Questions:

Which is a patient population IDSA recommends receives therapeutic drug monitoring while on azole antifungal therapy?

A Patients receiving azole antifungals and antibiotics

B: Patients with hepatic dysfunction

C: Patients receiving dual antifungal therapy

D: Patients receiving continuous infusion of D5-0.2% NS maintenanc

Which of the following medications can cause ELEVATED serum drug levels of voriconazole?

A Calcium carbonate/Vitamin D

B Ceftaroline

C Clarithromycin

D Carbamazepine

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-622 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

CLINICAL OUTCOMES FOLLOWING IMPLEMENTATION OF AN UPDATED ADULT CRITICAL CARE SEDATION PROTOCOL INCLUDING THE USE OF DEXMEDETOMIDINE AND DAILY SEDATION INTERRUPTION

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Objective: Critically ill patients frequently require mechanical ventilation with sedation. Current critical care literature demonstrates a therapeutic benefit from daily sedation interruption and the use of nonbenzodiazepines, such as dexmedetomidine or propofol. Therefore, the Swedish Covenant Hospital critical care sedation protocol was updated to implement standardized patient selection criteria for appropriate medication use and daily sedation interruption. Findings from post-protocol implementation data collection may improve understanding of the therapeutic and practical value of adherence to an updated sedation protocol.□□Methods: A retrospective chart review was conducted pre and post sedation protocol implementation. Patients were included if they were 18 years and older, admitted to the ICU or IMCU during the periods of 11/2012-1/2013 (pre) and 11/2013-1/2014 (post), and received mechanical ventilation. Patients were excluded if they were pregnant, had a severe neurologic condition, were admitted for CABG, received a tracheostomy, were treated for substance withdrawal, transferred from a different institution, were moribund, or expired during the admission. The updated critical care sedation protocol included propofol, dexmedetomidine, lorazepam, and midazolam and was implemented by providing in-services to ICU and IMCU providers. Primary outcomes of duration of mechanical ventilation, ICU/IMCU length of stay, hospital length of stay, and protocol adherence based on charting of daily sedation interruption were measured. Cost of the four sedatives was measured as a secondary outcome. Patients charts from a computerized database were accessed to obtain admission, discharge, ventilation, protocol adherence, and medication data. Data were analyzed to determine any relationship to outcomes before and after the intervention.□□Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Explain the rationale for using a daily sedation interruption protocol.

Review the use of available sedatives for patients on mechanical ventilation, including drug selection, dosing, and monitoring.

Self Assessment Questions:

Which of the following is an exclusion to daily sedation interruption?

A Age over 65

B: Copd

C: Use of a neuromuscular blocking agent

D: On a ventilator beyond 7 days

Dexmedetomidine is FDA approved for continuous infusion for up to

A 24 hours

B 48 hours

C 72 hours

D No time limit

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-623 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION AND EVALUATION OF STANDARDIZED STAFF DEVELOPMENT PROCEDURES AT A VA PHARMACY CALL CENTEI

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Purpose: The Roudebush VAMC pharmacy call center has transformed into a multi-service, off-site triage service for all prescription related calls for the entire Veterans Integrated Service Network (VISN) 11. Numerous modifications to daily processes and staffing adjustments were implemented to service the increased call demand. Currently, no formalized staff development procedures or assessment plans exist for the expansion of personnel. With the opportunity for further expansion of services, staff at the call center require formalized training to ensure all calls and associated documentation are handled efficiently. The primary objective of this study is to evaluate the efficacy of implementation of standardized staff training policies and procedures. Methods: This quality-improvement study is exempt from Institutional Review Board approval. Current personnel training procedures of the VISN 11 Pharmacy Call Center will be observed and documented. This study wil utilize voice of the customer surveys and current state process mapping to identify operational barriers, waste process variation, and system redesign characteristics in order to develop and implement formalized staff training tools. The following data will be collected: personnel hiring criteria, training processes and benchmarks, evaluation measures, and overall job satisfaction. Preliminary Results: Voice of the customer surveys of pharmacists and technicians at the VISN 11 Pharmacy Call Center identified staff concerns regarding non-standardized training procedures, potential displays of favoritism from management, and limited feedback regarding training progress. Current state process mapping of training procedures identified barriers regarding assignment of trainers on and off-site, timeline of meeting expected competencies, and work space constraints. Conclusions Reached: Conclusions to be presented at Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Outline how staff training procedures can be streamlined to enhance efficiency using process improvement tools.

Identify three barriers to implementation of standardized staff training procedures and potential opportunities to overcome these barriers.

Self Assessment Questions:

Which of the following can be used to accurately assess the main problems associated with staff training procedures?

A Indirect observation

B: Voice of the customer surveys

C: Comment boxes

D: Documented complaints

Which of the following is a barrier to implementation of standardized staff training procedures?

A Limited number of qualified training personnel

B Increased duration of training time

C Decreased number of trainees

D Additional availability of training resources

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-842 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

PHARMACIST-LED INITIATIVE TO REDUCE HOSPITALIZATIONS AND LENGTH OF STAY IN THE TREATMENT OF VENOUS THROMBOEMBOLISM

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Purpose: Traditionally, treatment of venous thromboembolism (VTE) required hospitalization and bridging from a parenteral anticoagulant to therapeutic warfarin. Inpatient bridging therapy for VTE contributes to long hospitalizations and high medical costs. Current evidence-based guidelines recommend outpatient therapy rather than hospital admission, when appropriate, for the treatment of VTE. Standard practice is slowly transitioning to outpatient-based treatment for eligible patients, but the burden of self-administering injectable agents and frequent monitoring remains an obstacle for many. The objective of this study is to determine the effectiveness of a VTE protocol in reducing length of stay and hospitalizations. Methods: This study was approved by the Institutional Review Board prior to initiation. Patients are required to provide informed consent in order to participate in the trial. A pharmacy team was responsible for establishing and implementing a VTE protocol for patients being treated at home and in the hospital. The emergency department staff will use the protocol to determine the most appropriate treatment and disposition for patients presenting with VTE. Patients will receive their first dose in the emergency department prior to being discharged home or admitted to the hospital. Clinical pharmacists and social workers will assist in treatment optimization. Adherence to the protocol will be tracked through thorough chart review. The primary outcomes are length of hospital stay and hospital admissions from the emergency department. The data will be recorded over a four month period and will be compared to data from a retrospective group in the previous year. Results and Conclusions: Data collection and analysis is currently in progress. Final results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Identify criteria for outpatient treatment of venous thromboembolism.

Review therapeutic options for treatment of venous thromboembolism.

Self Assessment Questions:

Per 2012 ACCP Antithrombotic Guidelines, early discharge can be considered for patients with a PESI (Pulmonary Embolism Severity Index) score less than:

A 35

B: 60

C: 85

D: 100

Name one advantage of using rivaroxaban over warfarin for the treatment of venous thromboembolism:

A Rivaroxaban is more efficacious than warfarin

B Rivaroxaban has a quicker onset of action

C No laboratory monitoring is required with rivaroxaban

D Rivaroxaban carries a reduced bleeding risk

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-624 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

REDUCING FIRST DOSE TURNAROUND TIME AT A LARGE, ACADEMIC MEDICAL CENTER UTILIZING THE KAIZEN METHODOLOGY FOR PROCESS IMPROVEMENT

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Background:□□The provision of reliable, timely medication order processing and delivery is a crucial component of hospital pharmacy services. Although it used to be widely discussed in the 1980s and 1990s, medication turnaround time has not been a focus of more recent pharmacy literature. Our institution has made multiple attempts in recent years to decrease turnaround times from our primary pharmacy satellite, but interventions have been inconsistent and provided non-sustainable impact.□□Purpose:□□The purpose of this investigation was to implement sustainable practices to improve medication turnaround time utilizing the kaizen methodology for process improvement.
□□

Methods:□□A process improvement project was conducted at our institution from August 2013 through March 2014. The medication order review, preparation, and delivery process was divided into multiple areas of focus for intervention. These areas were time from order entry until order approval, time from order approval until preparation, time from preparation until product verification, time from verification until leaving the satellite, and time from leaving the satellite until delivery. A team of pharmacists, pharmacy technicians, administrators, and consultants performed kaizen events to evaluate efficiency and barriers of current processes in the aforementioned areas and implement sustainable changes. Times to complete each portion of the review, preparation, and delivery process were recorded and analyzed at baseline, after each event, and upon completion of all changes. Continuous follow-up was conducted throughout the 8-month time period to ensure consistent practices among all technicians and pharmacists in the satellite.
□□

Results and Conclusions:□□Data collection and analysis are currently being conducted, and results will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Define the Kaizen methodology for process improvement

Review the pharmacy literature that focuses on medication turnaround time

Self Assessment Questions:

Which of the following is consistent with the Kaizen methodology for process improvement?

A A top-down approach to process improvement.

B: A focus on continuous, incremental process improvement.

C: Deliberate process improvement events that are scheduled at regu

D: An approach that focuses on the rapid implementation of large sca

Which of the following statements is consistent with pharmacy turnaround time literature?

A Implementation of new technology always decreases turnaround ti

B Pharmacy literature from the 1980s and 1990s was never able to s

C Current pharmacy literature mainly focuses on computerized phys

D Medication tracking software has not been shown to decrease me

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-843 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

RENEWAL OF SCHEDULE II OPIOID ANALGESICS: A PROCESS REVIEW (PART 1)

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Purpose: At the Indianapolis VAMC, requests for most controlled substances, including C-II medications, are routed through the VISN 11 Pharmacy Call Center Triage. Several steps are involved in documenting the request, alerting the provider, placing the order, and filling of the prescription. Previously, a hard-copy or handwritten prescription was required for all Schedule II narcotics. However, with recent direction from the Drug Enforcement Administration (DEA), the Department of Veterans Affairs was given permission to begin ordering Schedule II prescriptions electronically, and thus, eliminating the need for hard-copy or handwritten prescriptions. The goal of this process improvement is to review past and current methods for renewal of Schedule II opioid analgesics. Methods: A retrospective, review of written and computerized records at the Richard L. Roudebush VAMC was conducted. Data was obtained from the VISN 11 Pharmacy Call Center Computerized Record Management (CRM), computerized patient record system (CPRS), decentralized hospital computer program (DHCP), and Opti-Fill prescription filling system, as well as actual written prescription forms. Steps involved in the renewal process as well as time data were reviewed both before and after implementation of electronic-prescribing. Conclusions: Renewal of Schedule II opioid analgesics before the implementation of electronic-prescribing required multiple steps and the involvement of several staff in order for the request to be processed, renewed, and filled. After implementation of electronic prescribing, the number of steps involved in the process decreased as well as the total time from request until mailing of the prescription. The implementation of electronic-prescribing significantly improved the Schedule II opioid renewal process.

Learning Objectives:

Outline the process of renewing a Schedule II opioid analgesic from patient request through mailing of prescription.

Identify potential areas of process improvement in the Schedule II opioic analgesic renewal process by determining which step was found to take the longest amount of time.

Self Assessment Questions:

Which of the following is a step in the Schedule II opioid analgesic renewal process?

A Triage documenting the renewal request

B: Prescription written by provider

C: Prescription entered and/or verified by pharmacist

D: All of the above

Which step in the renewal process required the most time?

A Time from patient call to CPRS note entry

B Time from CRPS note entry to physician writing prescription

C Time elapse between prescription written and pharmacist verificati

D Time elapse between prescription filled and checked

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-844 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

RATE AND SEVERITY OF ACUTE KIDNEY INJURY IN ADULT PATIENTS DUE TO SINGLE AGENT HIGH-DOSE METHOTREXATE

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PURPOSE: High dose methotrexate (HDMTX) is effective in the treatment of lymphomas affecting the central nervous system. One of the most significant adverse effects of HDMTX is acute kidney injury (AKI). The purpose of this study is to evaluate the rate and severity of HDMTX-induced AKI at Spectrum Health. The secondary objectives are to examine creatinine elevations following HDMTX and the effect of regimen-related renal dysfunction on patient length of stay and relative dose intensity (RDI). □□METHODS: A retrospective cohort study was performed which included adult patients who received single agent HDMTX for the treatment of central nervous system lymphoma between January 1, 2008 and December 31, 2013. Data collected from the electronic medical record included: demographics, laboratory studies, treatments, and hospital length of stay. RDI was defined as the ratio of delivered dose intensity to planned dose intensity. The severity of AKI and changes in creatinine were graded using the National Cancer Institute (NCI) Common Toxicity Criteria for Adverse Effects (CTCAE) version 4. □□RESULTS: To date, thirteen patients and 150 encounters were retrospectively evaluated. Grade 3 or greater AKI occurred in 3 encounters (2%). Three patients (23%) experienced grade 3 or higher creatinine elevations during at least one encounter. Patients with grade 3 or greater AKI spent mean 12.7 days (S.D. 5.5 days) in the hospital post-HDMTX compared with 5 days (S.D. 1.2 days) in the hospital post-HDMTX for those not experiencing AKI (p = 0.14). Additionally, patients with grade 3 or higher AKI received a RDI mean of 0.44 (S.D. 0.2) versus 0.91 (S.D. 0.1) in those not experiencing AKI (p < 0.01). □□

CONCLUSIONS: A minority of patients experienced AKI following HDMTX administration. Grade 3 or greater AKI significantly increased length of stay. Moreover, RDI was significantly reduced for patients with grade 3 or greater AKI.

Learning Objectives:

Recognize the adverse effects of high-dose methotrexate administration

Describe current ancillary treatments used to prevent and/or eliminate adverse effects following high-dose methotrexate administration.

Self Assessment Questions:

Which of the following adverse effects is associated with high-dose methotrexate (HDMTX)?

A QTc interval prolongation

B: Peripheral neuropathy

C: Acute kidney injury

D: Hand-foot syndrome

Which of the following is used to reduce the toxicities associated with high-dose methotrexate (HDMTX)?

A Sodium bicarbonate to maintain urine pH < 7

B Pantoprazole administration during HDMTX infusion

C IV hydration to maintain urine output > 50 mL/hr

D Leucovorin administration beginning 24 hours after HDMTX

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-930 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE CLINICAL AND FINANCIAL IMPACT OF A PHARMACIST-MANAGED DYSLIPIDEMIA EMPLOYEE PROGRAM.

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STATEMENT OF PURPOSE: □Community Health Networks pharmacist run employee wellness program, Bridges to Health, provides its employees and dependents with one-on-one, personalized care focused on disease state education and medication management. In addition to the opportunity to meet regularly with a clinical pharmacist, the program also provides financial incentive for patients by offering copay waivers for dyslipidemia medications. The purpose of this study is to measure the impact that the Bridges to Health dyslipidemia program has on both the health of our patients and Community Health Network.□□STATEMENT OF METHODS USED: □A retrospective chart review will be performed on all patients enrolled in the program between January 2013 and December 2013. To measure the impact of the program, reduction in low-density lipoprotein (LDL) will be measured as the primary outcome. The study will compare patients LDL result from the year prior to enrollment to the last LDL result of 2013. The following secondary outcomes will also be studied: total cholesterol, high-density lipoprotein (HDL), non-HDL, triglycerides, blood pressure, body mass index (BMI), composite of cardiovascular outcomes (as defined by Framingham study: angina pectoris, myocardial infarction, coronary insufficiency, coronary heart disease death, hemorrhagic stroke, ischemic stroke, antherothrombotic brain infarction, transient ischemic attack, stroke death, intermittent claudication, and congestive heart failure), and financial implication of cardiovascular outcomes. The following demographic information will also be collected: gender and age.□□SUMMARY OF RESULTS TO SUPPORT CONCLUSION: □To be presented at Great Lakes Pharmacy Resident Conference.□□CONCLUSIONS REACHED: □To be presented at Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the impact pharmacists have historically made in managing patients with dyslipidemia.

Discuss the clinical and financial impact of Bridges to Health on employees, dependents, and Community Health Network.

Self Assessment Questions:

Which of the following parameters was significantly impacted in the IMPROVE study?

A Blood pressure

B: Ldl

C: Triglycerides

D: Bmi

Bridges to Health offers which financial incentive for its patients?

A No deductible

B HSA contribution

C Copay waivers

D Reduced premiums

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-625 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DOES A PHARMACIST MAKE A DIFFERENCE IN THE MEDICATION DISCHARGE PROCESS ON A CARDIAC UNIT?

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PURPOSE: Medication reconciliation is an important National Patient Safety Standard. Medication reconciliation involves coordinating information during transitions of care, communicating recommendations with prescribers, and providing patient education on safe medication use. Inadequate communication and poor coordination of care are factors that can lead to adverse drug events during the discharge process. The purpose of this study is to assess the impact of a pharmacists intervention on the transitions of care through a co-managed medication discharge process in patients with heart disease. METHODS: This is a prospective quality study. Patients on a cardiology floor will be screened for the following inclusion criteria: prescribed at least five scheduled medications with a primary or secondary diagnosis of coronary artery disease, myocardial infarction, heart failure, or atrial fibrillation. The pharmacist will make discharge medication recommendations on a Discharge Medication Reconciliation and Order Review form. This form will be utilized as a tool during the discharge process. The pharmacist will compare the prescribed discharge medications to the recommendations made on the form and record rationale for discrepancies. Education on prescribed medications will be provided to patients near the time of discharge. Prospective data will be collected during the month of December 2013 and will be compared to a baseline discharge medication recommendation acceptance rate from the literature. The primary endpoint is the numbe of pharmacist recommendations accepted by the discharging provider. Secondary endpoints include the effect of pharmacist provided medication education on patient satisfaction scores and the rationale behind medication reconciliation discrepancies. RESULTS/CONCLUSIONS: Data collection and analysis are currently in progress. Final results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference 2014.

Learning Objectives:

Recognize factors that are involved with medication reconciliation

Identify why accurate medication reconciliation is important

Self Assessment Questions:

Which of the following are important aspects of medication reconciliation?

A Communication between providers

B: Not providing education to patients on safe medication use

C: Coordination of information between transitions of care

D: Both A and C

Accurate medication reconciliation is important during the discharge process because:

A The patient will go home on multiple medications for the same indi

B There can be a reduction in adverse drug events if it is completed.

C There will be a reduction in overall patient safety if it is completed.

D The patient's transition of care will be worse if it is completed.

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-626 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFECT OF A MULTIDISCIPLINARY INTENSIVE OBESITY TREATMENT PROGRAM ON WEIGHT LOSS AND CLINICAL MARKERS OF DIABETES, HYPERTENSION AND HYPERLIPIDEMIA IN A VETERAN POPULATION.

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Purpose: It is well known that obesity increases the risk of diabetes, hypertension and cardiovascular disease. One approach to treating obesity is using an intensive multidisciplinary weight loss program in the primary care setting. The objective of this study is to assess the efficacy of the VA health system MOVE! (Managing Overweight/Obesity for Veterans Everywhere) program in helping obese patients lose weight and to determine what effect, if any, it has on clinical markers of obesity, diabetes, hyperlipidemia and hypertension.

Methods: This study has received Institutional Review Board approval. A hospital-wide intensive multidisciplinary weight loss program currently exists which consists of a five month class that meets once every other week. Patients are voluntarily enrolled in the class if they have a body mass index (BMI) greater than or equal to 30 or a BMI greater than 25 with an obesity related disease state (i.e. diabetes mellitus, hypertension, dyslipidemia, degenerative joint disease, sleep apnea, metabolic syndrome, cardiovascular disease). The following data will be collected at baseline and at the end of the program: BMI, body fat composition, height, waist circumference, fasting lipid panel, A1C and ALT. Weight and blood pressure will be measured at each visit. No additional patient interventions will be made in the study by the investigator other than those already included and outlined in the existing weight loss program. Various descriptive statistics such as percent and average will be used to simplify and summarize data collected. A student t-test will be used to detect a difference in the group before and after completing the program.

Learning Objectives:

Recognize the association of obesity with poor health outcomes and its impact on healthcare costs.

Outline the obesity treatment approach of a multidisciplinary weight loss program

Self Assessment Questions:

Which of the following statements is correct?

A Modest weight loss (5-10%) has no impact on improving one's hea

B: Rates of obesity in the U.S. have begun to decline in recent years.

C: Modest weight loss can lead to a 28% reduction in hypertension ai

D: Despite the increased incidence of disease states such as diabete

Studies have shown that:

A The use of weight loss medications alone is an effective long-term

B Obesity treatment programs are only effective when used in conju

C Orlistat was found to result in significantly higher weight loss comp

D Behaviorally based obesity treatment has been shown to be equal

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-627 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF PHARMACIST PARTICIPATION IN A NEW OUTPATIENT TRANSITION-OF-CARE SHARED DISCHARGE VISIT PROGRAM ON 30-DAY READMISSION RATES

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Purpose: The purpose of this study is to evaluate a newly initiated transition-of-care shared discharge office visit program. The primary objective of this study is to determine the impact of pharmacist interventions, including a comprehensive medication review (CMR) and medication specific disease state education, on 30-day readmission rates in patients recently discharged from a community hospital.□□Methods: This study has been submitted to the institutional review board and approved with exempt status. The study was completed at the Fairview Hospital Center for Family Medicine clinic, at which an existing pharmacist managed ambulatory care clinic is established. All eligible adult family medicine patients discharged from the affiliated community hospital were scheduled for a transition-of-care visit within fourteen days of discharge. Standardized face-to-face transition-of-care visits were completed by a team consisting of an ambulatory care pharmacist, a care enhancement physician resident, and a nurse. The pharmacy portion of the visit included a comprehensive medication review and brief disease specific medication education. The pharmacist also participated in an integrated portion of the visit with the physician and patient. The ambulatory care pharmacist was responsible for 30 days of follow up care, including additional phone encounters and office visits. The primary outcome of interest is 30-day readmission rates of patients seen by the transition-of-care team during the study period. Several secondary outcomes have also been evaluated including the number and type of pharmacy interventions, frequency of acceptance of recommendations by the physician, identified risks for readmission, and tracking of Medicare reimbursement using the new CPT transition-of-care codes.□□Results: Data collection and analysis is currently in progress. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review the rationale for pharmacist participation in the implementation of an outpatient transition-of-care discharge visit program

Describe potential barriers encountered during implementation of an outpatient transition-of-care discharge visit program

Self Assessment Questions:

The use of transition-of-care CPT codes requires which of the following elements?

A Face-to-face visit within 90 days of discharge
B: Low risk for readmission
C: Communication with patient within 2 days of discharge
D: Length of admission >7 days

Which of the following is part of the pharmacy portion of the discharge visit?

A Physical Exam
B Comprehensive medication review
C Obtaining vitals and rooming
D Problem list reconciliation

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-628 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

A MULTI-CENTER EVALUATION OF INPATIENT CARBIDOPA/LEVODOPA THERAPY IN PATIENTS WITH PARKINSONS DISEASE (PD)

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Purpose: □Best practice recommendations advise that ant-Parkinson medications be administered according to the patients home schedule when patients are admitted to the hospital. The National Parkinson Foundation estimates that up to 75% of PD patients do not receive appropriate drug therapy during inpatient stays. This study seeks to assess the contribution of medication reconciliation to therapy and patient outcomes in hospitalized patients with PD who received oral carbidopa-levodopa.□□Methods:□Six months of oral carbidopa-levodopa administration charges from five community hospitals in centra Ohio were captured. Retrospective chart review of identified patients were conducted. Demographic and clinical data extracted from patient charts include gender, age, co-morbid conditions, neurology/gerontology consult, length of stay, and primary admitting diagnosis. A panel of pharmacists will independently assess accuracy of appropriate medication use, deviation from home medication schedule, and any possible complications that arose from the medication reconciliation process. This data will then be used to determine whether these patients received carbidopa-levodopa according to their home schedules. Those that did will be compared to those who did not. Additionally, data regarding contraindicated medication use (i.e. haloperidol) will also be recorded. Data regarding PD sequelae will be recorded and compared between the two groups. □□Data: Pending□□Conclusion: Pending

Learning Objectives:

Recall co-morbid conditions that place PD patients at risk

State sequelae associated with inappropriate PD therapy

Self Assessment Questions:

What is a co-morbidity that place PD patients at increase risk of adverse events?

A Sleep deficiency
B: Hypertension
C: Hypercholesterolemia
D: Diabetes

Which of the following is a sequelae directly related to inappropriate PD therapy?

A Sleepiness
B Drowsiness
C Rigidity
D Pulmonary Embolism

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-931 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF ANTIBIOTIC PRESCRIBING IN THE EMERGENCY DEPARTMENT

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Purpose: Patients admitted for an infectious etiology are often given initial antibiotic doses in the emergency department (ED). Studies show that appropriate antibiotic prescribing leads to improved patient outcomes. The primary purpose of this medication use evaluation was to evaluate how antibiotics are being prescribed in the ED with respect to dose, indication, and timeliness. The secondary purposes were to assess appropriateness of initial antibiotic therapy, length of stay, and all cause readmission rates in the next 30 days. Methods: The study was approved by the institutional review board at Franciscan St. Margaret Health. Patients included were at least 18 years old, evaluated in the ED and admitted to the hospital for over 24 hours, and received their first dose of antibiotics in the ED. A standard data collection form was used. Preliminary Results: 100 patients were included for analysis (average age 68.3 years, 49% male). Out of the 176 antibiotic doses prescribed in the ED, 60 were piperacillin/tazobactam (34%) and 43 were vancomycin (24.4%). Compared to the hospital protocol, vancomycin was dosed incorrectly in 27 (64%) of patients. Four patients were given inappropriate empiric regimens based on the hospitals empiric guidelines. Only 5 patients had antibiotics ordered via order sets. The average time to initiate antibiotics was 3.4 hours. For patients with suspected sepsis, the average time to first antibiotic dose was 3.1 hours. Average length of stay was 8.5 days. Thirty-three were seen again within the next 30 days, 12 of which were readmitted. Twenty-five patients had delays in second antibiotic doses for greater than one hour from next dose due. Results and Conclusion: Based on the preliminary results, there are several opportunities that may improve antibiotic prescribing in the ED. Final interventions and results of the interventions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the importance of appropriate antibiotic prescribing in the ED.

List factors to consider when selecting an appropriate empiric antibiotic.

Self Assessment Questions:

1)Which of the following can be seen when empiric antibiotics are appropriately prescribed in the emergency department?

A Decreased length of stay

B: Improved patient outcomes

C: Decreased readmission rates

D: All of the above

Which of the following are important points to consider when selecting empiric antibiotic therapy?

A Correct dose

B Timeliness

C Spectrum of activity

D All of the above

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-629 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLICATION OF THE VERIFYNOW P2Y12 ASSAY ON PATIENT OUTCOMES

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Purpose: The platelet inhibitory response of clopidogrel is substantially variable. Studies show that high platelet reactivity with clopidogrel is associated with increased risk of cardiovascular events after PCI. VerifyNow P2Y12, is an assay that specifically and rapidly monitors inhibitory effects of thienopyridine therapy. No studies to date have used this assay to analyze time to surgery in cardiothoracic (CTV) patients on thienopyridine therapy. Decreases in time to surgery and/or length of hospital stay could broaden its utilization to non-PCI patients. This study will evaluate clinical outcomes of CTV patients analyzed by VerifyNow P2Y12 compared to those not analyzed by VerifyNow P2Y12. Methods: This retrospective, single-center study has been approved by the Western Institution Review Boards for exemption. The institution is a 468-bed community hospital with approximately 1,000 bypass surgeries a year. The hospitals Information Technology department will identify patients who have received the VerifyNow P2Y12 assay since 2009. The primary objectives include determining if the utilization of the assay decreases pre-surgery time for CTV patients and/or decreases length of hospital stay. Secondary objectives include determining current clinical settings in which the assay is being used, evaluating if the assay results dictate changes in P2Y12 antiplatelet therapy, assessing the composite and individual incidence of all-cause death, myocardial infarction, stent thrombosis, stroke, and target vessel revascularization, and assessing the rate of major and minor bleeding events. In addition, the following data will be collected: patient age, gender, race, height, weight, serum creatinine, hemoglobin, hematocrit, platelet count, co-morbid conditions, other antiplatelet therapy, type of cardiovascular procedure, platelet function assay, use of blood products. Continuous data will be analyzed using an unpaired t-test, ANOVA and/or ANCOVA, and categorical data will be analyzed using a chi-squared test. Results and Conclusions: Data collection and analysis are currently in process. Final results and conclusions to be presented.

Learning Objectives:

Review the current American College of Cardiology Foundation/American Heart Association guideline recommendations regarding discontinuation of thienopyridine antiplatelet therapy for elective coronary artery bypass graft surgery

Identify the rationale for the utilization of platelet function monitoring assays

Self Assessment Questions:

When should clopidogrel be discontinued prior to elective coronary artery bypass graft surgery?

A At least 3 days prior to surgery

B: At least 5 days prior to surgery

C: At least 7 days prior to surgery

D: No discontinuation is required

Platelet function monitoring assays were developed because

A Patient response to clopidogrel is the same among all patients

B Low on-treatment platelet reactivity with clopidogrel is associated w

C High on-treatment platelet reactivity with clopidogrel is associated

D High on-treatment platelet reactivity with clopidogrel is associated

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-932 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

NEPHROTOXICITY COMPARISON IN TWO COMMERCIALLY AVAILABLE GENERIC VANCOMYCIN PRODUCTS

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Purpose The purpose of this single-center, retrospective, matched-cohort, quality assurance study is to investigate the independent effect of two different generic vancomycin products, those produced and marketed by Pfizer and Hospira, on the incidence of acute kidney injury (AKI). Methods All adult patients who received vancomycin for 48 hours or greater from May 2013 through November 2013 at Sinai-Grace Hospital were eligible for inclusion. Patients were identified using TheraDoc, a commercially available electronic data-capture software system. Patients were placed into either the Pfizer cohort or the Hospira cohort based on the generic vancomycin product they received. Patients exclusively received one of the two products for their entire course of therapy and were not eligible for the study if it was unclear whether or not they only received one agent. Patients were excluded if they had a pre-existing need for renal replacement therapy, were already in AKI, or had unstable renal function at the time of initiation of vancomycin therapy. Patients meeting inclusion criteria were matched one-to-one based on the five following AKI risk factors: baseline creatinine clearance, initial daily dose of vancomycin, duration of vancomycin, severity of illness based on sepsis grade, and the number of concomitant nephrotoxins. The primary endpoint was the incidence of vancomycin-associated AKI based on three definitions: the 2009 vancomycin consensus guideline definition, the Acute Kidney Injury Networks (AKIN) definition, and the RIFLE criteria. Secondary endpoints were need for renal replacement therapy, length of hospital stay, and in-hospital mortality. This study has received IRB approval. Results Summary / Conclusions Preliminary results and conclusions will be presented at the 2014 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

List variables known to be associated with vancomycin-associated acute kidney injury or nephrotoxicity.

Recognize the different factors behind the theory that different vancomycin products might be associated with different efficacy and toxicity profiles.

Self Assessment Questions:

1.Which of the following variables has not been associated with vancomycin-associated acute kidney injury in clinical investigations after 1990?

A Vancomycin dose and duration of therapy
B: Vancomycin product
C: Severity of Illness
D: Concomitant nephrotoxins

2.Which of the following are factors that could contribute to the potential for different rates of acute kidney injury with different vancomycin products?

A Historically, vancomycin-associated nephrotoxicity was associated
B The FDA allows for some degree of manufacturing variability withi
C In vivo studies have demonstrated a variance in potency between
D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-631 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

MORTALITY RATES OF INFANTS TREATED WITH HIGH-DOSE SILDENAFIL

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Purpose: Sildenafil is commonly used for the treatment of pulmonary hypertension (PH) in pediatric patients. Previous data have shown a decrease in mortality with sildenafil use for PH; however, the STARTS-2 trial described a dose-dependent increase in overall mortality for patients ages 1-17 years (20% high dose, 14% medium dose, and 9% low dose). Long term mortality in infants <8 kilograms who receive sildenafi has not been well described in the literature. This study will describe the overall mortality rate of infants treated with "high-dose" sildenafil at CCHMC. This rate will be compared to the 9% mortality rate seen in the 8-20 kilogram high-dose subgroup of the STARTS-2 study, since this subgroup most closely matches the age and weight of our study population. Methods: Infants <8 kilograms with PH who were initiated on high-dose sildenafil from January 2007- January 2012 were included. "High dose" was defined as a dose >3 mg/kg/day for >7 days. Those on concomitant PH medications or ECMO were also included. The primary outcome was overall mortality. Results: Among 141 infants initiated on sildenafil from 2007-2012, 85 were treated with high-dose sildenafil. There were 20 patients lost to follow up and 12 recorded deaths. Female sex (p=0.0117) and an etiology of sepsis (p=0.0082) were found to be significantly different between the surviving and non-surviving groups. Surviving patients were found to have started sildenafil at an earlier age (39 days vs. 97 days; p=0.0196). The overall mortality rate was greater than that observed in the 8-20 kilogram subgroup of the STARTS-2 study (14% vs. 9%, p=0.575). Conclusions: Infants treated with high-dose sildenafil at CCHMC had a higher mortality rate than the 8-20 kilogram subgroup of the STARTS-2 trial.

Learning Objectives:

Review the mechanism of action of sildenafil and its place in therapy for management of pediatric pulmonary hypertension.

Discuss the literature supporting the current FDA recommendation for sildenafil use in pediatric patients.

Self Assessment Questions:

By what mechanism is sildenafil effective for treatment of pulmonary hypertension?

A Inhibits phosphodiesterase type 3 (PDE-3) in cardiac and vascular
B: Inhibits phosphodiesterase type 5 (PDE-5) in smooth muscle of pu
C: Blocks endothelin receptors on vascular endothelium and smooth
D: Acts as prostacyclin leading to vasodilation of all vascular beds

Why did the FDA recently issue a warning regarding high-dose sildenafil therapy in pediatric patients?

A High-dose sildenafil leads to adverse cardiac outcomes in pediatri
B Pediatric patients were found to have significant neutropenia follov
C Pediatric patients were found to have a dose-dependent increase i
D Pharmacokinetic differences in pediatric patients render sildenafil i

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-630 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF DURATION OF ORAL CORTICOSTEROIDS ON PEDIATRIC ASTHMA READMISSIONS

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PURPOSE: The goal of this study is to determine if the duration of oral corticosteroid therapy has an impact on pediatric asthma readmission rates. The use of inhaled corticosteroids (ICS) and bronchodilators have been well studied in the control of asthma. Oral (systemic) corticosteroids are commonly used in short courses of therapy to gain control of exacerbations in asthmatics. However, the optimal duration of the oral corticosteroid (OCS) therapy for an acute asthma exacerbation has not been established. Due to the many adverse effects of systemic exposure of corticosteroids, the most efficacious course of therapy with the minimum amount of exposure would be optimal. The primary objectives of this study are to determine if duration of OCS for status asthmatics in pediatric patients impacts the time to the next hospital admission or emergency department (ED) visit within 30 days and 90 days. □□METHODS: A retrospective chart review of pediatric patients who were readmitted to Riley Hospital for Children at Indiana University Health for an asthma exacerbation from August 1st, 2012 to July 31st, 2013 was conducted. Pediatric patients were included if they were 3-17 years of age, had a new or existing asthma diagnosis, and received prednisone, prednisolone, or methylprednisolone at 1.5-2.5mg/kg/day (Max of 60 mg/day). Patients were excluded if they had a non-asthmatic pulmonary history, neuromuscular disease, malignancy, depo injections or chronic oral corticosteroid use, or treatment with an oral corticosteroic within the past seven days. Data collected includes age, sex, weight, dose of OCS, length of OCS therapy, admission vs. observation, days since readmission, other asthma medications, change in controller medication on discharge, frequency of nebulizer use and co-morbidities. This study was IRB approved. □□RESULTS/CONCLUSIONS: Final results and conclusions are pending.

Learning Objectives:

Discuss the risks and benefits of oral corticosteroids in asthma exacerbations.

Recognize approved dosing for oral corticosteroids in asthma exacerbations in the pediatric population.

Self Assessment Questions:

Which of the following are potential side effects from oral corticosteroids

A Disturbance in mood
B: Osteoporosis
C: Fluid retention and weight gain
D: All of the above

What is the recommended dose of oral corticosteroid in ages 0-11 years old for asthma exacerbations for the 2007 Asthma Guidelines by Expert Panel Report 3?

A Prednisolone 1-2 mg/kg /day (Max of 60mg/day)
B Mometasone 3mg/day
C Methylprednisolone 4 mg/kg/day
D Fluticasone 1g/kg/day

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-632 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF ADVANCING AGE ON VANCOMYCIN PHARMACOKINETICS

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Purpose: Advancing age causes changes in body composition and function, including volume of distribution, metabolism, and renal function, which may alter medication pharmacokinetics (PK). Vancomycin, a broad-spectrum antibiotic frequently used to treat severe infections in hospitalized elderly patients, should be dosed to achieve trough levels of 15-20 mcg/mL to optimize clinical outcomes while minimizing toxicities. Vancomycin PK data in hospitalized elderly patients are very limited, making achievement of pharmacodynamic goals challenging in this patient population. The objectives of this study are to 1) describe vancomycin PK in hospitalized elderly patients and 2) identify patient-specific factors contributing to PK alterations.□□Methods: This prospective, single-center, clinical PK study will include elderly (≥ 65 years of age), non-obese patients with normal renal function being treated with vancomycin according to local standards of care for suspected or confirmed infection. Three vancomycin serum concentrations (drawn just prior to infusion, 2 hours post-infusion, and 6 hours post-infusion) will be assessed after the first day of therapy and measured using a quantitative enzyme immunoassay. PK parameters (volume of distribution in central compartment, elimination rate constant, half-life, maximum concentration, minimum concentration, area under the curve, and total body clearance) will be determined by fitting data to either a one or two compartment open model with first-order elimination, as appropriate. Multivariate logistic regression will be used to determine if patient-specific factors, such as age, albumin, nutritional status, fluid administration, and inflammation, alter vancomycin PK. Goal enrollment is a total of 15 patients (5 patients aged 65-74, 75-84, and ≥ 85 years, respectively).

Learning Objectives:

Describe the physiologic changes that occur with advancing age

Discuss the available literature on vancomycin dosing in a population of advancing age

Self Assessment Questions:

Which of the following physiologic changes occur with advancing age?

A Increased Proportion of Adipose Tissue
B: Decrease in total body water and lean mass
C: Increased proteinuria
D: All of the above

Available literature surrounding vancomycin dosing in advancing age suggests:

A Vancomycin clearance from the body is enhanced with increasing
B Volume of distribution is altered with increasing age
C Vancomycin half-life is shorter in a population of advancing age (≥
D A and B

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-845 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATING CHANGES IN EFFICACY, SAFETY, AND COST WHEN SWITCHING FROM REGULAR INSULIN TO INSULIN ASPART IN A PHARMACIST-MANAGED TYPE 2 DIABETES CLINIC

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Purpose: Approximately 20% of veterans have type 2 diabetes and many require the use of prandial insulin therapy to reach their treatment goals. Studies have shown that fast-acting insulin analogues like insulin aspart improve treatment satisfaction and flexibility when compared to regular insulin. These newer agents are more costly, however, and evidence showing therapeutic benefits over regular insulin have been inconsistent in the literature. The purpose of this study is to investigate if switching from regular insulin to insulin aspart improves diabetes control and hypoglycemia risk for veterans in a pharmacist-managed diabetes clinic. Evaluating these differences will help determine if restricting aspart use at the VA is beneficial to patients and the facility. Methods: This study is a retrospective analysis of type 2 diabetics who have switched from regular insulin to insulin aspart at the Chalmers P. Wylie VA Ambulatory Care Center in Columbus, Ohio. Data will be collected for patients seen in the Diabetes Control Clinic from August 1st, 2010 to July 31st, 2013. Patients enrolled must be on basal insulin therapy with insulin glargine, and have previously used regular insulin for at least three months before switching to insulin aspart for at least three months. The primary objective is change in hemoglobin A1c from the time of the therapy change (baseline) to three months after aspart initiation. Hemoglobin A1c six months after the therapy change will also be recorded, if available. Secondary objectives such as incidence of hypoglycemia, changes in weight, and cost of therapy will be reviewed. Preliminary Results: Ten patients were deemed eligible for study enrollment. Preliminary results reveal hemoglobin A1c decreased an average of 0.35% approximately three months after switching to insulin aspart. Analysis of secondary endpoints is currently pending. Conclusion: Final conclusions pending further statistical analysis.

Learning Objectives:

Identify the main pharmacologic differences between insulin aspart and regular insulin.

Describe the risks and benefits of various insulin regimens used to treat type 2 diabetes.

Self Assessment Questions:

What is the estimated duration of action of regular insulin?

A 30 to 90 minutes

B: 2 to 4 hours

C: 3 to 5 hours

D: 5 to 8 hours

Which medication class is most commonly associated with masking the symptoms of hypoglycemia?

A ACE Inhibitors

B Beta-Blockers

C NSAIDs

D Statins

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-633 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

INVESTIGATING HEART FAILURE READMISSIONS AFTER IMPLEMENTATION OF A PHARMACIST DRIVEN MEDICATION MANAGEMENT PROGRAM IN A HEART FAILURE CLINIC

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Purpose: Heart Failure is a leading cause of hospital readmissions throughout the United States. At SWG, the current all cause readmissio rate goal of 17.5% has not yet been achieved. Noncompliance with medication regimen, sodium and/or fluid restriction accounts for approximately 48% of readmissions of HF patients at SWG. This study will assess whether a pharmacist presence in the HF clinic will impact HF all cause readmission rates and patient satisfaction with medication education and treatment. Objectives: (1) Assess the HF all cause 30 day readmission rates at SWG after implementation of a pharmacist driven medication management program in a HF clinic. (2) Investigate patient satisfaction of medication regimen and treatment plan.

Methods: A prospective, single-blinded, randomized, placebo controlled trial will assess patients in the HF Clinic at SWG. Institutional Review Board approval has been achieved by Case Western Reserve University Hospital. Patients will be randomized to the standard of care group or pharmacist intervention group. Both groups will be given an 8 question baseline survey after informed consent is granted. The pharmacist intervention group will receive a customized, monthly, laminated medication compliance calendar with education materials provided by the pharmacist upon the first meeting. This group will also receive counseling on HF medications. The standard of care group will not have interaction with the pharmacist, with the exception of survey administration. The 8 question survey will be repeated upon study cessation to both groups. Chi-squared test will be used to assess readmission rates. Mann- Whitney U, Student t-test(s), and Chi-squared test will be used respectively to assess differences in patient satisfactio surveys from baseline to study cessation in study arms. Results: Benefits of a pharmacist presents in a HF clinic on all cause readmissio rates and patient satisfaction to be concluded at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss patient risk factors that lead to heart failure exacerbations and readmissions

Identify which medications can reduce morbidity versus mortality in heart failure patient populations

Self Assessment Questions:

Which of the following patient risk factors may lead to potential heart failure exacerbations?

A Use of NSAIDs

B: Medication noncompliance

C: Diet noncompliance

D: All of the above

What medication is proven to reduce mortality in Heart Failure patients?

A Metoprolol Succinate

B Digoxin

C Metoprolol Tartrate

D Amlodipine

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-634 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION AND REDUCTION OF DOSE ALERTS FOR CHEMOTHERAPY AND ADJUNCTIVE MEDICATIONS.

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Purpose: Electronic health systems featuring computerized physician order entry (CPOE) frequently utilize clinical decision support systems (CDSS) featuring warnings to alert providers of potential interactions or dosing errors. While CDSS have shown to decrease drug errors, alert fatigue can de-sensitize providers to the significance of the alert. This is of particular significance in oncology as dosing strategies often result in frequent drug alerts and consequences for errors can be more severe due to the high-risk nature of the medications involved. The primary purpose is to reduce the number of unnecessary dose alerts that are triggered for chemotherapy and associated medications. The secondary purpose is to assess provider satisfaction with the current oncology dosing alerts and rank order of commonly overridden dose alerts considered a nuisance. Methods: This is a quality assurance study exempt from review by the Institutional Review Board. A retrospective review of dose alert statistics reports from July 1 -September 31, 2013 has been evaluated for chemotherapy associated medications. Inclusion criteria from the reports include all routes of administration that were ordered from a treatment plan and predetermined medications ordered by oncology providers in order entry. An oncology provider survey of dosing alerts will be conducted. The survey measures satisfaction of oncology dose alerts while providing an opportunity to rank overridden oncology dose alerts for nuisance. Based on survey results, a task force consisting of pharmacists will convene to assess dose alert overrides and opportunities for improvement in dose warnings. Recommendations will be presented to oncology physicians for implementation of approved changes. A post-implementation survey will be conducted and a comparative analysis will be done to compare the pre- and post-implementation results. Results/Conclusions: Collection and analysis of the data is ongoing. Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Identify dosing alerts utilized by the health system.

Describe potential consequences of alert-fatigue.

Self Assessment Questions:

Which of the following is a type of dosing alert?

A Frequency
B: Dose
C: Max daily dose
D: All of the above

Which of the following is a potential consequence of excessive alerts?

A Clinicians may become de-sensitized to the significance of the ale
B Clinicians pay closer attention to alerts.
C Clinicians develop increased trust in the validity of the alert.
D Clinician satisfaction with clinical decision support systems is incre

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-635 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

SECONDARY PREVENTION MEDICATION PRESCRIPTION FILLING FOLLOWING AN ACUTE ISCHEMIC STROKE AND THE RELATIONSHIP TO HOSPITAL READMISSION RATES

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Purpose: Of the 795,000 who develop a stroke annually, 185,000 (23 percent) are recurrent stroke. Patients with high adherence to antihypertensive medications have been shown to suffer fewer non-fatal vascular events and have lower rates of stroke recurrence. Additionally, nonadherence to evidence-based secondary prevention therapies in patients with atherothrombosis was associated with an increase in mortality. The purpose of this study is to assess if medication pick-up following an acute ischemic stroke hospital discharge reduces hospital readmissions. Methods: Prior to this studys commencement, it will be submitted to the institutional review board for approval. This retrospective study will identify the discharge medications for acute stroke patients who were discharged from my institution between April 1 2012 through September 30, 2013. Medication adherence will be assessed via calling the patients home pharmacy and identifying if the patient retrieved their medications. The primary outcome of the study wil assess hospital readmission rates for the patients, with the primary objective of evaluating if medication pick-up from an outpatient pharmacy is a predictor of ischemic stroke patient readmission. Chi-square testing will assess all nominal data and a students t-test will assess all continuous data. Summary of Results and Conclusions: Results and conclusions to be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recall the medications classes commonly used to prevent recurrent strokes

Describe the data currently supporting the use of adherence to secondary prevention medications for an acute ischemic stroke

Self Assessment Questions:

Which of the following are commonly prescribed secondary prevention medications for acute ischemic stroke patients?

A Antiplatelet agents
B: Blood pressure lowering medications
C: HMG-CoA reductase inhibitors
D: All of the above

Perrault and colleagues were able to demonstrate that medication adherence to statin therapy resulted in:

A An increase in the relative risk non-fatal vascular events
B A decrease in the relative risk of myocardial infarction
C A decrease in the relative risk of stroke recurrence
D An increase in the relative risk of stroke recurrence

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-636 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF PNEUMOCOCCAL VACCINATION RATES IN A COMMUNITY PHARMACY

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Purpose: Vaccination with pneumococcal polysaccharide vaccine is a cost-effective strategy to lower morbidity and mortality in high risk groups, particularly in adults aged 19-64 years of age with a chronic condition and adults 65 years of age and older. However, vaccination rates in community pharmacies remain low despite growing availability o immunizations. The objectives of this study are to analyze site-specific eligibility for pneumococcal vaccine; evaluate pneumococcal vaccine documentation in the Michigan Care Improvement Registry (MCIR); and develop an intervention to improve community pharmacy pneumococcal vaccination rates. Methods: This study is a retrospective chart review of immunization consent forms from Pharmacy Group Practice Associates (PGPA) Pharmacy from August 1, 2012 to January 31, 2013 Eligible patients will include: patients 19-64 years of age with a chronic health condition; and patients 65 years of age and older who have received any immunization from PGPA Pharmacy. Chronic health condition will be defined as self-reported diabetes mellitus; heart disease; pulmonary disease; kidney disease; or blood disorder. Exclusion criteria include: patient recall of fainting or having a serious reaction to any vaccination; patients less than 19 years of age; patients 65 years of age and older who have had a pneumococcal vaccination less than 5 years prior; patients who are unable to recall prior pneumococcal vaccination with no self-reported health condition; and patient recall on consent form of being immunocompromised. Information to be collected will include patient recall of prior pneumococcal vaccination, self-reported chronic health condition, self-reported immunocompromised status, and record of pneumococcal vaccination in MCIR. Results: Sixty-four patients were 19-64 years o age with a chronic condition and 45 patients were 65 years of age and older. Sixty-nine patients have MCIR records available and, of those, 18 patients had a pneumococcal record. Conclusion: Will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the current estimated pneumococcal vaccination rates in community pharmacy for high risk groups

Recognize key characteristics required to identify high risk patients during vaccination assessment

Self Assessment Questions:

Which of the following conditions would qualify a 55 year old patient to receive a pneumococcal revaccination 5 years after the first dose?

A Hypertension
B: Diabetes mellitus
C: Currently smoke 1 pack per day of cigarettes
D: Chronic renal failure

Which of the following pulmonary diagnoses would serve as an indication for a 41 year old patient to receive a pneumococcal vaccination?

A Asthma
B Acute bronchitis
C Copd
D A and C

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-846 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

USE OF PROCALCITONIN LEVELS TO GUIDE ANTIBIOTIC TREATMENT AMONG ICU PATIENTS

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Statement of purpose: Sepsis is a common reason for ICU admission and requires early antibiotic administration to prevent progression into severe sepsis or septic shock. Often, antibiotics are initiated before the established diagnosis of sepsis and bacteriologic cultures are pending. Procalcitonin level is elevated during early sepsis. It has been demonstrated in multiple clinical trials that use of procalcitonin levels reduces duration of antibiotic without increasing mortality and morbidity among ICU patients. However, these studies were conducted mostly in European countries. Hence, a retrospective study was conducted to assess how procalcitonin levels affect decision on continuation of antibiotics, mortality and morbidity of ICU patients in the local setting. Statement of methods: This is a retrospective review of adul patients admitted to ICU with procalcitonin levels performed within 24 hours of ICU admission or during ICU stay in June 2013. Patient < 18 years old, pregnant women, and patients who had a traumatic injury or surgery within past 48 hours are excluded from the study. Basic demographic data, vital signs, laboratory results, radiographic and microbiologic results, duration of antibiotics, duration of mechanical ventilation, length of ICU and hospital stay, and mortality at 28 days are recorded. Physicians response to procalcitonin levels are also recorded. Data collected will be analyzed using t-test for parametric data and c2 test for non-parametric data. Association of procalcitonin levels and SOFA score with mortality and morbidity will be tested using logistic regression correlation. Outcomes of this study include distribution of procalcitonin levels for patients with or without infection, duration of antibiotics based on procalcitonin levels, morbidity and mortality of patients stratified according to continuation or discontinuation of antibiotics based on procalcitonin levels, and factors associated with mortality. Results and Conclusion: Results will be presented in full during Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss the utility of procalcitonin level in patient care management.

Explain the interpretation of procalcitonin level in the management of antibiotic treatment.

Self Assessment Questions:

1.Which of the following statement is true?

A Procalcitonin is a sensitive biomarker for diagnosis of viral infectio
B: Procalcitonin level is elevated within 48 hours after major surgery
C: Use of procalcitonin level is a standard practice in ICU to determin
D: Procalcitonin is a more sensitive biomarker than CRP as a diagno

It is suggested by Surviving Sepsis Campaign guidelines to use procalcitonin level to guide

A initiation of antibiotic
B change of antibiotic
C discontinuation of antibiotic
D all of the above

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-689 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

USING MONTE CARLO SIMULATIONS TO MODEL INSTITUTION-WIDE ANTIMICROBIAL PHARMACODYNAMICS AGAINST PSEUDOMONAS AERUGINOSA

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Purpose: Pseudomonas aeruginosa is the fifth most common pathogen implicated in hospital acquired infections and resistance to the limited arsenal of anti-Pseudomonal antibiotics is increasing. The antibiogram has long been a clinicians guide to predicting susceptibility of antibiotics when designing empiric regimens to include agents against P. aeruginosa. While an antibiogram has the advantage of incorporating an institutions specific microbial population, their disadvantage is that they are pathogen-driven and not therapy-driven. Monte Carlo Simulations (MCS) provide clinicians with an additional tool to choose optimal antimicrobial dosing by determining the probability with which an antibiotic regimen will reach a certain pharmacodynamic target to optimize bactericidal activity. The purpose of this project is to determine which antibiotic regimens will achieve a goal probability of target attainment (PTA) of 90% against isolates of P. aeruginosa at University of Kentucky HealthCare (UKHC). Methods: Data was reviewed retrospectively looking at microbiological data from first cultures positive for Pseudomonas aeruginosa at UKHC for 2012. Data points analyzed include site of culture collection, patient location within hospital, and minimum inhibitory concentrations (MIC) of antibiotics against P. aeruginosa. Antibiotics studied include amikacin, aztreonam, cefepime, gentamicin, levofloxacin, meropenem, piperacillin/tazobactam, and tobramycin. A review of existing primary literature was conducted to determine pharmacokinetic (PK) parameters for normal, healthy volunteers. Pharmacodynamic (PD) parameters were determined from manufacturer package inserts for studied antibiotics and the existing primary literature. Using MICs from UKHC specific isolates, PK parameters from the literature, and PD targets from the literature, a 10,000-subject MCS was run for each studied antimicrobial regimen to determine PTA attainment against P. aeruginosa. Results: Results and preliminary conclusions to be presented at Great Lakes Residency Conference.

Learning Objectives:

Review pharmacodynamic principles and their role in optimizing bactericidal activity of different antibiotic classes.

Discuss the limitations of using an antibiogram to design empiric antibiotic therapy regimens.

Self Assessment Questions:

What is the pharmacodynamic parameter for fluoroquinolones most associated with clinical cure?

A T > mic > 50%

B: Auc/mic > 100

C: Peak:MIC > 10

D: Peak:MBC > 8

Which of the following is correct regarding construction of an antibiogram?

A An antibiogram looks at antimicrobial susceptibility over a defined

B An antibiogram can contain multiple isolates from the same patien

C An antibiogram tests a single isolate against a single antimicrobial

D An antibiogram includes isolates from surveillance and diagnostic

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-637 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE EFFECT OF A PHARMACY DISCHARGE PROCESS ON HOSPITAL READMISSION RATES AT THE JESSE BROWN VETERANS AFFAIRS MEDICAL CENTER (JBVAMC)

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Purpose: Hospital readmissions have been a chronic issue in the United States healthcare system. The Centers for Medicare and Medicaid Services (CMS) estimates that one in five elderly patients is re hospitalized within 30 days after hospital discharge, costing 26 billion dollars annually. In addition, certain high-risk disease states such as heart failure, myocardial infarction, pneumonia, and chronic obstructive pulmonary disease have been identified as contributing to these 30-day readmission rates. At the Jesse Brown Veterans Affairs Medical Center (JBVAMC), the discharge pharmacy service has developed a process in an effort to address this problem. The objective of this study is to evaluate the impact of a pharmacy discharge process on hospital readmission rates with a focus on high risk disease states. The study will also evaluate the impact of pharmacist-provided counseling. Methods: This study is a randomized, retrospective electronic chart review of patients discharged at the JBVAMC between August 1, 2012 and September 1, 2013. The study includes patients aged 18 years and older who are discharged from the general medicine, surgical, intensive care, telemetry, rehabilitation, and extended care units who have a Pharmacy Discharge Note and a Discharge Instructions Note indicating the discharge diagnosis in the chart. Patients discharged to hospice, skilled nursing or inpatient care are excluded along with patients with scheduled readmissions, discharges against medical advice, and patients receiving Discharge Instructions Notes that include a duplicate medication list. The primary endpoint is the all-cause 30-day readmission rates. The secondary endpoints are all-cause and same-cause 30-day readmission rates for patients with high risk diagnoses and 30-day readmission rates for patients who received discharge education from pharmacists versus other healthcare providers. Results/Conclusion: Data collections and analysis are pending and will be presented at the Great Lakes Pharmacy Resident Conference in April 2014.

Learning Objectives:

Recognize the common barriers that contribute to high readmission rates.

Identify the disease states that are high-risk for 30-day readmissions.

Self Assessment Questions:

Which of the following are barriers that contribute to high readmission rates?

A Failure to educate patients on new medication devices

B: Patients inability to follow difficult self-care instructions

C: Pharmacist involvement during the discharge process

D: A and B

CMS will incur a penalty to hospitals with excess readmissions in which of the following high-risk disease states?

A Deep Vein Thrombosis

B Heart Failure

C Asthma

D Stroke

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-847 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE EFFECT OF ELECTRONIC CRITERIA MONITORED ANTIBIOTIC ORDER FORMS ON ANTIMICROBIAL USAGE

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Purpose: Inappropriate antibiotic usage leads to increased drug resistance, healthcare cost and emergence of subsequent infections such as Clostridium difficile. These unwanted consequences have created an increased need for antimicrobial stewardship. Technology has emerged as a useful tool impacting antimicrobial stewardship. The goal of this study is to compare antibiotic usage of select broad spectrum antibiotics pre- and post-implementation of electronic criteria monitored drug forms used within a healthcare system. Methods: This study is a multi-center, retrospective medical chart review of adult patients, who received daptomycin, imipenem, linezolid, and piperacillin/tazobactam between October 1, 2009 and October 1, 2013. Data collection will include baseline demographics, patient location, and hospital length of stay. Any changes in therapy within 36 hours of restricted antibiotic administration will be collected. Antibiotic usage will be determined by calculating the defined daily dose (DDD) per 100 occupied patient bed days. Identification of positive Clostridium difficile cultures >48 hours after restricted antibiotic administration will be collected, as well as other pertinent microbiological cultures. In order to evaluate usage of the electronic criteria monitored drug form, data will be collected regarding criteria selection and frequency of pharmacist evaluation. Subgroup analysis will be performed to evaluate antibiotic usage between intensive care unit and general medical floor prescribing. Finally, restricted antibiotic usage will be stratified by time (3, 6, and 12 months) post form implementation to assess if usage changed over time. Results: Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Discuss the primary goal of antimicrobial stewardship.

Describe the role of technology in antimicrobial stewardship.

Self Assessment Questions:

What is the primary goal of antimicrobial stewardship?

A Optimizing clinical outcomes while minimizing unintended conseqı
B: Promoting inappropriate selection, dose, route, and duration of ant
C: Reducing healthcare costs by reducing antibiotic therapy usage de
D: Creating unintended consequences of toxicity, Clostridium difficile,

Which is a technological advancement that can impact antimicrobial stewardship?

A Training healthcare teams
B Infectious Diseases consultations
C Pharmacy dosing consultations
D Electronic monitoring forms

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-848 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFECT OF OPIOID TOLERANCE ON PATIENT REPORTED SATISFACTION OF INPATIENT PAIN MANAGEMENT

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Purpose: Patient satisfaction with pain management correlates with overall patient satisfaction. Limited research is available identifying factors that impact inpatient satisfaction with pain control. Physical dependence and opioid tolerance further complicate acute pain management. This study compared patient reported Hospital Consumer Assessment of Healthcare Providers & Systems (HCAHPS) survey pain scores in medically ill opioid tolerant patients versus opioid nave patients admitted to a community hospital. Methods: This was a retrospective cohort study of patients 18 years of age and older discharged from our institution between July 1, 2012 and June 30, 2013 who completed the pain portion of the HCAHPS survey. Exclusion criteria included admission to the ICU or observation unit, psychiatric diagnosis, and admission for a surgical procedure. The primary endpoint compared "always" responses between opioid tolerant and opioid nave patients to questions within the pain domain of the survey. Secondary endpoints included: patient demographics, medication reconciliation, nurse documented pain scores, toxicology results, time to pain medication initiation, hourly nurse rounding, and HCAHPS overall patient satisfaction scores. Results: There were 191 patients randomly selected for review, 150 patients met inclusion criteria, and 30 patients were opioid tolerant on admission. There was no significant difference in response rates to the HCAHPS survey pain domain questions between opioid tolerant patients and opioid nave patients, (pain controlled: p=0.224, pain staff: p=0.275). Satisfaction with pain control was significantly improved with nurse documented pain scores (p=0.048), documentation of pain scores every 4 hours (p=0.012), appropriate medication reconciliation in opioid tolerant patients (p=0.024), and appropriate medication reconciliation in patients who were currently taking any opioid prior to admission (p=0.011). Conclusion: There is no difference in patient satisfaction with pain management between patients who are opioid tolerant and opioid nave prior to admission. There is potential to increase patient satisfaction with pain control by focusing on appropriate nurse documentation and opioid medication reconciliation.

Learning Objectives:

Discuss the difference between opioid tolerance, opioid dependence, and addiction and how each term relates to acute pain management.

Identify areas of focus that may lead to an increase in patient satisfaction with inpatient pain management.

Self Assessment Questions:

Which of the following is true regarding opioid tolerance?

A Opioid tolerance is compulsive use of a drug despite physical harr
B: Opioid tolerance is suspected when there is a decreased physiolo
C: Opioid tolerance is manifested as a drug specific withdrawal syndr
D: Opioid tolerance usually involves impaired control over drug use

Based on the research presented, which of the following may be associated with an increased overall patient satisfaction with inpatient pain management?

A Appropriate opioid medication reconciliation on admission
B Appropriate nurse documentation of pain scores
C Patients who are opioid naïve prior to admission
D Both A and B are correct

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-639 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

TREATMENT OF NEUTROPENIC FEVER AT AN ACADEMIC MEDICAL CENTER

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Purpose Febrile neutropenia is a potentially fatal complication of chemotherapy. This complication is considered an oncologic emergency and must be treated promptly and accurately to reduce mortality. The purpose of the study is to identify the timeliness and accuracy of guideline-recommended administration of antibiotics in patients with chemotherapy induced febrile neutropenia at the University of Cincinnati Medical Center. This will be compared between four groups; those that are admitted through the emergency department, those that are directly admitted, those seen in clinic, and those that develop the complication while hospitalized. This study will identify any opportunities for improvement that may exist in the treatment and management of this complication at this institution. The culture data of all patients will be identified and described. Methods This study is an investigator-initiated, retrospective chart review. Adult patients admitted to the University of Cincinnati Medical Center from November 1, 2012 to November 1, 2013 with a diagnosis of febrile neutropenia that meet diagnostic criteria (absolute neutrophil count less than 1,000cells/mm3 and temperature above 38C) will be screened for inclusion. The primary outcome will be to compare the proportion of patients that receive guideline-recommended antibiotics within two hours between the four different groups described above. Secondary endpoints will be to evaluate specific agents, dosing, and frequency of antibiotics chosen and to identify culture results of this patient population. Continuous data will be compared using ANOVA. Discrete variable comparisons will be done using the chi-square, Fischers exact test or one-way ANOVA, as indicated. Results Data is currently being collected and reviewed. Conclusion Conclusions will be determined and presented at the Great Lakes Pharmacy Resident Conference once evaluation is complete

Learning Objectives:

Identify a criteria used in the Multinational Association for Supportive Care in Cancer index score to predict which patients are at high risk for complications from febrile neutropnenia.

Select empiric antibiotic regimens that are recommended by the Infectious Diseases Society of America for empiric treatment of febrile neutropenia.

Self Assessment Questions:

Identify a criteria used in the Multinational Association for Supportive Care in Cancer index score to predict which patients are at high risk for complications from febrile neutropenia.

A Age

B: APACHE score

C: Use of prophylactic antibiotics

D: Respiratory rate

Select an antibiotic regimen from below that is recommended by the Infectious Diseases of America for a high risk febrile neutropenia patient without allergies.

A Oral ciprofloxacin and amoxicillin/clavulanate

B Intravenous piperacillin/tazobactam

C Intravenous ceftriaxone

D Intravenous ciprofloxacin and metronidazole

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-638 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PHARMACIST INTEGRATION INTO DISCHARGE MEDICATION RECONCILIATION AT A COMMUNITY HOSPITAL - PILOT PROGRAM

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Purpose: Reconciling medications at transitions of care is vital for patient safety. Froedtert & The Medical College of Wisconsin Communit Memorial Hospital (CMH) is striving to optimize patient care by involving pharmacists in the discharge medication reconciliation process to ensur greater patient safety by preventing medication errors. The objective of this study is to develop, implement, and evaluate pharmacist involvement in discharge medication reconciliation at CMH to reduce errors in discharge medication orders. Information gathered will support implementation of the program house-wide. Methods: This prospective, observational study was performed as a quality improvement project. Patients were eligible for inclusion if they were >18 years of age and were discharged from the modified care unit (MCU) Monday-Friday from 07:00-15:30; September 17 to October 11, 2013. All patients discharged to home were eligible for medication education with a review of discharge reconciliation; those discharged to long-term care centers or home hospice only required a review of discharge medications. The primary outcomes of the study included determining the average time required for a pharmacist to review discharge medication reconciliation, including education when indicated; capturing and categorizing the number of prescribing errors detected and acted upon; and evaluating prescriber acceptance of the pharmacist recommendations. Secondary outcomes included quantification of outpatient prescription capture and calculation of cost avoidance associated with a reduction in medication errors. Results: During the four-week pilot eighty-one patients were eligible for evaluation. A total o forty-two medication errors were caught in twenty-six individual patients. The pilot program has continued indefinitely on the MCU, and will be adapted for expansion to other units. Further data analysis is underway; results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss the benefit of addressing medication reconciliation at discharge an important transition of care.

Describe the advantage of having a pharmacist actively involved in the discharge reconciliation process.

Self Assessment Questions:

Which is true in regard to medication discrepancies during transitions of care?

A Medication discrepancies are rare.

B: Medication discrepancies do not typically cause adverse effects.

C: Up to two-thirds of medication discrepancies have the potential to

D: Medication discrepancies are addressed by the patient's communi

Which of the following has been shown to be a benefit of having a pharmacist involved in the discharge reconciliation process?

A Patients demonstrate improvement in healthcare utilization.

B Patients report more numerous adverse effects from their medicat

C Drug therapies are not optimized.

D Medication errors and the potential for patient harm are increased.

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-933 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF A NURSE ALERT SYSTEM ON STAT MEDICATION RETRIEVAL IN A COMMUNITY TEACHING HOSPITAL

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Purpose: A web-based Nurse Alert System (NAS) has been developed to track medications utilizing bar code scanning at predetermined scanning checkpoints. This NAS will interface with nursing unit cell phones; sending a text message when a STAT medication has been barcode scanned prior to being sent to the nursing unit through the pneumatic tube system. Such text messages will allow nurses to be more aware of the medication delivery time of STAT medications, thus improving timely medication administration for the patient and reducing the number of missing medication reports and phone calls to the pharmacy. To date there have been no studies examining the effect of a NAS in this process. The NAS is expected have a significant reduction on the turnaround time of STAT medications sent through the pneumatic tube system. Methods: The study is a prospective, observational study. The primary objective is to compare the mean reduction in STAT medication turnaround time from pharmacist check to documented medication administration. The secondary objective is the missing STAT medication rate. The pre- implementation phase will run for six weeks beginning in December 2013. The tentative post-implementation phase will run for six weeks in 2014. Descriptive statistics will be performed, including the frequencies of various medication classes, types of order, and nursing unit location. Statistical tests will include a t-test to determine significance of the mean STAT medication turnaround time, with a p value of <0.05. Post-Hoc analysis of the data will be done to determine if significant differences in mean turnaround time exist between medication classes, medication type, and nursing units.

Learning Objectives:

Describe the purpose of a nurse alert medication tracking system.

Outline the steps of the notification process to nursing staff.

Self Assessment Questions:

Which of the following medications are evaluated in this study?

A ONLY IV medications

B: Routine medications

C: Chemotherapy

D: STAT medications

The nurse alert system will help to directly reduce:

A Turnaround time from order entry to verification

B Turnaround time from verification to medication dispensing

C Turnaround time from pharmacist check to medication administrat

D Turnaround time from order entry to medication administration

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-849 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFECTS OF SCHEDULED INTRAVENOUS ACETAMINOPHEN DURING AND AFTER DISCONTINUATION ON POSTOPERATIVE PAIN SCORES AND OPIOID CONSUMPTION IN PATIENTS TREATEI AT A RURAL TEACHING HOSPITAL

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Purpose: Internal review in 2012-2013 at the study hospital identified that the General Surgery Service did not achieve levels of "acceptable pain" defined by the patient in 91.72 percent of all pain assessments conducted. With the recent approval of intravenous acetaminophen and the American Society of Anesthesiologists recommendation for use of multimodal therapy perioperatively, this study looks to evaluate the impact intravenous acetaminophen, as part of such therapy, has on pair scores in the first 24 hours postoperatively and any continued benefits that may exist after discontinuation due to possible initial reductions in pain severity. Methods: A retrospective cohort admitted to the hospital who had opioid medications present on their electronic medical record as part of postoperative care were compared to a prospective review of patients who received scheduled intravenous acetaminophen up to 24 hours postoperatively. Eligible patients were admitted for at least 24 hours postoperatively and were at least eighteen years of age. Patients were excluded if they were deemed intellectually impaired or pregnant. The following data was collected: patient demographics, attending general surgeon, type of surgery performed, opioid use and its intravenous morphine equivalence, usage of non-opioid pain medications, pain scores rated from 0 - 10 on a numerical rating scale up to 96 hours postoperatively, and postoperative time to discharge. Pain scores were assessed in 24 hour subsets up to 96 hours postoperatively and the two groups compared using the Kolmogorov-Smirnov Test. Opioid use in intravenous morphine equivalents, time to reach "acceptable pain" scores, percent of pain assessments below "the acceptable level of pain", time to any patient controlled opioid analgesia regimen discontinuations, and postoperative time to discharge will be compared using a one-sided t-test. Results and Conclusion: Results and Conclusion are pending and will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Review common medications that different professional organizations recommend for use in multimodal acute pain management in the perioperative setting.

Identify when patients require adjustments to standard dosing of intravenous acetaminophen according to the manufacturer's package insert.

Self Assessment Questions:

Which of the following does the American Society of Anesthesiologists 2011 update to guidelines for acute pain management in the perioperative setting recommend should be used as part of a multimoda

A Acetaminophen dosed as needed

B: Nonselective NSAIDs dosed around-the-clock

C: Celecoxib dosed as needed

D: Gabapentin dosed as needed

Which of the following patient(s) require dosage adjustment of intravenous acetaminophen according to the manufacturers package insert?

A 85 year old female weighing 65 kg

B 85 year old male weighing 49 kg

C 12 year old male weighing 55 kg

D Both B and C are correct

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-640 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF THE INCIDENCE OF CYTOMEGALOVIRUS WITH VARIOUS GRAFT-VERSUS-HOST-DISEASE PROPHYLACTIC REGIMENS

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Introduction: Graft-Versus-Host-Disease (GVHD) is a potentially life-threatening complication related to allogeneic hematopoietic stem cell transplantation (HSCT). GVHD prophylaxis using therapeutic combinations of immunosuppressive agents is a critical aspect of post-transplant care, but has the potential to increase risk of cytomegalovirus (CMV) replication. Immunosuppression secondary to GVHD prophylaxis or the disease itself and treatment, are proposed to be the primary causes for viral replication. CMV infection can lead to complications that increase transplant-related morbidity and mortality.Objectives: Currently there are no published studies which examine the incidence of CMV viremia/infection with various GVHD prophylaxis regimens. The purpose of this study is to evaluate the most commonly used regimens at Rush University Medical Center (RUMC) and compare the incidence of CMV viremia/infection.Methods: This study is a retrospective study with data collected as a result of standard care. Patients were identified from an electronic database and data was collected from the electronic medical record. Inclusion criteria are hospitalized patients 18 years and older who underwent allogeneic SCT between January 2008 and October 2013 and received GVHD prophylaxis with one of the following regimens: tacrolimus/sirolimus, cyclosporine/methotrexate +/- antithymocyte globulin, alemtuzumab/tacrolimus, bortezomib/tacrolimus/methotrexate,and mycophenolate mofetil/tacrolimus/cyclophosphamide. Exclusion criteria include patients with both donor and recipient negative CMV serologies and those lost to follow-up prior to completing immunosuppressive therapy. The primary outcome of this study is incidence of CMV viremia and/or organ infection with each of the GVHD prophylactic regimens. Secondary outcomes include overall survival at 1 and 3 years post-transplant and safety of each regimen. Both primary and secondary endpoints will be assessed at day 100 and day 365 post HSCT. Results/Conclusion: To date, 252 patients have been screened. Of these patients, 55 patients met inclusion criteria. Further data analysis is underway. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review potentially life-threatening complications related to allogeneic hematopoietic stem cell transplantation (HSCT).

Describe the relationship between cytomegalovirus (CMV) and immunosuppression.

Self Assessment Questions:

Which of the following is/are complications related to allogeneic hematopoietic stem cell transplantation (HSCT)?

A Graft-versus-leukemia effect

B: Graft-versus-host disease (GVHD)

C: GVHD and CMV

D: Cytomegalovirus (CMV)

Which of the following summarizes the relation between CMV and GVHD correctly?

A Only CMV seropositive recipients are at risk for contracting CMV p

B Immunosuppression resulting from either GVHD and/or GVHD trea

C GVHD treatment but not prophylaxis will increase the risk of CMV

D GVHD prophylaxis but not treatment will increase the risk of CMV

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-641 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PATIENT PERSPECTIVE ON THE UTILIZATION OF COMMUNITY PHARMACISTS AS TRAVEL HEALTH CONSULTANTS

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Purpose: To assess patients' needs and perceptions on travel health services provided by community pharmacists in order to gain insight for the implementation of these services;Methods: A cross sectional study will be conducted using a voluntary, anonymous survey instrument and offered to participants who have traveled internationally in the past or will be traveling within the next year. Participants will be excluded if they are less than 18 years old or are unable to read and write in English. The survey will ask a series of questions that assesses participants' needs for travel healthcare services and their perceptions on how knowledgeable and skilled community pharmacists are in providing travel health consultation regarding travel immunizations, medications and supplies. The questions will also provide insight on the participants' likelihood of seeking those products and services through a community pharmacy, as well as the willingness to compensate a pharmacist for the travel health consultation. Participants will have the option of completing the survey on paper at the pharmacy where offered or electronically, both of which are preceded with an informed consent clause. Survey responses will be transcribed by the principal investigator into a secure, password-protected spreadsheet that can then be utilized for data analysis and the study presentation. Statistical analyses will include calculations for overall frequencies and measures of central tendency.;Results/Conclusions: Data collection is in progress. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

List the components of a travel health consultation that could be performed by a pharmacist

Describe patient's perceptions on the role of the community pharmacist as a travel health consultant

Self Assessment Questions:

A travel health consultation service coordinates various aspects of trave care including, but not limited to:

A Immunizations

B: Prophylactic medications

C: Chronic health issues

D: All of the above

A travel health program developed within a community pharmacy offers travelers:

A Accessibility

B Uncoordinated Care

C Convenience

D A and C

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-850 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFECTIVENESS OF USING CONTINUOUS IV ONDANSETRON IN CHEMOTHERAPY - INDUCED NAUSEA AND VOMITING IN PEDIATRIC CANCER PATIENTS

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Purpose: To compare the effectiveness of continuous IV ondansetron 0.45 mg/kg/day (maximum 24 mg/day) in pediatric oncology patients who failed initial prophylaxis against chemotherapy - induced nausea and vomiting with ondansetron IV 0.15 mg/kg/dose (maximum 8 mg/dose) every 8 hours. Methods: A prospective study in pediatric oncology patients admitted to receive chemotherapy from January 1, 2013 through December 31, 2013 at the Childrens Hospital of Michigan was conducted. Patients between 1 and 25 years of age at the time of diagnosis and were receiving any of the following medications as a single agent or in combination were included: etoposide, cisplatin, cyclophosphamide >1000 mg/m2, doxorubicin > 25 mg/m2, methotrexate > 1000 mg/m2, cytarabine, and danurobicin. The following patients were excluded: those who completed chemotherapy prior to September 1, 2013, received a second antiemetic agent such as granisetron or aprepitant, or had a history of gastrointestinal reflux and nausea/vomiting. In addition to demographic information, other data collected included use of adjunct antiemetic agents and duration of continuous IV use. Results: Seven pediatric oncology patients failed ondansetron IV every 8 hours and were switched to continuous IV ondansetron. These patients were on additional adjunct antiemetic agents such as diphenhydramine, lorazepam, and promethazine. Emesis/nausea was controlled with the switch to continuous ondansetron. Etoposide, cyclophospamide, and doxorubicin were associated with the most uncontrolled nausea/vomiting with the use of ondansetron IV every 8 hours. Conclusion: Research is ongoing and preliminary results will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Explain the impact of poorly controlled chemotherapy-induced nausea and vomiting in pediatric patients

Discuss the effectiveness of using continuous IV ondansetron in pediatric oncology patients who failed initial prophylaxis with ondansetron IV every 8 hours

Self Assessment Questions:

Chemotherapy-induced nausea and vomiting is a side effect that occurs in what percentage of pediatric oncology patients?

A <10%

B: 30%

C: 60%

D: 99%

Based on the observation data, which of the following chemotherapy agents resulted in uncontrolled nausea and vomiting in patients and required switching from ondansteron IV every 8 hours to continuou

A methorexate, cisplatin, danurobicin

B etoposide, cyclophospamide, doxorubicin

C methotrexate, etoposide, doxorubicin

D etoposide, cisplatin, danurobicin

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-642 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PROTON PUMP INHIBITOR USE AND OUTCOMES IN THE NEONATAL INTENSIVE CARE UNIT

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Purpose: Literature suggests that proton pump inhibitors (PPIs) lack efficacy for gastroesophageal reflux disease (GERD) in the neonatal population. Despite the growing body of evidence which demonstrates the complications of PPI use in neonates, the use of PPIs for GERD continues. Potential complications of PPI use include increased risk for development of necrotizing enterocolitis (NEC), acute gastritis, osteopenia, and pneumonia. This study will characterize PPI use and outcomes within the Neonatal Intensive Care Unit (NICU) in an attempt to optimize PPI use in this population. Methods: PPI use data will be retrieved from the electronic medical record. A retrospective medication use evaluation (MUE) was conducted for all doses of PPIs administered in the NICU from November 3, 2012 through October 31, 2013 to assess dose, number of doses, duration of use, reason for use, and coded diagnoses. Prospective monitoring of patients on PPIs in the NICU will occur for a 60 day period in order to assess indication, dose, duration, age at initiation, and incidental development of complications. Prospective PPI use data will be available for comparison to retrospective MUE data. Based on the results of this study as well as the most recent literature regarding PPI use in neonates, standard prescribing practices will be developed. Results and Conclusion: Preliminary results demonstrate that over a 12 month period 50 patients received an average of 18.5 PPI doses per admission and the average dose administered was 1-2 mg/kg/day. A total of 1331 PPI doses (IV and PO) were administered. There were 27 infants ≥2500 grams, 11 infants <2500 grams, 7 infants <1500 grams, and 5 infants <1000 grams included in the retrospective analysis. Retrospective PPI MUE data and prospective study results and conclusions will be determined and presented.

Learning Objectives:

Discuss PPI use practices within the institution and the value of PPI stewardship measures in the neonatal intensive care unit.

Recognize the critical importance of pharmacist medication review with special attention to PPIs in the NICU as a means to decrease potentially unnecessary drug application and risk of PPI associated complications.

Self Assessment Questions:

Which of the following risk factors is considered to be the strongest predictor of necrotizing enterocolitis (NEC)?

A Gender

B: Gestational age

C: Birth weight

D: Infection

Proton pump inhibitor (PPI) use in the neonatal population has been shown to

A Increase risk of necrotizing enterocolitis (NEC)

B Improve the clinical signs and symptoms of gastroesophageal reflu

C Enhance the gastrointestinal environment against pathogens

D Decrease the risk of community-acquired pneumonia and gastroen

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-934 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

VASOPRESSOR USE IN HEMODYNAMIC SUPPORT RELATED TO SEPTIC SHOCK FOR ACHIEVEMENT OF TARGET MEAN ARTERIAL PRESSURE

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Purpose: Complications of sepsis include acute organ dysfunction and hypotension refractory to fluid resuscitation. The 2012 Surviving Sepsis Campaign: International Guidelines for the Management of Severe Sepsis and Septic Shock state that norepinephrine, an α and 1 adrenergic agonist, is recommended as the first choice vasopressor for use in septic shock. The emergency department and OR sepsis order set at Franciscan St. Elizabeth Health recommends norepinephrine as a first line agent, and allow dopamine as another option for achieving target mean arterial pressure (MAP) refractory to fluid resuscitation. Our intent is to examine vasopressor use in septic shock and evaluate how the hospitals prescribing practices mirror current best practice guidelines. □□Methods: This study is an IRB-approved retrospective chart review of patients who received norepinephrine, epinephrine, dopamine, phenylephrine, and/or vasopressin in septic shock in the hospital from April to September, 2013. Patients will be identified using hospital electronic medical records. Patient demographics, MAP, past medical history, line placement, adverse events, and mortality will be collected. Primary outcome measures will include MAP collected at intervals pre and post vasopressor administration. Secondary outcomes measures will be secondary vasopressor use and mortality. Assistance for statistical analysis will be provided by an affiliate of Franciscan St. Elizabeth Health. □□Results: Patient identification and data collection are ongoing. Further data collection and analysis will be completed prior to conclusion of the study. □□Conclusions: Final results and conclusions will be presented at the 2014 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Outline the 2012 Surviving Sepsis Campaign recommendations for vasopressor use in hemodynamic support related to septic shock.

Describe the monitoring parameters and their associated targets with vasopressor use as set forward by the 2012 Surviving Sepsis Campaign guidelines.

Self Assessment Questions:

When is dopamine an appropriate alternative to norepinephrine for achievement of hemostasis?

A Type II Diabetes Mellitus

B: Stage IV chronic kidney disease

C: Tachycardia

D: Low risk of tachyarrhythmias and/or bradycardia

What is the 2012 Surviving Sepsis Campaign definition of septic shock?

A MAP < 70 mm Hg

B SBP decrease >20 mm Hg

C sepsis-induced hypotension persisting despite adequate fluid resu

D Acute organ failure

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-643 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

JUSTIFICATION OF A PHARMACIST DRIVEN MEDICATION THERAPY MANAGEMENT (MTM) SERVICE AS PART OF AN EMPLOYER SPONSORED PROGRAM FOR HOSPITAL EMPLOYEES AND DEPENDENTS

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Purpose: Chronic diseases such as hypertension, diabetes, asthma, and hyperlipidemia are lifelong conditions. They affect the population worldwide and are described by the Center for Disease Control as the leading cause of death and disability in the United States. Many employers across the nation have implemented wellness services to help decrease health-care cost by improving employees health. The primary objective is to justify the need for a pharmacist driven MTM service at a self-insured health system and to assess the impact on the employees clinical improvements and financial benefits to Columbus Regional Hospital (CRH).□□Methods: Data will be collected and information will be based on insurance claims for the years 2008-2012. The chronic disease states evaluated were chosen based on the most prevalent chronic diseases of the employees and dependents. The total dollars spent per disease state and total pharmacy dollars spent per disease state will be the primary data collected and evaluated. Assessment of the financial benefits and cost avoidance opportunities will be completed. A business plan showing financial justification and outcome based health benefits with the implementation of the service will be created with the possibility to propose to the hospital committees.□□Results and Conclusions: Results and conclusion will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Explain the impact of workplace wellness programs on medical costs, work productivity, and absenteeism.

Describe the financial impact of chronic diseases in the United States

Self Assessment Questions:

According to the American Public Health Association, how much does the medical cost decrease by for every $1 spent on workplace wellness?

A Less than $1

B: About $2

C: About $3

D: Over $4

In 2010, the five most costly and preventable chronic conditions cost the United States about how much health care dollars?

A $100 million

B $350 million

C $100 billion

D $350 billion

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-644 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

ENHANCEMENT OF AN ESTABLISHED ANTIMICROBIAL STEWARDSHIP PROGRAM WITH THE IMPLEMENTATION OF A NOVEL EXTENDED-SPECTRUM BETA-LACTAM USE REPORT

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Purpose: Infectious Diseases Society of America (IDSA) recognizes that prolonged use of empiric broad-spectrum antibiotics contributes to increasing bacterial resistance trends worldwide. The objective of this study was to determine the effects of post-prescription pharmacist review of cefepime and piperacillin-tazobactam orders on duration of treatment.□□Methods: Patients receiving empiric cefepime or piperacillin-tazobactam for more than 48 continuous hours were identified using a computer-generated daily report. Exclusion criteria were as follows: intensive care unit, Infectious Disease consultation, re-initiation of study antibiotics after discontinuation or de-escalation, and clinician unavailability. Subjects consisted of a control group and active study group. Medical records of control group patients were reviewed retrospectively to assess baseline duration of empiric antibiotic therapy. The active study group received intervention in the form of a pharmacist recommendation to the primary care team. Using an evidence-based algorithm, the pharmacist recommended to de-escalate or discontinue current antibiotics unless therapy was deemed appropriate. The primary outcome was median days on cefepime and piperacillin-tazobactam pre- and post-pharmacist intervention. Secondary outcomes included: number of interventions, percentage of recommendations accepted, total antibiotic days, length of stay, rate of antibiotic re-initiation within 72 hours, and incidence of Clostridium difficile or extended-spectrum beta-lactamase-producing (ESBL) bacteria within 30 days. The institutional review board gave this study expedited approval.□□Results: Based on preliminary results, median days on cefepime and piperacillin-tazobactam have been reduced by 1.5 days from baseline after implementation of pharmacist post-prescription review. Twenty-eight patients met inclusion criteria for the prospective intervention group. Of the 28 patients, 13 continued present management and 15 received recommendation. Eleven (73%) of the 15 recommendations were accepted.□□Conclusions: In hospitalized adult patients receiving continuous empiric cefepime or piperacillin-tazobactam for at least 48 hours, preliminary results show a decrease in median days on study antibiotics in the group receiving pharmacist post-prescription review.

Learning Objectives:

Discuss the importance of antimicrobial stewardship.

Identify how pharmacists can make an impact on antimicrobial usage.

Self Assessment Questions:

Which antimicrobial covers Pseudomonas aeruginosa?

A Clindamycin
B: Piperacillin-tazobactam
C: Azithromycin
D: Vancomycin

Which one of these measurements meets SIRS criteria for infection?

A Temperature 37.2°C
B Heart rate 65 beats/min
C Respiratory rate 30 breaths/min
D White blood cell count 9,000 cells/mm3

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-645 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DO CRITERIA-BASED URINE CULTURES CONTRIBUTE TO UNNECESSARY ANTIBIOTIC USE IN A COMMUNITY TEACHING HOSPITAL?

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PURPOSE: Previous studies have demonstrated that urine cultures may be over utilized as a diagnostic tool and may contribute to inappropriate antimicrobial use. In the emergency department (ED) at Mercy Health Saint Mary's (MHSM) providers will commonly order a urinalysis (UA) with the option to automatically send the sample for culture if pre-specified UA criteria are met. This study was conducted to assess whether criteria-based urine cultures in the ED contribute to unnecessary antibiotic prescribing by inpatient providers. The primary objective of this study was to compare clinical outcomes of patients who received appropriate antibiotics versus those who received inappropriate antibiotics based on urinary symptoms. Secondary objectives were to compare the number of patients treated with antibiotics who were symptomatic to those who were asymptomatic, to describe the incidence of patients receiving a criteria-based urine culture, and to describe the documented symptoms of patients having a criteria-based urine culture performed.□□METHODS: This IRB-approved retrospective cohort study was conducted using the MHSM electronic medical records database. Data was collected for a random sample of 300 patients admitted to MHSM through the ED between January 1 and September 30, 2013. Adult patients were included if they had a urinalysis performed which met criteria to prompt a culture. Patients were excluded if they were discharged before the results of the culture were available, were neutropenic, or had a history of renal transplant within a year of culture. Outcomes will be assessed using the Chi-square test (nominal data), Mann-Whitney U test (ordinal data) and Students t test (continuous data as appropriate. □ □RESULTS: Data collection and analysis currently in progress.□□CONCLUSIONS: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify potential disadvantages of a criteria-based urine culture process

Relate patient symptoms, urinalysis and urine culture results to the appropriateness of antibiotic treatment.

Self Assessment Questions:

Which of the following is a potential disadvantage of the criteria-based urine culture process?

A Laboratory resources utilized for unnecessary cultures
B: Inappropriate antibiotic prescribing based solely on laboratory findi
C: Possibility of a missed opportunity to treat symptomatic patients ba
D: Answers A & B

Which of the following patients does not need UTI treatment per IDSA guidelines?

A Patient with 3+ bacteria on UA, presenting with dysuria and increa
B Patient with 3+ bacteria on UA, presenting with no urinary symptor
C Patient with 2+ bacteria on UA, presenting with confusion and fev
D Patient with 1+ bacteria on UA, presenting with urinary urgency

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-646 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF A POST-DISCHARGE OUTPATIENT HEART FAILURE CLINIC ON READMISSION RATES

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Purpose: This is a quality assurance (QA) project to evaluate the impac of follow-up with the Dayton Veterans Affairs Medical Center (VAMC)Post-Discharge Heart Failure clinic on readmission rates in patients with Heart Failure. A Heart Failure Post-Discharge clinic was implemented in November of 2012. The project will examinemultiple variables to determine if the Heart Failure Post-Discharge clinic would benefit from the addition of more comprehensive services.□□Methods: The Veterans Integrated Service Networks (VISN) 10 Decision Support Services has beenconsulted to obtain the data. All patients discharged with a primary diagnosis of Heart Failure in the 2012 and 2013 fiscal year at the Dayton VAMC. Information collected will include age, gender, comorbidities, weight, blood pressure, body mass index (BMI), serum creatinine, admissions for heart failure, and length of hospital stay. The time from hospital discharge to initial Post-Discharge Heart Failure encounter within 3, 7, 14, 21, and 30 days will be determined. The readmission rate for Heart Failure and the time to first readmission for Heart Failure will be calculated. To test for differences, t-tests will be used for continuous variables and chi-square will be used for categorical variables. Cox proportional hazards models will be used to determine the relationship between hospital follow-up and readmission.□□Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss the current literature on factors contributing to hospital readmissions attributed to heart failure.

Review the key focus areas and goals of the Hospital to Home (H2H) initiative.

Self Assessment Questions:

Nationally, what is the percentage of patients that die within one year following a Heart Failure admission?

A 20%

B: 25%

C: 30%

D: 35%

Which of the following statements is true?

A Insufficient discharge planning is one factor contributing to hospita

B The primary goal of the Hospital to Home (H2H) initiative is to dec

C One of the key focus areas of the H2H initiative is follow-up visit w

D H2H focuses on adequate pre-discharge medication management

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-851 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

RETROSPECTIVE REVIEW OF INITIAL TACROLIMUS DOSING IN ADULT HEART TRANSPLANT RECIPIENTS

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Purpose: Calcineurin inhibitors are a mainstay of therapy to prevent cellular rejection after heart transplantation but initiation induces renal vasoconstriction that can result in decreases in glomerular filtration rate. To date questions remain regarding dosing following heart transplantation; dose adjustments and monitoring requires the intricate balance of these risks. The purpose of this study is to optimize tacrolimus dosing and minimize risk of rejection within the first 3 months immediately following heart transplantation.□□Methods: This was a single center retrospective review that included all patients 18 years of age or older who underwent heart transplantation at the University of Michigan Health System between January 1st 2007 and December 31st 2012 and received tacrolimus as part of their immunosuppression regimen. Patients who received a repeat transplant or those followed by pediatric cardiology were excluded. The primary outcome of this study was to determine if time to therapeutic tacrolimus trough correlates with the rate of biopsy proven rejection (grade 2 or above, as defined by The International Society for Heart and Lung Transplantation) within the first 3 months after transplant. Therapeutic tacrolimus trough concentration was defined as trough greater than 10 ng/mL. The secondary outcome was to identify predictors of tacrolimus dose requirements to develop a predictive model for maintenance dose. Demographic data from recipients and donors were collected, along with concomitant maintenance immunosuppression, laboratory and biopsy results and known risk factors for cellular rejection. Descriptive statistics will be used to report baseline characteristics. Standard statistical methods will be used to analyze the data for primary and secondary outcomes. This study was approved by the University of Michigan Institutional Review Board.□□Preliminary Results: Data collection and analysis are currently ongoing. □□Conclusions: Conclusions cannot be drawn without a complete statistical analysis.

Learning Objectives:

Describe factors that may impact tacrolimus dosing, including patient size, drug interactions, renal and hepatic function and genetic factors.

Discuss the risks of sub- and supratherapeutic tacrolimus levels (about 10 - 15 ng/mL) and the impact initial dosing has on these risks.

Self Assessment Questions:

The following factors are known to impact tacrolimus dosing:

A Patient weight

B: Drug-drug interactions

C: Risk of renal toxicity

D: All of the above

The theorized concern with initiating tacrolimus at a low dose, with a slow titration to goal is:

A Increased risk of endocrine and metabolic side effects

B Increased risk of nephrotoxicity

C Increased risk of rejection

D Increased risk of drug interactions

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-647 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

INTRAVENOUS MAGNESIUM SULFATE FOR THE TREATMENT OF ACUTE ASTHMA AND CHRONIC OBSTRUCTIVE PULMONARY DISEASE IN THE EMERGENCY DEPARTMENT

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Background: Asthma and chronic obstructive pulmonary disease (COPD) are inflammatory airway disorders that can lead to serious consequences including emergency department (ED) visits, hospitalization, and death. The use of intravenous (IV) magnesium sulfate for refractory asthma and COPD exacerbations was first described in 1940; however, the exact mechanism, dose and efficacy remain uncertain. Due to conflicting results in current literature, a study was conducted to determine if IV magnesium sulfate is an effective adjunctive agent to reduce hospital admissions from acute asthma and COPD exacerbations presenting to the ED.□□Methods: This study was conducted as a retrospective, matched, case control study of asthma and COPD patients presenting to the ED at an academic medical center. Patients included were at least 18 years of age, had a pre-existing diagnosis of asthma or COPD, and presented to the ED for an exacerbation between January 2012 and April 2013. Patients who were pregnant, intubated prior to arrival, not treated in the main ED or were previously included in the study were excluded. Case patients received adjunctive magnesium therapy in the ED and were matched with control patients based on diagnosis and baseline oxygen saturation. The primary outcome was hospital admission rate due to asthma and COPD exacerbations. Secondary outcomes included changes in oxygen saturation, changes in respiratory rate, intubation requirements, intensive care unit admission rates, and the incidence of adverse effects associated with IV magnesium sulfate administration. □□Results: Sixty-four case patients were identified for inclusion in the study. The average oxygen saturation on admission was 94% with only five patients requiring intubation. The majority of patients (88%) received a two gram dose of magnesium with remaining patients being treated with a one gram dose. The case group had a hospital admission rate of 67%.□□Conclusions: Pending completion of statistical analysis.

Learning Objectives:

Identify potential mechanisms of action of magnesium in asthma and chronic obstructive pulmonary disease (COPD) exacerbations

Describe the current guideline recommendations for intravenous magnesium in asthma and COPD exacerbations

Self Assessment Questions:

How is magnesium postulated to exert its effects in asthma and chronic obstructive pulmonary disease (COPD) exacerbations?

A Modulation of calcium ion movement causing relaxation of the bro
B: Potentiating effects of beta agonists on adenyl cyclase
C: Decreasing the effects of acetylcholine
D: All of the above

The current guidelines on the treatment of asthma exacerbations recommend:

A Using intravenous magnesium as a first line treatment option
B Only using intravenous magnesium in patients with an oxygen satu
C Using intravenous magnesium as a potential adjunctive therapy in
D Against using intravenous magnesium due to safety concerns

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-852 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT AND IMPLEMENTATION OF AN AFTER HOURS PHARMACY TECHNICIAN

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Background: Aurora Health Care (AHC) is a 15-hospital health care system. Nine of these hospitals close the pharmacy in the evenings. In these hospitals, order verification is completed remotely; however other pharmacy services are unavailable on-site. To provide on-site pharmacy services beyond the usual hours of operation, the pharmacy department developed an After Hours Pharmacy Technician (AHPT) service. This service provides an on-site pharmacy technician, with remote pharmacist oversight, after the pharmacy closes in the evening. An existing AHPT service within the AHC system was used as a pilot to formalize and expand the service. □Methods: A literature search was conducted to determine the legal capabilities and limitations for pharmacy technician work without a pharmacist on-site. Using this information, new services were developed and added to the pre-existing services provided by the AHPT. The AHPT service was evaluated before and after implementing these changes by surveying nurses and pharmacists, along with AHPT activities snapshots. Documents were created outlining the role and responsibilities of the AHPT and a pharmacy director check list for initiating the service.□Results: The AHPT role expanded to include IV product compounding and loading/unloading of medications into automated dispensing cabinets (ADCs). These new services, along with the initial services, were viewed as valuable by 81% of surveyed nurses (N = 11), were used by 73% of surveyed nurses at least once weekly, and were estimated by 55% of surveyed nurses to save them at least one hour of work weekly. Approximately 65-80% of the AHPTs time is spent on ADC activities; the remaining time is primarily spent responding to nursing requests.
□

Conclusions: Implementation of an AHPT service is considered valuable by nursing staff, and it reduces nursing time spent on non-nursing activities. The service also provides a pharmacy resource to nurses after the pharmacy closes.

Learning Objectives:

List 3 activities that can be performed by a pharmacy technician with remote pharmacist oversight.

Describe 3 benefits of providing pharmacy services through an After Hours Pharmacy Technician Service.

Self Assessment Questions:

Which of the following are activities can be performed by a pharmacy technician with remote oversight by a pharmacist?

A Enter the central pharmacy to retrieve medications
B: Compound IV products for immediate use for verification by a rem
C: Verify new medication orders
D: Provide medications directly to the nurse for patient use before ph

What was considered by nursing staff to be one of the top three most valuable services provided by the After Hours Pharmacy Technician?

A Obtaining medications from other institutions when needed
B Loading and unloading medications into the automated dispensing
C Crediting or disposing of bulk products for discharged patients
D Locating medications

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-695 -L03-P

Activity Type: Knowledge-based Contact Hours: 0.5

OPTIMAL LOW-DENSITY LIPOPROTEIN LEVELS IN PATIENTS WITH HEART FAILURE

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Purpose: Heart failure (HF) is a complicated and prevalent disease state with a poor prognosis. A difference in clinical outcomes may exist between heart failure patients with low or high serum low-density lipoprotein (LDL) cholesterol levels. Consensus regarding optimal LDL levels in heart failure and whether there is a role for statins in these patients is lacking. Recent studies have shown that an LDL level <70 mg/dL is a negative prognostic indicator in HF and the negative association has also been shown in patients treated with statins. The purpose of this retrospective research is to further investigate whether there is an optimal level of LDL in patients with HF. Methods: This study is a retrospective chart review of patients who were admitted to Edward Hines, Jr. VA Hospital for a HF exacerbation and had a fasting lipid panel within 1 year of admission. Patients will be classified into 2 groups based on LDL levels: LDL <70 mg/dL and LDL >130 mg/dL. The data will be analyzed to determine the incidence of the primary outcome of all cause mortality between groups. Secondary outcomes will include cardiovascular events and all-cause mortality in patients treated versus not treated with a statin. Results: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the association shown in recent clinical literature between LDL levels and heart failure.

Identify theories that may explain the potential harm in low LDL levels in heart failure.

Self Assessment Questions:

Which of the following has been associated with increased overall mortality and a poor prognosis in heart failure?

A LDL level >130 mg/dL

B: Total cholesterol level ≥200 mg/dL

C: LDL level <70 mg/dL

D: Total cholesterol level <200 mg/dL

Which theory may help to explain the potential harm in lower LDL levels in heart failure?

A Endotoxin-lipoprotein hypothesis

B Sign of advanced disease

C Pleiotropic hypothesis

D A and B

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-648 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IVE GOT A FEVER! IMPROVING THE QUALITY OF FEBRILE NEUTROPENIA MANAGEMENT

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Bacterial infections are associated with substantial morbidity and mortality among patients with neutropenia. The risk of bacteremia is directly proportional to the degree of neutropenia, with patients with an ANC < 100 cells/mm3 for ≥ 10 days at the highest risk. The diminished immune response of neutropenic patients leaves the symptoms associated with a specific infection site and fever as the only indicators of infection. This, and the emergence of multidrug resistant bacteria make effective management crucial for recovery. The American Society of Clinical Oncology and the Infectious Disease Society of America have developed guidelines for the management of febrile neutropenia in adults being treated for malignancy. This study evaluates the effectiveness of a protocol developed in accordance with these guidelines, in improving the management of patients with neutropenic fever at Henry Ford Hospital. This is a retrospective quasi-experimental study. The primary endpoint is to describe compliance with contemporary guidelines. Secondary endpoints include: identifying characteristics of compliance and risk factors for noncompliance, comparing length of stay, 30 day all cause readmission rates, and days to resolution. Neutropenic patients admitted one year before and one year after guideline implementation were identified using an electronic medical record, and screened for fever and recent history of malignancy Patient characteristics will be analyzed using descriptive statistics. Compliance with the protocol between groups will be categorized and will be analyzed using the Chi Squared statistical test. Continuous data will be analyzed using the Mann-Whitney U statistical test. Time to resolution and 30 day all cause readmission rates will be analyzed using the Kaplan-Meier statistical test. Confounders of outcomes will be evaluated with bivariate tests, and those trending toward significance will be analyzed using multivariate statistical regression.

Learning Objectives:

Identify appropriate empiric treatment of febrile neutropenia based on patient presentation and characteristics.

Select an inpatient or outpatient treatment setting based on the Multinational Association for Supportive Care in Cancer (MASCC) Risk Index.

Self Assessment Questions:

A 72 year old male presented to the emergency department with a fever of 38.7C. His past medical history includes hypertension, COPD, and chronic lymphocytic leukemia (CLL) s/p treatment with fludara

A Vancomycin

B: Vancomycin/ Cefepime

C: Vancomycin/ Cefepime/ Metronidazole

D: Cefepime

A 55 year old woman presented to the emergency department with a fever of 38.5C. Her past medical history includes breast cancer s/p treatment with docetaxel and cyclophosphamide (TC) Q21 days, cycle

A 24

B 19

C 21

D 17

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-649 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF THE IMPACT OF POINT OF PRESCRIBING INTERVENTIONS ON ANTIBIOTIC UTILIZATION PATTERNS

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Purpose: Froedtert Hospital is an urban academic medical center located in Milwaukee, Wisconsin associated with the Medical College of Wisconsin. The hospital utilizes Epic as the electronic medical record platform. The current study is a single-center, pre- and post-interventional analysis of hospital antibiotic utilization. The primary objective of this study is to identify if alternative alerts built into the electronic medical record at the step of computerized provider order entry can reduce overall hospital usage of targeted antimicrobials. The study will also assess the indications chosen upon order entry for targeted antimicrobial agents, overall hospital costs for targeted agents, and provider response to the interventions. Methods: The study intervention will consist of computer-generated alternative alerts which will activate upon provider order entry of linezolid or moxifloxacin. The alerts will contain a brief summary of preferred indications for each of the targeted agents and suggestions for antimicrobial therapies which should be considered first line alternatives to linezolid and moxifloxacin. The provider will then have the option of choosing the preferred alternative for order entry, continuing with the original order, or canceling the entry entirely. Data will be collected for all patients receiving linezolid and moxifloxacin during the specified pre- and post-intervention periods. Data will be analyzed for a period consisting of 3600 admissions after implementation, which will be compared to the corresponding time period from the previous year. Results: Approval, provider education, and implementation of the alternative alerts have been completed. Outcomes remain under investigation, with data collection and analysis currently being conducted. Conclusions are pending final data analysis.

Learning Objectives:

Discuss the potential benefits of using alternative alerts at the stage of computerized provider order entry as part of an antimicrobial stewardship program.

Identify reasons to target a particular antimicrobial agent for reduction in usage with an alternative alert.

Self Assessment Questions:

What is a benefit of using alternative alerts at the stage of computerized provider order entry as part of an antimicrobial stewardship program?

A Reduced utilization of targeted antimicrobials

B: Higher percentages of use of targeted antimicrobials for specified

C: Reduction in antimicrobial costs

D: All of the above

Identify a reason to target a particular antimicrobial agent for reduction in usage with an alternative alert.

A Evidence of increased usage of the drug at your hospital relative to

B Personal preference of alternative therapies

C Documented cases of inappropriate use of the antimicrobial agent

D Both A and C are correct

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-853 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

PHARMACOKINETIC EVALUATION OF THERAPEUTIC FONDAPARINUX IN OBESITY

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Fondaparinux is an inhibitor of factor Xa commonly used for therapeutic anticoagulation. Complete absorption after subcutaneous administration and a volume of distribution limited primarily to the intravascular space results in a predictable anticoagulant effect not requiring routine monitoring. No differences have been observed in recurrence of venous thromboembolism or major bleeding when comparing patients weighing greater than 100 kilograms (kg) to those weighing less than 100 kg while receiving FDA-approved, weight-based doses of fondaparinux. However, extremes of body weight were not wel represented in the studies determining outcomes and adverse effects associated with fondaparinux. It is currently unclear if patients receiving fondaparinux 10 milligrams (mg) once daily will obtain the maximum and minimum average anti factor-Xa (anti-Xa) concentrations observed in original research. This multi-center, investigator-initiated, prospective pharmacokinetic study aims to determine if variability in anti-Xa concentrations exists between different weight categories in patients weighing greater than 100 kg. Patients admitted to select UC Health inpatient hospitals or with visits scheduled in select UC Health outpatien clinics that weight greater than 100 kg and are receiving fondaparinux 1(mg subcutaneously every 24 hours will be screened for inclusion. Patients with a creatinine clearance less than 30 milliliters per minute wi be excluded. Two to three steady-state anti-Xa concentrations (peak, trough, and a 12-hour post-dose level for inpatient subjects) will be collected from each patient enrolled in this study for the purpose of comparing concentrations obtained in patients weighing 100 to 125 kg, 126 to 150 kg, and greater than 150 kg. Anti-Xa concentrations obtaine as a result of this research will also be compared to anti-Xa concentrations reported in original research.

Learning Objectives:

Review the pharmacokinetic parameters altered in obesity.

Discuss the clinical value of anti-Xa concentration monitoring in patients receiving fondaparinux.

Self Assessment Questions:

Which of the following pharmacokinetic parameters is altered in obesity?

A Absorption

B: Clearance

C: Protein binding

D: Drug-receptor affinity

What is the average steady-state anti-Xa peak concentration range for fondaparinux?

A 0.14 – 0.19 mg/L

B 0.6 – 1.2 mg/L

C 1.0 – 2.0 mg/L

D 1.20 – 1.26 mg/L

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-650 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF A PHARMACY TRANSITION OF CARE MODEL TARGETING HOSPITALIZED PATIENTS AT HIGH RISK FOR MEDICATION RELATED READMISSIONS

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The purpose of this project was to determine the feasibility of identifying patients at high risk for medication-related readmissions during their stay at Froedtert Hospital and subsequently to implement multiple pharmacy interventions in an effort to improve medication adherence, reduce drug therapy problems and reduce readmissions. This is a descriptive, single-center, non-randomized 4-week pilot project at Froedtert Hospital, a 500 bed academic medical center. Admitted patients were identified in two ways: through an acuity tool developed internally targeting patients at high risk for medication-related readmissions or through a referral by discharge nurse-coordinators. After being identified, a pharmacy residen met with and assessed the patient for drug therapy problems and consequently communicated recommendations to the patients provider. Patients had the option to enroll in Froedterts Medication Management Mail Order service, were offered a Medication Therapy visit post-discharge, and received a post-discharge phone call approximately seven days after discharge. If the patient used an outside retail pharmacy, a discharge summary with details on medication changes was faxed to the pharmacy. In addition, patients with financial difficulties were connected with prior authorization technicians to assist in order for the patient to be able to obtain the medication in a timely and cost-effective manner. The primary outcome was the number of drug therapy problems identified per patient. Other outcomes include number of patients enrolled in each service, time commitment for this service, medication adherence rates, and readmission rates. Among the 12 patients enrolled in the pilot, 24 drug therapy problems were identified. A total of 855 minutes of pharmacy time was used to complete this pilot study, averaging about 70 minutes per patient. Therefore, on average, it took just over an hour to identify 2 drug therapy problems per patient. Other patient outcomes remain under investigation, with data collection and evaluation currently being conducted.

Learning Objectives:

Recognize ways pharmacists can be involved in the transitions of care to optimize patient outcomes

Identify limitations of pharmacy efforts in the transitions of care

Self Assessment Questions:

According to The Joint Commission, the three root causes of ineffective transitions of care are:

A Transportation breakdown, communication breakdown and accour
B: Communication breakdown, patient education breakdown, and a b
C: Failure to involve pharmacy in the transition of care process, trans
D: Communication breakdown, patient education breakdown and acc

Care transition models that have involved pharmacists to improve transition of care outcomes include all of the following except:

A Project Blue
B Project Red
C Better outcomes for older adults through safe transitions (BOOST
D Transitional Care Model (TCM)

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-854 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

OCCURRENCE AND CHARACTERIZATION OF EVEROLIMUS TOXICITY DURING FIRST AND SUBSEQUENT CYCLES IN THE TREATMENT OF METASTATIC BREAST CANCER

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Purpose: Everolimus in combination with exemestane is a novel treatment regimen for patients with advanced, endocrine-resistant breas cancer. The BOLERO-2 trial demonstrated a progression free survival (PFS) benefit with this combination of 6.9 months versus 2.8 months, compared to exemestane and placebo. In this trial, 19% of patients discontinued everolimus due to adverse events, and 63% required a dose reduction or interruption due to toxicity. The timing of these dose reductions or interruptions was not reported. Our clinicians have observed a seemingly large percentage of patients who experience first cycle (initial 28 days) toxicity. This study describes the frequency and timing of everolimus dose reductions and interruptions in patients treate with everolimus and exemestane. Methods: This was a retrospective case series of all patients who received everolimus in combination with exemestane, from May 1, 2012 through July 31, 2013 at the Stefanie Spielman Comprehensive Breast Center at The Ohio State University Comprehensive Cancer Center. Patients between 18 and 89 years of age who initiated everolimus and exemestane for the treatment of metastatic breast cancer were included. The primary objective is to determine the incidence of first cycle dose reductions or interruptions of everolimus. Secondary objectives include determination of PFS, examination of the effect previous therapies have on PFS, and characterization of differences between 10 mg, 7.5 mg, and 5 mg starting doses. Results and Conclusions: Forty-six patients met inclusion criteria. First cycle dose reductions and/or interruptions were observed in 21 (45.6%) patients. The most common indications for dos reduction or interruption were mucositis (47.6%), diarrhea (14.3%), nausea/vomiting (9.5%), thrombocytopenia (9.5%), fatigue (9.5%) and acute kidney injury (9.5%). Analysis of secondary objectives is ongoing. The early onset of everolimus toxicity seen in this series warrants thorough patient education and close clinical monitoring in the first cycle to manage toxicities.

Learning Objectives:

Identify which patients would be appropriate for treatment with everolimus in combination with exemestane.

Recognize the most common first cycle toxicities of everolimus associated with dose interruptions or reductions.

Self Assessment Questions:

Which of the following represents the adverse event associated with the highest incidence of grade 3 or 4 toxicity in patients treated with everolimus and exemestane?

A Fatigue
B: Acute kidney injury
C: Mucositis
D: Neutropenia

Which cytochrome P450 enzyme is responsible for potential drug interactions with everolimus?

A 3a4
B 2d6
C 1a2
D 2c19

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-651 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PERIOPERATIVE ORAL AMIODARONE IN COMBINATION WITH POSTOPERATIVE INTRAVENOUS MAGNESIUM TO REDUCE THE INCIDENCE OF POSTOPERATIVE ATRIAL FIBRILLATION

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Purpose: Postoperative atrial fibrillation (POAF) is the most common complication of cardiac surgery leading to increased cost, morbidity, and length of hospital stay. While the ideal prophylactic regimen is not yet well established, amiodarone has the most evidence beyond beta-blocker therapy. After investigating our institutional POAF incidence, we implemented a POAF prophylaxis protocol. Continual process improvement has led to incorporation into the preoperative evaluation, order sets, and is reinforced through staff education. Our prophylaxis protocol includes a perioperative oral amiodarone load and maintenance and intravenous magnesium postoperatively in addition to standard of care therapy. Methods: This is a single-center, retrospective, cohort study comparing pre-protocol to post-protocol patients. All patients who underwent CABG and/or valvular surgery between October 17, 2011 and October 17, 2013 who received postoperative intravenous magnesium and our perioperative amiodarone prophylaxis protocol will be included. Patients were excluded if they were <18 years old, pregnant, had a history of atrial fibrillation, were on any chronic antiarrhythmic medication or had a transcatheter aortic valve replacement. Our historical control group is established using data from an internal database. The primary aim of this study is to compare the incidence of POAF between patients in the control group versus those who received a preoperative oral amiodarone load followed by postoperative amiodarone maintenance and scheduled intravenous magnesium. Secondary outcomes will compare the incidence of POAF in patients who received incomplete preoperative or postoperative prophylaxis, length of hospital stay, in-hospital mortality, new permanent pacemaker requirement, 30-day readmission for atrial fibrillation, and cost to the control group.

Results & Conclusions: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review our institution's protocol for reducing postoperative atrial fibrillation

Review the risk factors for postoperative atrial fibrillation

Self Assessment Questions:

Which of the following regimens does our institution use in addition to standard of care for reducing POAF?

A Perioperative intravenous amiodarone and magnesium
B: Perioperative oral amiodarone and intravenous magnesium
C: Perioperative sotalol and intravenous magnesium
D: Perioperative colchicine and intravenous magnesium

Which of the following is NOT a known risk factor for POAF?

A Removal of beta blocker therapy perioperatively
B Advanced age
C Use of electrolyte replacements such as magnesium
D Diabetes

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-652 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT OF A QT MONITORING SYSTEM TO IDENTIFY HIGH RISK PATIENTS AT A COMMUNITY HOSPITAL

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Purpose: QT prolongation can lead to life-threatening cardiac arrhythmias (such as torsades de pointes (TdP)) and is considered a predictor of cardiac mortality. Patients enter the hospital with prolonged QT intervals due to congenital long QT syndrome, chronic arrhythmias, or medications. Upon admission, those patients may be exposed to further risk factors including electrolyte abnormalities and medications that prolong the QT interval. The objective of this study is to determine the validity of a QT interval risk factor flagging system to alert pharmacists to patients who are at risk of QT prolongation/TdP so that changes can be made to their therapy. Methods: This study has been approved by the institutions investigational review board (IRB) and will utilize the electronic patient surveillance and reporting program Sentri 7. This program will be used to flag patients who meet 4 or more set criteria that are known risk factors for increased QT intervals. Those criteria include: age > 65, female sex, potassium < 3.5, magnesium < 1.7, and medications with evidence of QT prolongation. The medications of interest are amiodarone, azithromycin, chlorpromazine, citalopram, clarithromycin, clozapine, disopyramide, dofetilide, dronedarone, droperidol, erythromycin, escitalopram, flecainide, fluconazole, fluoxetine, haloperidol, itraconazole, ketoconazole, levofloxacin, lithium, methadone, moxifloxacin, mirtazapine, olanzapine, paroxetine, quetiapine, ranolazine, risperidone, sertraline, sotalol, tacrolimus, trazodone, trimethoprim/sulfamethoxazole, venlafaxine, and ziprasidone. The patients information, including medications, will then be reviewed by a pharmacist and recommendations such as electrolyte replacement and alternative mediations will be made to lower the patient's risk of arrhythmia/TdP. Data will be collected regarding number of interventions, number of accepted interventions, and most common risk factors. As dictated by these findings, standing order sets and daily pharmacist review (via electronic patient surveillance) will be adjusted.

Results and conclusions: Will be presented at Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe QT interval prolongation including its risk factors and how it relates to the development of torsades de pointes and other life-threatening ventricular arrhythmias.

Review common medications with potential risk of causing QT interval prolongation.

Self Assessment Questions:

Which of the following is associated with an increased risk of torsades de pointes in hospitalized patients?

A Patient weight
B: Hypomagnesemia
C: Male sex
D: Hyperkalemia

Which of the following medications has a known risk of increasing the QT interval?

A Dapsone
B Gentamicin
C Levofloxacin
D Metronidazole

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-855 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

OUTPATIENT PARENTERAL ANTIMICROBIAL THERAPY (OPAT) FOR THE MANAGEMENT OF STAPHYLOCOCCUS AUREUS BACTEREMIA (SAB)

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Purpose: Staphylococcus aureus bacteremia (SAB) is an infection associated with significant morbidity and mortality. According to standard practices and guidelines from the Infectious Diseases Society of America (IDSA), patients may receive up to six weeks of intravenous (IV) antimicrobial therapy. Treatment is frequently administered in outpatient settings to decrease cost and risk of nosocomial infections. While OPAT is generally safe and effective, a previous study at Louis Stokes Cleveland Department of Veterans Affairs Medical Center (LSCDVAMC) found a high failure rate in veterans with bone and joint infections. This study will identify risk factors for OPAT failure in veterans with SAB such that OPAT patient selection, determination of disposition, and treatment can be improved.□□Methods: This is a retrospective chart review of patients with initial SAB diagnosis enrolled in the LSCDVAMC OPAT program between January 2011 and September 2013. Patients bacteremic with more than one organism or enrolled in the spinal cord rehabilitation program will be excluded. Collected data will include patient characteristics and demographics, past medical history, infections concomitant with SAB, microbiology, time to clearance of bacteremia, treatment regimen and setting, and success or failure of therapy. Patients will be classified as a treatment failure if one of the following criteria are met: requiring unplanned extension of IV or oral suppressive antimicrobial therapy, relapse of infection within 60 days after end of therapy, requiring admission or unplanned surgical intervention related to initial infection within 60 days after end of therapy, or failing to complete therapy. Chi-squared tests and odds ratios will be used to determine differences between success and failure groups in univariate analyses. Multivariate logistic regression will then be used to determine which risk factors are the strongest predictors of treatment failure.□□Results and Conclusions: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review pathogenicity of Staphylococcus aureus and management of SAB

Describe OPAT, associated guidelines, and the OPAT program at LSCDVAMC

Self Assessment Questions:

What is the approximate mortality rate associated with Staphylococcus aureus bacteremia?

A 0-10%
B: 10-20%
C: 20-40%
D: >50%

What are the potential advantages of OPAT compared to inpatient therapy?

A Lower risk of nosocomial infection
B Decreased cost
C Higher cure rate
D Both A and B

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-653 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

INITIAL ANTIBIOTIC SELECTION IN THE EMERGENCY DEPARTMENT AND CONTINUATION OF THERAPY IN FEBRILE NEUTROPENIA

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Purpose: □To evaluate the influence of empiric antibiotic selection in the emergency department on continued antimicrobial therapy in patients admitted with fever and neutropenia. □Background:□ Fever and neutropenia remain significant complications of patients undergoing cancer chemotherapy. Infectious complications in these patients often cause significant morbidity and mortality. The Infectious Diseases Society of America (IDSA) has compiled guideline recommendations for empiric antibiotic therapy in these patients, focusing on treatment of gram-negative bacteria. Gram-positive antimicrobial coverage, including empiric vancomycin, is only recommended in select patients meeting specific criteria. Timely antibiotic administration in the ED and appropriate selection of agents used has been shown to decrease mortality. Antibiotics started in the ED may influence the continued antimicrobial therapy patients receive when admitted to the inpatient ward. □Methods: □Retrospective chart review of patients identified using specific ICD-9 coding for "neutropenia, unspecified", "neutropenia, infection", and "other neutropenia". Included patients were ≥ 18 years old, presenting to the ED during the specified timeframe, with an ANC of ≤ 1000 cells/mm3 or with an anticipated ANC of ≤ 1000 cells/mm3. The definition of neutropenia is defined in the IDSA guidelines. Patients must also have received empiric antibiotics in the ED. Patients were excluded if they failed to satisfy the ANC requirements, did not receive antibiotics in the ED, or if a CBC/d was not obtained in the ED. Antibiotic continuation upon admission to an inpatient bed was also assessed.
□

Results:□Data collection and analysis is ongoing. Preliminary data shows an adherence to guideline recommendations of 70%.
□

Conclusion:□Available when data analysis complete

Learning Objectives:

Identify the IDSA guideline criteria for addition of gram-positive antimicrobial coverage in patients with fever and neutropenia

Review the appropriateness of empiric and continuation antimicrobial therapy in patients with fever and neutropenia

Self Assessment Questions:

Which of the following patient characteristics meets the IDSA guideline criteria for empiric gram-positive antimicrobial coverage?

A Recent chemotherapy exposure
B: Hemodynamic instability on presentation
C: Residence in a long-term care facility
D: ANC of 2500 cells/mm3

Appropriate empiric antimicrobial therapy for a patient with febrile neutropenia and hypotension requiring fluid resuscitation and vasopressor therapy on presentation to the ED includes which of the f

A Cefepime monotherapy
B Fluconazole + Vancomycin
C Vancomycin + Cefepime
D Vancomycin monotherapy

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-654 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSESSMENT OF A SEDATION TITRATION PROTOCOL FOR PATIENTS RECEIVING MECHANICAL VENTILATION

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Purpose: Proper provision of sedative and pain medications to the mechanically ventilated patient is an important aspect of care in critically ill patients. Spectrum Health implemented a sedation protocol with instructions for sedation management in mechanically ventilated patients. We sought to determine if compliance with a newly implemented sedation protocol will increase the percent of assessments achieving Richmond Agitation Sedation Scale (RASS) goal. Methods: Adult patients receiving mechanical ventilation with the newly implemented sedation protocol ordered for ≥48 hours were retrospectively identified. The primary objective is percentage of assessments at target RASS goal. Secondary objectives include intensive care unit (ICU) length of stay (LOS), duration of mechanical ventilation, cumulative dose of sedatives, incidence of delirium, occurrence of spontaneous breathing trials (SBT) and spontaneous awakening trials (SAT). Results: To date, twenty-eight non-compliant and six compliant patients have been evaluated. Demographic characteristics were similar for APACHE II score (p=0.59) and gender (p=0.07). Age and weight differed between groups (57 vs 74 years, p=0.03; 95.9 vs 63.3 kg, p=0.02). No difference was seen in percent of RASS scores at goal (40.2 vs 98.8, p=0.09). There was no difference with ICU LOS (208.5 vs 195.8 hours, p=0.65), mechanical ventilation (128 vs 71 hours, p=0.72), cumulative propofol dose (13033 vs 6428 mg p=0.13), cumulative dexmedetomidine dose (2706 vs 2135 mcg, p=0.44), percent positive Confusion Assessment Method for the ICU screens (7.3 vs 5.6, p= 1) or occurrence of SAT/SBT (54 vs 73, p=0.47; 35 vs 53, p=0.13). There was a difference in cumulative fentanyl dose (2209 vs 387 mcg, p=0.03). Conclusions: Poor adherence to the sedation protocol was observed. Adherence to the institutional protocol did not improve achievement of RASS goal. ICU length of stay and mechanical ventilation were not reduced with protocol adherence, but a decrease in the cumulative fentanyl dose was observed.

Learning Objectives:

Review sedation goals recommended by the 2013 Clinical Practice Guidelines for the Management of Pain, Agitation, and Delirium in Adult Patients in the Intensive Care Unit

List possible benefits of targeting light sedation

Self Assessment Questions:

According to the 2013 Clinical Practice Guidelines for the Management of Pain, Agitation, and Delirium in Adult Patients in the Intensive Care Unit, what level of sedation should be targeted?

A Light sedation
B: Moderate sedation
C: Heavy sedation
D: No sedation

Which of the following is a possible benefit from targeting lighter sedation?

A Longer duration of mechanical ventilation
B Shorter ICU length of stay
C Decreased physiologic stress response
D Increased delirium

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-856 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION AND REDUCTION OF PEDIATRIC DOSE ALERTS IN A COMMUNITY HEALTH SYSTEM

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Computerized provider order entry (CPOE) and dosing related computerized clinical decision support (CDS) functionalities are being used widely. Dose warnings in the CPOE system can be generated during or after order entry when an ordered medication is deemed to be out of range based on commercial or customized medication dosing rules. Multiple studies have found that most of the time, prescribers ignored dose alerts that they deemed irrelevant. Too many warnings can be overwhelming and may result in alert fatigue, which may lead to potential medication errors. Pediatric patients tend to be more sensitive than adults to medication errors. The primary objective of this project is to reduce the number of pediatric dose alerts in a community health system with a limited of pediatric population. This evaluation is considered a quality improvement project, and is therefore exempt from review by the Institutional Review Board. A retrospective analysis of pediatric medication orders causing dose alerts in order entry from July 1 to September 30, 2013 will be performed. Inclusion criteria will include overridden dose alerts triggered by medication orders for ambulatory care and hospitalized patients younger than 18 years of age. Dose alerts will be filtered by pediatric departments. Data will be analyzed and descriptive statistics will be used to determine the number of overridden pediatric dose alerts. Dosing rules associated with the triggered dose alerts will be evaluated for the appropriateness of the alerts triggering based on the recommendations from a reputable pediatric reference. The resulting recommendations for any changes to the dosing rules will be brought to a task force of pediatric pharmacists and the internal Department of Pediatrics. Collection and analysis of the data is ongoing. Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Recognize that alert fatigue can be a major problem

Identify the different types of dose alerts that trigger frequently

Self Assessment Questions:

What can occur when prescribers order medications that triggered too many irrelevant alerts?

A Prescribers can use their time more efficiently
B: Prescribers can begin to ignore alerts that may be relevant
C: There is an improvement in safety
D: A and B

Which of following dose alerts is triggered most frequently?

A Exceeds maximum duration
B Exceeds maximum daily dose
C Below minimum daily dose
D Below minimum duration

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-935 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

INTEGRATING PHARMACIST COMPETENCY EXAMINATIONS WITH ELECTRONIC TRAINING SOFTWARE

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Purpose: Hospitals accredited by the Joint Commission are expected to orient employees before they are allowed to provide care, services, and treatment to patients. In addition to completion of orientation activities, competency is assessed to determine if qualified employees have the knowledge and skills required for their jobs. The completion of the orientation activities and determination of employee competency must be documented. Currently, a large component of orientation at this health system includes oral presentations given by subject matter expert pharmacists. These pharmacists then hand-grade the examinations that the newly hired pharmacists are required to pass. Paper records of completion and competency must then be organized and maintained by the pharmacy managers. The purpose of this project is to create online learning modules for selected orientation subjects, convert competency examinations into an electronic format, and create an electronically documented sign-off for pharmacist competency with the goal of decreasing pharmacists time required to train newly hired pharmacists. Methods: This is a quality improvement project, exempt from IRB review. Topics were identified to be converted into electronic format and software capabilities were investigated. Pharmacy managers decided which topics would be considered competencies and which would require supplemental online learning modules. Current examinations were updated and converted into electronic format, including multiple-choice, multiple-choice multiple-answer, true/false, and short-answer questions. Learning modules were created in PowerPoint and uploaded with examinations. A final competency sign-off was added for electronic documentation. The appropriate subject matter expert pharmacists and managers will be trained on how to use the online system to grade short answer questions. Indicators to be measured include the number of examinations and learning modules converted to electronic format, percent of questions graded automatically, passing rate, and an analysis of frequently missed questions. Results/Conclusion: Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Recognize the required components of a competency expected for Joint Commission accreditation.

Identify what should be considered when selecting topics for competency evaluation.

Self Assessment Questions:

1.Which of the following is required for employee competency evaluation as expected by the Joint Commission for hospital accreditation?

A Random audits assessing employee performance after training
B: Appropriate Board of Pharmacy certification
C: Documented final sign-off verifying competency
D: Retrievable records documenting years of prior job experience

What should be considered when selecting topics for competency evaluation?

A Clinical topics of interest of the pharmacist
B Patient population encountered on the job
C Prior job experience from other institutions
D Areas the individual is trying to strengthen

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-857 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE USE OF MULTIPLE BENZODIAZEPINES IN CRITICALLY ILL PATIENTS WITH ALCOHOL WITHDRAWAL AND ALCOHOL RELATED DELIRUM TREMENS

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Purpose: To determine if intubated patients in a medical intensive care unit (MICU) that are treated with a combination of benzodiazepines for severe alcohol withdrawal or alcohol related delirium tremens have a difference in time to extubation, length of stay in the MICU and sedation scores, compared to those treated with a single benzodiazepine. Methods: This study is an IRB-approved retrospective cohort including patients admitted to a medical intensive care unit (MICU) with a diagnosis of alcohol withdrawal or alcohol related delirium tremens. Adult patients admitted to the MICU from January 1, 2008 to September 31, 2013 that are ≥18 years of age at the time of admission, intubated and placed on a continuous infusion of midazolam will be included. Subjects will be grouped by continuous infusion of midazolam or a scheduled around-the-clock benzodiazepine in addition to a continuous infusion of midazolam. These patients will be matched based on APACHE II score and Child Pugh in a 1:3 manner. The primary endpoint is time to extubation. Secondary endpoints that will be evaluated are length of stay in the MICU and difference in sedation scores. For statistitical analysis, categorical data will be analyzed using a chi-squared test and continuous parametric data will be analyzed using the independent student's t-test and continuous non-parametric data will be analyzed using the Mann Whitney U Test

Learning Objectives:

Identify the current pharmacological options available for the treatment of alcohol withdrawal or alcohol related delirium tremens

Describe the primary mechanism of action of benzodiazpines in alcohol withdrawal or alcohol related related delirium tremens

Self Assessment Questions:

Which of the following drug classes is first-line therapy for the treatment of alcohol withdrawal or alcohol related delirium tremens?

A Acetylcholinesterase Inhibtors
B: Barbituates
C: Alpha-adrenergic agonists
D: Benzodiazepines

Which of the following receptors are potentially affected by benzodiazepines during treatment of alcohol withdrawal or alcohol related delirium tremens?

A Alpha 1 receptors
B Alpha 2 receptors
C Gamma-aminobutyric acid (GABA) receptors
D N-methyl-D-aspartate (NMDA) receptors

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-858 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF THE GRECC CONNECT INTERDISCIPLINARY CARE TEAM ON THE HEALTHCARE OF RURAL GERIATRICS AND ASSESSMENT OF THE PHARMACISTS ROLE WITHIN THE TEAM

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Purpose: The GRECC (Geriatrics Research Education and Clinical Centers) Connect Program is an innovative initiative consisting of an interdisciplinary care team at the Madison VA that was established in April 2013. This program was developed to provide support to rural providers caring for complex geriatric Veterans along with improving the access and quality of care for older Veterans located in rural settings by providing evidence-based, geriatric primary care through interprofessional clinical consultation with a network of geriatric specialists. The purpose of this evaluation is to determine the impact of the program based on improved patient outcomes, increased utilization of the program by rural providers/geriatric Veterans, and to determine the pharmacists role within the interdisciplinary team. Additionally, this evaluation will determine demographics for patients consulted to GRECC Connect and measure the satisfaction of providers and patients utilizing GRECC Connect to help further enhance the structure of the program. Methods: A retrospective chart review will be completed for all patients consulted to GRECC Connect between April 1, 2013 and January 31, 2014. Standard baseline data will be collected including specific geriatric conditions, dual care utilization, number of potentially inappropriate medications, utilization of acute care within the past year, fall history, number of recommendations made by the interdisciplinary team, and travel distance saved to Madison VA. Additionally, three month outcome data will include number of recommendations provided and accepted by rural providers, number of potentially inappropriate medications after consultation, acute care utilization and recent fall history. Ongoing evaluation of the program will be done through provider satisfaction electronic surveys. Additionally, all patients/caregivers who received care through the GRECC Connect Telemedicine Service will be contacted via telephone to complete a satisfaction survey. Results and Conclusions: This study is currently in progress. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Explain the components that encompass the unique aspects of the GRECC Connect Clinic Model

Identify health disparities that exist for geriatric patients living in the rural setting

Self Assessment Questions:

Which of the following is true regarding the VA GRECC Connect Clinic?

A The GRECC Connect Clinic currently offers services to the Rockfo
B: Patients consulted to the GRECC Connect Clinic are scheduled fo
C: The GRECC Connect Clinic consists of an interdisciplinary team th
D: Electronic consultation is the only approach utilized by GRECC Co

Which of the following is true regarding geriatrics living in the rural setting compared to those living in an urban area?

A Rural geriatrics are at a lower risk for institutionalization
B Rural geriatrics often suffer from higher rates of chronic disease
C Rural geriatrics have easier access to specialized geriatric care
D Rural geriatrics are less likely to have functional limitations

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-655 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE IMPACT OF A PHARMACIST ASSESSING DELIRIUM IN THE MECHANICALLY VENTILATED, CRITICALLY ILL PATIENT

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Purpose The purpose of this study is to find if early identification and prevention of delirium contributes to a decrease in duration of mechanical ventilation in our ICU patient population. Methods A 2:1 comparative analysis of retrospective, non CAM-ICU group (n=60) and prospective, CAM-ICU group (n=30) was performed on all subjects requiring >48 hours of mechanical ventilation (MV) receiving continuous infusions of analgesia and sedation. Retrospective subjects were identified as positive for delirium based on terminology documented in patient progress notes because the CAM-ICU tool was not utilized. Prospective subjects were assessed daily using the CAM-ICU by the pharmacist during sedation vacation. Prevention and treatment strategies were implemented during interdisciplinary rounds.

Results Mortality and delirium were higher in the non CAM-ICU group (26% vs 20% & 40% vs 23.3%). Positive delirium had no effect on ICU LOS for either group (all $p > 0.05$), however it had a significant impact on duration of ventilation for both retrospective and prospective groups ($p=0.005$ and $p=0.012$). Patients with delirium had a longer duration of MV for both the non CAM-ICU and CAM-ICU groups (5.96 vs 3.83 days and 8.57 vs 3.87 days). When the CAM-ICU group received an antipsychotic, or had an increase in mobility, there was a decrease in delirium ($p=0.007$ and $p=0.021$). The incorporation of a new sedation plan and the utilization of dexmedetomidine also significantly decreased delirium for the CAM-ICU group ($p < 0.001$). When comparing subjects with delirium in the CAM-ICU group to delirium subjects in the non CAM-ICU group, there was no statistically significant difference in mortality, LOS, and duration of mechanical ventilation (all $p > 0.05$). Conclusions Pharmacist implementation did not decrease the duration of mechanical ventilation. Delirium was not associated with an increase in mortality or LOS.

Learning Objectives:

Describe the potential role of the pharmacist in the identification and treatment of delirium in the critically ill patient.

List 3 preventative therapies to decrease the risk of delirium in the critically ill, mechanically ventilated patient.

Self Assessment Questions:

Pharmacists may provide all of the following services except:

A Provide recommendations for appropriate dosing of sedation and a
B: Ensure sedation vacation compliance
C: Provide education about prevention of delirium
D: All of the above

All of the following are therapies to prevent delirium except:

A Minimize benzodiazepine utilization
B Early mobilization
C Prophylactic antipsychotic use
D Early identification of delirium with CAM-ICU assessment

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-656 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EXPANDING THE SCOPE OF PRACTICE FOR PHARMACY TECHNICIANS TO CONDUCTING MEDICATION HISTORIES IN THE EMERGENCY DEPARTMENT OF AN URBAN TEACHING HOSPITAL

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Purpose□The Patient Protection and Affordable Care Act established the Hospital Value-Based Purchasing Program which has provided financial incentive for hospitals to improve their transitions of care. An important transition is from the community into the hospital and this usually occurs in the emergency department (ED). A review of recent literature identifies perils of utilizing non-pharmacy personnel to conduct medication histories. Published reports have shown 53% of patients have at least one medication discrepancy upon admission and 22-27% of those have potential for harm. Furthermore, the ED is known to be a particularly high-risk environment, with frequent medication errors. Currently, a medication history is obtained by ED triage technicians or nurses at this institution. The intent of this program is to implement a pharmacy technician to perform thorough medication histories of targeted patients to improve accuracy. □Methods□Initially, a literature review was conducted to compare the effectiveness of different healthcare professionals in performing accurate medication histories. Upon completion of this review, pharmacy administration decided to measure the impact of pharmacy department conducted medication histories. A retrospective evaluation of non-pharmacy completed medication histories is being conducted to identify discrepancies. The inclusion criteria are: patient 18 years of age or older, receiving greater than 5 home medications, a diagnosis of heart failure, diabetes, or chronic obstructive pulmonary disease. APPE pharmacy students are conducting medication histories in the emergency department and documenting all discrepancies compared with the medication history of the triage technician or nurse. The data is being analyzed and summarized using input from multi-disciplinary key stakeholders. Planning for a formal technician training procedure and integration of technician workflow is being initiated.□Results □To be presented□Conclusion□To be presented

Learning Objectives:

Identify keys components of value-based purchasing and their effects or hospitals

Describe methods to successfully incorporate a pharmacy technician into the emergency department for purposes of conducting medication histories

Self Assessment Questions:

Value-Based Purchasing is currently in fiscal year 2014 of implementation. What are the financial implications for exceeding the pre-determined readmissions threshold?

A None, currently in the data collecting stage

B: CMS reduction in base operating diagnosis related group (DRG) ra

C: Office of Pharmacy Affairs to immediately suspend hospital 340b p

D: CMS reduction in the early readmitted patient's reimbursement pa

Pharmacy technician conducted medication histories were implemented to combat CMS readmission penalties associated with which of following disease states?

A Asthma

B Heart Failure

C Diabetes

D Copd

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-859 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

ARGATROBAN THERAPEUTIC MONITORING: SERUM CONCENTRATION VERSUS APTT

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Argatroban is monitored using activated partial thrombin time (aPTT). Cases have shown aPTT may be an unreliable way of measuring argatroban anticoagulation and can lead to excess drug administration. Assessing an argatroban level using an anti-IIa assay may increase the accuracy of monitoring. Adult patients 18 years or older receiving argatroban infusions between April 2012 and August 2013 were included. In April, 2013, use of argatroban anti-IIa level monitoring was implemented within our institution for all patients receiving argatroban. Demographic information, argatroban dose, dose titrations, aPTT or argatroban levels, duration of argatroban therapy, and bleeding incidents were collected. Patients monitored by aPTT (pre-April, 2013) were compared with patients monitored with argatroban levels. Demographics were similar at baseline in both groups. The mean aPTT and anti-IIa level were 54.03 seconds and 0.955 mcg/ml in the respective cohorts. Argatroban dose was significantly less in the anti-IIa group compared to the aPTT group. Major bleeding episodes were similar between the two cohorts. Therapeutic argatroban anticoagulation with anti-IIa monitoring resulted in lower argatroban dosing requirements compared to aPTT monitoring.

Learning Objectives:

Review the use of argatroban

Outline argatroban dosing recommendations

Self Assessment Questions:

Which of the following statements about argatroban is correct?

A Argatroban is a direct thrombin inhibitor.

B: Argatroban is a factor Xa inhibitor.

C: Argatroban is immunogenic.

D: None of the above.

Per package insert, it is recommended to initiate argatroban _____.

A With a 20 mcg/kg/min bolus.

B At 5 mcg/kg/min in patients with with normal organ function.

C At 0.5 mcg/kg/min in patients with liver dysfunction.

D All of the above.

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-860 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

NUTS AND BOLTS OF BUILDING NEW SERVICE-LINES: BLUEPRINTS FOR ESTABLISHING AN OUTPATIENT PHARMACY

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Purpose Currently, there are no guides that describe a generalized process for initiating new service lines in a healthcare institution. There are many studies presently showing the outcomes and benefits of various service lines, but there is nothing showing how to properly put these ideas into place. This research project is to develop guidelines addressing this process focusing on initiating an outpatient pharmacy to validate the process. Methods The project has outlined a step-by-step process starting from the development of the idea for the new service line to the final step of implementing the project in the institution. The process is comprised of 10 steps: identifying a need, identifying relevant personnel, developing a list of options, outlining the required investment, identifying outcomes, judging those outcomes, determining the value of the project, analyzing tradeoffs, creating acceptability, and finally, the implementation. The data collected included retrospective financial data of employee prescriptions as well as pricing of expected inventory. A pro forma was developed to support the guidelines presented. Summary of Results Data and methodology have supported the approach for successful initiation of new service-lines. The final endpoint will be whether or not the process creates a successful initiation of an outpatient pharmacy in the studied institution. Conclusions The goal for the project is to encompass all aspects of the decision making process so that anyone who would like to initiate a service line can use these guidelines to start any type of service line in any institution with successful implementation of the project.

Learning Objectives:

Outline the stepwise approach to initiating a new service line in a healthcare institution.

Identify the role of a pro forma in developing a business plan.

Self Assessment Questions:

Name the recommended step that includes presenting the service-line proposal to the identified decision makers.

A Listing options

B: Identifying outcomes

C: Determining value

D: Creating acceptability

Identify the main type of data collected when developing a pro forma for a business plan.

A Statistical

B Financial

C Demographic

D Anecdotal

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-861 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

MEDICATIONS ASSOCIATED WITH FALLS LEADING TO EMERGENCY DEPARTMENT VISITS IN OLDER ADULTS

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Purpose: Falls are a leading cause of injuries, hospitalization and deaths among older adults. Several risk factors for falls in older adults have been identified, but none as potentially preventable or reversible as medication use. Fall-risk increasing drugs (FRIDs) include antidepressants, anxiolytics, hypnotics, sedatives, neuroleptics, antihypertensives, antiarrythmincs, antiparkinsonsian, anticholinergic and hypoglycemic medications. The purpose of this study is to investigate whichmedication classes and patient related factors are associated with Emergency Department (ED) visits due to falls in older adults at the Williams S Middleton Veterans Hospital. Methods: A retrospective chart review utilizing ICD-9 codes was conducted on patients who presented to the Emergency Department during November 01, 2009 until July 31, 2013 for falls, dizziness, syncope and hypoglycemia. Medication use at the time of the ED visit was categorized and recorded. Additionally, multiple patient related factors were collected, including the number of FRIDs on the patients medication list, if the patient had fallen within one year prior to the ED visit, if an injury had been sustained due to the fall, and documented post fall follow-up interventions. Descriptive statistics were used to describe the general sample collected and various patient factors. Time series analysis and repeated measure ANOVA was used to describe the frequency of medication classes associated with fall related ED visits and other patient related factors as appropriate. Results and Conclusions: To be presented

Learning Objectives:

Recognize medications that can be classified as FRIDs (Fall Risk Increasing Drugs)

Identify specific pharmacologic and non-pharmacologic interventions that pharmacists can implement to reduce the risk of falls in older adults

Self Assessment Questions:

Which of the following medications is considered a FRID (Fall Risk Increasing Drug)?

A Omeprazole

B: Metformin

C: Terazosin

D: Acetaminophen

According to a study reporting on Pharmacoepidemiology and Drug Safety administrative data, what percentage of community-dwelling people aged 65 years or older experience at least one fall every year?

A 25%

B 30%

C 40%

D 50%

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-657 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

TRANSMUCOSAL IMMEDIATE RELEASE FENTANYL (TIRF) PRODUCTS AND RISK EVALUATION AND MITIGATION STRATEGY (REMS) PROGRAM: DOES IT WORK?

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The Food and Drug Administration (FDA) requires Risk Evaluation and Mitigation Strategy (REMS) programs for certain high-risk medications to ensure that the benefits of a drug outweigh its risks. In 2011, a REMS program was approved for Transmucosal Immediate Release Fentanyl (TIRF) medications to mitigate the risk of misuse, abuse, addiction, overdose, and serious complications due to medication errors with the use of TIRFs. These medications are FDA-approved to manage breakthrough pain in adults with cancer who are opioid tolerant. To date there are no studies published evaluating the effectiveness of REMS programs in reducing patient harm or its impact on prescribing practices. The current study is a retrospective chart review assessing the impact of the TIRF REMS program by evaluation of inpatient prescribing patterns before and after implementation of the REMS program. Included in this study were orders for patients admitted to Cleveland Clinic Main Campus between October 1, 2010 to September 30, 2013 for one of the following TIRF medications: Abstral sublingual tablets, Actiq oral transmucosal lozenge, Fentora buccal tablet, Lazanda nasal spray, Onsolis buccal soluble film, Subsys sublingual spray or the generic equivalents. The primary outcome is to determine if TIRF products, primarily the Cleveland Clinic formulary product Actiq, are being prescribed for the FDA-approved indication of management of breakthrough cancer pain in opioid-tolerant patients. Secondary outcomes are to describe the incidence of severe patient adverse events, including respiratory depression and mortality, and to evaluate whether the education requirements of the REMS program are being met by prescribers, pharmacists, and patients. Results and conclusion are to be presented.

Learning Objectives:

Identify the purpose of the Transmucosal Immediate Release Fentanyl (TIRF) Risk Evaluation and Mitigation Strategy (REMS) program

Describe the FDA-approved indications for TIRF medications

Self Assessment Questions:

The purpose of the TIRF REMS program is:

A To mitigate the risk of misuse, abuse, addiction, overdose, and se

B: To ensure that physicians are only prescribing TIRFs for FDA-appr

C: To improve patient safety outcomes, including reduction of respira

D: To increase access and availability of appropriate treatment therap

The FDA-approved indications for TIRF medications are:

A The management of breakthrough pain in adults with cancer who a

B The management of post-operative pain in adults for short-term us

C The management of pain in pediatric patients who are unable to to

D A & B only

Q1 Answer: A Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-936 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARISON OF TWO PREVENTATIVE HYDRATION STRATEGIES UTILIZED TO REDUCE NEPHROTOXICITY ASSOCIATED WITH CISPLATIN ADMINISTRATION

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Various hydration strategies have been used to prevent nephrotoxicity associated with cisplatin administration. Currently, there is not a universally accepted cisplatin hydration protocol, due to conflicting data in the literature. The purpose of the study is to evaluate the prevalence of nephrotoxicity in patients who received cisplatin, saline hydration, and mannitol diuresis compared to those who received cisplatin and saline hydration without mannitol diuresis. It is hypothesized that the current hydration regimen, without mannitol, is as nephroprotective compared to the previous hydration regimen with mannitol. This retrospective cohort review includes individuals 18 years or older who received cisplatin chemotherapy within an institutional health system. Patients are excluded from the review if they have a documented renal carcinoma. Patients will be categorized into two treatment groups: those who received concomitant cisplatin, mannitol, and saline hydration and those who received cisplatin and saline hydration without mannitol. The primary outcome measure of the study is prevalence of nephrotoxicity, based on change in serum creatinine. Secondary outcome measures include the following: prevalence of hypokalemia and hypomagnesemia secondary to cisplatin administration, prevalence of hospitalizations due to nephrotoxicity associated with cisplatin administration, delays in cisplatin administration due to decreased renal function, prevalence of cisplatin dose adjustments due to decreased renal function, and prevalence of progression to chronic kidney disease secondary to cisplatin administration. Additional data to be collected will include: age, gender, malignancies, cisplatin dosing, relevant comorbidities, and concomitant nephrotoxic drug therapies and dosing. Data collection is ongoing. Appropriate statistical analysis as defined by a biostatistician will be employed. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify various methods for preventing nephrotoxicity associated with cisplatin administration.

Discuss the current literature surrounding preventative agents, specifically mannitol and saline hydration, used for the prevention of cisplatin-associated nephrotoxicity.

Self Assessment Questions:

Which of the following is true regarding the prevention of cisplatin-associated nephrotoxicity?

A Fluid hydration with saline has been thought to reduce the time of

B: Hydration is the only preventative measure utilized to reduce neph

C: There are definitive guideline-based recommendations for prevent

D: Mannitol is a thiazide diuretic which has been shown to have conc

Which of the following is true regarding previously published literature evaluating the use of mannitol in the prevention of cisplatin-associated nephrotoxicity?

A Mannitol is not a current strategy to prevent nephrotoxicity associa

B Mannitol is postulated to increase cisplatin exposure in the kidneys

C Patients treated with mannitol have minimal risk of developing cisp

D Current literature is conflicting regarding the true benefit of mannit

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-862 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

INTRAVENOUS UNFRACTIONATED HEPARIN DOSING BASED ON ACTIVATED PARTIAL THROMBOPLASTIN TIME VERSUS ANTI-XA ASSAY

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Purpose: Unfractionated heparin (UFH) has a variety of important therapeutic implications, including a narrow therapeutic index for both efficacy and safety. The activated partial thromboplastin time (aPTT) laboratory assay used to monitor and adjust heparin can be affected by patient specific factors, leading to variable levels. An alternative to the aPTT is the anti-Xa heparin assay, which is a clearer reflection of UFH level and effect. The objective of this study is to design and implement an anti-Xa heparin assay dosing protocol in order to improve anticoagulation-related outcomes. Methods: A single-center, quasi-experimental study will be conducted at Froedtert Hospital. A new IV UFH dosing protocol based on anti-Xa heparin assay monitoring will be developed and implemented throughout Froedtert Hospital in March 2014. Prior to implementation, a retrospective analysis will be conducted for patients initiated on standard-heparin protocol monitored with aPTT, between October 1, 2013 and December 31, 2013. Post-implementation an observational analysis will be conducted for patients receiving IV UFH with the anti-Xa dosing protocol from March 1, 2014 through May 31, 2014. The primary outcome of the study is to evaluate the time to achieve two consecutive therapeutic anticoagulation levels when monitoring UFH based on anti-Xa compared with aPTT assays. Secondary outcomes include percentage of laboratory values within therapeutic anticoagulation range, number of infusion rate adjustments per 24 hours, number of laboratory monitoring assays per 24 hours, average turnaround time of assays, and percentage of patients experiencing recurrent venous thromboembolisms, clotting, bleeding, or hemorrhage events while receiving UFH. Preliminary results and conclusions: This study is currently in the data collection phase. Study results and conclusions remain under investigation.

Learning Objectives:

Identify the potential advantages of anti-Xa assays versus aPTT values when used for the therapeutic monitoring of IV unfractionated heparin

Discuss the current literature evaluating the use of anti-Xa heparin assays in patients receiving IV unfractionated heparin

Self Assessment Questions:

Which of the following statements is correct?

A The heparin anti-Xa assay measures the time it takes for the blooc
B: The accepted therapeutic aPTT range will be the same throughout
C: The accepted therapeutic anti-Xa range will be the same througho
D: The aPTT assay is a direct measure of how much heparin is prese

Which of the following statements has been demonstrated by recent literature regarding the topic of laboratory monitoring of heparin infusions?

A Recent literature has indicated a decreased time to achieve therap
B Recent literature has indicated a decreased time to achieve therap
C There is no literature to date that evaluates the difference between
D A number of systematic reviews have been published that evaluate

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-658 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

TELEPHARMACY IN THE OUTPATIENT CLINIC: FEASIBILITY AND EFFECTIVENESS OF VIDEO CONSULTATIONS

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Purpose The use of remote patient healthcare is increasing which expands care to patients in resource restricted settings. Video based telepharmacy has been used in community pharmacies for technician oversight and remote patient counseling. Whereas telephone based telepharmacy has been used to perform disease state management with patients in remote areas. Our primary objective is to assess the feasibility of video based patient-pharmacist consultations in a hospital based outpatient clinic setting. Secondarily we will evaluate consultation effectiveness. Our goal is to determine if video based pharmacy services will be a viable option to expand pharmacy services within OhioHealth.

Methods This study was approved by the Institutional Review Board. Patients seen in the clinic are screened for study inclusion based on pre clinic schedule review by a pharmacy resident. Patients are asked to participate if they have a diagnosis of hypertension in their problem list and are older than 18 years of age. Consented patients are given a pre-consultation hypertension knowledge test, then meet with a pharmacy resident via video conference. Visits that cannot be completed by video due to technical difficulties will take place in person. All visits address baseline disease state, lifestyle modification and medication knowledge in a semi-structured format followed by pharmacist provided education. After the visit the pharmacist makes recommendations to the provider and the patient completes a validated satisfaction survey and repeats the knowledge test. To determine feasibility we measure 1) patient satisfaction, 2) percent visits completed by video and 3) percent time on task during the consultation. To determine consultation effectiveness we evaluate the difference between pre and post consultation knowledge test scores. Results and Conclusions: Results are pending and will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify the methods used to determine the feasibility of a video telepharmacy service in an outpatient clinic setting.

Identify the methods used to determine the effectiveness of a video telepharmacy service in an outpatient clinic setting.

Self Assessment Questions:

Which one of the following was used to determine the feasibility of the telepharmacy service?

A Patient satisfaction
B: Patient consent rate
C: Patient clinic attendance
D: Pre and post consultation knowledge test scores

Which one of the following was used to determine the effectiveness of the telepharmacy service?

A Pre and post consultation knowledge test scores
B Percent visits completed by video
C The number of recommendations accepted by providers
D Patient consent rate

Q1 Answer: A Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-863 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

OPTIMIZATION OF CONTINUOUS RENAL REPLACEMENT THERAP' (CRRT) REPLACEMENT FLUID PRODUCTS

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Purpose: Continuous renal replacement therapy (CRRT) is an alternative to dialysis in those patients who are hemodynamically unstable with acute kidney injury (AKI), chronic kidney disease (CKD) or volume overload. A replacement fluid or dialysate solution, composed o glucose and electrolytes, is required with most modalities of CRRT. Currently, there are standard replacement fluid/dialysate solutions available in addition to the option for pharmacies to compound their own patient-specific custom replacement fluid/dialysate solutions. When choosing a replacement fluid/dialysate solution, one must take into consideration patient acid/base status, patient electrolytes, cost, and safety associated with that solution. At Aurora Health Care, the options of standard or patient-specific custom replacement fluid/dialysate solution are available. The primary purpose of this project was to evaluate the current CRRT workflow process and implement changes to reflect practices that provide the highest level of patient care and reduce pharmacy costs Methods: This retrospective chart review evaluated adult patients admitted to any Aurora Health Care hospital who received CRRT between July-September 2012 and January-June 2013. Data collection included the following information: replacement fluid product/dialysate chosen, replacement fluid/dialysate composition and reason for use of a patient-specific custom replacement fluid/dialysate, length of therapy, use of citrate as an anticoagulant for the CRRT machine, use of electrolyte supplementation, and the number of times filer clotting was documented. A comprehensive analysis of the data, including cost, was conducted. After data analysis was complete, proposed changes to the order set were developed, presented to the nephrologists for review and approval, and submitted for inclusion to the order sets available in CPOE. Results/Conclusions: Data collection has been completed. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify situations in which the use of CRRT can be considered

Describe the advantages of utilizing a standard replacement fluid/dialysate compared with patient-specific custom replacement fluid/dialysate

Self Assessment Questions:

Which of the following situations would be appropriate to initiate CRRT?

A Patient with one kidney

B: Patient requiring fluid removal who is currently on vasopressin

C: Patient living in the community who wants an alternative to dialysis

D: Patient who presents to the hospital with a potassium of 6.3, who i

Which of the following is a disadvantage of standard fluid replacement fluids/dialysate?

A Decreased cost

B Less sterile product manipulation

C Quality Assurance

D Ability to customize a solution to meets a patient's needs

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-864 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

A COMPARISON OF EXTENDED-INFUSION VERSUS TRADITIONAL INFUSION OF MEROPENEM: A RETROSPECTIVE STUDY

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Background: Higher resistance levels to current antibiotics have led many institutions to reevaluate the way antibiotics are administered. For carbapenems like meropenem, in vitro and animal studies have demonstrated that the amount of time in which the free drug concentration exceeds the MIC of an organism (T> MIC) is the best predictor of bacterial killing and microbial response. Gathering data from patients who participated in the pilot program of extended-infusion meropenem at Bronson Methodist Hospital, which began on November 12, 2013, will provide evidence that is needed to implement a hospital wide policy regarding extended-infusion meropenem. Objective: The primary objective of this study is to compare clinical outcomes of extended-infusion meropenem versus traditional infusion meropenem in eligible patients at Bronson Methodist Hospital. Methods: This study is a retrospective cohort study analyzing data collected from electronic charts of patients admitted to Bronson Methodist Hospital starting March 2013 until 75 patients were collected in each treatment arm. This study compares clinical outcomes in patients who received extended-infusion meropenem with traditional infusion meropenem. The primary outcome is clinical failure, defined as change in antibiotics, charted notation of clinical failure, or death in patients receiving extended-infusion meropenem versus those receiving traditional infusion meropenem. Secondary outcomes are days to procalcitonin <0.05, days to WBC <11,000, and time to defervescence. Results/Conclusions: Data collection is ongoing and final results will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the pharmacokinetic concept behind using extended-infusion meropenem

Identify potential advantages and complications with extended-infusion meropenem compared to traditional infusion meropenem

Self Assessment Questions:

Which of the following is the best parameter to measure the effectiveness of beta-lactams such as meropenem?

A Time above the MIC

B: Trough levels

C: Post antibiotic effect

D: Peak/MIC

Which of the following statements best represents the available data regarding the use of extended-infusion meropenem?

A Extending the infusion time of meropenem from 30 minutes to 3 h

B Extended-infusion dosing of meropenem is not an acceptable alte

C Utilizing extended-infusion dosing of meropenem has shown poter

D Shorter length of stay and lower mortality rates were associated w

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-659 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF A PHARMACIST-LEAD INDIVIDUALIZED PAIN MANAGEMENT PROCESS ON LENGTH OF STAY IN CHRONIC PAIN PATIENTS ADMITTED FOR A SURGICAL PROCEDURE

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The number of patients with chronic pain who are treated with opioids is increasing and inpatient pain management of these patients with opioid dependence can be difficult for providers. Poorly managed acute on chronic pain can lead to increased length of stay and hospital costs. The primary objective and purpose of this pilot project is to develop a process for pharmacist-lead individualized pain management of chronic pain patients admitted for a surgical procedure and to measure the impact that process has on length of stay. The electronic medical record system will be used to identify patients who self-identify as having chronic pain and have a recent history of treatment with opioids. Inclusion criteria include patients with chronic pain as defined above and admission to Munson Medical Center (MMC) for a surgical procedure. Exclusion criteria include age ≤18 years, patients enrolled in palliative care or hospice, pregnant women, prisoners and oncology patients. The following baseline data will be collected: sex, age, reason for admission location of admission to MMC and hospital length of stay. Once baseline data on length of stay in chronic pain patients is identified, a pharmacist-lead pain team will create individualized pain treatment plans for those chronic pain patients admitted for a surgical procedure. Length of stay will then be re-measured and compared to the baseline data. The primary outcome is the development of an individualized pharmacist lead pain management process for chronic pain patients admitted for a surgical procedure and the impact the process has on length of stay.

Learning Objectives:

Outline the process for pharmacist-lead individualized pain management of chronic pain patients admitted for a surgical procedure.

Describe different pain monitoring scales and treatment options for acute on chronic pain.

Self Assessment Questions:

Part of the pain management process includes the risk assessment of patients to determine the need for ORADE monitoring. Which of the following is the MOST effective way to detect opioid-related resp

A Continuous SpO2 monitoring

B: End tidal CO2 monitoring

C: Changes in the respiratory rate

D: Routine assessment with the Richmond Agitation Sedation Scale (

Which of the following is NOT an appropriate strategy for the management of acute on chronic pain?

A Continuation of home maintenance doses of opioids

B Addition of NSAIDs to the pain regimen

C Addition of a fentanyl patch to the pain regimen

D Addition of ketamine to the pain regimen

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-660 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF COST SAVINGS BY OPTIMIZATION OF BATCH PROCESSES AND MODIFICATION OF THE TECHNICIAN MEDICATION DELIVERY MODEL

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

Methods: Initial data will be collected related to the volume of medication returns, pharmacy errors, refill requests, missing medications, and associated labor costs. A new protocol will then be developed to optimize the technician medication delivery model and batch processes. Both intravenous and oral processes will be assessed. Data will be compared pre and post intervention. Results: This research is currently in the data collection phase. Results of this study, along with conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify pharmacy process improvements that impact cost savings and reduce medication waste

Describe how optimizing daily batches by increasing batch frequency affected cost savings

Self Assessment Questions:

Which of the following is not associated with cost savings and waste reduction?

A Reviewing current batch processes to find areas for improvement

B: Increasing the amount of medication waste per batch

C: Optimizing batch timing and frequency

D: Reducing time spent required for medication returns

Which of the following is correct?

A Increasing the amount of daily IV batches decreased pharmacy re

B Increasing the amount of daily IV batches increased pharmacy rela

C Increasing the amount of daily IV batches increased the amount o

D The results are inconclusive

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-865 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

A QUALITY IMPROVEMENT ANALYSIS OF ADHERENCE RATES DURING THE TRANSITION FROM ORAL TO LONG ACTING INJECTABLE ANTIPSYCHOTIC THERAPY WITHIN A VETERAN POPULATION

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Statement of the purpose: The primary objective of this quality improvement analysis is to determine if the use of long acting injectable (LAI) antipsychotic treatment improves medication adherence rates within a closed health care system. The secondary objectives include evaluation of costs associated with the use of LAI antipsychotics within VA Illiana Healthcare System as well as the evaluation of VA Illiana population data and internal procedures for the use of LAI antipsychotic medications.□□Statement of methods used: A retrospective chart review was conducted of patients with first time use of formulary LAI antipsychotic during inpatient psychiatric hospitalization. Data was collected on patient demographics, mental health diagnosis, medications, medication refill records, and previous antipsychotics within 12 months. Adherence rates, days of mental health hospitalization, and discontinuation rates of LAI agents were calculated. Adherence rates one year prior to treatment with LAI antipsychotics are compared to adherence rates for up to a year following initiation of LAI antipsychotic. Statistical analysis of the primary and secondary endpoints will be conducted using appropriate measures of central tendency. Demographic parameters will be analyzed using percentages of the entire study population.□□Results/Conclusion: Results and conclusions will be presented at Great Lakes Pharmacy Resident Conference.

Learning Objectives:

List advantages and disadvantages of long acting injectable therapy.

Recognize patient-related and facility-related factors to be considered in evaluating long-acting injectable antipsychotic therapy.

Self Assessment Questions:

Which of the following is an advantage of long-acting injectable versus oral antipsychotic therapy?

A Stigma
B: Tolerability
C: Cost
D: Dosing Flexibility

How long must risperidone oral therapy be continued after the first injection of risperidone long acting injectable?

A 1 week
B 3 weeks
C 1 month
D 3 months

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-661 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF A MEDICATION RENEWAL PROTOCOL AT COMMUNITY PHARMACIES WITHIN AN ACADEMIC MEDICAL CENTER

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Purpose:□Emphasis on healthcare provider collaboration has become increasingly prevalent as healthcare costs in the United States continue to rise. Prescriptive authority protocols between physicians and pharmacists can improve quality of care for patients and reduce healthcare costs. The primary objective of this study is to implement a medication renewal protocol (MRP) at two community pharmacy sites within an academic medical center. Secondary objectives are to decrease patient wait times for medication renewals through implementation of the MRP and evaluate healthcare provider perspectives of pharmacist involvement in the MRP.

□□

Methods:□Prior to implementation, the organization-wide MRP was approved by the medical board and included pharmacists. Pharmacy-specific renewal workflows were constructed with oversight from primary care physician leaders and Information Technology staff within the academic medical center. Each participating pharmacist received standardized educational materials related to the renewal of chronic prescription medications when protocol criteria were met (recent office visits and appropriate and up-to-date laboratory values). Educational training emphasized the medications included in the MRP, how to re-order these medications, and documentation procedures. Pharmacists at the two community pharmacy sites gained additional access to the organization-wide electronic medical record to perform these functions.

□□

Two months of pre- and post-implementation data were collected from the pharmacy dispensing software and electronic medical records to calculate the time required to complete prescription renewal requests and assess impact. The number of prescription renewals completed by pharmacists and the number of patients who experienced a decreased prescription wait time were evaluated post-implementation. Additionally, healthcare provider perspectives of pharmacist involvement in the MRP were evaluated through a post-implementation survey.

□□

Results/Conclusions:□This study is still under investigation. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify the benefits of including pharmacists in the medication renewal process

Recognize clinical criteria that should be considered for inclusion in a medication renewal protocol

Self Assessment Questions:

Pharmacist involvement in the medication renewal process may provide all the following benefits EXCEPT:

A Reduced healthcare costs
B: Improved quality of care for patients
C: Increased provider and patient satisfaction
D: Decreased number of physician visits

What clinical criteria were specified in the UW Health Primary Care Clinic MRP?

A Medications, office visits, laboratory values, refill quantities
B Medications, office visits, communication preferences, refill quanti
C Office visits, laboratory values, insurance limitations, communicati
D Medications, laboratory values, insurance limitations, refill quantiti

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-866 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF ANTI-XA MONITORING FOR UNFRACTIONATED HEPARIN INFUSIONS AND STANDARDIZATION OF THE PHARMACISTS ROLE IN UNFRACTIONATED HEPARIN MONITORIN

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Background: At the University of Wisconsin Hospital and Clinics (UWHC), unfractionated heparin (UFH) is consistently among the top medications associated with errors. UFH infusions at UWHC are managed by a nurse-directed titration protocol with limited and inconsistent involvement by pharmacists. Additionally, optimal practices for monitoring and managing UFH therapy remain unclear despite regular use. UFH has traditionally been monitored using aPTTs. However, it has been reported that biological factors can influence aPTTs resulting in poor predictability of UFH action and delayed therapeutic response, whereas anti-Xa levels have been reported to more accurately correlate with heparin activity. Purpose: The purpose of the project is to improve adherence to UFH nomograms by enhancing the monitoring role of the pharmacist and to improve the time to achieving therapeutic anticoagulation. Objectives: The objectives are to standardize the pharmacists role in monitoring, documenting, and communicating follow-up for UFH infusions and to evaluate monitoring o UFH infusions with either aPTT or anti-Xa levels. Methods: A workgroup of clinical and informatics pharmacists designed a workflow for pharmacists to follow when monitoring UFH infusions. This workflow includes assessing the appropriateness of provider-selected heparin intensity nomograms and dose adjustments by nurses as well as communicating with providers and nurses to promptly correct identified errors. The workgroup also developed electronic clinical support tools to facilitate standardization of monitoring and documentation of UFH infusions by pharmacists. The new workflow will be piloted on targeted medical units. A retrospective chart review will be completed to evaluate UFH infusion monitoring by anti-Xa and aPTTs. Data collected will include differences in the time to therapeutic levels, number of lab tests performed, number of dose adjustments, identification of patient populations who may preferentially benefit from anti-Xa monitoring, and an economic analysis. Results: Outcomes remain under investigation, with data collection and evaluation currently being conducted.

Learning Objectives:

Describe laboratory monitoring practices for heparin infusions

Describe how pharmacists can be involved in the management of heparin infusions

Self Assessment Questions:

Which of the following statements is true with regards to laboratory monitoring of unfractionated heparin infusions?

A Ideal monitoring practices are clearly defined since heparin has be
B: Both anti-Xa and aPTT levels should be monitored in every patient
C: Ideal practices for monitoring and adjusting heparin infusions rema
D: aPTT levels are the preferred method of monitoring heparin infusic

Which of the following statements is true with regards to monitoring heparin infusions by pharmacists?

A Monitoring heparin infusions is unnecessary since errors rarely occ
B Errors with heparin are typically minor which limits the utility of enh
C Enhanced monitoring practices for heparin infusions may improve
D Pharmacists should not be involved in the management of heparin

Q1 Answer: C Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-867 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

CURRENT EMERGENCY DEPARTMENT (ED) ALCOHOL WITHDRAWAL TREATMENT STRATEGIES AT THE CAPTAIN JAMES LOVELL FEDERAL HEALTH CARE CENTER (FHCC)

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Purpose: To determine the extent to which current alcohol withdrawal treatment in the ED adheres to evidence-based practice guidelines for alcohol withdrawal. A secondary objective is to describe current practices employed in the ED to treat alcohol withdrawal. Methods:

The study is a retrospective descriptive study of alcohol withdrawal management in the FHCC ED. Each category listed below is based on the Department of Veterans Affairs/Department of Defense (VA/DoD) guidelines and will be used as the standard of care for withdrawal management. Each standard will be divided into 2 subgroups. Group A will be those who meet the standard of care for the item in question (i.e. alcohol history assessed). Group B will be those who did not meet the standard of care for that item (i.e. alcohol history not assessed). Categories include: (1) estimation of withdrawal potential; (2) completion of physical exam; (3) completion of mental status exam; (4) labs drawn (blood alcohol level (BAL), complete blood count, liver function tests, basic metabolic panel, urine drug screen, and carbohydrate deficient transferrin, (5) standardized assessment of withdrawal symptom severity; (6) medications used for treatment (benzodiazepines, carbamazepine, or valproic acid); (7) emphasis on patient engagement in ongoing addiction treatment. Patients will be included if they are: a veteran or active duty personnel at the FHCC greater than 18 years old treated in the ED for alcohol intoxication, alcohol withdrawal, delirium tremens, or seizures related to alcohol withdrawal; received a "banana bag" or the individual contents of a "banana bag" (multivitamin, folate, dextrose, thiamine) for alcohol withdrawal or detoxification; a veteran or active military personnel with a BAL. Charts will be reviewed from January 01, 2011 to July 30, 2013. The number of participants will be determined based on availability of information gathered during a review of the hospital database. Results/Conclusion: Pending.

Learning Objectives:

Name two pharmacotherapy strategies used for alcohol withdrawal

Identify the medications used in alcohol withdrawal treatment that adhere to the VA/DoD evidence-based practice guidelines for stabilization and withdrawal management

Self Assessment Questions:

Which dosing strategy is recommended for the management of alcohol withdrawal in the VA/DoD practice guidelines?

A Fixed dosing
B: Symptom-triggered dosing
C: Neither A or B
D: Both A and B

Which class of medication is recommended by the VA/DoD practice guidelines as first-line treatment for management of acute alcohol withdrawal?

A Benzodiazepines
B Antipsychotics
C Anticonvulsants
D Opioid antagonists

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-662 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT AND EVALUATION OF A PHARMACIST-RUN COLLABORATIVE PRACTICE AGREEMENT FOR THE MANAGEMENT OF ANEMIA IN MALIGNANT DISEASE WITH ERYTHROPOIETIN STIMULATING AGENTS AT FROEDTERT AND THE MEDICAL CO

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Purpose: Adult cancer patients experience anemia for three main reasons: decreased production of red blood cells, blood loss, and peripheral destruction of red blood cells. Administration of erythropoiesis stimulating agents (ESA) reduces transfusions and increases hemoglobin levels in anemia of malignant disease. Epoetin alfa and darbepoetin alfa are currently used at Froedtert and the Medica College of Wisconsin Cancer Clinics, where there is a wide variation in initiation, titration, and documentation of ESA therapy. This complicated process has led to confusion and increased the potential for error, leaving pharmacists and nurses dissatisfied with the current ESA prescribing and documenting practices in the Cancer Clinics. The purpose of this project is to increase the safe and efficacious use of ESA therapy, standardize the workflow for ESA prescribing and titration, and improve documentation of the indication and hemoglobin goals.

Methods: An ESA medication use guideline and pharmacist-run collaborative practice agreement (CPA) was developed and will be implemented in the Cancer Clinics. The primary outcome measured will be the number of patients with ESA therapy initiated in accordance with the criteria in the ESA guideline pre and post implementation. Secondary outcomes include comparing nurse and pharmacist satisfaction pre and post guideline and CPA implementation, reimbursement rates, and transfusion rates. In addition, the number of patients receiving ESA therapy not dosed using the CPA and the reason the CPA was not used will be measured. Preliminary Results and Conclusion: Data collection and analysis is ongoing. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the risks and benefits of ESA therapy.

Recognize whether a patient meets the criteria to initiate ESA therapy based on the patients labs and indication for therapy.

Self Assessment Questions:

A patient with chemotherapy induced anemia was initiated on Procrit approximately one month ago. The hemoglobin level drawn today is 10.6g/dL. Your recommendation should be:

A Hold the dose, because the hemoglobin is >10g/dL

B: Give the dose, because the hemoglobin is <12g/dL

C: Hold the dose, because the hemoglobin is >10.5g/dL

D: Discontinue ESA therapy indefinitely, because the hemoglobin is >

There are multiple risks and benefits associated with ESA therapy use. Which of the following is a risk associated with ESA therapy use?

A Increased iron overload

B Transfusion reactions

C Increased thrombotic events

D Transfusion avoidance

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-663 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

OBTAINING ADMISSION MEDICATION HISTORIES WITH PHARMACY TECHNICIANS AND PHARMACY STUDENTS

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Purpose: Pharmacists have long been involved in the medication history acquisition portion of medication reconciliation. With the recent encouragement from the ASHP Pharmacy Practice Model Initiative to elevate technicians to more advanced practice areas, some institutions have implemented systems with pharmacy technicians performing this duty. The William S. Middleton VA Pharmacy team is implementing this system in spring 2014. The purpose of this project is twofold: to improve the internal performance measure of medication reconciliations performed by pharmacy on the day of or day after admission and to allow for additional pharmacist time to be redeployed to more clinically-driven tasks. Methods used: Prior to data collection, a small group of pharmacy technicians and students were trained to obtain medication histories for admitted patients. Time from admission to completion of medication reconciliation will be measured, using chart reviews of time-stamped chart notes to obtain this data. Specifically, the percentage of medication reconciliations completed within 12, 24, 48, and 72 hours will be collected and compared to baseline data. Additionally, the number of medication discrepancies identified by technicians and pharmacy students will be tracked and compared to pharmacist-driven baseline data, in an effort to test for maintenance of quality of medication history performed. Lastly, time spent performing medication histories by the technician will be tracked, providing data around the time savings for the pharmacists that would otherwise have been obtaining medication histories. Medication histories collected by pharmacy students will be included in the measured metrics and analysis. Baseline data (non-technician) collected will include medication reconciliations completed at 12, 24, 48, and 72 hours and the average number of discrepancies per medication history performed.

Preliminary Results: Data collection will begin once the technician admission history program is running in February 2014. Conclusions Reached: Results to be available at a later date.

Learning Objectives:

Identify the effect of implementing a technician-driven medication history program on the quality of medication history collected

Recognize the effect of implementing a technician-driven medication history program on timeliness of medication reconciliation completion

Self Assessment Questions:

As indicated by the number of discrepancies identified in the medication histories, did the quality of the medication history collected improve, stay the same, or decline?

A Quality improved

B: Quality was maintained

C: Quality declined

D: Students and technicians achieved differing results

What affect does the addition of technicians and students into the admission medication history process have on the timeliness of medication reconciliation completion?

A Medication reconciliation is completed in a shorter period of time

B Timeliness of admission medication reconciliation is not affected

C Time to completion of admission medication reconciliation is exter

D Data on timeliness of medication reconciliation completion was inc

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-868 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF ENOXAPARIN VERSUS ANTI-XA ADJUSTED DALTEPARIN FOR VENOUS THROMBOEMBOLISM PROPHYLAXIS IN HIGH-RISK TRAUMA PATIENTS

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Purpose□Venous thromboembolism (VTE) is a common and potentially life-threatening complication in hospitalized patients. The risk of VTE is highest in the subset of critically injured patients, with estimated incidence of deep vein thrombosis (DVT) and pulmonary embolism (PE) without prophylaxis ranging from 40-80% and 4-10%, respectively. Studies evaluating the use of unfractionated heparin and low-molecular weight heparins (LMWH) have concluded that LMWH is more efficacious for VTE prophylaxis in high-risk trauma patients (multiple orthopedic injury; injury severity score >9). However, conflicting evidence exists regarding the efficacy of once-daily dalteparin for VTE prophylaxis in high-risk trauma patients. In September 2012, the University of Cincinnati Medical Center (UCMC) changed the formulary low-molecular weight heparin from dalteparin to enoxaparin. Prior to this change, the trauma service was dose-adjusting dalteparin based on anti-Xa levels. Following the formulary change, high-risk trauma patients receive enoxaparin 30mg SQ Q12h dosing without routine anti-Xa monitoring. This change provides UCMC with the unique opportunity to compare outcomes of anti-Xa adjusted dalteparin with non-adjusted enoxaparin prophylaxis in high-risk trauma patients.□□Methods□This retrospective, single center, cohort study will include patients admitted to the trauma service for at least 72 hours at University of Cincinnati Medical Center and receiving anti-Xa adjusted dalteparin, or non-adjusted enoxaparin fo VTE prophylaxis. The primary outcome is to determine the incidence of VTE in trauma patients receiving anti-Xa adjusted dalteparin (October 2011 - September 2012) versus non-adjusted enoxaparin (October 2012 - September 2013). Secondary outcomes are to determine the incidence of death and bleeding events between the two groups, as well as to determine patient-specific factors associated with VTE or bleeding events.□□Results□Data collection and analysis are on-going.

Learning Objectives:

Describe venous thromboembolism risk factors

Discuss venous thromboembolism prophylaxis strategies in trauma patients

Self Assessment Questions:

Which of the following represents the venous thromboembolism risk factors of Virchow's triad?

A Venous stasis, physical activity, coagulopathy

B: Venous stasis, endothelial damage, hypercoagulability

C: Endothelial damage, adequate blood flow, low injury severity score

D: Younger age, physical activity, glasgow coma scale > 8

Which of the following is the most appropriate choice for venous thromboembolism prophylaxis in high-risk trauma patients?

A Unfractionated heparin

B Argatroban

C Low molecular weight heparin

D Warfarin

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-664 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

HIGH DOSE VERSUS STANDARD DOSE OSELTAMIVIR FOR TREATMENT OF SEVERE INFLUENZA IN ADULT ICU PATIENTS

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Background: Although oseltamivir is recommended as the treatment of choice for severe influenza, the optimal dose is a topic of debate. The approved dose is 75mg twice daily (or renally-adjusted equivalent), regardless of severity of illness. However, the Centers for Disease Control suggest using higher doses of oseltamivir (i.e.150mg twice daily may be warranted for severe influenza. Unfortunately, there are limited data comparing high dose to standard dose oseltamivir. To date, there has been no published study evaluating outcomes with high dose oseltamivir exclusively in patients admitted to the intensive care unit (ICU).□□Objective: To evaluate differences in clinical outcomes for severely ill ICU patients receiving high dose (>150mg total daily dose equivalent) or standard dose (≤150mg total daily dose equivalent) oseltamivir for the treatment of influenza□□Methodology: A non-interventional, retrospective chart review will be conducted to primarily evaluate differences in ICU length of stay for severely ill patients with influenza receiving high dose or standard dose oseltamivir. Secondary objectives include comparing the change in Sequential Organ Failure Assessment (SOFA) Score between 0 and 48 hours after oseltamivir initiation (delta SOFA0-48h), and differences in cure rate, hospital length of stay, and mortality rate. Adult patients admitted to the ICU, who required supplemental oxygen above their baseline requirements, had laboratory identification of influenza virus, and received treatment with oseltamivir for at least 24 hours will be included. Data describing patient demographics, baseline characteristics, ICU length of stay, delta SOFA0 48h, cure at day 5, duration of oxygen requirements above baseline, hospital length of stay, and 28 day mortality will be collected. Nominal data will be analyzed using the Chi-Square or Fishers exact test and continuous data will be analyzed using the Students t-Test or the Mann-Whitney U-Test, as appropriate.□□Results and Conclusions: To be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss the current literature evaluating high dose versus standard dose oseltamivir in patients with influenza admitted to the intensive care unit

Describe the design and methods of the current study

Self Assessment Questions:

Which of the following statements is correct?

A High dose oseltamivir (>75mg BID) has been shown to decrease r

B: High dose oseltamivir has been shown to decrease time on mecha

C: High dose oseltamivir has been shown to decrease ICU length of s

D: There has been no study evaluating high dose versus standard do

What is the FDA approved dose for influenza treatment in a patient with normal renal function?

A 150 mg BID

B 75 mg BID

C 150 mg once daily

D 75 mg once daily

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-665 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF RAPID IDENTIFICATION OF ACINETOBACTER BAUMANNII VIA MATRIX-ASSISTED LASER DESORPTION IONIZATION TIME-OF-FLIGHT (MALDI-TOF) AND ANTIMICROBIAL STEWARDSHIP INTERVENTION IN PATIENTS WITH PNEUMONIA

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Purpose: Rapid pathogen identification is important in optimizing outcomes in patients (pts) with infections due to multi-drug resistant (MDR) pathogens, including Acinetobacter baumannii (AB). Previous studies have demonstrated improved outcomes in pts with the use of rapid diagnostic tests and antimicrobial stewardship (ASP) interventions Our study sought to evaluate the impact of rapid identification of AB via MALDI-TOF and ASP interventions in pts with bacteremia and/or pneumonia. Methods: Retrospective, quasi-experimental study of adult inpatients with bacteremia and/or pneumonia due to AB between Jan 2011 and Aug 2013. In the pre-intervention period, AB was identified via traditional microbiological methods and the results of a positive blood culture were communicated to the treating physician. During the intervention period, AB from a blood and/or respiratory culture was identified by MALDI-TOF and results were communicated to the ID PharmD. The primary outcome was time to effective therapy. Secondary outcomes included clinical cure at seven days and in-hospital mortality. Differences between groups were explored using a Wilcoxon rank-sum, $\chi 2$, students t-test or Fishers exact test as appropriate. A two-tailed α of ≤ 0.05 was considered statistically significant. Results/Conclusions: 206 pts were reviewed, 136 met inclusion criteria. Time to effective therapy was significantly reduced (75 hours vs. 28 hours; P=<0.01) and a higher rate of clinical cure was achieved in the intervention group (8% vs. 24%; P=0.01). There was no difference in hospital mortality between the groups (21% vs. 19%; P=>0.99). Our study demonstrates the impact of MALDI-TOF combined with ASP intervention on clinical outcomes in pts with AB bacteremia and/or pneumonia; an impact which would likely be experienced by patients in other healthcare settings.

Learning Objectives:

Recognize the implications of rapid pathogen identification and early appropriate antimicrobial therapy on patient outcomes.

Describe the impact of MALDI-TOF and antimicrobial stewardship interventions on patients with infections due to Acinetobacter baumannii

Self Assessment Questions:

1.In patients with bacteremia due to Acinetobacter baumannii, mortality has been shown to be reduced by which of the following interventions:

A Strict use of contact precautions and isolation parameters

B: Early effective antimicrobial therapy

C: Prompt fluid resuscitation

D: Decreasing overall and infection-related costs

2.When compared to traditional microbiological methods, pathogen identification via MALDI-TOF can reduce the time to organism identification by approximately:

A 6 days

B 72 hours

C 1.5 days

D 320 minutes

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-666 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

OPTIMIZATION OF PAIN AND SEDATION MANAGEMENT IN INTUBATED PATIENTS

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Purpose: Updated guidelines for the management of pain, agitation, and delirium in critically ill patients were published by the Society of Critical Care Medicine in 2013. The guidelines emphasize the importance of adequately treating pain, recommend maintaining light levels of sedation, and suggest using non-benzodiazepine sedatives over benzodiazepines in intubated patients. Certain guideline recommendations that have been associated with improved clinical outcomes are underutilized at Aurora Health Care (AHC). The objective of this project is to optimize pain and sedation management in intubated patients through provider, nursing, and pharmacy education and revision of AHCs pain and sedation order set. Methods: Baseline data was collected for intubated AHC patients in July 2013 and included type and amount of sedatives and analgesics, duration of ventilation, achievement of the target level of sedation, and length of stay. A literature search was conducted to identify best practices for pain and sedation management in intubated patients. Educational materials were developed and presented to providers, nurses, and pharmacists. The order set was revised to include a new consult for pharmacists to review the current pain and sedation regimen for optimization, add additional education, rearrange the order of sedatives to emphasize the use of non benzodiazepines, and modify dosing of sedative and analgesic boluses to be weight-based. The revised order set is currently pending acceptance. The project will be piloted in one AHC intensive care unit in February 2014 and data post-interventions will be collected. Results/Conclusions: Data collection is currently ongoing. Results will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe methods of optimizing pain and sedation management in intubated patients based on 2013 Society of Critical Care Medicine guidelines.

List adverse clinical outcomes that have been associated with the use of benzodiazepine sedatives.

Self Assessment Questions:

Which of the following is recommended by 2013 Society of Critical Care Medicine guidelines?

A A deep level of sedation should be targeted

B: Pain should be routinely monitored

C: Benzodiazepines should be used over non-benzodiazepines

D: Non-opioid analgesics should be used over opioids

Use of benzodiazepines may be associated with an increased risk of which of the following clinical outcomes?

A Self-extubation

B Mortality

C Delirium

D Infection

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-667 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPROVING MEDICATION ADHERENCE TO REDUCE HOSPITAL READMISSIONS THROUGH POST-DISCHARGE PATIENT FOLLOW UP AND TRANSITION OF CARE HANDOFF TO OUTPATIENT PHARMACIES

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Purpose: Opportunities exist for increasing the quality of care provided t patients transitioning from an inpatient setting to an outpatient setting. Nearly two-thirds of post-discharge adverse events are related to medications, creating an opportunity for pharmacists and pharmacy team members to streamline the transition of care. The primary objective of this project is to define the impact of post-discharge pharmacist telephone call follow up on readmission rates. The secondary objective is to determine the impact on medication adherence.□□Methods: This project was identified as quality improvement and thus exempt from Institutional Review Board review. Patients discharged from October 14, 2013 through January 14, 2014 who filled prescriptions at the onsite outpatient pharmacy were identified and contacted by a pharmacy team member by telephone between two and seven days post-discharge. The pharmacy team members assessed medication adherence, adverse events, and the patients preference for prescription transfer. The pharmacy team members also provided education and reinforced adherence based on perceived opportunity. When applicable, prescriptions were then transferred to the patients pharmacies of choice along with transition of care information. Readmission rates were calculated for the intervention population and compared to readmission rates of all patients discharged during the same intervention period. Adherence rates were assessed by patient report during the post-discharge telephone call and, if applicable, by obtaining refill history of transferred prescriptions at the patients preferred pharmacies.□□Preliminary Results: Phone calls were attempted for a total of 409 discharge patients between October 14, 2013 and January 14, 2014. Of these patients, a pharmacy team member made contact with 273 patients (67%). Final results and conclusions will be presented at the 2014 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recognize situations in which patients may benefit most from transition of care communication between inpatient and outpatient settings

List the three conditions for which the Centers for Medicare & Medicaid Services require readmission measures in order to calculate a hospitals excess readmission ratio

Self Assessment Questions:

For which of the following situations may patients benefit most from transition of care communication from their inpatient to outpatient practitioners?

A A medication is discontinued

B: No medication changes were made; patient admitted for observati

C: An antibiotic was recently used

D: Both A and C are correct

What are the three conditions for which the Centers for Medicare & Medicaid Services require readmission measures in order to calculate a hospitals excess readmission ratio?

A Chronic obstructive pulmonary disease, atrial fibrillation, congestiv

B Acute myocardial infarction, pneumonia, congestive heart failure

C Acute myocardial infarction, diabetic foot infection, congestive hea

D Acute myocardial infarction, pneumonia, atrial fibrillation

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-937 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFECTS OF CYTARABINE DOSING STRATEGIES ON COMPLETE REMISSION DURATION IN ACUTE MYELOID LEUKEMIA

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Purpose: High-dose cytarabine (HiDAC, 3 gm/m2) is the most widely accepted regimen for consolidation therapy. Recent studies have shown intermediate dose cytarabine (IDAC, 1-1.5 gm/m2) provides decreased toxicities with no difference in overall survival (OS). The objective of this study was to evaluate the duration of CR between IDAC and HiDAC on disease-free survival (DFS). Methods: This is a retrospective cohort review of patients > 18 years old who received consolidation with IDAC or HiDAC from January 2002 to December 2013. The primary endpoint was DFS comparing 3 gm/m2 versus 1.5-2 gm/m2 for the first cycle of consolidation. Results: Data collection and analysis is currently ongoing and the results will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

State the most widely accepted regimen for consolidation chemotherapy for acute myeloid leukemia.

Describe a toxicity that has been associated with the use of high dose cytarabine (3 gm/m2)

Self Assessment Questions:

JW is a 55 YOM with AML with favorable cytogenetics that received the standard induction regimen of 7+3. JW achieved remission and is going to start consolidation therapy. What is the most appropri

A Cytarabine 100 mg/m2 IV every 12 hours on Days 1,3,and 5 for 4

B: Cytarabine 1.5 gm/m2 IV every 12 hours on Days 1,3, and 5 for 4

C: Cytarabine 3 gm/m2 IV every 12 hours on Days 1, 3, and 5 for 4 c

D: Cytarabine 400 mg/m2 IV every 12 hours on Days 1, 3, and 5 for 4

JW is about to receive high dose cytarabine for consolidation, what unique toxicity should the pharmacist educate JW on?

A Rash

B Nausea/vomiting

C Bone Marrow Suppression

D Cerebellar Toxicity

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-668 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF EVIDENCE-BASED MANAGEMENT OF ADULT ASTHMA PATIENTS IN A PRIMARY CARE CLINIC

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Purpose: Uncontrolled asthma costs the United States billions of dollars annually. Though the most recent asthma treatment guidelines were released several years ago, literature provides mixed results on the evidence-based state of adult asthma care. The purpose of this study is to add to the body of knowledge illustrating adult asthma care in a primary care setting, as well as to evaluate the adult asthma care provided at my site. Results will lead to quality assurance strategies and initiatives. Methods: The University of Wisconsin Health Science Minimal Risk Institutional Review Board and the Dean Foundation Institutional Review Board approved this research study. In this retrospective cohort study, patient records from the internal medicine (IM), family medicine (FM), and pharmacy departments of this primary care clinic will be reviewed and analyzed. At least one asthma-specific ICD-9 diagnosis code will be required for inclusion. Exclusion criteria include chronic obstructive pulmonary disease-, cystic fibrosis-, and emphysema-specific ICD-9 codes or evidence of other lung-related comorbidities such as prescribed medications for these conditions. Demographic data and asthma-related symptomatology (e.g. asthma exacerbations, frequency of night-time symptoms, urgent care visits/hospitalizations) will be collected from medical records. Pharmacy records will be reviewed to document asthma-specific medication regimens and related information (e.g., dispensing data to evaluate adherence, use of oral steroids). Medication regimens will be compared to NAEPP guidelines to determine guideline implementation rates. Descriptive statistics will be used to characterize patients and calculate guideline implementation rates. Independent sample t-tests and Chi-squared tests will be used to assess group differences in demographic variables (IM versus FM patients). Chi-squared tests will be used to evaluate differences in guideline implementation rates for IM versus FM patients. Data from this study will be aimed at assuring and improving adult asthma care. Results/Conclusions: Results will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Describe the importance of using evidence-based care for the treatment of asthma

List the symptoms of uncontrolled asthma

Self Assessment Questions:

In 2011, how many adults suffered an asthma attack?

A 5.2 million

B: 14 million

C: 500,000

D: 9.2 million

How many exacerbations per year indicate uncontrolled asthma

A 0

B 1

C 2

D B and C

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-669 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PROGRAM OF ALL-INCLUSIVE CARE FOR THE ELDERLY (PACE) AS A MODEL FOR INTEGRATED CARE: A PILOT STUDY TO ASSESS HEALTH OUTCOMES AND COST-EFFECTIVENESS

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Purpose: Program of All-Inclusive Care for the Elderly (PACE) is a holistic patient-centered care model hypothesized to improve health outcomes thereby reducing healthcare costs. The purpose of the presen study is to determine whether the PACE model could be expanded in alignment with Centers for Medicare and Medicaid Services (CMS) vision to create an integrated model of care for dual eligible beneficiaries. Methods: The proposed retrospective chart review was IRB approved through Henry Ford Health System. A total of 96 subjects are required for α = 0.05, = 0.8, CI = 95% and a sample population of 9.4 million to represent the approximate number of dual eligible beneficiaries nation-wide. The inclusion criteria was any PACE participant that enrolled from January 2011-June 2012. Participants enrolled in palliative care, disenrolled from the program after ≤ 3 months have documented medication non-adherence or had missing data at baseline, 6 months or 1 year were excluded from the study. The two objectives of the study are: (1) To compare general health outcomes i.e. body mass index (BMI), blood pressure, hemoglobin A1c (HgA1c), low density lipoprotein (LDL), geriatric depression scale (GDS) score and vitamin D level at the time of program enrollment (baseline), six months post-enrollment and one year post-enrollment (2) To compare healthcare related expenditures in PACE programs to the national averages for dual eligible beneficiaries by assessing emergency department visits, hospital admission rates, 30-day hospital re-admission rates and temporary/permanent placements to nursing homes, skilled rehabilitation centers and assisted living facilities. Results and Conclusion: Preliminary results demonstrate that enrollment into a PACE program positively impacts health outcome measures over the course of 1 year. Final results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe how the PACE model aligns with CMS vision to improve healthcare delivery to dual eligible beneficiaries

Explain how integrated care programs improve health outcomes and healthcare-associated expenditures

Self Assessment Questions:

Which of the following best describes a PACE program?

A PACE is a managed care organization that acts as the insurance

B: PACE is a program that allows its participants to use their existing

C: PACE is a managed care organization that acts as the insurance p

D: PACE is a managed care organization that acts as the insurance p

Which of the following findings best shows that PACE programs improve overall health for its participants?

A Body mass index decreased at 6 months post enrollment from bas

B Vitamin D level increased at 1 year post enrollment from baseline

C Body mass index increased at 1 year post enrollment from baselin

D Geriatric depression scale score increased at 6 months post enroll

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-869 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFECT OF COMPREHENSIVE ANTICOAGULATION MANAGEMENT ON ATTAINMENT AND MAINTENANCE OF THERAPEUTIC INRS FOLLOWING ORTHOPEDIC SURGERY

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Orthopedic surgery is associated with a 4.3% risk of post-orthopedic venous thromboembolism per the 2012 CHEST guidelines. This is concerning given that the three-month morality following pulmonary embolism is between 15-18%. Therefore, post-surgical anticoagulation is recommended. Warfarin is often employed to this end, but its narrow therapeutic index necessitates close monitoring and dosage adjustments to maximize the therapeutic benefit to risk ratio. Inpatient pharmacy-managed anticoagulation, improved transitions of care, and outpatient anticoagulation clinics have been independently associated with improvements in warfarin use, but to our knowledge, a comprehensive anticoagulation management policy that includes all of these components has not been previously evaluated. Our institution recently implemented such a policy. Inpatient management, which was previously conducted by orthopedic surgeons, became the responsibility of clinical pharmacists and time to enrollment in our anticoagulation clinic at discharge was shortened from four days to one day. The aim of this single center, retrospective cohort study is to characterize the effects of this comprehensive management policy on efficacy and safety outcomes. We are currently reviewing the medical records of patients receiving warfarin following orthopedic surgery before implementation of the policy (surgery between July 15th, 2012 - January 5th, 2013) and comparing them to patients with surgery performed after implementation (between January 13th, 2013 - July 15th, 2013). We will exclude patients whose surgeries took place during the week of implementation to minimize confounding. Patient demographics, date and type of surgery, discharge date, INRs, relevant disease states, concomitant medications liver and hematologic labs, and details of hemorrhagic complications will be recorded. We will compare time to first post-discharge INR > 2, time within therapeutic range, proportion of measured INRs < 1.5, proportion of measured INRs > 4, and frequency of hemorrhagic complications. Results and conclusions will be presented during the conference.

Learning Objectives:

Explain the thrombotic risks associated with orthopedic surgery.

Discuss the benefits of a comprehensive anticoagulation management policy.

Self Assessment Questions:

To minimize the risk of thrombosis following orthopedic surgery, the CHEST Guidelines for the Prevention of VTE in Orthopedic Surgery Patients

- A Recommend that antithrombotic therapy be continued for a minimu
- B: Recommend that antithrombotic therapy be continued for a minimu
- C: Suggest that antithrombotic therapy be continued for up to 35 days
- D: Both a) and c)

Based on the findings from Dager et al. which of the following was not associated with the use of a pharmacy-managed anticoagulation service for warfarin?

- A Reduced length of hospitalization
- B Fewer patient days with INRs > 3.5
- C Shorter time to INR > 2.0
- D Fewer patients concomitantly taking significantly interacting medic

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-670 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

RENAL DOSING MEDICATION DECISION SUPPORT USING RULE-BASED CONTEXTS

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Background: Clinical decision support (CDS) pertaining to adjusting medication doses and frequencies based on patients renal function has been previously described in the literature. Published accounts of renal dosing CDS have described investigators implementing pop-up alerts, which may interrupt the clinicians workflow and lead to alert fatigue. Secondly, the implementation of pop-up alerts has been met with limited success and conflicting results. Currently, no CDS for renal dose adjustment of medications is implemented at Cleveland Clinic. The study investigators were looking to implement a novel method of decision support that goes beyond the use of pop-up alerts. Objective: To design, implement, and evaluate real time renal dosing CDS for providers electronically ordering targeted medications using the electronic health record. Methodology: This was an IRB-approved pre/post implementation study that evaluated if implementation of context-based decision support is effective in guiding prescribers to choose initial therapy in accordance with renal dosing guidelines. For this study, we built functionality in our electronic medical record that, upon medication ordering, calculated the patients creatinine clearance and adjusted which dose and frequency are selected by default upon initial appearance to the prescriber. Adult patients were included in the study if they had renal dysfunction defined as a creatinine clearance of less than 50 mL/min and were ordered one of the studys "target" medications: ciprofloxacin, famotidine, metoclopramide, enoxaparin, gabapentin, and dabigatran. The studys primary endpoint was the difference in number of orders placed with recommended dose and/or frequency defaults before and after CDS implementation. Secondary endpoints included differences before and after CDS implementation in the following: proportion of orders that generated a renal dosing-related intervention by a pharmacist, cost of therapy, and time-to-verification after order signing. Results and Conclusions: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

List characteristics of effective clinical decision support

Discuss the effects of utilizing context-based decision support, rather than "pop-up" style alerts

Self Assessment Questions:

Which of the following characteristics should be considered in developing effective clinical decision support?

- A Decision support should be presented at the appropriate point in th
- B: All CDS alerts should display to every clinician involved in the pati
- C: “Pop-up” style alerts are the most effective form of alerting for eve
- D: Resolution of alerts should require the clinician to input non-pertine

What can be considered an advantage for utilization of context-based renal dosing decision support?

- A “Pop-up” style alerts demonstrate consistent ineffectiveness in the
- B Contextual clinical decision support allows the flexibility to offer dif
- C Effectiveness of context-based renal dosing decision support has
- D Context-based renal dosing decision support will eliminate the nee

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-938 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

CLOSTRIDIUM DIFFICILE INFECTION RATES AND PHARMACIST ANTIMICROBIAL STEWARDSHIP INTERVENTIONS IN A COMMUNITY TEACHING HOSPITAL

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Purpose: Over the past few decades Clostridium difficile infection (CDI) rates have increased substantially, along with the severity of the disease. The existing literature strongly supports antimicrobial stewardship as a key component to reducing CDIs. The objectives of this study are to quantify and categorize antibiotic related interventions performed by pharmacists and to evaluate hospital-wide CDI rates.□□Methods: Antimicrobial stewardship is a responsibility for all ou pharmacists. In December 2013, an educational series on appropriate antibiotic selection, focusing on pneumonia and urinary tract infections, and early IV to PO conversion was presented to our pharmacists. The intention of this series was to rejuvenate the stewardship program and increase pharmacist engagement. Efforts were also implemented to increase the midnight pharmacists involvement in antimicrobial stewardship. Retrospective chart review will be conducted to measure the number and types of antibiotic related interventions performed by pharmacists. Intervention reports within the health systems electronic medical record will be utilized to analyze interventions. Antibiotic interventions will be divided into the following categories: duplicate therapy, renal adjustment, other dose adjustment, IV to PO conversion, narrow antibiotic coverage, broaden antibiotic coverage, change automatic stop date, adverse drug event, change antibiotic duration, change dosing frequency, antibiotic education, clarify allergy, initiate antibiotics, discontinue antibiotics, drug interactions or contraindications and other. CDI rates will be obtained from existing hospital infection control reports. Pharmacist interventions and CDI rates will be evaluated from September 1, 2013 to November 30, 2013 and January 1, 2014 to March 31, 2014 for comparison. No patient specific information will be collected or analyzed during this study. CDI rates will be analyzed to determine if a correlation with pharmacist antibiotic interventions exists.□□Results and Conclusions: Results are pending and will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify risk factors for Clostridium difficile infections

Describe the key components of an antimicrobial stewardship program

Self Assessment Questions:

Which of the following antibiotic classes is/are most commonly linked to the development of Clostridium difficile infections?

A Cephalosporins

B: Aminoglycosides

C: Fluoroquinolones

D: Both A and C

Which of the following benefits can be the result of a multidisciplinary antimicrobial stewardship program?

A Less ongoing physician education required

B Reduction in antimicrobial use

C Sustained cost savings

D Both B and C

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-672 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF VANCOMYCIN INDUCED NEPHROTOXICITY FOLLOWING IMPLEMENTATION OF A PHARMACIST-INITIATED DOSING SERVICE.

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Purpose□A previous Cincinnati Veterans Affairs Medical Center (CVAMC) study conducted in 2011 indicated there was no difference in nephrotoxicity after implementation of a protocol for pharmacists to dose vancomycin. Recent literature publications indicate vancomycin nephrotoxicity incidences are increasing for numerous reasons around the country. At our facility, increasing concerns regarding vancomycin nephrotoxicity among physicians, pharmacists, and patient safety advisors led to this study. The purpose of this study is to compare patient characteristics in the nephrotoxic and non-nephrotoxic group to identify differences that may contribute to the incidence of nephrotoxicity.□Methods□The study is a retrospective chart review, quality improvement study performed at the CVAMC. Prior to study initiation, study protocol was approved by both the IRB and VA R&D. The health systems electronic medical record will be used to identify patients who received vancomycin from May to December of 2013. The study will exclude patients who did not have a documented vancomycin trough level, patients on hemodialysis, patients who received vancomycin for surgical prophylaxis, and patients who received vancomycin as outpatient therapy or at another facility prior to admissior to the CVAMC. Eligible patients will be stratified into one of two groups, either nephrotoxic or non-nephrotoxic. The following data elements will be collected for all patients included in the study: age, gender, height, weight, vancomycin dose, indication for use, goal trough, and vancomycin levels drawn. Additional risk factors known to increase the incidence of vancomycin nephrotoxicity will also be evaluated. These include obesity, as defined as BMI ≥30, >4 grams/day dosing, >20mcg/mL trough levels, and other concomitant nephrotoxic agents. Collected data will be evaluated for differences to identify if certain characteristics contribute to vancomycin nephrotoxicity at our facility.□Results/Conclusions□Results and conclusions will be presentec at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Review the ASHP/IDSA/SIDP consensus review and its impact on vancomycin dosing.

Discuss the incidence of vancomycin-induced nephrotoxicity and any specific patient characteristics thought to contribute to the development of vancomycin-induced nephrotoxicity at the Cincinnati VA.

Self Assessment Questions:

Based on the ASHP/ISDA/SIDP, vancomycin-induced nephrotoxicity is defined as

A Increase of baseline serum creatinine by ≥ 50% for two consecutiv

B: Any increase in Scr while receiving vancomycin therapy

C: Serum creatinine increase of ≥ 0.5mg/dL for two consecutive days

D: A & c

Based on the ASHP/ISDA/SIDP consensus review, trough concentrations of 15-20 mcg/mL is recommended for which of the following infections?

A Urinary Tract Infection

B Endocarditis

C Cellulitis

D All of the above

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-671 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

OPTIMIZING THE ANTIBIOGRAM IN THE SETTING OF FEBRILE NEUTROPENIA AT A MAJOR ACADEMIC MEDICAL CENTER

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Background: At most institutions, minimum inhibitory concentrations (MICs) determined in vitro are used as the primary determinant for developing the antibiogram, which is often applied to all patient populations. The success of antimicrobial therapy depends on many factors including disease states and site of infection, in addition to the MIC which evolves with time. The purpose of this research initiative is to ensure optimal empiric antimicrobial therapy in the adult febrile neutropenia (FN) population for various gram positive and gram negative bacteria at the University of Kentucky (UK) HealthCare through the use of patient-specific MICs and Monte Carlo simulations (MCS). Methods: This study will have a retrospective component which includes the identification of adult patients ≥ 18 years old with concurrent ICD-9 diagnosis codes of 288.0 and 780.6 indicating FN admitted to the Markey Cancer Center at UK HealthCare with one or more of the following positive cultures isolated in the calendar year of 2012: Staphylococcus aureus, Pseudomonas aeruginosa, Acinetobacter spp., Enterobacter spp., Escherichia coli, and Klebsiella pneumoniae. Pharmacokinetic studies of adult healthy volunteers will be collected to identify pharmacokinetic parameters (e.g. Cmax, Vd, t1/2, and AUC) for the following antimicrobials: vancomycin, daptomycin, linezolid, piperacillin/tazobactam, cefepime, meropenem, levofloxacin, tobramycin and aztreonam. Utilizing these pharmacokinetic parameters, MCS using Crystal Ball (Oracle Corporation, Redwood Shores, CA) will be executed for 10,000 patients per combination of antimicrobial and applicable gram negative or gram positive organism with various dosing strategies. The primary outcome is to determine the probability of target attainment with at least 90% of simulations based on established antimicrobial-specific pharmacokinetic-pharmacodynamic targets including: fT > MIC, AUC/MIC, and Cmax/MIC. Results/Conclusions: Data collection and analyses are currently in progress; final results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Discuss the utility of Monte Carlo simulations (MCS) in the enhancemen of institutional antibiograms aimed at targeting specific patient populations.

Identify the most appropriate pharmacokinetic-pharmacodynamic target for various antibiotics.

Self Assessment Questions:

When considering Monte Carlo simulations (MCS) to assess antimicrobial efficacy:

A Factoring in all aspects of performing MCS, this research strategy

B: The design of MCS is highly customizable and includes the ability

C: MCS can determine the probability of target attainment for the use

D: Ideally for an antimicrobial to be considered adequate to treat the

Which of the following is the most appropriate pharmacodynamic target when assessing the efficacy of daptomycin?

A fT > MIC: ≥ 60%

B Cmax/MIC: ≥ 10

C Auc24/mic: ≥ 666

D fT > MIC: ≥ 40%

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-673 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT AND IMPLEMENTATION OF A CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD) PATIENT DISCHARGE COUNSELING PROGRAM

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Background: Chronic obstructive pulmonary disease (COPD) is a progressive and chronic disease affecting fifteen million Americans. The National Center for Health Statistics, in 2011, reported that chronic lower respiratory disease, primarily COPD, was the third leading cause of death in the United States. In 2015, the Centers for Medicare and Medicaid will be adding acute COPD exacerbation to their Readmission Reduction Program, which is already in place for heart failure, acute myocardial infarction, and pneumonia. Currently, there is limited information and research on the impact medication education has on COPD readmission rates. In response to the upcoming CMS initiative, the Cleveland Clinic is pursuing disease specific certification in COPD. Pharmacists will provide medication counseling as part of a multidisciplinary effort to improve the care of COPD patients.

Objective: To establish a multidisciplinary COPD Patient Discharge Counseling Program at the Cleveland Clinic to reduce readmission rates. Methodology: A quasi-experimental study with a historical control will be conducted to evaluate the implementation of the COPD Patient Discharge Counseling Program. The study population will include all inpatient adults (≥18 years) in non-intensive care units, who are admitted for an acute COPD exacerbation or newly diagnosed COPD. The patients will be identified through a shared COPD patient list in Epic and a COPD admission order set, which will include a Pharmacy COPD Education consult. Over a three month period all patients fitting the inclusion criteria will receive medication education from a pharmacist and will be compared to a historical control group. Data will be collected regarding demographics, length of stay, overall readmissions, readmissions within 30 days, overall HCAHPS scores, medication specific HCAHPS score, and bronchodilator prescribed on discharge. Results and Conclusions: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss the rationale for implementing a COPD discharge counseling program

Describe the research design and methods

Self Assessment Questions:

What two new readmission measures will CMS be adding to their Hospital Readmission Reduction Program in FY 2015?

A Hip/Knee Arthroplasty and COPD

B: COPD and Heart Failure

C: Asthma and Hip/Knee Arthroplasty

D: Diabetes and COPD

What is the 30-day rehospitalization rate of patients initially admitted for COPD?

A 26.9

B 20.1

C 22.6

D 24.6

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-674 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

REALIGNMENT OF PHARMACIST PATIENT CARE SERVICES: MAXIMIZING THE INCLUSION OF PHARMACY STUDENTS AND RESIDENTS INTO THE PRACTICE MODEL

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The purpose of this investigation is to define an optimal model of student, intern, and resident integration into the pharmacy practice model allowing for expansion of clinical services through reallocation of pharmacy staff. First, the Pharmacy Education and Practice Integration Taskforce (PEPIT) was formed, composed of students, residents, clinical pharmacists, and managers. The taskforce identified the optimum model as one that utilizes students and residents to expand clinical pharmacy services and encourages the provision of patient care at the greatest depth of respective training. An analysis of the student and resident involvement on inpatient units was performed to identify areas where value could be maximized. The following initiatives were identified: improved efficiency of Introductory Pharmacy Practice Experience (IPPE) student rotations, pharmacy bedside rounding, and re alignment of resident rotations to facilitate redistribution of pharmacist staff. The IPPE program was launched hospital wide, reallocating student contact hours from pharmacists to interns, thereby increasing direct patient care opportunities. Pharmacist run bedside rounding was piloted on two inpatient units and determined to be unfeasible. Rounding was simplified to focus on distribution of an inpatient medication list with targeted teaching performed by Advanced Pharmacy Practice Experience students and re-launched on one unit. The ability to shift pharmacist resources through re-alignment of resident rotations was tested through moving a pharmacist from an inpatient role to a dedicated ambulatory clinic role on a second unit. Workload time studies were performed to determine the overall shift in patient care activities caused by the changes on both units. The pilot data will be used to create a 2 year plan for practice model change that will include recommendations on residency alignment, intern staffing model expansion, and pharmacist redistribution. The summary of results and conclusion will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Explain the process for identifying clinical areas and services where students and residents can serve to expand pharmacist clinical care.

Describe common barriers and identify possible solutions associated with increasing student and resident inclusion in the pharmacy practice model.

Self Assessment Questions:

Which of the following is an area where students can serve as pharmacist extenders?

A Order verification
B: Signing prescriptions
C: Precepting other students
D: Entering orders

Which of the following is a common barrier associated with increasing student and resident inclusion into the pharmacy practice model?

A Colleges of pharmacy resisting patient care roles for students
B Having unlimited access to students interested in pharmacy work e
C Preceptors and clinical staff being overly enthusiastic to take on ac
D Lack of consistent student or resident coverage

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-870 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

ENHANCING MEDICATION SAFETY THROUGH IMPLEMENTATION OF A SCORECARD EVALUATING COMPLIANCE OF BEDSIDE MEDICATION VERIFICATION

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Purpose: Bedside medication verification (BMV) is one of many technologies that can be implemented in a hospital institution to improve patient safety and decrease medication errors. However, in order to see the maximal benefit of incorporating such technology, compliance must be maximized. The purpose of this study was to evaluate the outcomes of implementing a protocol to audit and increase BMV compliance. Methods: This was a prospective study implemented at St. Elizabeths Hospital, a 260 bed community based teaching hospital in Belleville, IL. A BMV compliance scorecard was developed and distributed weekly to nursing managers, who utilized this auditing tool to further educate their unit nurses about the importance of BMV bar code scanning when administering medications to patients. The scorecard was designed to be an interactive tool where different evaluable components could be isolated by the nurse managers, such as the top medications not scanned along with the individual nurses not scanning in each unit. The baseline BMV compliance prior to implementation of the weekly scorecard was 92.3% compliance. Upon reaching goal BMV compliance of 97.5%, the scorecard distribution was reduced to monthly distribution. The primary endpoint was to evaluate the frequency of near-misses with an increase in BMV compliance. The secondary endpoint was to quantify the amount of soft dollars saved in regards to medication errors prevented with an increase in BMV compliance. Results and conclusions: Data collection is currently in progress; results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Recognize the different technologies that can be implemented to improve medication safety.

Discuss the benefits of bedside medication verification (BMV) compliance.

Self Assessment Questions:

Different technologies that can be implemented to improve medication safety include:

A Smart Pump technology
B: Computerized Physician Order Entry (CPOE)
C: Bedside Medication Verification (BMV)
D: All of the above

What is a benefit in increasing BMV compliance?

A Decrease in near-misses caught
B Decrease in medication errors
C Decrease in patient safety
D Decrease in soft dollars saved

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-871 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

ACCUMETRICS-BASED CLOPIDOGREL DOSING IN ENDOVASCULAR NEUROSURGERY

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Purpose: Thrombotic complications during and after neuroendovascular procedures pose a significant risk to patients. Current practice utilizes dual antiplatelet therapy (DAPT) with aspirin and clopidogrel to mitigate this risk. However, inter-patient variability in response to clopidogrel has been well documented, placing certain patients at higher risk of developing thrombotic or hemorrhagic complications. Platelet function tests offer an avenue to potentially measure and monitor response to antiplatelet therapy with clopidogrel. These tests have been evaluated in clinical trials in the cardiology setting, but the benefit of using such assays has not been completely established. Current practice at the University of Illinois Hospital and Health Sciences System includes use of the Accumetrics VerifyNow P2Y12 Test to evaluate clopidogrel-induced platelet inhibition in patients undergoing neuroendovascular interventions. The results are utilized to guide antiplatelet therapy, including adjustments of the loading and/or maintenance clopidogrel dosing or switch to another therapeutic agent. The objective of this study is to determine if tailored antiplatelet therapy using platelet function testing following neuroendovascular procedures effectively reduces the risk of thrombotic complications without increasing the risk of hemorrhagic complications when compared to a standard clopidogrel dosing regimen.□□Methods: This study is a retrospective chart review o patients receiving DAPT with aspirin and clopidogrel following a neuroendovascular intervention from May 1, 2002 to December 31, 2012. Patients will be divided into two groups, one having received standard DAPT and the other having a clopidogrel dosing regimen guided by platelet function testing. Charts will be reviewed for the occurrence of events, including ischemic complications, hemorrhagic complications, and death. Events in the 6 months following the procedure will be documented. Platelet inhibition levels will be recorded as well.□□Results and Conclusion: Data collection is ongoing. The results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Explain the need for dual antiplatelet therapy prior to and following neuroendovascular procedures.

Describe the potential benefit of the Accumetrics VerifyNow P2Y12 Test in guiding dual antiplatelet therapy for neuroendovascular procedures.

Self Assessment Questions:

What is the rationale for the use of platelet function testing in neuroendovascular procedures?

A These tests may determine a patient's eligibility for a neuroendova
B: Inter-patient variability in response to clopidogrel may increase a p
C: Platelet function tests will determine if a patient is an appropriate c
D: All of the above

Obtaining platelet reactivity unit (PRU) levels from the Accumetrics VerifyNow P2Y12 Test would allow clinicians to:

A Determine the appropriate duration of therapy
B Evaluate patient response to clopidogrel
C Tailor patient-specific clopidogrel doses
D B and C

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-675 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

APPLICATION AND MODIFICATION OF A PUBLISHED METHOD TO OPTIMIZE ALLOCATION OF CLINICAL PHARMACY HUMAN RESOURCES

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An objective tool - pCATCH - has been recently published and used in allocating clinical pharmacist resources within a large, academic medica center with a pharmacy practice model similar to that in existence at the University of Chicago Medicine (UCM) (i.e. decentralized pharmacists, service-specific clinical coverage). This tool evaluates those aspects of a clinical pharmacist's workload (pharmacy acuity scores, teaching, high-priority medication usage) that have not been captured by other metrics. □□

Purpose□The purpose of this analysis is to validate and modify the current objective methodology, applying it to UCM clinical pharmacy services in an effort to determine how human resources can be effectively allocated. □□Methods Used□The current study is a retrospective review of various data sets at UCM for fiscal years 2010 through 2013. The first phase of data collection will be specific to pCATCH tool implementation. Then, in collaboration with a task force comprised of pharmacy department leadership and additional subject matter experts, other quantifiable productivity factors will be identified for data collection and tool incorporation. □□The primary objective is to optimize human resource allocation through application of the objective pCATCH methodology. The secondary objective is to describe modification of this methodology at UCM and the subsequent incorporation of additional metrics into the tool, to account for pharmacy practice model differences from the designing institution. After these two phases in data collection and tool implementation, the productivity results may ultimately be used within the UCM Department of Pharmacy Services to objectively allocate resources.□□Summary of Results/Conclusions Reached□Data collection and evaluation are currently being conducted.

Learning Objectives:

Describe the components and the application of an objective tool used in allocating clinical pharmacist resources

Discuss the modification of this methodology at the University of Chicago Medicine by the subsequent incorporation of additional metrics

Self Assessment Questions:

Of the following metrics, which was evaluated in the "pCATCH"?

A Orders processed per hour
B: Learners assigned per year
C: Hours worked per week
D: Interventions made per month

Which of the following metric modifications was incorporated into the University of Chicago Medicine's methodology?

A Re-definition of "high priority" medication
B Incorporation of pediatric medical services
C Inclusion of IPPE pharmacy student learners
D A. and B.

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-872 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

SACONAZOLE PROPHYLAXIS FOR INVASIVE FUNGAL INFECTIONS (IFI) IN HIGH-RISK PATIENTS WITH HEMATOLOGIC MALIGNANCIES: A SIX-YEAR RETROSPECTIVE REVIEW OF EFFICACY AND A QUASI-EXPERIMENTAL STUDY TO ASSESS PH

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Purpose: Invasive fungal infections (IFI) are a major cause of morbidity and mortality in high-risk patients with hematologic malignancies due to prolonged or severe neutropenia or potent immunosuppressive therapy with allogeneic hematopoietic stem cell transplantation (HSCT). According to pharmacokinetic analyses, absorption is influenced by gastric pH, fatty foods or acidic drinks, mucosal integrity, and frequency of administration. Strategies to increase gastric acidity, avoid acid suppressants and decrease episodes of diarrhea are prudent to prevent breakthrough IFIs due to lower posaconazole plasma levels. Reports of sub-therapeutic posaconazole concentrations resulting in clinical failure rates exist. The aim of this study is to perform a retrospective review of posaconazole use for prophylaxis and its efficacy in preventing IFI in high-risk hematology patients at Rush University Medical Center (RUMC). Results from the review will serve as a control for a quasi-experimental study to assess the impact of a pharmacy driven interventional protocol on strategies to improve posaconazole absorption and therapeutic drug monitoring.□□Methods: This study consists of two components: a retrospective chart review and a prospective pharmacy intervention. All patients under 18 years of age will be excluded. For the retrospective chart review, a posaconazole report will be generated. The prospective pharmacy driven intervention will contain patients who are started on posaconazole prophylaxis while at RUMC and will be identified for the infectious diseases pharmacy resident to follow. A pre-approved protocol for serum posaconazole levels will be implemented during the study period. The infectious diseases pharmacy resident will follow all study patients to assure serum posaconazole levels and education/interventions are conducted and followed through. Pre-identified variables will be collected and logged onto a data collection spreadsheet. All data will be collected, recorded, and analyzed confidentially and without the use of patient identifiers. □□Results: Results pending.□□Conclusions: Will be made after results are analyzed.

Learning Objectives:

List the conditions for which posaconazole prophylaxis is routinely used

Identify factors that affect posaconazole absorption

Self Assessment Questions:

Which of the following conditions does not warrant posaconazole prophylaxis?

A Autologous hematopoietic stem cell transplant patients
B: Neutropenic acute myeloid leukemia patients
C: Neutropenic myelodysplastic syndrome patients
D: Significant graft versus host disease

Which of the following scenarios could result in poor posaconazole absorption?

A Taking posaconazole with a fatty meal
B Taking posaconazole with an acidic beverage
C Taking posaconazole three times daily
D Taking a PPI while on posaconazole therapy

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-676 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

INCIDENCE OF SUBTHERAPEUTIC INTERNATIONAL NORMALIZED RATIO (INR) AFTER HOLDING WARFARIN FOR TWO DAYS

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Purpose: The purpose of this study is to evaluate the incidence of subtherapeutic INRs after a two-day warfarin hold for an INR of 4.1-5.□□Background: Mayo Clinic Health System-Eau Claire is a private, nonprofit, integrated, healthcare system. A pharmacy directed anticoagulation service was established in 2007. The service provides anticoagulation management to approximately 2500 patients by pharmacists and nurses in 11 locations across northwest Wisconsin. □

The current protocol states that patients who present with an INR of 4.1-6 hold warfarin for two days. An internal quality review demonstrated that 41% of patients had a subtherapeutic INR after holding warfarin for two days. Based on these observations, it is reasonable to investigate the incidence of this occurrence further.□The population for this study includes patients with an INR of 4.1-5. Per the current protocol, patients with an INR greater than 5 require a confirmation venipuncture draw. We chose not to evaluate patients with INRs between 5.1-6 due to potential variability in point of care testing and confirmation venipuncture draw. This study is designed to evaluate the current protocol within the anticoagulation service and will help determine if any modifications are necessary. □□Methods: A retrospective chart review will be conducted on 320 patients who present with an INR of 4.1-5 and have an INR range of 2-3. The primary analysis will consist of estimating the percentage of patients with subtherapeutic, therapeutic and supratherapeutic INRs after two days of holding warfarin. □A secondary analysis will be a comparison of the therapeutic groups for adverse event rates within 30 days following the out of range INR using Pearsons chi-square test. This data will be compared to any adverse events reported in patients with a therapeutic INR after holding warfarin for two days.□□Results: Results will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify the significance of a subtherapeutic INR after a two-day warfarin hold

Discuss potential modifications of an established anticoagulation protocol and the impact it will have on clinical pharmacy practice

Self Assessment Questions:

Based on the current anticoagulation service protocol, which patients INR value would warrant a two-day warfarin hold?

A 2.5
B: 3.4
C: 4.5
D: 1.9

Any potential modifications to the current anticoagulation protocol would be made with what primary goal in mind?

A Enhance patients' quality of life
B Increase patient time in therapeutic range
C Increase productivity within the service
D Change the time frame between patient visits

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-677 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

SAFETY OF DABIGATRAN AND RIVAROXABAN IN THE ELDERLY VETERAN POPULATION

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Purpose: To compare the incidence of bleeding and thrombosis with dabigatran and rivaroxaban in the elderly (aged 75 years or older)atrial fibrillation (AF) population. Methods: A retrospective chart review was conducted on patients greater than 74 years of age in the Veterans Integrated Service Network (VISN) 11 of the Veterans Affairs Healthcare System (VAHCS) who received a target-specific oral anticoagulant (TSOAC), dabigatran or rivaroxaban, for the prevention of stroke caused by non-valvular AF. Patients were matched based on gender, race, age creatinine clearance (CrCl), CHADS2 score, and history of stroke (unmatched patients were excluded from analysis). The two patient groups were compared to each other with respect to the composite incidence of thrombosis and bleeding (primary outcome) as well as the number of significant drug-drug interactions (secondary outcome).

Results: The primary outcome occurred in 5 out of 18 patients (28%) and was observed in two patients on dabigatran and three on rivaroxaban. It was not associated with reduced renal function (CrCl less than 30) as the CrCl of the patients ranged from 50-87 mL/min. However, the primary outcome did appear to be correlated with drug-drug interactions. Four of the five patients had a drug-drug interaction, with aspirin 81mg daily being the most common interacting medication. All patients that experienced the primary outcome received appropriate renally-adjusted doses per CrCl calculated with actual body weight. Sixty seven percent of patients were dosed initially by an anticoagulation pharmacist, and all patients were monitored by a pharmacist-run outpatient anticoagulation clinic. Conclusion: The safety profiles of dabigatran and rivaroxaban appear to be similar in the elderly AF population based on this small sample size. However, the bleeding risk appears to be increased in patients receiving antiplatelet therapy and a TSOAC. Thus, providers may need to re-assess the risks versus benefits of antiplatelets in combination with TSOACs.

Learning Objectives:

Discuss the use of target-specific oral anticoagulants in the treatment of non-valvular atrial fibrillation

Review the side effect profiles of dabigatran and rivaroxaban and explain which of the two medications may be safer in elderly patients due to differences in elimination pathways

Self Assessment Questions:

1)Which of the following is an advantage that target-specific oral anticoagulants offer to patients over warfarin?

A More drug-drug interactions
B: Fewer dietary restrictions
C: Slower onset of action
D: Less predictable pharmacokinetics

What percent of a dabigatran and rivaroxaban dose, respectively, is eliminated by the kidneys?

A 13%, 74%
B 74%, 13%
C 80%, 66%
D 66%, 80%

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-939 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARISON OF TIME TO RATE CONTROL USING INTRAVENOUS DILTIAZEM IN PATIENTS PRESENTING TO THE EMERGENCY DEPARTMENT WITH FIRST-EPISODE, RECURRENT, OR PERMANENT ATRIAL FIBRILLATION

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Objectives: Atrial fibrillation (AF) with rapid ventricular response is one of the most common cardiac arrhythmias treated in the emergency department (ED). Intravenous (IV) diltiazem is often utilized as first-line pharmacologic therapy due to its titratability, provider familiarity, and current AF treatment guideline recommendations. Regardless of medication selection, emergency practitioners aim to provide timely and sustained ventricular rate control to reduce the risk of negative AF sequellae. Though diltiazem is used widely, it is unknown if an efficacious difference exists when treating first-onset AF versus recurrent or permanent AF. The purpose of this study was to determine if IV diltiazem achieves ventricular rate control sooner in patients presenting to the ED with first-episode AF compared to other types of AF and to evaluate clinically significant consequences if such differences do exist. Methods: A retrospective cohort study was conducted in a 70-bed ED at an academic medical center. Patients with first-episode, recurrent, and permanent AF treated initially with IV diltiazem in the ED were included and those with systolic blood pressure <90 mmHg, known history of sick sinus syndrome, presence of third-degree atrioventricular block, history of Wolff-Parkinson-White syndrome, allergy to diltiazem, diltiazem listed as a home medication, or treated with direct current cardioversion were excluded. The primary outcome was time (minutes) required to achieve sustained rate control (heart rate less than 110 beats per minute or conversion to normal sinus rhythm) after the first dose of IV diltiazem in those with first-episode versus recurrent or permanent AF. Secondary endpoints were use of additional antiarrhythmics, rate of treatment failure, time to hospital discharge, and total costs of stay. Statistical analysis for the primary outcome will be performed by the log-rank test. Results: Data collection is ongoing. Conclusions: Pending investigation.

Learning Objectives:

Recall current rate control strategies for the management of acute atrial fibrillation in the emergency department.

Discuss clinical and financial impact of atrial fibrillation.

Self Assessment Questions:

What is the most common arrhythmia treated in the ED?

A Ventricular tachycardia
B: Atrial fibrillation
C: Second degree heart block, Type 2
D: Premature atrial contractions

Which of the following statements is correct:

A Optimal management choice for first-episode AF in the ED is well
B Current AF treatment guidelines recommend rate control over rhyt
C Direct current cardioversion is usually the preferred means of man
D Both beta blockers and non-dihydropyridine calcium channel block

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-678 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DURATION OF EFFICACY WITH ADDITION OF GLIPIZIDE TO METFORMIN THERAPY IN VETERANS WITH TYPE 2 DIABETES MELLITUS

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Purpose: To determine the duration of initial glipizide efficacy when added to metformin in lowering or maintaining hemoglobin A1c in veterans with type 2 diabetes mellitus.□□Methods: This study has been submitted to IRB. A retrospective cohort study identified patients using ICD-9 codes for type 2 diabetes mellitus. Patients included were on metformin monotherapy and started glipizide between January 2001 to December 2003. Exclusion criteria included diabetes management by non-Veterans Affairs (VA) provider, no baseline or subsequent hemoglobin A1c (A1c), previous management with other antidiabetic agent(s) or insulin, age 80 years or older, discontinuation of study medications, or mortality within the follow-up period. Data collected included A1c, weight, age, gender, race, pertinent labs, comorbidities, medications, and provider type. Patients were followed until criteria met for secondary failure or up to a 10-year period. Secondary failure was defined as addition of third agent or A1c increase by at least 2%. Study endpoints were the duration of glycemic control and change in A1c after addition of glipizide to metformin. Data will be analyzed using descriptive statistics.□□Results: Six patients meeting inclusion criteria were identified from 130 chart reviews. Preliminary results found all subjects were male, average age of 64.5 years, 50% white, and 50% black. Mean baseline weight was 100.3 kilograms (kg) with final weight of 96 kg. Initial average total daily dose (TDD) of metformin and glipizide were 916.7mg and 8mg, respectively. Final average TDD was metformin 1758mg and glipizide 17.9mg. The average length of metformin use prior to initiation of glipizide was 0.5 months. Baseline average A1c was 9.8% prior to glipizide initiation; average initial A1c reduction was 2% with combination therapy. The mean duration until secondary failure was 33 months.□□Conclusions: Preliminary data suggests that the addition of glipizide to metformin monotherapy will be effective for approximately 3 years.

Learning Objectives:

Review the current recommendations for oral agents in type 2 diabetes mellitus.

Discuss the proposed mechanism and onset for secondary failure with use of sulfonylurea.

Self Assessment Questions:

Which oral combination is currently recommended as first line in the practice guidelines for type 2 diabetes mellitus?

A Glipizide and sitagliptin

B: Metformin and acarbose

C: Metformin and glipizide

D: Repaglinide and pioglitazone

Which of the following is a hypothesis for secondary failure with oral sulfonylurea drugs?

A Impaired beta-cell function

B Sulfonylurea resistance

C Increased insulin resistance

D More than one of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-679 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATING INTENSIVE CARE UNIT NURSES KNOWLEDGE CONCERNING DELIRIUM IN CRITICALLY ILL PATIENTS BEFORE AND AFTER PHARMACIST-LED EDUCATION AND IMPLEMENTATION OF DELIRIUM ASSESSMENT

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Purpose□Patients in the intensive care unit (ICU) are at high risk for delirium development. Delirium is associated with increased risk of mortality, higher cost of care, and possible long-term functional deficits. Up to eighty percent of ICU patients may experience delirium, and often, it goes unrecognized and untreated unless patients present with hyperactive delirium. There are no FDA approved medications and the 2013 Clinical Practice Guidelines for the Management of Pain, Agitation, and Delirium in Adult Patients do not give any particular pharmacological recommendations. Previous studies support the use of a multifaceted education program to improve both nurses knowledge about delirium and perceptions about its recognition. Non-pharmacological interventions along with evidence-based assessment tools, daily spontaneous awakening and breathing trials (SATs and SBTs), appropriate sedative selection, and early mobility and exercise have been shown to decrease delirium. The aim of this study is to evaluate knowledge concerning delirium before and after pharmacist-led education.□□Methods□The ICU at Union Hospital is an open thirty-six bed medical, surgical, and cardiovascular unit. In this study, a twenty-one question survey was provided to all ICU registered nurses prior to pharmacist-led education. Each question evaluated knowledge and perceived barriers for assessment. Following survey administration, pharmacist-led instruction will be provided including written and verbal education on the benefits of practice, as well as implementation techniques for the ICU. The education will be tailored to the initial survey responses. Re-evaluation with another survey will follow pharmacist-led education. Primary outcome and data analysis will measure the change from baseline of knowledge and acceptance of delirium assessment and management in the ICU. This research project was approved by the Critical Care Committee and Pharmacy and Therapeutics Committee.□□Results□Data collection and analysis is in progress. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Outline current guidelines from the Society of Critical Care Medicine (SCCM) regarding appropriate assessment and management of delirium in critically ill patients.

List common risk factors associated with development of delirium.

Self Assessment Questions:

Best assessment for delirium is which of the following?

A Mmse

B: History from family

C: Cam-icu

D: Review of medicatons

For delirium management, primary prevention is:

A Non-pharmacological

B Benzodiazepines

C Anticholinergics

D Analgesics

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-14-680 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

OPTIMIZING EMPIRIC RECOMMENDATIONS FOR THE TREATMENT OF URINARY TRACT INFECTIONS (UTI) IN THE EMERGENCY DEPARTMENT (ED) THROUGH BEST PRACTICE GUIDELINES

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Purpose: The aim of this study was to develop and test whether a pharmacist quality improvement intervention can optimize prescribing patterns for antibiotics used in the treatment of UTI in the emergency department. Goal was to develop a site specific guideline to better assis physicians in selecting optimal empiric antimicrobial therapy for UTIs.□Methods: Prior to beginning this study, Institutional Review Board (IRB) was obtained. The study consisted of pre- and post-intervention phases. The pre-intervention phase included retrospective review of patients who presented to the ED between October and November 2013 Patients included were those over 18 years of age with a urine culture, diagnosis of UTI, and were prescribed antimicrobial regimens without requiring further admission to the hospital. Patients were excluded if they had a catheter-related UTI. Data collection included patients age, sex, type of UTI and antibiotic regimen. Analysis of the baseline data collection was presented to emergency department physicians and physician assistants and nurse practitioners. Emphasis was based on potentially inappropriate prescribing patterns. A site specific pathway for empiric UTI treatment was created, distributed and posted in various locations in the ED. Post-intervention phase will include an identical data collection process as in the pre-intervention phase. □Preliminary Results: A total of 202 patients met the inclusion/exclusion criteria for the pre-intervention phase. The majority of patients were female 189/202 (93%) and the most common type of UTI was uncomplicated cystitis 104/202 (51%). Data revealed that antimicrobial therapy was inappropriately prescribed for 50% of patients. The most common UTI receiving inappropriate empiric antimicrobial therapy was uncomplicated cystitis. Comparison of pre and post intervention phase treatment recommendations and final results will be presented at Great Lakes Residency Conference.

Learning Objectives:

Identify patterns of empiric antibiotic prescribing for patients presenting with symptoms of UTI in the ED

Recognize the potential benefits of implementing a site specific pathway for UTI

Self Assessment Questions:

Which of the following is an appropriate empiric treatment for a patient presenting to the ED with symptoms of uncomplicated cystitis? Facility has a > 20% resistance rate to sulfamethoxazole/trimetho

A Levofloxacin 750 mg x 5 days
B: Ciprofloxacin 500 mg BID x 5 days
C: Sulfamethoxazole/trimethoprim 800/160mg x 5 days
D: Cefuroxime 500 mg BID x 7 days

State a potential benefit of implementing a site specific pathway for empiric antimicrobial treatment for urinary tract infections?

A Increases antimicrobial resistance
B Optimize therapy and Increases adherence to treatment guidelines
C Result in poor healthcare outcomes
D Improve patient compliance

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-681 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PILOTING A REMOTE MEDICATION CONSULTATION SERVICE ALONGSIDE DISCHARGE PRESCRIPTION DELIVERY

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Purpose: The purpose of this project is to test the functionality and characterize various teleconferencing technologies within Aurora Health Care in order to best provide medication education to discharging patients receiving prescriptions through Aurora Health Cares discharge prescription delivery service. Remotely located pharmacists will be able to conduct a discharge medication consult directly to the patient via a video conferencing system prior to discharge. This remote consultation service will be inserted into the current discharge prescription delivery system providing convenient access to a pharmacist as the medications are delivered bedside. □□Methods: A literature search was conducted on the application, clinical outcomes, and patient satisfaction of pharmacist-run telehealth services to identify best practices, if any, in creating these services. The inpatient surgery unit at Aurora St. Lukes Medical Center was then chosen as the primary implementation unit given its quicker patient turn over and general characteristics of prescription type and volume. Next, a workflow was created that fits into the currently established discharge prescription service if the patient accepts the offer for consultation at the time of medication delivery. Various videoconferencing mediums were then evaluated based on feasibility, cost, and ease of use. Remotely located pharmacists were oriented to the inpatient electronic health record and the inpatient pharmacist discharge process. Pharmacy technicians were also trained to set up a remote discharge consultation for the patient using the evaluated technology. Once the service is piloted on the hospital unit, frequency of use of the service and general pharmacy technician and patient satisfaction will be evaluated.□□Results/Conclusion: Implementation of the discharge prescription delivery service is currently set for February 25th, 2014. Further results and conclusions from the implementation will be shared at the Great Lakes Residency Conference

Learning Objectives:

Describe the positive and negative aspects of three different forms of video conferencing available in the Aurora Health Care system

Identify three barriers to implementing a pharmacist-run telehealth service in an institutional setting

Self Assessment Questions:

1.Which form of teleconferencing technology was chosen to pilot this program based on low cost and ease of use?

A Polycom
B: Cisco
C: Microsoft Lync
D: Skylight iCareChat

What barriers exist in implementing a tele-consultation service?

A High cost of technology
B Staff and patients finding value in the service
C User "friendliness" of the technology
D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-873 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

ANTIFUNGAL THERAPY FOR THE MANAGEMENT OF FUNGAL INFECTIONS DUE TO CONTAMINATED METHYLPREDNISOLONE INJECTIONS

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Purpose: As of October 23, 2013, the Centers for Disease Control and Prevention (CDC) reports 751 cases of fungal infections due to contaminated methylprednisolone injections. Of these, over one-third of the patients are located in Michigan, the highest number of any state. Based primarily on expert opinion, the CDC recommends empirically initiating patients on voriconazole with or without liposomal amphotericin B. Itraconazole and posaconazole are also listed as alternative agents. The total duration of antifungal therapy, reasons patients switched from initial voriconazole therapy to an alternative agent and adverse drug effects of the alternative therapies in this patient population are unknowr and therefore will be evaluated.□□Methods: This is a retrospective, observational, descriptive, single-center, IRB approved study. Patients initiated on voriconazole with or without liposomal amphotericin B as inpatients from October 4, 2012 to March 31, 2013 and have completed at least 30 days of therapy will be included in the study. The study will utilize electronic medical records and fungal outbreak clinic records to determine baseline characteristics, the duration of antifungal therapy, reasons patients switched from initial therapy to alternative therapy and adverse effects patients experienced from alternative therapy. Baseline characteristics will be compared using mean, median and standard deviation calculations. As this is a descriptive study, duration of therapy, reasons patients switched therapy and adverse effects will be reported through the use of text, charts and tables.□□Results: Results will be presented at the Great Lakes Pharmacy Residency Conference.
□□

Conclusion: Conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify reasons patients with antifungal infections secondary to contaminated methylprednisolone injections switched from voriconazole to alternative therapy (itraconazole or posaconazole).

Indicate the most predominant adverse events patients experienced while on itraconazole and posaconazole therapy.

Self Assessment Questions:

What are the 2 most common reasons patients were switched from voriconazole therapy?

A Alopecia and hepatotoxicity

B: Central nervous system toxicity and periostitis

C: Neuropathy and phototoxicity

D: QTc prolongation and rash

Which of the following is the most common adverse effect of itraconazole therapy?

A Central nervous system toxicity

B Fatigue

C Gastrointestinal effects

D Neuropathy

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-682 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSESSMENT OF SURGICAL ANTIMICROBIAL PROPHYLAXIS PRACTICES BEFORE AND AFTER IMPLEMENTATION OF MULTIDISCIPLINARY INTERVENTIONS RELATED TO ANTIMICROBIAL PROPHYLAXIS IN SURGICAL PATIENTS

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Surgical site infections (SSI) are a common nosocomial infection resulting in substantial morbidity, mortality, and healthcare cost. Efforts to reduce these infections include the Surgical Care Improvement Project (SCIP) and American Society of Health-Systems Pharmacists clinical practice guidelines for antimicrobial prophylaxis in surgery. To evaluate antimicrobial surgical prophylaxis practices at The University of Chicago Medicine, the multidisciplinary Surgical Quality and Patient Safety Improvement Committee (SQPSIC) examined antimicrobial selection, dosing, and intra-operative re-dosing for SCIP and non-SCIP adult inpatient procedures during March 2012. Based on this initial data, the SQPSIC and Antimicrobial Stewardship Program created institutiona guidelines for adult inpatient surgical procedures. In addition to the guidelines, education for surgical and anesthesia staff, as well as changes to optimize perioperative workflow promoting utilization of pre-op order sets and automated dispensing cabinets were implemented in January 2013 The intent of this analysis is to compare antimicrobial prophylaxis practices before and after implementation of these interventions. □A retrospective cohort study will be performed including adult inpatient surgical procedures during March 2013. Patients younger than 18 years and procedures not addressed by institutional guidelines will be excluded. For each procedure, surgical service, duration of surgery, patient gender, age, actual body weight, estimated glomerular filtration rate, estimated blood loss, antimicrobial agent, dose, number of doses, timing of doses, and occurrence of SSI will be collected. The primary endpoint will be to compare proportion of appropriate intra-operative re-dosing, as defined in the institutional guidelines, before and after implementation of the guidelines. Secondary outcomes will include comparing the proportion of appropriate antimicrobial selection, appropriate dose selection, and SSI before and after guideline implementation. Categorical outcome variables will be compared using the chi squared or fishers exact test and continuous variables using the students t test. □Results and conclusions are forthcoming.

Learning Objectives:

Describe the methods employed at the University of Chicago Medicine t promote judicious use of antimicrobial surgical prophylaxis

Identify antimicrobials that may require intra-operative re-dosing depending on surgical procedure length

Self Assessment Questions:

Which of the following methods were employed by the Surgical Quality and Patient Safety Improvement Committee at the University of Chicago Medicine to improve antimicrobial surgical prophylaxis practi

A Implementation of surgical procedure specific order sets

B: Creation of institution specific guidelines for antimicrobial surgical

C: Educational for surgical and anesthesia staff

D: All of the above

Which of the following antimicrobials would require intra-operative re-dosing for a surgical procedure lasting 4 hours

A Vancomycin

B Cefazolin

C Gentamicin

D Levofloxacin

Q1 Answer: D Q2 Answer: B

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Activity Type: Knowledge-based Contact Hours: 0.5

COMPARISON OF TIME IN THERAPEUTIC RANGE OF FACE-TO-FACE PATIENTS AND TELEPHONE PATIENTS AT A VA PHARMACIST-RUN ANTICOAGULATION CLINIC

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Purpose: To evaluate if the actual time in therapeutic range (TTR) of patients managed at the Indianapolis VAMC pharmacist-run anticoagulation clinic is consistent with the expected TTR values determined by Rose et al risk adjustment tool. To conduct a sub-group analysis of warfarin patients who are managed by telephone appointments to patients managed through face-to-face appointments.

Methods: This is a retrospective study modeled after the 2011 Rose study. A list of all Indianapolis VAMC anticoagulation clinic patients on warfarin at any time between June 2010 and June 2013 was generated and divided into two groups: face-to-face patients and patients followed via telephone appointments. Patient charts were reviewed in random order until 200 patients from each group met eligibility criteria, forming a total study population of 400 patients. The actual TTR is calculated by Rosendaals method. Preliminary Results: Data collection is complete for 125 of the face-to-face patients and for 100 telephone patients. The average age of all included patients is 68 years old. The actual percent of time in therapeutic range is 71.72% while our expected percent time in therapeutic range 66.42%. For the face-to-face patients, average age is 66 years old and the actual percent of time in therapeutic range is 72.19% while our expected percent time in therapeutic range is 67.14%. For the telephone patients, average age is 71 years old and the actual percent of time in therapeutic range is 71.08% while our expected percent time in therapeutic range is 65.46%. Conclusion: The actual percent TTR of patients at the Indianapolis VAMC pharmacist-run anticoagulation clinic exceeds the expected percent TTR. A sub-group analysis reveals comparable results between patients managed face-to-face compared to over the phone.

Learning Objectives:

Explain how the indication for warfarin, age at initiation of warfarin, co-morbid health conditions, number of chronic medications, and number o hospitalizations affects the expected time in therapeutic range.

Review recommendations from the CHEST 2012 guidelines.

Self Assessment Questions:

All of the following decrease the expected percentage of time spent in therapeutic range except:

A Younger age

B: Older age

C: Increased number of chronic medications

D: Increased number of comorbid disease states

Based on the 2012 CHEST guidelines, how often should an INR that has been stable for the past 3 months be checked?

A 2 weeks

B 6 weeks

C 12 weeks

D 16 weeks

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-684 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF PHARMACIST UTILIZATION OF THE CLINICAL PULMONARY INFECTION SCORE ON THE RATE OF PROLONGED EMPIRIC ANTIBIOTIC THERAPY FOR PNEUMONIA

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Purpose: We sought to determine the effectiveness of a pharmacist-driven Clinical Pulmonary Infection Score (CPIS) protocol in decreasing the rate of prolonged empiric antibiotic therapy (PEAT) in mechanically-ventilated patients with suspected pneumonia. Methods: This was a pre- and post- implementation cohort study analyzing mechanically-ventilated patients initiated on empiric antibiotic therapy for suspected pneumonia in the Intensive Care Unit (ICU). CPIS was calculated by a pharmacist on days 1 and 3 of antibiotic therapy. If the CPIS was less than or equal to 6 on days 1 and 3, the pharmacist would recommend discontinuation of antibiotic treatment for pneumonia. Mechanically-ventilated patients empirically treated in the ICU for pneumonia prior to CPIS protocol implementation were compared with patients post-implementation. The primary outcome is the rate of PEAT, characterized by regimens continued for at least 72 hours. This study was approved by the Institutional Review Board. Results: Based on preliminary results in the pre-implementation study cohort (n=12), rate of PEAT in patients with a CPIS less than or equal to 6 on days 1 and 3 of antibiotic therapy was 71% as compared to a rate of 100% in the patients with CPIS greater than 6. Mean ICU stay was 8.3 days and 11.5 days in patients with a CPIS less than or equal to 6 and CPIS greater than 6, respectively. Total antibiotic days were higher in the patients with CPIS greater than 6 (8.9 days) than the patients with CPIS less than or equal to 6 (6.6 days). Prospective data collection for patients in the post-implementation phase of the study is ongoing. Conclusion: Based on the preliminary data gathered, patients with CPIS of less than or equal to 6 had high rates of PEAT without pharmacist intervention, indicating a potential to reduce overuse of antibiotics with a CPIS-guided intervention

Learning Objectives:

Describe the components of CPIS that are used to guide antimicrobial therapy.

Recognize the role CPIS has for a patient with suspected pneumonia when guiding antimicrobial therapy.

Self Assessment Questions:

Which of the following is a component of CPIS?

A Oxygenation PaO2/FiO2

B: Hematocrit

C: APACHE II score

D: Serum creatinine

A CPIS less than or equal to 6 indicates that empiric antimicrobial therapy for pneumonia should be _____.

A Broadened

B Continued

C Discontinued

D De-escalated

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-14-685 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

HEPARINIZED VANCOMYCIN LOCKS TO PREVENT CENTRAL LINE BLOODSTREAM INFECTIONS IN THE NICU

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Purpose□Central line-associated bloodstream infections (CLABSI) significantly lengthen hospital stay and may lead to decreased survival o the neonate. Given the increased susceptibility of infection in low birth weight neonates, several institutions have incorporated the use of vancomycin lock prophylaxis to reduce the number of CLABSIs in the neonatal intensive care unit (NICU). The objective of this study was to evaluate the impact of the addition of heparinized vancomycin lock prophylaxis to neonates weighing less than 1500 grams in St. Marys Hospital NICU to prevent central line infection and decrease length of stay. □□Methods□The design of this study was a retrospective chart review, with prospective data collection beginning after the initiation of vancomycin lock prophylaxis in St. Marys thirty-eight bed NICU in February 2014. Data were collected on number and location of central lines, reported CLABSI, antibiotic therapies, microbiology of infection, and length of stay for neonates admitted to the St. Marys NICU from January 2011 through November 2013. Prospective data were collectec on neonates after initiation of vancomycin lock prophylaxis in February 2014. □□Results/Conclusions□This study is still under investigation. Data collection and analysis are being conducted currently.

Learning Objectives:

Describe the rationalization for antibiotic lock prophylaxis in the neonatal population.

Identify the most common microbiology of central line-associated bloodstream infections in the neonatal population.

Self Assessment Questions:

Which of the following is correct?

A Low birth weight neonates are at no greater risk of developing cen

B: The heparinized vancomycin lock prophylaxis dose is two-hundred

C: Use of heparinized vancomycin lock prophylaxis has been shown t

D: Most central line-associated blood stream infections (CLABSI) ten

What is the most common microbiology of central line-associated bloodstream infections (CLABSI) in the neonatal population?

A Streptococcus species

B Coagulase negative staphylococci

C Pseudomonas aeruginosa

D Escherichia coli

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-686 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF THE FINANCIAL IMPACT AND CLINICAL EFFECTIVENESS OF A TWENTY-FOUR HOUR PHARMACY TOXICOLOGY DRUG INFORMATION SERVICE

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Purpose: St. Joseph Hospital has initiated and established emergency department (ED) pharmacy service since 2011 which included toxicology consultation. ED pharmacists consulted 194 toxicological cases and saved over $55,000 directly by avoiding poison control center calls, which is set up as a fee for service in Wisconsin. Toxicological consult services will be expanded to multiple hospitals within Wheaton Franciscan Healthcare supported by inpatient pharmacy at St. Joseph Hospital to help triage poison control center calls. The purpose of this research project is to evaluate the financial benefits of providing poison consultations by pharmacists, and to assess the effectiveness of pharmacists toxicological consultations.□Method: This study will be submitted for Institutional Review Board exemption, and will be conducted over 6 months. Previous toxicological services by St. Joseph ED pharmacists were reviewed, and financial benefits were identified. In order to expand this service, basic education on toxicology will be provided to all the inpatient pharmacists at St. Joseph Hospital and will be assessed via a written competency. Starting February 2014, all inpatient pharmacists will be trained to consult toxicological cases. This is a change in practice since historically only emergency department pharmacists addressed these calls within their scheduled shifts. A data collection form will be completed by the consulting pharmacist including date, facility and type of provider calling, pharmacists name, patients account number, case description, recommendations provided, time spent, and the pharmacists confidence level for recommendations. Cost analysis will be performed based on the amount of poison control center calls avoided by pharmacists consultations. The toxicological cases will be characterized by demographic information and toxins. Pharmacists consultations will be evaluated by whether the medical provider takes the pharmacists recommendation to avoid the poison control center call or not, and the patients prognosis. □Results/Conclusions: To be presented at Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review diagnostic and treatment algorithms for common toxicological exposures

Identify a pharmacists role in the toxicological consultation process within a hospital system

Self Assessment Questions:

Which one is not the antidote for calcium-channel-blocker (CCB) and beta-blocker toxicities?

A Atropine and calcium are first-line therapy

B: Glucagon is the antidote for CCB and □-blocker

C: Hyperinsulinemia/euglycemia therapy (HIET) can be used for seve

D: Flumazenil is the antidote for CCB

A patient presents at ED with ethylene glycol poisoning emergency. The healthcare practitioner can consult the treatment plan from? Choose the best answer

A lab technicians

B pharmacists who have been trained in toxicological consultation

C patient's family members

D ED nurses

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-14-687 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT AND IMPLEMENTATION OF A PROTOCOL FOR INF SELF-MONITORING IN A PHARMACIST-MANAGED ANTICOAGULATION CLINIC

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Purpose: INR self-monitoring is increasing in popularity for patients receiving anticoagulation with long-term warfarin due to convenience and fewer cost barriers to patients. Self-monitoring has been shown to be a feasible, safe, and reliable option for warfarin management. Current literature has found a comparable time in therapeutic range (TTR) for INR self-monitoring compared to conventional INR monitoring. The purpose of this project is to describe the implementation of an INR self-monitoring protocol in a pharmacist managed anticoagulation clinic. Methods: The Institutional Review Board determined this quality improvement project is exempt from oversight, and the protocol was approved by the department of pharmacy. Patients enrolled in the IMCA Anticoagulation Clinic at Akron General Medical Center will be considered for enrollment. Patients included must have been monitored by the clinic for at least three months and eligible for self-monitoring as determined by clinic policies and procedures. Exclusion criteria include patient refusal for self-monitoring. The primary study outcome is TTR during the last two months of clinic monitoring and the first two months of self-monitoring. Secondary outcomes related to adherence with the self-monitoring protocol include adherence with INR monitoring and reporting, scheduled clinic appointments, warfarin instructions, and need for reversion to clinic testing. Secondary outcomes related to communication include number of attempts to communicate with the patient for routine assessments and for INR results outside the therapeutic range, the number of calendar days between the first attempt to reach a patient and achieved communication, and instances of non-communication of information relevant to warfarin management. Other secondary outcomes include frequency of INR testing before and after initiation of self-monitoring. All results will be descriptive in nature. Results/Conclusions: Pending at the time of submission, to be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Define the types of INR monitoring available and associated guideline recommendations.

Discuss the current evidence published regarding INR self-monitoring.

Self Assessment Questions:

Which of the following is a recommendation from the Antithrombotic Therapy and Prevention of Thrombosis 2012 Guidelines by American College of Chest Physicians?

A INR self-management is recommended for all patients

B: INR self-management is recommended for motivated, competent p

C: INR self-management is not recommended

D: No statement regarding INR self-management or self-monitoring

Which of the following is a possible benefit of INR self-monitoring compared with conventional monitoring?

A Improved time in therapeutic range

B Reduced frequency of major hemorrhages

C Increased frequency of INR testing without excessive burden on th

D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-688 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTING STANDARDIZED PHARMACIST-RUN ADMISSION MEDICATION RECONCILIATION AND ASSESSING ITS IMPACT ON INPATIENT MEDICATION SAFETY

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Purpose: Medication reconciliation during transitions in care is a crucial component of promoting medication safety. Roughly a quarter of medication errors that occur during hospitalization are due to lack of reconciliation of inpatient medications with home medications. Studies show that pharmacists identify more medication related problems during transitions in care than physicians or nurses. The objective of this study is to implement standardized pharmacist-run admission medication reconciliation and assess its impact on multiple patient safety outcomes. Methods: The study is a prospective cohort study of inpatients at a tertiary care Veterans Affairs medical center. Three months of data will be collected on current practice prior to interventions being made. After these three months, a pharmacist-run admission medication reconciliation program will be implemented. The same data will be collected for three months after the intervention. The primary outcome will be the number of medication interventions made at discharge by the pharmacist. Since pharmacists are already tracking interventions at discharge, a decrease in the number of interventions would be indicative of fewer medication errors and discrepancies occurring throughout the hospitalization. Secondary outcomes include the time spent on discharge medication reconciliation by the discharge pharmacist, number of reported medication errors, and answers to a pre intervention and post-intervention pharmacist survey. The study was approved by the institutional review board. Results: A three week pilot period prior to full implementation showed that pharmacists had an average of 1.74 interventions per patient admitted. Pharmacists also documented medication discrepancies or concerns on 73% of admitted patients. Full post-implementation results are not yet available. Conclusion: The pilot period showed that pharmacists involved in medication reconciliation at admission detected several patient safety issues. Full post-implementation conclusions are not yet available.

Learning Objectives:

Recognize the proportion of inpatient medication errors that occur as a result of medication reconciliation issues at hospital admission.

Identify the benefits of pharmacists performing medication reconciliation at admission.

Self Assessment Questions:

What percentage of all inpatient medication errors occur as a result of inaccurate or incomplete medication reconciliation at admission?

A 5%

B: 15%

C: 25%

D: 50%

What is a benefit of performing medication reconciliation at admission that is not achieved by performing medication reconciliation at discharge?

A Decreased medication discrepancies

B Decreased readmissions

C Complying with The Joint Commission standards

D Improving medication safety during the hospitalization

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-14-940 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5