PHARMACIST-LED HORMONAL CONTRACEPTIVE PRESCRIBING SERVICE IN A FEDERALLY QUALIFIED HEALTH CENTER: INITIAL IMPLEMENTATION OUTCOMES

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Purpose: The United States has a significantly higher rate of unintended pregnancies compared to many other developed countries. In 2011, the most recent year with data, 45% of all pregnancies in the United States were unintended. Indianas unintended pregnancy rate is above the national average, at 49% in 2010. Unintended pregnancy rates are highest among low-income persons of childbearing potential, with rates more than five times higher for those with incomes <100% of the federal poverty level compared to those with incomes >200% of the federal poverty level. Hormonal contraceptives are effective in preventing pregnancies; however, many persons of childbearing potential face barriers accessing contraception. Efforts have been made across the country to expand accessibility through pharmacist-prescribing legislation, but not in Indiana nor within Federally Qualified Health Centers (FQHC) in the state. It is currently unknown if pharmacist-provided contraceptive services can be successfully implemented in a FQHC in Indiana where pharmacist prescribing of hormonal contraceptives under a statewide protocol is unavailable. The purpose o this research is to explore initial implementation outcomes of a pharmacist-led hormonal contraception prescribing service within a FQHC through a collaborative practice agreement with in-house providers. Methods: Pharmacists began providing hormonal contraceptive services within a FQHC under a collaborative practice agreement to persons of childbearing potential ages 18-44 in January 2022. During the initial implementation phase of the service, the acceptability, adoption, appropriateness, and feasibility are being assessed through surveys, interviews, and electronic medical record data. Patient and staff surveys are being utilized to assess perceptions of the service. The survey will be followed with an optional interview with patients and clinic staff to gain further insight into perceptions of the service.Results/Conclusions: Data analysis is currently in progress and Results and Conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Review literature regarding unintended pregnancies and hormonal contraception.

Recognize a pharmacist's role in hormonal contraception prescribing.

Self Assessment Questions:

According to the literature, which of the following best describes unintended pregnancies?

A The United States has a lower rate of unintended pregnancies con
B: Only a quarter of pregnancies in the United States were unintende
C: Unintended pregnancy rates are higher among low-income person
D: Limited barriers exist to accessing effective contraception

Which best describes pharmacists role in hormonal contraception prescribing?

A Legislation in Indiana allows pharmacists to prescribe hormonal cc
B Pharmacists may prescribe hormonal contraceptives under collabo
C Pharmacists only provide contraceptive services in a community s
D Over-the-counter oral contraceptives eliminate the need for pharm

Q1 Answer: C Q2 Answer: B

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IMPACT OF CLINICAL DECISION SUPPORT TOOLS ON PHARMACIST-DIRECTED PROPOFOL MONITORING IN THE INTENSIVE CARE UNIT OF A COMMUNITY ACUTE CARE HOSPITAL

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Statement of purpose: The Society of Critical Care Medicine recommends propofol as a first-line sedative in critically ill, mechanically ventilated patients. Prolonged use and high infusion rates of propofol are risk factors for propofol infusion syndrome (PRIS) and requires close laboratory monitoring to identify. Clinical decision support systems (CDSS) provide targeted information to help providers make informed, high-impact patient care interventions. The purpose of this study is to assess the impact of pharmacy driven CDSS in improving lab monitoring of propofol in the ICU. The primary outcome of this study was to evaluate the changes of rates of ordering triglyceride and creatine kinase levels daily per protocol in patients admitted to the intensive care unit (ICU) on continuous infusions of propofol after implementation of a CDSS alert targeted to pharmacists in an environment outside the electronic health record.Statement of methods used: Study protocols were submitted to the institutional review board for approval before data collection. CDSS were implemented at Ephraim McDowell Health on September 1, 2020. ICU patients were divided into two groups based off the implementation of CDSS with the pre-CDSS group being admitted from August 1, 2019 to August 31, 2020 and the post-CDSS group admitted from September 1, 2020 to August 31, 2021. A retrospective chart review was conducted between the two groups comparing compliance to facility standards of monitoring triglycerides and creatine kinase in patients receiving propofol for at least 48 hours. Patients were included if they were 18 years or older, admitted to the ICU, and were receiving propofol for 48 hours or longer. Summary of (preliminary) results to support conclusion: Statistical analysis in progressConclusions reached: In progress

Learning Objectives:

Define monitoring parameters for propofol infusion syndrome (PRIS) and their importance to the care of critically ill patients

Outline the role of pharmacy driven clinical decision support tools in managing adverse events of medications

Self Assessment Questions:

What are two common manifestations of propofol infusion syndrome and what monitoring parameters could be used to assess those manifestations?

A Metabolic acidosis and acute kidney injury â€“ TG and CK
B: Hypertriglyceridemia and rhabdomyolysis â€“ TG and CK
C: Hypotension and respiratory depression â€“ BP and RR
D: ECG changes and hypotension â€“ Mg, K, and RR

Based off the results from this study, how can clinical decision support systems (CDSS) can improve pharmacy workflow and practice?

A Make your job easier by highlighting every intervention you need to
B They do not improve pharmacy practice and should not be implem
C CDSS can help improve compliance with pharmacy policies and p
D Gives you a script for provider recommendations

Q1 Answer: B Q2 Answer: C

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MYELOID GROWTH FACTORS (MGFS) IN PATIENTS RECEIVING IMMUNOSUPPRESSIVE CHEMOTHERAPY: EVALUATION OF MGFS USE IN HOSPITALIZED PATIENTS

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Purpose: Myelosuppression and neutropenic complications remain majo dose-limiting toxicities of cancer chemotherapy resulting in increased morbidity, mortality, and costs. Myeloid growth factors (MGFs) have been utilized to prevent and treat neutropenia in cancer patients receiving chemotherapy. The National Comprehensive Cancer Network (NCCN) developed guidelines regarding the management and prevention of neutropenia. The objective of this study is to assess the use of MGFs for appropriateness according to the NCCN guidelines. Th results will be used to identify areas for improvement. Methods: This study is a single-system retrospective chart review of patients prescribe myeloid growth factors from 1/1/2019 to 8/31/2021 at SwedishAmerican Regional Cancer Center or SwedishAmerican Hospital. The evaluated medications are filgrastim, peg-filgrastim, and tbo-filgrastim. The data collected includes age, weight, vital signs, white blood cell count, absolute neutrophil count, cancer diagnosis, chemotherapy treatment plan, type of MGFs given, administration date, and incidence of febrile neutropenia. After collection and assessment of the data, this study will be utilized to identify areas for improvement to help prevent neutropenic complications. Results/Conclusion: Data results and conclusion will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recognize patient characteristics that would predispose a cancer patien to developing serious complications from neutropenia

List differences between the most commonly used myeloid growth factor products

Self Assessment Questions:

Which of the following risk factors increase the risk of neutropenia?

A Age â‰¥ 65 years

B: History of smoking

C: Previous radiation therapy

D: A & C

Which of the following MGF products has a weight-based dosing?

A Filgrastim

B Pegfilgrastim

C Sargramostim

D All of the above

Q1 Answer: D Q2 Answer: A

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EFFICACY OF DIRECT ORAL ANTICOAGULANTS COMPARED TO VITAMIN K ANTAGONISTS IN THE SETTING OF VENOUS THROMBOEMBOLISM OR STROKE PREVENTION IN THOSE WITH MORBID OBESITY

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Direct oral anticoagulants (DOACs) have become the mainstay of therapy in the treatment of acute venous thromboembolism (VTE) and stroke prevention in atrial fibrillation patients. Their advantages include wider therapeutic index and fixed dosing. However, patients with morbid obesity, especially with a BMI > 50 kg/m2, are underrepresented in literature. This is a major consideration since obesity may affect drug pharmacokinetics. The purpose of this research is to compare safety and efficacy of DOACs with warfarin in the setting of VTE treatment and stroke prevention.This multi-center, retrospective cohort analysis will evaluate the incidence of cardioembolic stroke or recurrent VTE in morbidly obese patients prescribed a DOAC or warfarin for either VTE o stroke prevention in the setting of atrial fibrillation. Patients with BMI > 40 kg/m2 and a new prescription for apixaban, rivaroxaban, or warfarin issued during an encounter at a TriHealth hospital between the dates of January 2016 through November 2020 will be identified. Patients will be included in either the DOAC or warfarin cohort if they are 18 years of age, if the anticoagulant indication was either VTE treatment or stroke prevention associated with atrial fibrillation, and if they received follow-u from TriHealth providers for at least 12 months after initiation of therapy. Pregnant patients, prisoners, patients with mechanical heart valves, patients on intermittent hemodialysis, and patients who were on anticoagulation at the time of original encounter will be excluded. The primary outcome will be incidence of recurrent VTE and ischemic stroke at one year. Secondary outcomes include a composite of major bleedin and clinically relevant non-major bleeding at one year, rates of recurrent VTE and ischemic stroke and major bleeding, and clinically relevant non major bleeding within BMI subgroups at one year. Results and conclusion will be reported at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe anticoagulation treatment options for patients with morbid obesity

Review current evidence for the use of direct oral anticoagulants in patients with morbid obesity

Self Assessment Questions:

Which of the following dosing strategy does the 2021 International Society on Thrombosis and Haemostatis communication on Control of Anticoagulation recommend for rivaroxaban and apixaban in patients with morbid obesity?

A Double the standard dosing

B: Standard dosing

C: 50% dose reduction

D: Follow anti-Xa levels

Which of the following direct oral anticoagulants (DOACs) has demonstrated the best efficacy in patients with morbid obesity?

A Rivaroxaban

B Dabigatran

C Edoxaban

D Betrixaban

Q1 Answer: B Q2 Answer: A

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RETROSPECTIVE EVALUATION OF DOSING WEIGHT OF TACROLIMUS EXTENDED RELEASE IN OBESE KIDNEY TRANSPLANT RECIPIENTS IN THE DE NOVO SETTING

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Tacrolimus is known to have intra- and interpatient variability in therapeutic response. This variability is magnified in the obese kidney transplant population. Extended-release tacrolimus (Envarsus XR) was approved in 2018 for use as a de novo immunosuppressive agent in kidney transplant. Currently, there is limited guidance or recommendation on dosing of Envarsus XR de novo in obese patients. Approximately one-half of kidney transplant patients at our center meet criteria for obesity as defined by the World Health Organization. The aim of this study is to correlate de novo Envarsus XR regimens using various doses and body weight (e.g., actual, ideal, or adjusted) with early therapeutic serum concentration attainment.

Learning Objectives:

Identify the best dosing strategy as a predictor of therapeutic trough level in de novo kidney transplantation.

List tacrolimus acute peak related side effects.

Self Assessment Questions:

Which of the following is not considered a peak related side effect of tacrolimus?

A Diarrhea

B: Shakiness and headache

C: Hypotension

D: Acute kidney injury

Inter and intrapatient variabilities in regard to tacrolimus therapeutic response is associated with:

A Prograf

B Astegraf XL

C Envarsus XL

D All of them.

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-402-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

DISPARITIES IN MEDICATION SAFETY EVENTS BASED ON DEMOGRAPHICS

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A focus of health care quality and patient safety is focused on adverse drug events (ADEs) which can be defined as an injury resulting from medical intervention related to a drug which can include medication errors, allergic reactions, or side effects. Studies have found widespread gaps in literature regarding ADE reporting in racial and ethnic minority groups along with targeted interventions. In general, Black hospitalized patients have been shown to experience increased patient safety events when compared to white patients. The purpose of this single center, retrospective study is to evaluate medication safety events via MIDAS reports to determine if demographic disparities (racial, gender, economic) exist between medication errors reported and the demographics of the overall hospital population at the University of Cincinnati Medical Center (UCMC). Additionally, an aim of this study is to evaluate if there are differences in severity of medication safety errors based on certain demographics. This study is important as there have been no similar studies evaluating the severity of medication safety events based on demographics. This study is evaluating if biases exist within our health care system which could be leading to under-reporting of patient safety events across various patient groups. A report was composed of patients at least 18 years old admitted to UCMC between January 1, 2020 and October 1, 2021 with a documented MIDAS report. Additional information was obtained including baseline demographics including age, sex/gender, race, zip code, and preferred language. Data on the severity of the medication safety event was retrieved as a part of the MIDAS report. Data collection and analysis are on-going. Results will be presented at Great Lakes Pharmacy Residents Conference in April 2022. A conclusion will be forthcoming based on results.

Learning Objectives:

Recognize demographic variables that affect medication event reporting

Describe the clinical impact the results will have on medication event reporting

Self Assessment Questions:

Which of the following are true?

A Medication safety events are reported evenly amongst Black and W

B: Widespread gaps in literature exist regarding ADE reporting acros

C: White patients experience less severe medication safety events

D: Patients with limited English proficiency experience more severe n

Which of the following represents one of the primary outcomes of this research project?

A Determine if the demographics from MIDAS reports match the der

B Evaluate the frequency of MIDAS reports across the hospital syste

C Evaluate the incidence of specific medication class errors

D Determine if the severity of MIDAS reports is related to specific de

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-805-L05-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

SCREENING AND ANTIMICROBIAL STEWARDSHIP FOR PATIENTS PRESENTING WITH ALTERED MENTAL STATUS IN URINARY TRACT INFECTION

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Background Treatment of asymptomatic bacteriuria continues to lead to unnecessary antibiotic use.1 At University of Kentucky HealthCare, management of suspectedurinary tract infections (UTIs)was evaluated pre-guideline implementation(2017), post-guideline implementation(2018), and post- prospective audit and feedback(2019). A common symptom that persisted after guideline implementation was altered mental status (AMS) which lacks definitive evidence to be linked with UTI.2 Furthermore, there are generally accepted criteria for defining symptomatic UTI for long-term care facility residents without an indwelling catheter that use symptom-based evaluation for starting antimicrobial therapy including acute dysuria, fever, various urinary symptoms, hematuria, and costovertebral angle tenderness.3 Using the Loeb minimum criteria as a standard definition of UTI applied to patients with AMS, we will use our existing dataset to evaluate antibiotic prescribing practices in the subset of patients with AMS as the primary reason for UTI workup versus patients with classic UTI symptoms. Methods This will be a single-center, retrospective study utilizing a previously collected dataset over three time periods from September " November 2017, 2018, and 2019. This study will be conducted at an academic medical center in Lexington, KY examining adult patients >18 years of age with a collected urinalysis and have received antimicrobial therapy for a UTI indication. Outcomes Primary outcome: adherence to Loeb minimum criteria in UTI screening and treatment. Secondary outcomes: duration of antimicrobial therapy; number of urinalyses collected

Learning Objectives:

Describe Loeb Minimum Criteria as they relate to antibiotic prescribing in urinary tract infection.

Discuss the need for reform in prescribing antibiotic therapy to treat suspected urinary tract infection in patients presenting with altered mental status.

Self Assessment Questions:

Which of the following criteria would automatically qualify a patient with suspected urinary tract infection for antibiotic treatment based on Loeb Minimum Criteria?

A Fever >37.9Â°C

B: New or worsening urgency

C: Acute dysuria

D: Gross hematuria

Which of the following criteria would qualify a patient with an indwelling catheter and suspected urinary tract infection for antibiotic treatment based on Loeb Minimum Criteria?

A Fever >37.9Â°C

B New costovertebral angle tenderness

C New onset delirium

D Any of the above

Q1 Answer: C Q2 Answer:

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I-INSPIRE: IMPROVING THE INPATIENT TO SPECIALTY PHARMACY INTERNAL REFERRAL SYSTEM

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Specialty pharmacy prescription capture via internal inpatient referral is inconsistent at UW Health and results in reduced revenue. Despite this, readily available systems are in place to run benefit investigations, initiate prior authorizations, and proactively gain medication access for specific patient populations. Optimizing an internal specialty pharmacy referral system to improve inpatient capture, would be mutually beneficial to patients and our health system. The purpose of this project is to measure patient enrollment into UW Health specialty pharmacy during transitions of care. Improving specialty patient referral volume and time to referral are secondary objectives during this pilot.

Learning Objectives:

Describe the benefits of health-system based specialty pharmacy services

Identify barriers to implementing and optimizing a specialty referral program to improve inpatient to specialty capture

Self Assessment Questions:

Which of the following is a benefit of health-system based specialty pharmacy services?

A a.Health system protection from white bagging

B: b.Discounted pricing

C: c.Direct access to electronic medical record and health system pro

D: d.Insulation from competition in the market

Which of the following is a barrier to implementing a health-system specialty pharmacy referral-based program?

A a.Concern for enrollment delaying discharge

B b.Improved patient awareness of health system specialty services

C c.Designated personnel to discuss enrollment with patients

D d.Inpatient and outpatient marketing efforts

Q1 Answer: C Q2 Answer: A

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EVALUATION OF DIABETIC KETOACIDOSIS (DKA) MANAGEMENT PRE AND POST PROTOCOL CHANGES IN A COMMUNITY HOSPITA

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Diabetic ketoacidosis (DKA) is a critical complication of diabetes definec by a triad of uncontrolled hyperglycemia, metabolic acidosis, and increased total body ketones. Use of standardized protocols for DKA management have been shown to decrease the time to anion gap closure and minimize complications. The study institution recently updated the DKA treatment protocol, including how the insulin infusion rates are changed and modifications in electrolyte replacement. The purpose of this project is to evaluate safety and efficacy outcomes following evidenced based changes to the study institutions DKA protocol. This is a retrospective chart review of patients who were initiated on and transitioned off the DKA protocol while at the study institution between June 1, 2018 and August 31, 2021. Patients were separated into pre-update and post-update groups. Pediatric, pregnant, and incarcerated patients were excluded. The primary endpoint was time to anion gap less than 12 and time to serum acetone less than 0.6 mmol/L. Secondary efficacy outcomes included time from IV insulin star to the first dose of subcutaneous insulin, frequency of the anion gap reopening, and the frequency of serum acetone increasing. Secondary safety outcomes included the frequency of hypoglycemia and the frequency of hypokalemia. Data was collected until 50 patients were represented in each of the study groups. Other data collected includes age, sex, weight on admission, and blood glucose on admission. Data was analyzed using t-tests and fishers exact test.Results and conclusions will be presented at the 2022 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recognize components of DKA resolution

Review safety concerns of DKA treatment

Self Assessment Questions:

Which of the following lab values would indicate DKA has resolved?

A Blood glucose 289 mg/dL; serum bicarbonate 17 mEq/L; anion ga
B: Blood glucose 248 mg/dL; serum bicarbonate 15 mEq/L; anion ga
C: Blood glucose 178 mg/dL; serum bicarbonate 14 mEq/L; anion ga
D: Blood glucose 163 mg/dL; serum bicarbonate 16 mEq/L; anion ga

What are two common complications of DKA treatment?

A Hypokalemia and hypoglycemia
B Hyperkalemia and hypoglycemia
C Hypochloremia and hypoglycemia
D Hyperchloremia and hypoglycemia

Q1 Answer: C Q2 Answer: A

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FOUR-FACTOR PROTHROMBIN COMPLEX CONCENTRATE (4F-PCC) VS. ANDEXANET ALFA FOR THE REVERSAL OF DOACS FOLLOWING TRAUMATIC BRAIN INJURY

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Purpose: The objective of this study is to evaluate the efficacy of andexanet alfa as compared to 4-factor PCC in traumatic brain injuries. Our specific aim is to evaluate and compare clinical and safety outcomes of those treated with andexanet alfa versus 4-factor PCC. As there are limited studies directly comparing these two reversal agents and unclear guidance on the preferred agent, we hope to add to the current available literature.Methods: This is a retrospective review of data accessed from the Michigan Trauma Quality Improvement Program database from 35 Level 1 and 2 trauma centers in Michigan and Minnesota. Inclusion criteria includes age 18 years, presentation with blunt or penetrating injury, Abbreviated Injury Scale (AIS) > 2 for head, Injury Severity Score 5, factor Xa inhibitor use within 2 days of presentation, and having received either andexanet alfa or 4-factor PCC within 24 hours of admission. Exclusion criteria includes direct admits from another hospital, P2Y12 inhibitor use prior to injury, AIS > 2 outside of head, no signs of life upon initial evaluation, having received andexanet alfa and 4-factor PCC during admission, and history of bleeding disorders (Factor V Leiden, Hemophilia, and Von Willebrand Disease). Data is included from January 2018 through September 2021. Primary outcomes include rate of mortality/hospice. Secondary outcomes include unplanned OR visits, time to OR, hospital and ICU length of stay, and incidence of VTE. Univariate differences in patient characteristics by group will be evaluated using Chi-squared tests for categorical variables and analysis of variance F-tests for continuous variables. Multivariable logistic regression modeling will be used to account for differences in patient characteristics and injury severity.Results and conclusion will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review the current literature pertaining to the reversal of Factor Xa inhibitors.

Discuss the efficacy and safety outcomes of 4F-PCC and andaxanet alfa in patients following a traumatic brain injury.

Self Assessment Questions:

What is a major limitation of the 2015 andexanet alfa approval study?

A Lack of anti-Xa levels
B: External validity
C: Not a randomized control trial
D: Only included patients on apixaban

What is(are) the factor(s) that determine giving a high vs. low dose of andexanet alfa?

A Patientâ€™s weight
B Severity of injury
C Timing and dosage of oral FXa inhibitor
D CrCl

Q1 Answer: B Q2 Answer: C

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OUTPATIENT PHARMACY ENTERPRISE-WIDE IMPLEMENTATION OF REMOTE FINAL VERIFICATION

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Organizational growth, establishment of new partnerships, and expanding geographical reach necessitates maximizing and implementing streamlined workflow processes focused on sustaining positive patient outcomes, customer satisfaction, and continual provisior of high quality, safe patient care. Advancement proposals were presented through the Pharmacy Practice Model Steering Committee, consisting of various frontline staff to review, prioritize, and approve initiatives. With the committees endorsement to implement upgraded visual precision counting devices with advanced features, a business plan highlighting quality, safety, and efficiency gains as justification was presented and approved by senior leadership and the Capital Committee. Following fund release and device purchase, workflow development commenced to test the hypothesis and support the primary objective using an interventional, single-center study design. Preliminary results support the hypothesis that remote final verification by a pharmacist is not inferior to physical onsite final verification by a pharmacist. Furthermore, initial findings suggest that implementing remote final verification supports increasing workflow efficiencies that wi be substantiated with Ready by Promise Time measurement and overall improved patient satisfaction scores. Future evaluation will include financial return-on-investment. Implementing visual precision counting devices with advanced features to support workflow steps, such as remote final verification, creates efficiencies within the pharmacy while maintaining safe, quality patient care and satisfaction.

Learning Objectives:

Identify benefits to workflow and operational refinement through utilization of remote final verification.

Describe automated technology solutions and how they would be utilized to accomplish remote final verification.

Self Assessment Questions:

What is a benefit of remote final verification?

A Increase workflow complexities

B: Enhance cross-site support

C: Increase counting discrepancies

D: Decrease diversion monitoring

What type of automated technology solutions would be utilized to implement remote final verification?

A Robotic Adherence Packager

B Automatic Compounding System

C Automatic Storage and Retrieval System

D Visual Precision Counting Device

Q1 Answer: B Q2 Answer: D

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TIME TO APPROPRIATE ANTIBIOTICS FOR SEPSIS PRE & POST ED SEPSIS INITIATIVE IMPLEMENTATION

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Statement of purposeSepsis is a leading cause of morbidity and mortality in the pediatric population accounting for 1.2 million cases every year worldwide. Based on 2018 estimates, the mortality rate of sepsis in the pediatric population is between 11-19%. The leading cause of mortality in sepsis is refractory shock or multi-organ failure with most deaths occurring within the initial 48 to 72 hours of treatment. The Sepsis Consensus panel recommends timely recognition of septic shocl and sepsis-related organ dysfunction, and initiation of antibiotics as soor as possible, within 1 hour of recognition. Quality improvement (QI) initiatives have been implemented in various hospital settings to improve clinical outcomes.Statement of methods usedThe study was approved by the Indiana University Institutional Review Board. It is a retrospective cohort study to evaluate pre- and post- Quality Improvement (QI) interventions aimed at improving compliance with sepsis guidelines in pediatric patients diagnosed with sepsis over the last four years in the emergency department (ED) at Riley Hospital for Children at IU Health. Data was collected for patients <18 years of age who presented to the ED during the period of 01/01/2017 to 06/31/2021 and had a diagnosis of sepsis. A total of 338 patient charts were screened and 291 were enrolled in the study with 71 assigned to the preintervention group and 220 assigned to the post-intervention group. The primary outcome was percentage of patients receiving antibiotics within 1 hour of arrival to the ED and rate of appropriate antibiotics for empiric coverage of sepsis pre and post- three ED sepsis QI implementations. Secondary outcome measured was the percentage of patients transferred to PICU versus floor beds. Summary of results to support conclusionResults and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss the impact of quality improvement (QI) initiatives on timeliness and appropriateness of antibiotics in pediatric patients presenting to the ED with sepsis.

Review the Pediatric Surviving Sepsis Guidelines.

Self Assessment Questions:

1.According to the Surviving Sepsis guidelines, when should antibiotics be initiated in a patient who presents with septic shock or sepsis related organ dysfunction?

A Within 1 hour of recognition of septic shock

B: Within 2 hours of recognition of septic shock

C: Within 3 hours of recognition of septic shock

D: Within 4 hours of recognition of septic shock

All of the following are indicated in a patient who presents with septic shock except

A Obtain blood cultures

B Rapid administration of 30 mL/kg isotonic crystalloid

C Administration of broad-spectrum antibiotics

D Administer vasopressors if MAP > 65mmHg

Q1 Answer: A Q2 Answer: D

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ASSESSMENT OF DISCHARGE POTASSIUM PRESCRIPTIONS IN PATIENTS NOT ON POTASSIUM PRIOR TO ADMISSION

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Background: Inappropriate continuation of medications upon hospital discharge is a concern effecting transitions of care for many patients, leading to increased adverse effects and possible representation to the hospital. Literature has identified rates to be as high as 7.9% for prescriptions without a documented indication 30 days after discharge. Gaps in the continuity of patient care have been identified as a major area for improvement in patient safety for the reduction of preventable adverse events. It has recently been noticed that patients are inadvertently being discharged with new potassium supplementation at Henry Ford Macomb Hospital (HFMH). Erroneous prescribing of potassium puts patients at risk of hyperkalemia which can be a potentially life-threatening electrolyte disorder. Purpose: To compare prescribing patterns of potassium at discharge with and without pharmacist intervention. Methods: This was a single center pre-post quasi-experimental study. Inclusion criteria included patients 18 years of age and admitted with a new scheduled potassium order and active diuretic order. The pre-intervention group included patients admitted from 06/1/2020-06/30/21 and 1/24/22-4/1/22 for the post-intervention group. There were 2 interventions implemented for this study. First, education was provided to medical providers and information was provided regarding past potassium discharge orders. Secondly, after education was provided, pharmacists ran daily reports to identify patients with a diuretic and scheduled potassium initiated. Pharmacists monitored patients daily and when it appeared that the patient was nearing discharge, the discharge physician was contacted about any outstanding potassium orders. The primary endpoint is percent difference in patients discharged with new potassium prescriptions without a diuretic or clinical indication before and after pharmacist intervention. The secondary endpoints include potassium levels during admission and upon discharge, re-admission within 90 days, and the number of I-Vents opened. Results/Conclusion: Results and conclusion will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recognize normal and abnormal potassium serum levels

Identify and assess the risk and benefits of continuing potassium supplementation

Self Assessment Questions:

What is the normal range of serum potassium?

A 4.5-7.0 mmol/L

B: 3.5-5.0 mmol/L

C: 2.0-4.5 mmol/L

D: 7.0-10.0 mmol/L

Hyperkalemia has been associated with the following adverse effects, except for?

A Arrythmias

B Muscle weakness

C Seizures

D Parathesis

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-685-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IMPACT OF LOWERED INPATIENT CORRECTIONAL BEDTIME INSULIN DOSING ON GLYCEMIC OUTCOMES OF VETERANS

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Purpose: Limited evidence exists to support the use of bedtime correctional insulin (i.e. sliding scale insulin) in managing blood glucose (BG) of hospitalized patients, leading to identification of need for further study. Specifically, management of bedtime correctional insulin is not addressed in guidelines from the American Diabetes Association, American Academy of Clinical Endocrinology, or Veterans Affairs/Department of Defense. This study will review glycemic outcomes, primarily hypoglycemic events, before and after a protocol change to reduce bedtime correctional insulin dosing. Methods: This study is a retrospective, cohort analysis of a single healthcare system at the Robley Rex Veterans Affairs Medical Center. The protocol change reduces current correctional insulin scales by one level, or tier, of units at bedtime (i.e. rather than administering correctional insulin with BG greater than 150mg/dL, insulin will not be administered until BG greater than 200mg/dL); mealtime insulin will not be impacted. The electronic medical record will identify adult patients who were prescribed insulin aspart on a correctional scale with at least one BG reading from 0000 (midnight) to 0700. Comparable historical and active cohorts will be created at a 1:1 ratio and matched by characteristics at baseline including: age, presence of acute kidney injury, hemoglobin A1c, use of systemic steroids, body mass index, use and type of basal insulin, use of oral antihyperglycemic agents, and level of correctional insulin prescribed. The primary outcome will be number of nocturnal hypoglycemia readings, defined as BG less than 70 mg/dL from 0000 (midnight) to 0700. Secondary outcomes will include, but are not limited to, mean fasting glucose, hospital length of stay, BG readings at various levels, and the number of times no correctional insulin was given at bedtime. Chi-square tests will be used to compare discrete outcomes, while student t-tests will be used to compare continuous outcomes. Results/Conclusion: Pending

Learning Objectives:

Define blood glucose goals for inpatient diabetes management.

Discuss factors for increased risk of hypoglycemia in hospitalized patients.

Self Assessment Questions:

Per American Diabetes Association guidelines, what is the primary target glycemic range for hospitalized patients?

A 80-130mg/dL

B: 130-150mg/dL

C: 140-180mg/dL

D: 150-200mg/dL

Which of the following is most likely to increase risk of hypoglycemia for hospitalized patients?

A Use of systemic steroids

B Variable oral intake

C Long duration of diabetes

D Parenteral nutrition

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-408-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

BLEEDING OUT RESOURCES: REDUCING HEPARIN INFUSIONS IN THE EMERGENCY DEPARTMENT

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Unfractionated heparin (UFH) IV infusions have been a mainstay of PE and DVT management in the ED. UFH has been historically favored because of its fast onset and minimal patient-specific changes required for initial dosing. However, UFH requires extensive Anti-Xa or PTT lab monitoring representing additional resources required consistent with the extensive monitoring. Alternatively, enoxaparin, apixaban, and rivaroxaban all have an onset of around 2 hours with a consistent pharmacodynamic profile. High-quality trials have demonstrated the superiority or non-inferiority of these alternative agents, and national guidelines have recommended non-UFH agents as first line for the treatment of DVTs and low-risk PEs. The primary objective of this projec was to decrease the number of heparin infusions initiated in the ED for patients presenting with a DVT or low-risk PE. The secondary objectives were to decrease hospital resources spent on patients presenting with a DVT or low-risk PE and to identify factors leading to increased usage of heparin infusions. The primary objective was measured by pulling the percentage of patients presenting with a DVT or low-risk PE where heparin was selected as the initial anticoagulation strategy before and after implementation of guidelines with corresponding education. Secondary objectives were measured by conducting a pre-vs-post analysis of admission rates, length of stay, length of time spent in the ED, and rate of heparin initiation after transfer from the ED if heparin was not selected as initial anticoagulation. Preliminary analysis revealed that a significantly higher proportion of patients with a low-risk PE received heparin as initial therapy (31/78, 39.7%) when compared to patients with a DVT (27/118, 22.9%) 2= 6.4 (p=0.011). This signals that this is an area that can be targeted with future educational interventions.

Learning Objectives:

Classify factors that may lead to higher doses of sedation and analgesia

Select guideline recommended therapy for a patient based on their risk stratification to use resources judiciously

Self Assessment Questions:

JW is a 56-year-old male presenting with shortness of breath, tachypnea, tachycardia, and hypoxia. He is normotensive, and a CTPE is obtained which reveals a subsegmental PE with evidence of right heart strain. Troponin was obtained which returned negative. Admissior is planned due to the severity of JWs symptoms. What PE risk category does JW fall into?

A High-risk

B: Intermediate-high risk

C: Intermediate-low risk

D: Low-risk

BT is a 38-year-old female presenting with shortness of breath and is found to be COVID+. She has no PMH. A CTPE is obtained which reveals a segmental PE with no evidence of right heart strain. Troponin was obtained and was found to be negative. Admission is planned due to an episode of transient hypoxia to monitor her overnight. Which initial anticoagulation strategy would most judiciously use resources while still retaining efficacy and safety?

A Heparin bolus plus infusion titrated to Anti-Xa goal 0.3-0.7

B Heparin infusion with no bolus titrated to Anti-Xa goal 0.3-0.7

C Warfarin alone to target INR 2.0-3.0

D Apixaban 10 mg twice daily for 7 days followed by 5 mg twice daily

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-409-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

IMPACT OF A PHARMACIST-DRIVEN PHARMACOKINETIC SERVICE ON THE OPTIMIZATION OF VANCOMYCIN

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Recent guideline updates recommend a shift from trough- to AUC-based therapeutic drug monitoring (TDM) of vancomycin, primarily due to lack of correlation between trough and efficacy. Conversely, trough concentrations >15 mg/L are a reliable predictor of vancomycin-induced kidney injury (VIKI) and are less resource intensive to monitor than AUCs. Pharmacist-driven vancomycin pharmacokinetic services (PDVPKS) have demonstrated improved outcomes and decreased rates of VIKI using trough-based TDM, while data are limited evaluating use o AUC-based methods. Further, despite their requisite function in many academic institutions, reports on PDVPKS led by pharmacy residents are scarce and those including a 24-hour on-call program are absent. Therefore, the objective of this study was to evaluate the impact of pharmacy resident-lead vancomycin TDM on the incidence of trough concentrations 15 / 20 mg/L and determine the potential utility of AUC-based TDM in this setting.This observational cohort study included adult inpatients who received vancomycin and had TDM performed at least once from 10/2019-10/2021. Patients receiving any form of renal replacement therapy or with creatinine clearance 30 mL/min were excluded. The primary outcome was the incidence of initial vancomycin trough concentration 15 mg/L (mild-moderate infections) and 20 mg/L (severe infections). Secondary outcomes included follow-up trough concentrations, comparison of AUC/MIC dosing projections via MAP-Bayesian method to empiric and trough-based dosing, as well as adherence to the institutions PDVPKS protocol and guideline. Data will be analyzed via descriptive statistics and compared using inferential statistics. Continuous data will be compared using the Mann-Whitney U test and categorical data via Chi-square test or Fishers exact test. Groups will be stratified according to type of clinician performing TDM (pharmacy resident) and time of day (business hours vs. on-call).Data collection and analysis is ongoing. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Review the current literature and guidance regarding vancomycin dosing and monitoring

Discuss the advantages of utilizing an area under the curve (AUC)-based approach for patients receiving vancomycin therapy

Self Assessment Questions:

Which of the following do consensus guidelines recommend for vancomycin dosing and monitoring?

A Trough monitoring as a surrogate marker for the target area under

B: Trough monitoring as a surrogate marker for clinical efficacy

C: An AUC/MIC ratio of 400-600 to achieve clinical efficacy and ensu

D: Dose adjustments based on trough monitoring (target 15-20 mg/L)

What is the purpose of utilizing an AUC-based approach with vancomycin therapy?

A Decrease the total dose of vancomycin the patient receives

B Prevents the occurrence of nephrotoxicity

C More efficacious against methicillin resistant Staphylococcus aure

D Increase vancomycin concentration at the site of infection

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-410-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

ASSOCIATION BETWEEN VANCOMYCIN AUC/MIC AND CLINICAL FAILURE IN PATIENTS WITH STREPTOCOCCAL BACTEREMIA

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Vancomycin is an efficacious therapy against certain streptococcal strains, particularly cephalosporin resistant viridans group streptococci. Although rare, streptococcal infections with positive follow-up blood cultures have been shown to require longer treatment durations which confer higher toxicity risk. Area under the curve to minimum inhibitory concentration ratio (AUC/MIC) is the preferred monitoring approach for vancomycin when treating serious methicillin-resistant Staphylococcus aureus infections. AUC/MIC monitoring is being investigated but is not yet well elucidated with other bacterial pathogens. To our knowledge, no studies to date have examined the relationship between vancomycin AUC/MIC and clinical failure in streptococcal bacteremia. This is a retrospective cross-sectional study conducted at The Ohio State University Wexner Medical Center (OSUWMC) inpatient facilities evaluating adult patients with streptococcal bacteremia treated with vancomycin definitive therapy. Protected populations, patients who received alternative or concomitant anti-streptococcal therapy for more than 50% of their treatment course, those with concomitant S. aureus or enterococcal bacteremia, and others who do not otherwise qualify for Bayesian calculations are excluded.The primary outcome is treatment failure, defined as a composite of 60-day infection-related readmission, recurrent bacteremia with Streptococcus spp., persistent streptococcal bacteremia, or 60-day all-cause mortality. Secondary outcomes include time to bacteremia clearance, hospital length of stay, and nephrotoxicity A combination of descriptive statistics, Students t-test or Wilcoxon rank sum, chi-square or Fishers exact test will be used to assess the difference between patients who experience the primary outcome and those who do not at a 95% confidence interval. Classification and regression tree analysis (CART) will be conducted to identify the AUC/MIC threshold for predicting clinical failure. Once the threshold is identified, descriptive statistics will be conducted comparing patients on opposing sides of the AUC/MIC threshold value. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Recognize potential benefits of utilizing vancomycin AUC/MIC monitorin

Identify patients with streptococcal bacteremia who could be candidates for vancomycin AUC/MIC monitoring

Self Assessment Questions:

Vancomycin AUC/MIC monitoring may reduce the risk of which of the following as compared to trough-based monitoring:

A Infection-related mortality

B: Treatment failure

C: Nephrotoxicity

D: All of the above

Which of the following patients could most benefit from AUC/MIC vancomycin monitoring:

A 60 y.o. male with a severe penicillin allergy discharging on 2 week

B 33 y.o female with acute lymphoblastic leukemia, discharging on 2

C 56 y.o. male with cirrhosis and prior hepatorenal syndrome, discha

D 45 y.o female with GERD discharging on 10 days of vancomycin tl

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-411-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

INCIDENCE AND RISK FACTORS OF VASOPRESSIN-ASSOCIATED HYPONATREMIA IN CRITICALLY ILL PEDIATRIC CARDIAC PATIENTS

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In pediatric ICU patients receiving vasopressin, the rate of hyponatremia has been reported as high as 66%. Symptoms of hyponatremia may be nonspecific, including headache, lethargy, and nausea. Rapid declines i serum sodium and severe hyponatremia are associated with increased risk of brain damage, seizure, and coma. Acute hyponatremia (defined as onset < 48 hours) is generally more serious than chronic hyponatremia, with increased rates of seizure and death. Symptomatic hyponatremia is a medical emergency requiring careful correction, as overcorrecting or too rapidly correcting serum sodium can be harmful. Children are at increased risk of hyponatremic encephalopathy because their brain-to-intracranial-volume ratio is larger than adults. Risk factors for hyponatremia include hospitalization, hypotonic maintenance fluids, use of thiazide diuretics, existing renal failure, SIADH, vomiting and diarrhea, and existing water imbalance.

Learning Objectives:

Identify factors of vasopressin-associated hyponatremia

Describe risks associated with hyponatremia in pediatric ICU patients

Self Assessment Questions:

Which of the following is not a known risk factor for developing hyponatremia?

A ICU admission

B: Use of hypertonic maintenance fluids

C: Use of thiazide diuretics

D: Existing renal failure

Why are children at increased risk of hyponatremic encephalopathy?

A Childrenâ€™s brain-to-intracranial-volume ratio is larger than adul

B Children have less salt reserves than adults

C Pediatric renal dysfunction affects natural ADH release

D Pediatric patients tend to have shorter hospitalizations

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-806-L05-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EFFECT OF ANTIPLATELET AND ANTICOAGULANT AGENTS ON OUTCOMES FOLLOWING EMERGENT SURGERY FOR TRAUMATIC BRAIN INJURIES

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Traumatic Brain Injury is the single largest cause of death from injury in the United States, comprising one third of all trauma deaths. A large concern relates to elderly patients taking anticoagulants or antiplatelets prior to an injury due to the higher risk of falls and potentially serious hemorrhagic complications. This project was designed to utilize the Michigan Trauma Quality Improvement Program (MTQIP) database to conduct a retrospective review to fill existing gaps in literature and expand on current data outcomes to determine the effect that anticoagulants/antiplatelets have on outcomes following emergent surgery for patients with a traumatic brain injury. MTQIP consists of data from 35 verified Level 1 and 2 trauma centers in Michigan with over 220,000 trauma patients. Data was extracted from January 1, 2014 to September 30, 2021. Patients included in the study had the following criteria: age >18 years, Maximum Head/Neck severity value of Abbreviated Injury Scale (AIS) >2, Injury Severity Score >5, and underwent a neurosurgery operation within 24 hours of Emergency Department admission. Patients were excluded from the study if they meet at least one of the following criteria- Maximum Face/Chest/Abdomen or Pelvic Contents/Extremity or Pelvic Girdle/External severity value of AIS >3, or having no signs of life at initial. The primary outcome was in-hospital mortality and/or hospice. Secondary outcomes included length of stay (for both Intensive Critical Care dates and total hospital days), blood products received within 24 hours of admission, and composite of any serious in-hospital grade II/III complications. Data was stratified based on anticoagulant/antiplatelet agent prior to admission. Univariate differences in patient characteristics by group will be evaluated using Chi-squared tests for categorical variables and analysis of variance F-tests for continuous variables.

Learning Objectives:

Discuss mortality and hospice rates following emergent surgery in patients receiving a DOAC compared to patients not on antiplatelet or anticoagulant

Describe the safety and risk of serious complications following emergent surgery when comparing antiplatelet or anticoagulant agents

Self Assessment Questions:

What is the primary outcome of the study?

A Length of stay

B: in-hospital mortality and/or hospice

C: Blood products

D: in-hospital complications

Which of the following therapies is NOT utilized in the study groups?

A Warfarin

B Aspirin

C Clopidogrel

D Ticagrelor

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-807-L05-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

CLINICAL PHARMACIST IMPACT ON DILTIAZEM ADMINISTRATION ROUTE IN PATIENTS PRESENTING TO THE EMERGENCY DEPARTMENT IN ATRIAL FIBRILLATION WITH RAPID VENTRICULAR RESPONSE

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The American College of Cardiology recommends diltiazem for rate control in patients with atrial fibrillation (AF). It is a common practice to manage acute AF with rapid ventricular response (RVR) using a loading dose of diltiazem followed by intravenous (IV) continuous infusion; however, once rate control has been achieved, oral (PO) diltiazem may be appropriate. The purpose of this study is to evaluate the impact of emergency medicine clinical pharmacists on diltiazem ordering practices for the continued treatment of AF with RVR.This is a single center, pre-/post-education study. Education on dosing and route options was disseminated to emergency medicine providers and hospitalists in October 2021. The primary objective is the number of patients able to be successfully managed with oral diltiazem at four hours. Data for adult patients presenting to SwedishAmerican Hospital from May 2021 through December 2021 with a diagnosis of AF with RVR, a heart rate > 110 beats per minute, and are treated with at least one loading dose of IV diltiazem followed by PO or continuous infusion in the emergency department was identified. Exclusions included patients meeting the following requirements: prison inmate status, pregnant, transferred to or from an outside hospital, electrical cardioversion, other rate control agents, and lack of vital sign documentation. In total, 297 patient were evaluated, 31 males and 31 females (n=62) were included. Forty-five patients received continuous infusion while 17 patients received PO. During the pre-education period, 13.5% of patients (5/37) received PO; during the post-education period, 48% (12/25) received PO. In those treated with continuous infusion, 66.7% patients (30/45) were deemed to have treatment success while 94% of PO patients (16/17) had treatment success. In those receiving continuous infusion, 75.5% (34/45) of patients were admitted to the ICU compared to 23.5% of patients treated with PO (4/17).

Learning Objectives:

Discuss in which emergent setting and patient population oral diltiazem would be appropriate

Identify if patients loaded with intravenous diltiazem are able to be successfully maintained on oral diltiazem at four hours

Self Assessment Questions:

Per the guidelines, which patient would be appropriate to receive oral diltiazem?

A A patient with a heart rate of 87 beats per minute, 30 minutes after

B: A patient with a heart rate of 110 beats per minute, 1 minute after

C: A patient that has converted to normal sinus rhythm, with a heart r

D: A patient that has a heart rate of 132 after receiving two loading do

In this study, what percentage of patients treated with oral diltiazem were able to be successfully treated at four hours?

A 100%

B 27.70%

C 94%

D 66.70%

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-413-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

ASSESSING THE SENSITIVITY OF THE PHQ-9 TO PREDICT MEDICATION ADHERENCE ISSUES

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Purpose: Patients who have depression are at an increased risk of being non-adherent to their medications. The purpose of this research is to determine the sensitivity of the PHQ-9 questionnaire, a standard screening tool used to assist in the diagnosis of depression, in being able to predict issues with medication adherence. The individual questions of the PHQ-9 will be weighted to determine if certain questions are better predictors of medication adherence issues. This study can help determine if there are healthcare gaps when it comes to assessing medication adherence.Methods: Study participants include patients who have been referred to the PGY-1 clinic, Diabetes clinic, Anticoagulation clinic, and/or for an Annual Wellness Visit, with a pharmacy resident within the Saint Joseph Health System Network. During the patient visit, the PHQ-9 questionnaire is administered by an ambulatory care pharmacist. The pharmacist administering the PHQ-9 is instructed on the criteria which would warrant a referral to social work. This is to ensure that concerns get addressed if a patient is at risk of being a harm to themselves or society. The pharmacist also assesses the patients adherence to medications at this time. All data collected during the patient visit will be given to the primary investigator. Patient data will be de-identified when the correlation of the PHQ-9 results and medication adherence are being assessed. A multiple linear regression analysis will be conducted to determine the correlation between the PHQ-9 results and medication adherence.Results and Conclusions: This study is ongoing; therefore the results and conclusions will be presented at the 2022 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify which metrics are tracked that determine reimbursement for contracts with Centers for Medicare and Medicaid Services (CMS) and other payors.

Recognize how medication adherence is affected in patients who have depression.

Self Assessment Questions:

Which of the following statements is correct?

A Adherence to medications is not a metric that is tracked for reimbu

B: Adherence to medications for diabetes, cholesterol, and hypertens

C: Centers for Medicare and Medicaid Services (CMS) and other pay

D: Pharmacists do not need to be aware of/track metrics.

Which statement expresses how medication adherence is affected in patients with depression?

A Medication adherence decreases

B Medication adherence increases

C Medication adherence is not affected

D Medication adherence is affected, but it is not known how it is affe

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-686-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

THE IMPLICATIONS OF INITIAL ANTIHYPERTENSIVE THERAPY SELECTION IN BLACK PATIENTS

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Background:Black and African American patients often experience higher rates of hypertension-related morbidity and mortality due to healtl disparities and pathophysiological factors. In addition to an overall highe rate of hypertension diagnoses, Black patients are also less likely to achieve blood pressure control. Clinical guidelines often support the use of calcium channel blockers (CCBs) and thiazide diuretics in Black patients compared to other therapies such as renin-angiotensin system (RAS) inhibitors. Current guidelines recommend a thiazide diuretic or a CCB as an initial antihypertensive therapy in Black patients without hear failure or chronic kidney disease. Statement of Purpose: The purpose of this study is to assess and evaluate the healthcare utilization and time burden implications related to initial antihypertensive therapy selection ir Black patients. Methods:This study is a retrospective cohort analysis tha assesses and evaluates the healthcare utilization implications and time burden related to the initial antihypertensive therapy selection in Black patients between the ages of 18 and 79 years within an urban, academic health system. Three hundred patients were allocated to the three treatment groups (CCBs, thiazide diuretics, and RAS inhibitors). The primary outcome describes the proportion of patients achieving a blood pressure reading of <140/90 mmHg at one-year after initiation of initial antihypertensive therapy. Secondary outcomes will include the total combined number of medication adjustments needed during a one-year period, total months from initiation of anti-hypertensive agent to blood pressure control, and the total number of medications prescribed at one year. Baseline characteristics will be reported via descriptive statistics. The primary outcome will be analyzed using a chi-squared test and secondary outcomes will be analyzed using analysis of variance to compare means of independent groups.Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review antihypertensive therapy selection in Black patients

Describe the impact that initial antihypertensive therapy selection has or blood pressure control in Black patients

Self Assessment Questions:

According to the 2017 ACC/AHA/Multisociety Guidelines, which of the follow is an appropriate initial antihypertensive therapy for a Black patient without comorbid conditions?

A Angiotensin-converting enzyme Inhibitor

B: Calcium Channel Blocker

C: Beta Blocker

D: Angiotensin Receptor Blocker

Stroke mortality risk and heart failure risk secondary to hypertension are highest among which race?

A White

B Black

C Asian

D American Indian

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-414-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EFFECT OF TARGETED EDUCATION ON ADVERSE DRUG REACTION REPORTING AT A SINGLE VETERANS AFFAIRS HEALTH CARE SYSTEM

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Purpose: The purpose of this study is to analyze rates of adverse drug reaction (ADR) reporting pre- and post-implementation of a pharmacist-led, pharmacovigilance education program targeted to medical residents. Methods: The target subjects were medical residents working on the internal medicine service at a single center Veterans Affairs Health Care System. Pharmacist-led, educational mini-sessions were conducted in-person to 9 medical residents and further, written education was provided to medical residents not reached during the in-person session. The education program focused on medication safety and how to best document patient allergies and ADRs. The rates of ADRs reported will be evaluated through a pre- and post-assessment utilizing the Veterans Affairs Adverse Drug Event Reporting System (VA ADERS) database. Additionally, results will evaluate and compare the proportion of non-severe and severe ADR reports, identify the most common drugs associated with ADR, the type of healthcare professional most likely to submit an ADR report, and how ADR reporting at the Lexington VA HCS compares to other facilities within its Veterans Integrated Services Network (VISN 9). Continuous variables will be evaluated using students t-test. Categorical variables will be evaluated using chi-squared test. Results: All outcomes remain under investigation. Data analysis is currently being conducted.Conclusion: It is anticipated that provider education will improve ADR reporting and identify potential further educational needs.

Learning Objectives:

Classify the difference between adverse drug event (ADE), adverse drug reaction (ADR), and medication errors.

Identify the patient population at highest risk of being hospitalized due to an adverse drug reaction (ADR)

Self Assessment Questions:

Which of the following best describes an adverse drug reaction?

A A patient experiences shortness of breath and uses an albuterol in
B: Patient is prescribed atorvastatin 20mg daily but atorvastatin 10mg
C: A patient develops a dry cough while taking lisinopril 10mg daily as
D: A patient forgets to take their metoprolol succinate for several days

What patient population is most likely to experience a hospital admission due to an adverse drug reaction?

A 18 year old
B 30 year old
C 35 year old
D 71 year old

Q1 Answer: C Q2 Answer: D

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Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

ANALYSIS OF CURRENT TOBACCO CESSATION MANAGEMENT BY AMBULATORY CARE CLINICAL PHARMACISTS WITHIN FROEDTERT HEALTH ENTERPRISE

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Clinic-based pharmacists within Froedtert & the Medical College of Wisconsin (F&MCW) have been working under a collaborative practice agreement for the management of tobacco cessation since 2016; however, a system-wide comprehensive review on the outcomes of their tobacco cessation services has yet to be completed. In order to evaluate the success of pharmacist managed tobacco cessation services, an analysis of how F&MCW pharmacists across different ambulatory clinics operationalize the collaborative practice agreement is necessary. The aim of this project is to compare current F&MCW ambulatory care pharmacist workflows and engagement with tobacco cessation management. This study is a single-center, mixed method evaluation of current tobacco cessation pharmacist engagement that involves a survey and a retrospective chart review. The survey was administered to all F&MCW ambulatory care clinical pharmacists and covers questions from the following domains: method of initiating tobacco cessation, interest in/barriers to providing tobacco cessation services, tobacco cessation counseling general practice, documentation of tobacco cessation counseling, visit type, and patient follow-up. The retrospective chart review will look at all patients referred to pharmacists for tobacco cessation from December 2020 through November 2021. Data will be related to pharmacists who had completed the survey and used to capture follow through with ordered referrals. Data to be evaluated from the electronic medical record will include: patient age, gender, race/ethnicity, clinic department under which patient was referred to pharmacist, date of referral, whether or not information has ever been entered into a flowsheet specific to smoking cessation, date of completed encounter with pharmacist since referral was placed, and current tobacco use from social history. Descriptive statistics will be employed to summarize the results. Data collection and analysis are ongoing. Results and conclusions will be presented at the 2022 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify how ambulatory care clinical pharmacists in Wisconsin are able to deliver tobacco cessation services.

Recognize similarities in tobacco cessation practices among ambulatory care clinical pharmacists at Froedtert & the Medical College of Wisconsin.

Self Assessment Questions:

Wisconsin pharmacists can provide tobacco cessation services through:

A A statewide protocol
B: A collaborative practice agreement
C: Prescriptive authority
D: None of the above

The majority of ambulatory care clinical pharmacists at Froedtert & the Medical College of Wisconsin are conducting tobacco cessation encounters:

A With health care professionals other than providers
B With providers
C Independently
D All of the above

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-687-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

ASSESSMENT OF A PHARMACIST-DRIVEN TRANSITIONS OF CARE ALGORITHM TO OPTIMIZE DURATION OF ANTIMICROBIAL THERAPY UPON HOSPITAL DISCHARGE

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According to a Centers for Disease Control review in 2019, 75% of inpatient antimicrobial prescribing was not consistent with recommended practice in patients with community-acquired pneumonia (CAP) and urinary tract infections (UTI). Several studies suggest that pharmacist intervention can decrease inappropriate duration of antimicrobial therapy upon hospital discharge. New transitions of care initiatives provide an opportunity to implement an algorithm that ensures optimal antimicrobial treatment duration on transition from inpatient to outpatient therapy. The purpose of this study is to determine the impact of a pharmacist-driven transitions of care algorithm on duration of antimicrobial therapy after discharge.

Learning Objectives:

Recognize the advantages of implementation of a pharmacist-driven transitions of care algorithm for patients discharging on antimicrobial therapy for common indications

Identify appropriate antimicrobial treatment regimens for community-acquired pneumonia or urinary tract infections following discharge from the hospital.

Self Assessment Questions:

1.Which of the following would be an advantage of a pharmacist-driven transitions of care algorithm for patients discharging on antimicrobial therapy for CAP or UTI?

A a.Overall increase in duration of antimicrobial therapy upon discha
B: b.Prescribers rejecting recommendations provided by pharmacy se
C: c.Increase in the appropriateness of antimicrobial agent selection a
D: d.Decrease in number of medications patients will be discharged o

2.MB is a 73 YOM was admitted for CAP. During his admission, he received ceftriaxone 1 g IV q24h and azithromycin 250 mg PO q24h for 3 days. A sputum culture was collected growth of Streptococcus pneumoniae and the respiratory and antigen tests were negative for atypicals. His provider inquires with pharmacy about what to prescribe a discharge. Which of the following would be an appropriate treatment regimen for MB?

A a.No additional therapy required
B b.Amoxicillin/ clavulanate 875 mg PO BID x 4 days
C c.Levofloxacin 750 mg PO q24h x 7 days
D d.Azithromycin 500 mg PO q24h x 3 days

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-688-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

BLOOD, SWEAT, AND COVID! ANTICOAGULATION IN NON-CRITICALLY ILL COVID-19 PATIENTS: PRE- AND POST-PHARMACIST INTERVENTIONS

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Background: Patients with COVID-19 have a number of complex coagulation abnormalities that create a hypercoagulable state, which raises questions about appropriate interventions to prevent thrombosis. The pathogenesis of the hypercoagulability of COVID-19 is not completely understood, but it can be thought of in terms of Virchow's triad: (1) venous stasis, (2) activation of blood coagulation, and (3) vein damage. All three of these major contributions to clot formation apply to severe COVID-19 infection. Studies suggest an increased risk of thromboembolism (TE) in patients with COVID-19, further emphasizing the need for clear thromboprophylaxis guidelines for this patient population.Statement of Purpose: This study aimed to assess the efficacy and safety of prophylactic and therapeutic dosing approaches in non-critically ill COVID-19 patients, and, based on our results, educate prescribers and physicians on the more appropriate approach in order to improve anticoagulation in this patient population.Methods: This was a quasi-experimental study. Adult patients, aged 18 years or older, with COVID-19 infection admitted to Henry Ford Macomb Hospital (HFMH) from June 1, 2020 to September 1, 2021 were identified using electronic health records. The first phase of the study consisted of two pre-interventional groups: (1) COVID-19 patients who received anticoagulation using initial guideline recommendations and (2) COVID-19 patients who received anticoagulation using revised guideline recommendations. Our intervention phase included providing education on guideline-recommended COVID-19 anticoagulation therapy to physicians. Post-intervention, we recollected and reanalyzed our data to study the impact of the education efforts made. The specific aims of the study included assessing the anticoagulation treatment patterns, the rate of inpatient thrombotic events, the rate of readmission for thrombotic events, the rate of bleeding, and determining any association between readmission and positive testing with elevated D-dimer. Appropriate statistical analyses were utilized to analyze outcomes.Results/Conclusion: Results and conclusions will be presented at the conference.

Learning Objectives:

Describe the hypothesized mechanism in which COVID-19 induces a hypercoagulable state.

Discuss the current recommended anticoagulation strategies in critically ill and non-critically ill patients with COVID-19.

Self Assessment Questions:

Based on the results from the trials conducted by the REMAP-CAP, ACTIV-4a, ATTACC investigators, therapeutic anticoagulation in non-critically ill COVID-19 patients lead to which of the following outcomes?

A Increased risk of GI bleed
B: Decreased incidence of stroke
C: Decreased survival with an increased need for ICU-level organ su
D: Increased survival with a decreased need for ICU-level organ supp

Which of the following dosing strategies is considered therapeutic dosing?

A Enoxaparin 40 mg BID
B Enoxaparin 1 mg/kg BID
C Enoxaparin 40 mg QD
D Enoxaparin 0.5 mg/kg BID

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-415-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

PATIENT AWARENESS, ATTITUDES, AND PERCEPTIONS OF PHARMACISTS PRESCRIBING FOR TOBACCO CESSATION AIDS

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The objective of this study is to assess patient awareness and perceptions towards pharmacists prescribing medications for tobacco cessation. In the past 15 years little progress has been made with increasing access to tobacco cessation medications for patients, leading to less patients receiving assistance with quitting tobacco or nicotine. Fourteen states, including Indiana, have increased access to cessation medications through statewide protocols allowing pharmacists to prescribe medications used for quitting tobacco. Research indicates that pharmacists in such states can produce quit rates of up to 25%, but currently there are no studies assessing the patients awareness or perceptions toward pharmacists prescribing medications for tobacco cessation.Patients aged 18 years or older who receive care from a federally qualified health center in Indiana will be asked to participate in an anonymous survey when presenting for an appointment. Patients who consent to the survey will be sent an electronic link for completion. The survey will be administered in English and Spanish. Patients do not need to be a tobacco user to participate. The Theory of Planned behavior (TPB) guided survey development. TPB constructs that are assessed include attitudes, subjective norms, perceived behavioral control, intention, and behavior. Participants sociodemographic characteristics, tobacco/vaping use, and prior quit attempts will also be characterized. The survey is programmed into Qualtrics and has been externally reviewed and pilot tested for readability and length. Survey participants can provide an email address to be contacted by a pharmacist for assistance with quitting and also be entered to win one of 10, $50 Amazon gift cards at the end of the survey. Descriptive statistics will characterize the study population and their responses to survey items. Statistical modeling will estimate relationships between the core TPB constructs and intention to engage in pharmacy-based tobacco cessation services.Preliminary results will be presented during GLPRC.

Learning Objectives:

Describe the pharmacists' role in tobacco cessation and Indiana's standing order for pharmacists prescribing cessation medications.

Discuss patients' knowledge and perceptions of pharmacists' prescribing for tobacco cessation medications.

Self Assessment Questions:

How many states, like Indiana, have a statewide protocol or standing order allowing pharmacists to prescribe medications for tobacco cessation?

A 9

B: 14

C: 10

D: 12

Which of the following below are barriers for patients with regards to receiving proper assistance with quitting tobacco?

A Cost of medications

B Access to care

C Lack of knowledge on medications for quitting tobacco

D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-689-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IMPACT OF LENALIDOMIDE RELATIVE DOSE INTENSITY ON CLINICAL OUTCOMES IN MULTIPLE MYELOMA PATIENTS

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Purpose: Multiple myeloma represents the second most common hematologic malignancy in the US. Current regimens include novel-agent based induction, high dose chemotherapy, autologous stem cell transplant (ASCT), and maintenance therapy. Large, randomized trials demonstrated improved progression-free survival (PFS) in patients receiving post-ASCT maintenance with lenalidomide 10-15 mg daily. Patients continue therapy for upwards of five years, resulting in prolonged therapy, but toxicities result in delays and dose reductions. Largely unknown is the impact of lenalidomide relative dose intensity (RDI) on progression free survival (PFS) and overall survival (OS). Additionally, a model that can predict progression after lenalidomide maintenance has not yet been established. Statement of purpose: This project examines how lenalidomide RDI impacts depth of response, PFS, and frequency of side effects.Methods: This study is a single center, retrospective chart review of patients at University of Illinois Health between 1/1/2007 and 12/31/2021. Patients diagnosed with multiple myeloma, who received ASCT with melphalan, followed by maintenance lenalidomide have been identified. Baseline demographic, disease-related factors, and treatment-related factors are being collected. Data surrounding dose and duration of maintenance therapy, platelet and neutrophil dynamics, occurrence of NCI-CTCAE grade 3 or 4 toxicities, and IMWG response assessments are being collected as well. The primary objectives are to evaluate the impact lenalidomide RDI on clinical outcomes, identify subgroups of patients who benefit from higher RDI, and describe association of lenalidomide RDI and toxicities. Our secondary objective is to develop a model of neutropenia or thrombocytopenia that can predict PFS after lenalidomide maintenance. We also plan to validate a population PK model to determine if it can predict outcomes based on lenalidomide predicted AUC. Data will be analyzed using univariable and multivariable Cox regression models.Results: Preliminary results and conclusions will be presented at the 2022 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Define the criteria used to diagnose Multiple Myeloma.

Describe the side effects of lenalidomide therapy.

Self Assessment Questions:

Which of the following are clinical signs and symptoms of multiple myeloma?

A Lytic lesions and hypocalcemia

B: Back pain, renal impairment, hypercalcemia, anemia

C: Upper respiratory tract infection, urinary tract infection

D: Hypercalcemia, upper respiratory tract infection, skin rash

Which of the follow is a side effect of lenalidomide, an immunomodulator, used in multiple myeloma treatment?

A Leukocytosis

B Cystitis

C Thrombocytopenia

D Pulmonary fibrosis

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-416-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATING QUALITY MEASURE OUTCOMES AFTER PHARMACIST INTERVENTION ON MEDICATION ACCESS

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Purpose: In response to adverse drug outcomes, the U.S. Food and Drug Administration issued a call to researchers to ensure antidiabetic medications are not associated with an increased risk for cardiovascular events. Newer agents have since been well-studied and demonstrated benefits in slowing the progression of diabetic complications, such as cardiovascular and chronic kidney disease. Despite data demonstrating a reduction of disease burden and improvement in health outcomes leading to updated guideline recommendations, their high cost and poor insurance coverage limits public access. To address this issue, manufacturers offer free medication through patient assistance programs. The purpose of this study is to determine if the impact of pharmacist intervention on improving medication access leads to better health outcomes.Methods: This single center, retrospective, cohort study conducted at Indiana University Health (IUH) evaluated 342 patients with type 2 diabetes mellitus. Patients were included in the study if they were 18 years old, had an A1c 8%, were followed by an IUH Primary Care provider, and who were either uninsured or enrolled in a Medicare plan during the study period of January 1, 2020 through September 30, 2021. Patients in the intervention group were enrolled in manufacturer patient assistance programs and followed by a clinical pharmacist. The primary endpoint was change in A1c after pharmacist intervention on medication access compared to a similar cohort of people who were not managed by a pharmacist. The secondary endpoints include the number of patients meeting accountable care organization quality metrics as a result of pharmacist-led diabetes management. Data collected from the electronic medical record includes A1c, blood pressure, weight, albumin/creatinine ratio, pneumococcal vaccine status, and the addition of an appropriate intensity statin. Appropriate statistical analyses were utilized to analyze the outcomes.Results/Conclusions: Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify which antidiabetic agents are available to uninsured and Medicare beneficiaries through manufacturer patient assistance programs

Discuss the impact of pharmacist intervention on medication access and diabetes management

Self Assessment Questions:

Which antidiabetic medication classes are easily accessible to uninsured and Medicare beneficiaries through manufacturer patient assistance programs?

A Insulin

B: GLP1 receptor agonists

C: SGLT2 inhibitors

D: All of the above

What was the difference in average A1c lowering between the intervention and control group?

A No difference

B 0.5

C 1.3

D 3

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-417-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

DESIGN, IMPLEMENTATION, AND ASSESSMENT OF A PROPHYLACTIC CALCITONIN GENE-RELATED PEPTIDE INHIBITOR AND ABORTIVE MIGRAINE MEDICATION MONITORING PROGRAM

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Purpose: There is a significant disease burden associated with migraine for both patients and their employers, with healthcare and lost productivity costs estimated to be as high as $36 billion annually in the US. Migraine is a chronic disease in which individuals experience throbbing unilateral headaches. Prophylactic calcitonin gene-related peptide inhibitor (CGRP) clinical trials have demonstrated that these agents are able to reduce the number of days abortive migraine-specific medications are used per month. Therefore, it may be reasonable to use abortive migraine medication utilization patterns to infer CGRP effectiveness. The purpose of this study is to design, implement, and assess a pharmacist-led intervention program that identifies potential CGRP non-responders using abortive claims data.Methods: This study is a prospective pilot study. Pharmacy claims were collected by the University of Michigan Prescription Drug Plan (PDP) for all patients receiving a prophylactic CGRP between July 1, 2017 and October 31, 2021. For each patient, the date of their first CGRP pharmacy fill was assigned as their index date. Three different time periods were assessed for each patient where the average quantity of abortive migraine medications filled per month was determined. The first time period was six months pre-index date. Investigators reviewed migraine agent claims data to identify potential patients for intervention. The date of each claim review was logged as the assessment date. Patients without a decrease in abortive migraine medication use in the previous six months from the assessment date compared to time period one were identified as potentially requiring intervention. Patients were contacted via phone for counseling and medication use assessment. If further intervention was required, the pharmacist documented their interaction with the patient and sent recommendations to the patients treating provider.Results/Conclusions: Data analysis is in progress. Preliminary results and conclusions will be presented at the 2022 GLPRC.

Learning Objectives:

Classify the different types of migraineurs.

Review the current American Headache Society (AHS) recommendations for preventative migraine treatment.

Self Assessment Questions:

Per AHS, which of the following is an example of a chronic migraineur?

A A patient with â‰¥ 15 tension-type-like headache days per month

B: A patient with 10 headaches lasting 3+ hours and symptoms of ph

C: A patient with â‰¥ 15 migraine-like or tension-type-like headaches

D: A patient with 5 headaches lasting 10+ hours without treatment lea

Which of the following is considered an adequate trial of a prophylactic CGRP in a migraine patient according to AHS?

A One month for monthly injections

B Three months for monthly injections

C 12 months for quarterly injections

D Six months for monthly injections

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-418-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF ANTI-XA LEVELS AND VENOUS THROMBOEMBOLISM PROPHYLAXIS ENOXAPARIN DOSING PROTOCOL IN BURN PATIENTS

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Purpose: Venous thromboembolism (VTE) is a complication in burn patients due to increased immobilization, surgery, and altered coagulation pathways. Previous studies have investigated the use of anti-Xa monitoring to assess low molecular weight heparin dosing practices in burn patients to prevent VTE. These studies have found standard doses are inadequate in achieving prophylactic goal anti-Xa levels and require multiple dose adjustments. Based on this data, Eskenazi Healths Burn Center implemented an updated VTE prophylaxis protocol. For initial enoxaparin dosing, the old protocol recommended standard dose enoxaparin with anti-Xa monitoring while the new protoco is a more aggressive enoxaparin dosing regimen determined by the patients body mass index and percent total body surface area burn. The objective of this study was to assess the efficacy and safety of the updated VTE prophylaxis protocol to determine if goal anti-Xa levels can be achieved earlier compared to the previous Burn Center enoxaparin dosing protocol. Methods: This is an observational, retrospective, cohort study with a historic protocol group from 3/1/21 to 5/31/21 and a new protocol group from 10/1/21 to 12/31/21. Patients were included if they were 18 years or older, admitted with a burn injury, and had anti-Xa monitoring after at least three consecutive doses of enoxaparin. The primary endpoint was protocol efficacy defined as percentage of initial anti-Xa levels within prophylactic goal range and time to goal anti-Xa level. Secondary endpoints included percent of subtherapeutic and supratherapeutic initial anti-Xa levels, number of patients that achieved goal anti-Xa level, number of enoxaparin adjustments required to achieve goal anti-Xa level, rate of VTE occurrence, number of missed or held doses if VTE occurred, correlation to published enoxaparin dosing equations in burn patients, and bleeding occurrence.
Results/Conclusion: Data collection and analysis are ongoing and will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify patient-specific factors that can increase the risk of venous thromboembolism in burn patients.

Describe the current gaps in literature surrounding venous thromboembolism prophylaxis in burn patients.

Self Assessment Questions:

Which two patient-specific risk factors should be considered when determining initial enoxaparin dosing in a burn patient, according to the new protocol at Eskenazi Health?

A Percent Total Body Surface Area Burn and Body Mass Index

B: Body Mass Index and Age

C: Percent Total Body Surface Area Burn and Age

D: Gender and Age

Standard dosing of low molecular weight heparin for VTE prophylaxis in burn patients has largely been shown to be:

A Too aggressive with supratherapeutic anti-Xa levels

B Inadequate with subtherapeutic anti-Xa levels

C Appropriate with therapeutic anti-Xa levels

D Not enough data to make a conclusion

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-419-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

A RETROSPECTIVE REVIEW OF THE EFFICACY AND TOXICITY OF IMMUNOTHERAPY IN SOFT TISSUE SARCOMA

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Background/rationale: Patients with locally advanced or metastatic sarcoma have limited treatment options and a poor prognosis, with progression free survival (PFS) of less than 6 months and overall survival (OS) of less than 15 months. Combination therapy with ipilimumab and nivolumab has shown encouraging results. Studies have reported PFS ranging from 2.7 to 4.1 months and rates of any grade adverse events ranging from 36% to 58%. Response Evaluation Criteria in Solid Tumors (RECIST) and immune-related Response Evaluation Criteria in Solid Tumors (iRECIST) criteria have been used to determine the response rates. Recent data has demonstrated that the Choi criteria may identify patients with sarcoma who have promising outcomes with continued therapy even after having progression as identified by the RECIST criteria.Objectives: The objective of the study is to evaluate response rates to treatment with ipilimumab and nivolumab utilizing iRECIST and Choi criteria and to quantify the frequency of adverse events. This study represents diverse sarcoma subtypes, some of which are currently not represented in the literature.Methods: This study is a single center, Institutional Review Board approved, retrospective study of patients who underwent treatment with at least one cycle of ipilimumab and nivolumab for locally advanced or metastatic sarcoma from June 2018 to June 2021. The primary outcome is objective response rate (ORR). Tumors were measured using computed tomography, positron emission tomography-computed tomography or magnetic resonance imaging, and ORR was assessed using iRECIST and Choi criteria. Secondary outcomes include OS, PFS, clinical benefit rate, duration of clinical benefit, and assessment of toxicity at any point during treatment with ipilimumab and nivolumab. Outcomes will be assessed using appropriate statistical tests. Results/Discussion: Final results to be presented at Great Lakes Pharmacy Conference.

Learning Objectives:

Recall the mechanism of action of ipilimumab and nivolumab.

Describe the rationale for assessing sarcomas with the Choi criteria.

Self Assessment Questions:

What is the mechanism of action of ipilimumab and nivolumab?

A Ipilimumab is a CTLA-4 inhibitor and nivolumab is a PD-1 inhibitor

B: Ipilimumab is a CTLA-4 inhibitor and nivolumab is an PD-L1 inhibi

C: Ipilimumab is a PD-1 inhibitor and nivolumab is a CTLA-4 inhibitor

D: Ipilimumab is a PD-L1 inhibitor and nivolumab is a CTLA-4 inhibito

What may be the benefit of assessing tumor response with the Choi criteria?

A There is no benefit

B RECIST criteria are outdated

C Choi criteria has been established as the gold-standard evaluation

D The Choi criteria may identify patients who have promising outcom

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-420-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

HIGH PROPOFOL DOSES IN A CRITICAL CARE SETTING

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Background: In the intensive care unit setting, proper sedation and analgesia are vital in preventing delirium, aiding amnesia, and promoting quality outcomes. Methods to achieve appropriate sedation and analgesia may vary by provider. However, at Indiana University Health Ball Memorial Hospital, propofol continuous infusion doses are significantly higher compared to other hospitals within the system. The Pain, Agitation/Sedation, Delirium, immobility, and Sleep Disruption in Adult Patients in the ICU (PADIS) guideline recommends using propofol or dexmedetomidine for sedation but provides little guidance on dosing and their use with other sedatives and analgesics. Purpose: To evaluate propofol dosing management at IU Health Ball Memorial Hospital compared to other IU Health hospitals regarding other sedative and analgesia usage. Methods: A multi-centered, retrospective chart review study is being conducted to evaluate propofol use combined with other sedatives and analgesics. Other IU Health hospitals will serve as the control. Inclusion criteria are as follows: >18 years old, admitted to a critical care unit, received propofol infusion at a dose above 50 mcg/kg/min. Exclusion criteria are receiving propofol for induction or procedure, pregnancy, propofol used for seizure, or patient is receiving benzodiazepines for alcohol withdrawal. Basic baseline characteristics will be collected, including intravenous drug abuse history and opioid tolerance category, as well as admission serum creatinine and triglyceride levels will be collected. For the propofol infusion, the total duration, maximum dose, and total time in minutes propofol dose is > 50 mcg/kg/min will be collected. For dexmedetomidine, fentanyl, and ketamine, the propofol dose when these agents are added will be documented, as well as the maximum dose of the agents. Concurrent oral opioids, oral benzodiazepines, benzodiazepine infusion, or neuromuscular blocking agent infusion with propofol will be documented Results: Results and conclusion will be presented at the Great Lakes Pharmacy Resident Conference

Learning Objectives:

Identify factors that may lead to higher doses of sedation and analgesia

Discuss effective sedation methods in the critical care setting

Self Assessment Questions:

What agent(s) does the PADIS guideline recommend for sedation?

A Propofol only
B: Midazolam only
C: Propofol or dexmedetomidine
D: Propofol, dexmedetomidine, or midazolam

What are potential consequences of using high doses of propofol?

A Hypertension
B Hypotension
C Hypokalemia
D Seizure

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-421-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

IMPACT OF ALTERED MENTAL STATUS (AMS) ON APPROPRIATE TREATMENT OF UTI

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Purpose: Differentiating between a urinary tract infection (UTI) and asymptomatic bacteriuria (ASB) in patients who present with altered mental status (AMS) can be difficult. In 2019, the Infectious Diseases Society of America (IDSA) published an updated guideline for the management of ASB clarifying that AMS can be caused by several conditions and should not be classified independently as a symptom of UTI. However, patients admitted to the hospital with AMS and bacteriuria often receive antibiotics to prevent presumed UTIs from evolving to urosepsis. Per the 2019 ASB update, patients with AMS are more likely to receive overtreatment and thus should receive careful observation instead of antimicrobial treatment to avoid adverse medication effects and increasing antibiotic resistance. The purpose of this study was to evaluate patient outcomes associated with overtreatment of asymptomatic pyuria at Mercy Health Saint Marys hospital as well as the burden of overtreatment. Methods: This retrospective study will evaluate the impact of AMS on inappropriate treatment of asymptomatic pyuria in the inpatient setting. All adult patients who presented to Mercy Health Saint Marys hospital between February 1,2020and October 1, 2021 with AMS and pyuria will be included in the study. Exclusion criteria include urinary symptoms, admission to critical care, history of renal transplant, urological surgery, co-infection, pregnancy, and neutropenia. The primary objective of this study is to compare a composite of patient-related outcomes (readmission for AMS, C. difficile infection, or development of resistant organisms) when asymptomatic pyuria is inappropriately treated as a UTI. Secondary outcomes evaluated include characterizing the burden of overtreatment of asymptomatic pyuria, identifying risk factors for antimicrobial treatment in patients with AMS, and assessing patient-related outcomes within 30 days of the index visit Results: Data collection is ongoing. Full results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Explain when it is appropriate to withhold antibiotic treatment for UTI in patients presenting with AMS

Recognize the potential adverse outcomes associated with treating asymptomatic pyuria with antibiotics

Self Assessment Questions:

Which of the following best represents the current IDSA recommendations for a 68-year-old patient presenting with AMS and no urinary symptoms?

A AMS is not considered a true symptom of a UTI, however, given th
B: AMS is not considered a true symptom of a UTI, and thus the pati
C: AMS is considered a true symptom of a UTI, and thus the patient s
D: AMS is not considered a true symptom of a UTI, and thus the pati

Which of the following are possible adverse outcomes associated with overtreatment of asymptomatic pyuria?

A Development of antibiotic-resistant bacteria
B Subsequent C. difficile infection
C Adverse reaction to antibiotic used
D All of the above

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-422-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

MULTICENTER RETROSPECTIVE EVALUATION OF VASOPRESSIN VERSUS HYDROCORTISONE ON DURATION OF NOREPINEPHRINE THERAPY IN REFRACTORY SEPTIC SHOCK

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Purpose: Septic shock is a subset of sepsis with circulatory and metabolic dysfunction associated with higher risk of mortality. In patients with sepsis and septic shock, vasopressin and hydrocortisone are suggested by Society of Critical Care Medicine's 2021 Surviving Sepsis guidelines as adjunctive agents after norepinephrine initiation. These guidelines do not provide specific guidance regarding the timing of initiation or the order in which these agents should be initiated. The aim of this study is to compare clinical outcomes of vasopressin versus hydrocortisone when added to norepinephrine in septic shock patients.Methods: This multicenter, retrospective, observational study will include patients who are at least 18 years of age, received vasopressin (0.03 units/min or 0.04 units/min) or hydrocortisone (total IV hydrocortisone dose of 200mg/day or 300mg/day) after norepinephrine initiation, received an IV fluid bolus, serum lactate level > 2 mmol/L, and received antibiotics. Patients will be excluded if pregnant or incarcerated received additional vasopressors or inotropes other than norepinephrine prior to receiving study drug, received mechanical circulatory support, had history of glucocorticoid use, or concomitant use of vasopressin and hydrocortisone within 6 hours. The primary outcome is duration of norepinephrine therapy. Secondary outcomes will include hemodynamic responsiveness, time to resolution of shock, recurrence of shock within 72 hours, duration of vasopressor therapy, intensive care unit and hospital lengths of stay, incidence of new renal replacement therapy, duration of mechanical ventilation, adverse events, and time to initiation of a third hemodynamic supportive agent. A sample size of 614 patients will provide 80% power to detect an 11% difference between the vasopressin and hydrocortisone groups. In addition, a two sided z-test with unpooled variance and a p-value of 0.05 will be used to determine significance. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Recall which pharmacologic agents are recommended as adjunctive therapy to norepinephrine by the 2021 Society of Critical Care Medicine Surviving Sepsis guidelines.

Identify the studied dosing regimen for vasopressin and hydrocortisone in the treatment of refractory septic shock.

Self Assessment Questions:

According to the 2021 Society of Critical Care Medicine Surviving Sepsis guidelines, which agent(s) are considered to be adjunctive therapy to norepinephrine in treatment of septic shock?

A Hydrocortisone
B: Phenylephrine
C: Vasopressin
D: A & C

Based on the inclusion criteria, which of the following patients would be included in this study based on medication dosing?

A A 45 year-old male on norepinephrine who received a one time IV
B A 37 year old female on norepinephrine who is receiving hydrocort
C A 24 year old female on norepinephrine who is receiving vasopres
D A 56 year old male on norepinephrine who is receiving hydrocortis

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-423-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

WHICH HEMATOLOGY/ONCOLOGY OUTPATIENTS ARE HIGHER ACUITY FOR CLINICAL PHARMACIST REVIEW?

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Purpose: Prioritization and acuity tools have been leveraged to facilitate targeted and efficient clinical pharmacist interventions. However, there is a lack of established pharmacy-specific acuity factors in the outpatient hematology/oncology setting. The National Comprehensive Cancer Networks Pharmacy Directors Forum conducted a survey to establish consensus amongst clinical pharmacists on acuity factors associated with hematology/oncology outpatients that are most important for a clinical pharmacist to review.Methods: A three-round electronic Delphi survey was conducted. During round one, respondents were asked to suggest acuity factors based on their expert opinion. In round two, respondents were asked to agree or disagree with the compiled acuity factors, in which only those with 75% agreement were included in round three. Final consensus was defined as a mean score 3.33 on a modified 4-point Likert scale (4 = strongly agree, 1 = strongly disagree) during the round three.Results: Of 338 invited hematology/oncology clinical pharmacists, 124 from 22 cancer centers participated in the first round (response rate, 36.7%), of which 103 completed the second round (response rate, 83.1%) and 84 the third round (response rate, 67.7%). Open-ended responses from round one were compiled into 51 acuity factors. Agreement of greater than 75% was achieved for 28 acuity factors during the second round; whereas final consensus (mean weighted score 3.33) was achieved for 18 acuity factors during the third round. Acuity factors were identified in the following themes: antineoplastic regimen characteristics, drug interactions, organ dysfunction, pharmacogenomics, recent discharge, laboratory parameters, and treatment-related toxicities. Conclusion: This Delphi panel of 124 clinical pharmacists achieved consensus on 18 acuity factors that would be helpful to flag a hematology/oncology outpatient as high priority for clinical pharmacist review. The research team envisions incorporating these acuity factors into a pharmacy-specific scoring tool within the electronic health record.

Learning Objectives:

Describe the Delphi technique to answering a research question.

Recognize identified acuity factors that contribute to a higher acuity hematology/oncology outpatient for clinical pharmacist review.

Self Assessment Questions:

Which best describes the Delphi technique to answering a research question?

A Expert opinion from content experts
B: Systematic review of the literature
C: Consensus-building via a series of questionnaires over multiple ite
D: Cohort study to follow a group of participants over time

Which acuity factors were identified as contributing to a higher acuity hematology/oncology outpatient for clinical pharmacist review?

A Antineoplastic regimen characteristics (i.e. active treatment, cycle
B Interactions (i.e. drug-allergy, drug-drug, pharmacogenomic)
C Organ dysfunction (i.e. renal, hepatic)
D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-424-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF THE APPROPRIATENESS OF TACROLIMUS LEVELS IN THE EMERGENCY DEPARTMENT

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To assess the appropriateness of tacrolimus (TAC) levels collected in the Emergency Department (ED) of a large academic medical center

Learning Objectives:

Identify the clinical indications and ideal timing of tacrolimus levels

Discuss the role that pharmacists may have on optimizing timing of tacrolimus levels

Self Assessment Questions:

1.In which scenario would it be most appropriate to draw a tacrolimus level at this time?

A a.56 yo M with a history of a kidney transplant (2004) admitted for a

B: b.67 yo F with a history of a double lung transplant (2019) admitted

C: c.50 yo F with a recent liver transplant (2021) transferred from an

D: d.61 yo M with a history of a heart transplant (2000) admitted for pc

2.How can a pharmacist ensure appropriate and clinically relevant tacrolimus levels are being ordered?

A a.Provider and nursing education

B b.Medication reconciliation

C c.Documentation of last dose

D d.All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-690-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF ANTIBIOTIC PRESCRIBING FOR EXTENDED DURATIONS BY DENTISTS IN THE VA HEALTH SYSTEM

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Dentists are among the top prescribers of antibiotics and account for approximately 10% of all antibiotics prescribed in the United States annually. Previously there was a lack of guidelines on the treatment of acute oral infections, however in 2019 the American Dental Association (ADA) released a clinical practice guideline (CPG) for the treatment of acute oral infections including irreversible pulpitis (IP), apical periodontitis (AP), and acute apical abscess (AAA). Prior to the release of the new ADA guideline, several studies evaluating antibiotic prescribing patterns had shown that antibiotics were being overprescribed by dentists. The purpose of our study is to evaluate national antibiotic prescribing for acute oral infections after the release o the ADA guideline and to identify patient variables associated with an antibiotic prescription. Specifically, we seek to evaluate which antibiotics are being prescribed for durations beyond seven days along with the appropriateness of these antibiotics. Additionally, this study will evaluate the incidence of adverse effects associated with prolonged use of antibiotics. A cross-sectional analysis of national VA dental clinic encounters from January 1st, 2021 to June 30th, 2021 will be conducted Veterans with cases of acute oral infections will be identified using International Classification of Disease, Tenth Revision, Clinical Modification (ICD-10-CM) codes and included in the cohort. Veterans prescribed an antibiotic within +/- 7 days of their dental encounter will be included in the analysis. Data is currently being collected and results will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recall the American Dental Association (ADA) clinical recommendations for the urgent management of acute oral infections

Discuss antibiotic prescribing for extended durations in treatment of oral infections in the VA health system

Self Assessment Questions:

What is the recommended antibiotic duration for treatment of an acute oral infection with systemic involvement?

A 1-2 days

B: 3-7 days

C: 10 days

D: 14 days

2.Which of the following is NOT a reason that dentists often prescribe antibiotics for patients with dental pain and/or intraoral swelling?

A Diagnostic/prognostic uncertainties

B Patient expectations

C Gaps in knowledge

D Monetary gain

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-427-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

DE-ESCALATING TO FIRST-GENERATION CEPHALOSPORINS FOR URINARY TRACT INFECTIONS: A PROBLEM TOO DIFFICULT FOR A NUDGE COMMENT?

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Purpose: Norton Healthcare added a unique microbiology reporting nudge to inform prescribers that oral cephalosporins are effective for cefazolin minimum inhibitory concentrations (MIC) 4-16 g/mL in uncomplicated urinary tract infections (UTIs). The purpose of this study was to determine if the microbiology nudge led to similar first-generation cephalosporin use across MICs 16 g/mL. Methods: This is a retrospective cohort study of patients 18 years old hospitalized between 1/1/2020-5/31/2021 at a community healthcare system who had E. coli, K. pneumoniae, or P. mirabilis isolated from urine culture. Inclusion criteria included receipt of broad spectrum antibiotics for a UTI within 48 hours of urine culture collection. Cohorts were fully susceptible (MIC 2 g/mL), intermediate susceptible (MIC =4 g/mL), UTI susceptible (MIC 8-16 g/mL), and fully resistant (MIC >16 g/mL). The primary outcome was percentage of patients prescribed a first-generation cephalosporin after susceptibilities finalized. Secondary outcomes included percentage of patients with recommendations to de-escalate to first-generation cephalosporins. A subgroup including the intermediate and UTI susceptible cohorts was reviewed for barriers to de-escalation.Results: 1,387 patients were included (n=924 fully susceptible, n=141 intermediate susceptible, n=91 UTI susceptible, and n=232 fully resistant). First-generation cephalosporin use was highest (21%) in the fully susceptible cohort with lower use in the intermediate susceptible (4%) and UTI susceptible (2%) groups. Test for trend identified a statistically significant decrease in the rate of de-escalation as cefazolin MIC increased (p <0.001). De-escalation occurred in 11% (n=152) of patients without an antimicrobial stewardship program (ASP) recommendation. ASP recommendations were made in 8% (n=112) of patients; 37% (n=51) were accepted. Subgroup analysis was not performed due to limited de-escalations.Conclusions: A microbiology reporting nudge was not effective in promoting first generation cephalosporin use for the treatment of UTIs caused by organisms with higher cefazolin MICs.

Learning Objectives:

Identify appropriate patients to de-escalate to oral cephalosporins based on urine-specific breakpoints

Recall nudge strategies shown to have benefit for antimicrobial stewardship efforts

Self Assessment Questions:

Which patient would be the MOST appropriate to de-escalate to an oral cephalosporin?

A 45 YO with kidney stones and pyelonephritis and urine culture with
B: 24 YO with cystitis and urine culture with Proteus mirabilis (cefazo
C: 35 YO with cystitis and urine culture with Citrobacter koseri (cefaz
D: 55 YO with cystitis and urine culture with Klebsiella pneumoniae (c

Some institutions have shifted from reporting normal respiratory flora to no MRSA, no Pseudomonas spp. identified on respiratory cultures. Wha type of nudge is this?

A Putting choices at â€œeye levelâ€□
B Default choices
C Framing comment
D Providing feedback

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-428-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

PHARMACIST INVOLVEMENT IN BLOOD CULTURE FOLLOW UP FROM THE EMERGENCY DEPARTMENT (ED)

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Bacteremia is a serious infection and if untreated, can lead to sepsis. Prompt action on critical preliminary gram stain results is needed for these serious infections. Historically, emergency medicine (EM) physicians and nurses completed this critical follow up for discharged EM patients, however, as EM pharmacists have expanded some have assumed this role. In 2016, our institution created a blood culture follow up algorithm for discharged EM patients which recommends patients are contacted within two hours, regardless of time of day. The EM pharmacist has primary responsibility for follow up when on duty (115 hours per week, 68% of weekly hours), and the on-site charge nurse and attending physician are responsible 32% of weekly hours. While data specific to blood culture follow up is lacking, pharmacist management of other common culture results, such as urine, skin, and sexually transmitted infections, decreased time to patient contact and saved physician and nursing resources. This IRB-approved, single-center, retrospective study included adults with a positive blood culture that resulted after discharge from the emergency department (ED). The primary outcome compared time from a critical gram stain result to first attempted contact between the pharmacist on-duty and pharmacist off-duty cohorts from November 2017 to October 2021. Patients were excluded if they were a prisoner or discharged by an inpatient team. Patients will be identified by a query of positive blood culture results in discharged patients and then categorized into cohorts. To detect a 15 minute difference between cohorts and assuming 120 minutes as a reasonable time to patient contact, 172 patients were needed (= 0.05, 90% power).Data analysis is in process and results are pending.This study hopes to describe the role of the EM pharmacist in improving time to attempted patient contact for discharged ED patients with positive blood culture results.

Learning Objectives:

Discuss the current gaps in literature regarding culture follow up for patients discharged from the emergency department

Describe the ED pharmacist's role in blood culture follow up.

Self Assessment Questions:

Which of the following cultures has the least support from literature with regards to time to patient contact after discharge from the emergency department?

A Urine
B: Skin and Soft Tissue
C: Sexually Transmitted Infections
D: Blood

Which health care professional has been shown to decrease time to patient follow up for urine and skin cultures?

A Pharmacist
B Physician
C Nurse
D Microbiologist

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-429-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EVALUATION OF THE UTILIZATION OF VORICONAZOLE VERSUS ALTERNATIVE AZOLE THERAPIES FOR INVASIVE ASPERGILLOSIS INFECTION (IAI) IN LUNG TRANSPLANT RECIPIENTS

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Purpose: Invasive aspergillosis infection (IAI) is a significant cause of morbidity and mortality among solid organ transplant (SOT) patients, with lung transplant recipients having the highest incidence and mortality rates. Although voriconazole is regarded as the treatment of choice for IAI, recent randomized control trials have established isavuconazole and posaconazole as alternative, non-inferior treatment options for IAI. The proposed benefits of using these alternative agents include improved tolerability and safety profiles compared to voriconazole. However, previous studies lacked evaluation of therapeutic drug monitoring (TDM) for voriconazole. This study aims to evaluate the safety and efficacy of voriconazole optimized with TDM compared to alternative azole therapies for IAI in lung transplant recipients. Ultimately, the goal of this study is to characterize the specific patient population that may benefit from alternative azole therapies.Methods: This study was a single-center, retrospective cohort analysis. Adult lung transplant recipients from our institution between 1/1/2014 and 1/1/2021 with a diagnosis of either proven, probable, or possible IAI that received at least 30 days of azole therapy were included. Patients with disseminated IAI, multi-organ transplant recipients, or repeat lung transplantation were excluded. The primary outcome was to evaluate the total number of treatment-emergent adverse effects of voriconazole versus alternative azole therapy reported from the first administered dose through the 6-week follow-up period after treatment completion. The secondary outcomes compared incidence of readmission rates, treatment failures and mortality, median number of patients that required therapy switch from initial azole treatment, time to therapeutic azole levels, and trends in lung function between treatment groups. Data was collected and analysis will be completed using SPSS software.Results/ Conclusions: will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe a standardized approach to therapeutic drug monitoring of azole therapies and selecting azole treatment for a lung transplant recipient with IAI

Discuss the safety and efficacy of voriconazole compared to alternative azole therapies for IAI in lung transplant recipients

Self Assessment Questions:

Which of the following antifungal agents used to treat IAI is matched with the correct goal therapeutic range?

A Voriconazole; 1 â€“ 5.5 Î¼g/mL

B: Posaconazole; 3 â€“ 6 Î¼g/mL

C: Isavuconazole; 1 â€“ 2 Î¼g/mL

D: Voriconazole; serum drug levels not performed

Which of the following are important monitoring parameters for lung transplant recipients receiving voriconazole therapy for IAI?

A Visual disturbances

B Liver function tests

C Hallucinations

D All of the above

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-430-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

AN ASSESSMENT OF THE INCIDENCE OF DIABETIC RETINOPATHY AND DIABETIC RETINOPATHY COMPLICATIONS AMONG PATIENTS WITH TYPE 2 DIABETES MELLITUS RECEIVING GLUCAGON-LIKE PEPTIDE 1 RECEPTOR AGONISTS IN A VETERAN POPULATION

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PurposeThe usage of glucagon-like peptide-1 receptor agonists (GLP-1RAs) has grown in recent years due to recent study results indicating potential for cardiovascular protection in type 2 diabetes mellitus (T2DM) patients. These studies also indicated potential for increased risk of diabetic retinopathy (DR) complications with GLP-1RAs. At this time, no published studies have investigated the incidence of DR and DR complications among T2DM patients receiving GLP-1RAs in a Veteran population. The purpose of this study is to identify the incidence of DR and DR complications in Veterans with T2DM prescribed GLP-1RAs and identify which factors are associated with increased or decreased risk.MethodsThis study will be a retrospective electronic chart review of patients who were prescribed any of the three most common GLP-1RAs (i.e. dulaglutide, liraglutide, semaglutide) at Veteran Health Indiana. The primary outcomes of this study are the background rate of DR or diabetic macular edema prior to GLP-1RA prescribing, rate of patients newly-diagnosed with DR or diabetic macular edema while prescribed GLP1-RA, and rate of patients diagnosed with DR complications while prescribed a GLP-1RA. Some key secondary endpoints include change in HbA1c while prescribed a GLP-1RA, number of patients with HbA1c < 7% while prescribed a GLP-1RA, and number of patients with HbA1c > 9% while prescribed a GLP-1RA. Study population includes any patients who were prescribed one of the noted GLP-1RAs between October 1, 2017 to June 30, 2021 with a documented eye exam both before initiation of and after at least six months of GLP-1RAs therapy. Data will then be reviewed to identify patients diagnosed with diabetic retinopathy or complication of diabetic retinopathy.Results and ConclusionsResults and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Explain the impact diabetes has on the possibility of developing retinopathy and current recommendations for screening.

Recognize the risk factors for developing retinopathy in patients with diabetes.

Self Assessment Questions:

How often are routine eye exams typically recommended in patients with diabetes?

A Every 6 months

B: Annually

C: Every 2 years

D: As needed

Which of the following is a risk factor for developing retinopathy in patients with diabetes?

A Dyslipidemia

B Use of SGLT-2 inhibitors

C High insulin doses

D High incidence of hypoglycemia

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-431-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

DEVELOPMENT OF A TOOL TO ASSESS HYPOGLYCEMIA RISK IN PATIENTS WITH TYPE 2 DIABETES

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Purpose: Many factors, including use of antihyperglycemic medications, can put patients with diabetes at risk for hypoglycemic events. Current literature suggests that hypoglycemia causing hospitalization results in substantially increased risk of morbidity and mortality. The purpose of this study was to develop and assess a predictive model, using hypoglycemic risk factors, identifying diabetic patients who could have high resource utilization (ED encounters or hospitalizations) because of hypoglycemia. This will help determine patients at highest hypoglycemic risk and would proactively identify candidates for appropriate preventive measures such as patient education, medication modification, or continuous glucose monitor utilization. Methods: The institutional review board approved this retrospective analysis. Subjects were included if they had type 2 diabetes and at least 1 office visit within the health system during 2019 and 1 office visit during 2020. Subjects were excluded if they were deceased prior to January 1, 2021, were under 18 years old, or had type 1 or gestational diabetes. Data was collected using a Cogito framework and data warehouse containing information from the electronic health record. Recursive partitioning with a split-sample design was used to create a decision tree based on potential predictors. Results: A preliminary version of a predictive model found success in predicting total ED encounters or total hospital admissions. The model identified patients who will have at least one ED encounter in the subsequent year with a precision and recall of approximately 0.5, meaning that when the model identified a patient as being high risk, it was accurate 50% of the time and accurately found 50% of all patients at risk. For inpatient admissions, precision and recall were 0.25 and 0.5, respectively. Area under the curve (AUC) was 0.75, indicating a good foundation for a model after refining and clarification of definitions.Conclusion: Depends on final evaluation of data.

Learning Objectives:

Identify factors contributing to hypoglycemic risk.

Classify hypoglycemic risk factors by strength of risk.

Self Assessment Questions:

Which of the following factors may contribute to hypoglycemic risk?

A Sedentary lifestyle

B: Use of long-acting insulin

C: History of severe hyperglycemia

D: Presence of severe lung disease

Which of the following patients would likely have the highest risk of severe hypoglycemia?

A 82 year old female with type 2 diabetes, cognitive disease, hypothy

B 24 year old pregnant female currently taking propranolol for migrai

C 45 year old male with type 2 diabetes and hypertension taking met

D 68 year old male with type 2 diabetes and alcoholism, previously h

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-809-L05-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

OSTEOPOROSIS: CLOSING GAPS IN CARE TO HELP OUR VALUE-BASED CONTRACT MEASURES

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Background: Osteoporosis is a prevalent disease that exists in over 200 million people, of which 9 million will experience a new osteoporosis-related fracture yearly. Over 50% of postmenopausal white women will have an osteoporotic fracture, and the percentage jumps to 70% in those over the age of 80. One of the Centers for Medicare and Medicaid Services (CMS) value-based contract measures is titled Osteoporosis Management in Women who had a Fracture. This measure evaluates the percentage of women ages 67-85 who suffered a fracture and had either a bone mineral density (BMD) test or a prescription drug to treat osteoporosis within 6 months of the fracture date. In order to reach a 5-Star rating defined by the measure, at least 68% of women meeting the criteria should receive at least one of the interventions.Methods: In this single-center retrospective comparison, data was collected on patients not meeting the current value-based contract measure who received pharmacist intervention. The intervention could include provider and/or patient outreach to order the BMD test and/or osteoporosis medication. The purpose of this study was to assess the impact of pharmacist intervention on the individual Star ratings for fracture and osteoporosis in Parkview Healths value-based contracts. The primary outcome of this study is the difference in Star rating from the 2020 measurement year to the 2021 measurement year. Secondary outcomes include the change in Star rating from the start of the study period, percentage of care gaps closed, and change in plan reimbursement. Results/Conclusion: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Define the CMS fracture and osteoporosis value-based contract measur

Identify appropriate steps to take in patients meeting the fracture and osteoporosis care measure and closing the existing care gap

Self Assessment Questions:

Which of the following patients would be evaluated under this study protocol?

A 85-year-old male who had a humerus fracture 3 months with no DI

B: 45-year-old female who had a tibia fracture 8 months ago with no I

C: 77-year-old female who had a facial fracture s/p MVA 2 months ag

D: 69-year-old female who had a hip fracture 4 months ago with her l

1.Which of the following would be most appropriate to order in a patient with a PMH of recent fracture 4 months ago currently not on osteoporosis medication?

A X-ray of previous fracture location

B DEXA scan

C PET scan

D Full body CT scan

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-691-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

PRESCRIBING RATES OF ANGIOTENSIN RECEPTOR-NEPRILYSIN INHIBITOR (ARNI) VERSUS ANGIOTENSIN CONVERTING ENZYME INHIBITORS (ACEI)/ANGIOTENSIN RECEPTOR BLOCKERS (ARB) II PATIENTS WITH HEART FAILURE WITH REDUCED EJECTION FRACTION (HFREF) UPON DISCHARGE

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Purpose: Heart failure (HF) exacerbations increase the risk of mortality and place a significant cost burden on the healthcare system from inpatient admissions. In 2014, the PARADIGM-HF study found sacubitril valsartan, the first and only ARNi, was superior to enalapril at reducing the risk of cardiovascular death and HF hospitalizations. Sacubitril-valsartan is the preferred treatment to an ACEi or ARB for HFrEF. The 2019 PIONEER-HF study established safety in starting sacubitril-valsartan upon discharge of an acute HF exacerbation rather than previous recommendations to initiate an ACEi or ARB then switch to an ARNI outpatient. However, in clinical practice, prescription rates of sacubitril-valsartan upon hospital discharge remain limited. The purpose of this study is to assess a single institutions prescribing rate of sacubitr valsartan for indicated patients upon discharge after an acute HF exacerbation hospitalization. Methods: This single center, retrospective observational study was completed by manual chart review. Included were patients > 18 years old with HFrEF, discharged on an ARNi, ACEi, or ARB from an admitted hospitalization encounter identified by the international classification of diseases, tenth revision, clinical modification (ICD-10-CM) code: I50 for acute heart failure decompensation. Women of childbearing age, pregnant women, a left ventricle ejection fraction (LVEF) > 40%, no documented LVEF, dialysis New York Heart Association (NYHA) functional class IV, hospice or palliative care, and patients receiving inotropic therapy will be excluded. The primary outcome is the number of patients discharged on sacubitril-valsartan. The secondary outcomes are 30-day and 90-day hospital readmissions. An a priori sub-group analysis will evaluate the number of documented reasons for not prescribing sacubitril-valsartan on discharg in patients prescribed an ACEi/ARB. Results and Conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review current recommendations for initiation of sacubitril-valsartan in patients with HFrEF

Describe patient specific absolute contraindications, precaution warnings, and adjustments needed when prescribing sacubitril-valsartan

Self Assessment Questions:

WJ is a 50-year AA male with history of renal dysfunction, pulmonary hypertension, CKD Stage III, CAD, HTN, and a 15-pound weight gain over the last 7 days. An ECHO was performed and reports an LVEF of 30 %. The provider wants to prescribe WJ with appropriate guideline directed medical therapy (GDMT). The patient reports he is currently taking enalapril 10 mg two times a day. eGFR= 32 ml/min/1.73^2. Vitals HR " 84; BP: 134/81; SCr: 1.2. What is the best recommendation for patient, WJ, at this time?

A Add spironolactone 25 mg daily

B: Stop enalapril for 36 hours then start sacubitril-valsartan 49/51 mg

C: Stop enalapril and immediately start sacubitril-valsartan 49/51 mg

D: Stop enalapril for 36 hours and then start losartan 12.5 mg daily

For patient WJ, which of the following would be an absolute contraindication to initiating sacubitril-valsartan?

A WJâ€™s BP was 106/76

B WJâ€™s ECHO reported a LVEF of 47%

C WJ reported previous angioedema while taking an ACEi

D WJâ€™s eGFR was < 30 ml/min/1.73^2

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-432-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

THE IMPACT OF DELAYED SECOND-DOSE ANTIBIOTICS ON MORTALITY IN BOARDED PATIENTS IN THE EMERGENCY DEPARTMENT

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Purpose: In patients with septic shock, a 2006 study by Kumar et al. found that the risk of mortality increases by 7.6% with each hour of dela in initial antibiotic administration. Recent evidence also suggests poorer outcomes in patients with sepsis who have delays in second-dose antibiotics. In this era of increased boarding and overcrowding in the emergency department (ED), the purpose of this study will be to evaluate the impact of delayed second-dose antibiotics in boarding patients with sepsis at a 40-bed community hospital ED. Methods: A retrospective chart review was performed on adult patients with sepsis who received their first dose of antibiotics while boarding in the ED at Union Hospital from July 1, 2020 to June 30, 2021. Boarding was defined as a minimum of a 4-hour length of stay (LOS) in the ED. Patients were excluded if they received their first dose outside of the ED antibiotics were discontinued after the first dose, or the patient expired o code status switched to comfort measures only prior to second dose. Delayed timing was defined as 125% of the recommended interval for dosing of antibiotics. The primary outcome is in-hospital mortality. Secondary outcomes are intensive care unit LOS, hospital LOS, mechanical ventilation after second dose, and vasopressor use after second dose. Assuming mortality is 15% for the timely second doses with a 15% increase in mortality for delayed second-doses, a sample size of 120 patients is needed in each group to provide 80% power and a significance of <0.05. A Fishers exact test will be used for categorical variables. An independent t-test will be used for continuous variables.Results/Conclusions: Results and conclusions will be presented at the 2022 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recognize the focus on timely administration of first-dose antibiotics by the national core sepsis measure

Identify emergency department boarding as a predictor of delayed second-dose antibiotics

Self Assessment Questions:

The national core sepsis measure focuses on timely administration of which of the following?

A Antiemetics

B: Antibiotics

C: Antihypertensives

D: Anticholinergics

What is a predictor of delayed second-dose antibiotics?

A Boarding in the emergency department at least 4 hours

B Gram-negative coverage

C Older age

D Vasopressor use

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-433-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

COMPARATIVE ANALYSIS OF TIME TO FIRST THERAPEUTIC ANTI-XA LEVEL IN OBESE AND NON-OBESE PATIENTS VIA A WEIGHT-BASED HEPARIN INFUSION PROTOCOL IN A COMMUNITY HOSPITAL

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Purpose:As population obesity rates have continued to rise, it has become apparent that it is more difficult to achieve therapeutic drug levels in obese patients as compared to non-obese patients. Specifically in patients placed on heparin infusions following a thrombogenic phenomenon (such as venous thromboembolism, atrial fibrillation, or non-ST-segment elevation myocardial infarction), data shows it takes longer to achieve a therapeutic anti-Xa level in the obese population. The purpose of this study is to assess the time to first therapeutic anti-Xa level in obese and non-obese patients using a weight-based heparin protocol containing indication-specific dosing nomograms. Methods:A retrospective chart review was conducted to analyze the time to first therapeutic anti-Xa level (0.3-0.7 IU/mL) in obese (body mass index 30 kg/m2) and non-obese (body mass index < 30 kg/m2) patients. All patients meeting the inclusion and exclusion criteria between June 2019 and June 2021 were evaluated. The primary endpoint was to assess the amount of time it took to achieve the first therapeutic anti-Xa level based on the indication-specific dosing nomogram at Baptist Health Lexington. Secondary endpoints include time to two consecutive therapeutic anti-Xa levels and comparisons of initial and therapeutic heparin rates.Results:Data collection and analysis is still ongoing. Should this phase of the study demonstrate a difference in time to first or second therapeutic anti-Xa level, an updated dosing algorithm will be submitted to the local internal review board and then the local Pharmacy & Therapeutics committee for approval.

Learning Objectives:

Identify risk factors of thrombogenic events

Recall factors that could impact an anti-Xa level

Self Assessment Questions:

Which of the following is a risk factor for thrombogenic events?

A Hospitalization

B: Pregnancy

C: Increased BMI

D: All of the above

Which of the following would most impact an anti-Xa level?

A Warfarin

B Apixaban

C Dabigatran

D Aspirin

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-434-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF POSTGRADUATE YEAR ONE PHARMACY RESIDENCY APPLICATION RUBRICS

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Purpose: The American Society of Health-System Pharmacists requires all accredited pharmacy residency programs to create and utilize a rubric for the evaluation of prospective candidates. The purpose of the study was to evaluate differences among eight postgraduate year one (PGY1) pharmacy residency application rubrics that are utilized to determine which candidates to invite for interviews. Methods: Fifty applicants who applied to the University of Kentucky HealthCares PGY1 Pharmacy Residency Program in December 2018 were evaluated on eight different programs rubrics. The eight programs are geographically diverse and encompass representation from academic medical centers, community health systems, and Veterans Affairs medical centers. Sixteen out of the fifty applicants were scored on each rubric by multiple scorers to evaluate interrater score variability. Application scores were normalized to a common scale and descriptive statistics were used for analysis. Results: 516 separate application scores were analyzed to determine how the same applicants score compares amongst the eight different rubrics. Most applicants attended pharmacy school in the southeast region of the United States, did not participate in longitudinal experientia tracks, and attended pharmacy schools that utilized Grade Point Average rather than pass-fail grading systems. There was 75% agreement (6 out of 8) on the overall lowest scored applicant and 50% agreement (4 out of 8) on the overall highest scored applicant amongst the different rubrics. The top 16 scored applicants were consistently within the top 33% of scores for each program, demonstrating congruence among valued metrics. All rubrics valued applicant leadership, work experience, and scholarly activity, although to varying degrees. Conclusion: Analysis of PGY1 pharmacy residency application rubrics demonstrates slight variation in how much each application metric was valued, although there is general consistency when determining the most highly rated applicants to invite to interviews.

Learning Objectives:

Identify which attributes would be most highly valued for PGY1 pharmacy residency applicants.

Discuss the propensity for standardized score consistency amongst the different rubrics.

Self Assessment Questions:

What application aspects are most highly valued universally amongst the eight pharmacy residency programs evaluated?

A scholarship, GPA, and work experience

B: letters of recommendation, rotation experiences, and leadership

C: letters of intent, letters of recommendation, and rotation experienc

D: scholarship, rotation experiences, and leadership

Was there relative agreement for the application scores across the various rubrics? Why or why not?

A Yes, despite differences in weighted application metrics, there was

B No, the differences in weighted application metrics were substanti

C No, although there were similarities in weighted application metrics

D Yes, the application rubrics produced the exact same distribution o

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-692-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

CREATING AN AMBULATORY PHARMACY INITIATIVE AIMED AT DECREASING EMERGENCY DEPARTMENT VISITS FOR A SELF-INSURED HEALTH SYSTEM

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Purpose: According to the CDC, nearly 136 million patients visit emergency departments (ED) in the United States per year. An estimated 13 to 27% of ED visits could be managed or prevented by care in physician offices, clinics, and urgent care centers, with the potential to save $4.4 billion annually. Inappropriate utilization of EDs can be detrimental to cost and quality of care. Evidence supports that pharmacist-driven interventions directed at high-risk patients can reduce ED utilization. The purpose of this process improvement project is to create an ambulatory pharmacy initiative aimed at decreasing potentially avoidable ED utilization for a self-insured health system.Methods: This process improvement project utilized the PDCA (plan, do, check, and act) methodology. Using medical and pharmacy claims data from 2019 and 2020, patients with a potentially avoidable ED visit were identified. This patient population was assessed to determine criteria that would classify patients as most likely to benefit from ambulatory pharmacy services. The criteria were further analyzed to prioritize patients for pharmacist outreach. A pilot period was conducted between October 2021 and December 2021. Pharmacist outreach intended to identify and resolve any gaps in care and medication-related issues, ensure understanding of discharge instructions, and assist in coordinating follow up care and referrals. Outcomes were evaluated after follow-up to verify if the prioritized criteria for pharmacist outreach resulted in decreasing repeat ED visits. Results/Conclusions: Results and conclusions will be presented at the 2022 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Define avoidable emergency department visit

Recognize roles for pharmacists to decrease avoidable ED visits

Self Assessment Questions:

1.Which of the following may classify as a non-avoidable ED visit?

A Persistent nausea and vomiting associated with a lack of dose titra

B: Elevated blood pressure in a patient non-adherent to anti-hyperten

C: Laceration and fracture from a motor vehicle accident

D: COPD-related exacerbation in a patient only prescribed a rescue i

What pharmacist-driven intervention(s) have potential to decrease ED utilization?

A Comprehensive medication review including identification and reso

B Coordination of follow-up with primary care and specialists

C Identify and resolve adherence barriers to medications

D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-693-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EVALUATING THE IMPACT OF PRIOR AUTHORIZATION ON ONCOLOGY PATIENTS ADMITTED TO THE HOSPITAL

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Background: National spending on cancer care is continually increasing and many insurers have implemented prior authorization (PA) requirements to address these costs; however, obtaining a PA can often be a lengthy and complex process. Navigating the transition from the inpatient to outpatient setting with a medication that requires a PA also adds an additional layer of complexity. Ensuring access to medications by confirming affordability and securing PAs prior to discharge can prevent additional costs associated with increased length of stay. Inpatient and outpatient pharmacy services within Henry Ford Health System have collaborated to implement a standardized electronic test claim process to determine out-of-pocket cost and the need for PA prior to discharge. The objectives of this study are to describe the process of assessing medication access prior to discharge, to identify factors that may be predictive of the need for PA, and to determine the impact of PA on hospital length of stay.Methods: This is an IRB approved retrospective, comparative cohort study of patients admitted to Henry Ford Hospitals inpatient oncology unit between January 2019 and December 2020. Patients were included if they were 18 years of age, admitted to the inpatient oncology unit for 72 hours, and had a documented DMCI for filgrastim, tbo-filgrastim, filgrastim-sndz, and/or filgrastim-aafi. All vulnerable populations were excluded along with patients enrolled in hospice or comfort care, admitted with a diagnosis o acute myeloid leukemia, and admitted to receive a stem cell transplant (SCT) or who have previously undergone SCT. The primary endpoint of the study is total length of hospital stay in days. Secondary endpoints include incidence of PA approval or denial, time to PA approval or denia in days, and delay in discharge defined as further overnight hospitalization once medically stable for discharge. Data analysis is ongoing.

Learning Objectives:

Describe the impact of need for prior authorization on patients with cancer admitted to the hospital.

Identify medications commonly prescribed to patients with cancer that may require a prior authorization.

Self Assessment Questions:

Which of the following statements is true?

A Insurance companies have implemented PA due to decreasing ca

B: Medications that require a PA take a median of four days longer to

C: Research has shown that the involvement of pharmacy does not i

D: Medications that require a PA are not associated with administrati

Which of the following is a medication commonly associated with the need for PA?

A Ondansetron

B Dexamethasone

C GCSF

D Fluconazole

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-694-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

APPROPRIATENESS OF TREATMENT FOR ASYMPTOMATIC BACTERIURIA IN A RURAL HEALTHCARE SYSTEM AND THE ROLE OF A CLINICAL PHARMACIST

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Purpose: According to the Centers for Disease Control and Prevention (CDC), antibiotics may be inappropriate in 20-50% of cases. In February of 2020 Saint Claire HealthCare started monitoring patients after their departure from the emergency department. Implementing this monitoring system has made lack of adherence to antimicrobial stewardship guidelines by prescribers more apparent. An area of interest is in patients with asymptomatic bacteriuria. Asymptomatic bacteriuria is common and current guidelines suggest that it should not always be treated. The purpose of this study is to evaluate appropriateness of treatment in asymptomatic bacteriuria in accordance with current guidelines.Methods: This is a single center, retrospective chart review that focuses on the appropriateness of the treatment of asymptomatic bacteriuria in accordance with current guidelines in patients that have departed from an emergency department affiliated with a rural community hospital. The time period being studied is March 1, 2020 to March 1, 2021. A secondary focus will be the impact clinical pharmacists impose on antimicrobial stewardship. The Infectious Disease Society of America (IDSA) defines asymptomatic bacteriuria as the presence of one or more species of bacteria growing in the urine at specified quantitative counts, irrespective of the presence of pyuria, in the absence of signs or symptoms attributable to urinary tract infection (UTI). Antibiotics will be reviewed for patients during the study period who had asymptomatic bacteriuria evidenced by physician notes and chart review. Patients <18 years of age, women 51, and men were excluded in this study. The data to be collected includes prescribed antibiotic and asymptomatic bacteriuria/UTI associated diagnoses. Appropriateness will be determined based on IDSA guidelines, age, gender, allergies, dose, frequency, duration, past medical history, and previous culture results.Results/Conclusions: This study is in progress. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the appropriate treatment plan for asymptomatic bacteriuria.

Identify the adverse effects that a lack of antimicrobial stewardship can have on public health.

Self Assessment Questions:

Which of these patients should be prescribed antibiotics for their asymptomatic bacteriuria?

A 40 year old female that comes into the emergency department witl
B: 35 year old female that comes into an outpatient clinic with a phar
C: 21 year old female who is 20 weeks pregnant comes in for flu-like
D: 18 year old female who has no symptoms comes into an urgent ca

KR is a 30 year old female that presented to the emergency department for hyperemesis. When reviewing her urine sample, you notice her urine is positive for human chorionic gonadotropin and that she has a moderate amount of bacteria in her urine. Which of these choices would be the most appropriate choice for an antibiotic regimen?

A Cefdinir 300 mg PO BID for 14 days
B Cefdinir 300 mg PO BID for 7 days
C Levofloxacin 500 mg PO BID for 14 days
D KR does not need to be prescribed an antibiotic

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-435-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

A BEFORE-AFTER STUDY OF THE TWO-BAG METHOD VERSUS CONVENTIONAL MANAGEMENT FOR ADULT DIABETIC KETOACIDOSIS (DKA)

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Purpose: The two-bag method for treatment of diabetic ketoacidosis (DKA) utilizes fixed infusion rates of both insulin and total fluids with a variable dextrose rate. This is facilitated with one saline-containing bag and a second bag containing saline with 10% dextrose. These solutions are infused together and titrated per a nursing-driven nomogram to maintain target blood glucose during ketosis resolution. The two-bag method has previously been associated with earlier anion gap closure, earlier resolution of hyperglycemia, less hypoglycemia, and fewer IV flui bags charged. However, not all studies have been able to replicate these findings. Given the shortcomings and variation in current management o DKA, the authors institution has chosen to transition from conventional management to the two-bag method based on these prior findings. The current study aims to compare the two-bag method to conventional management of DKA and to evaluate the effects of this practice change. Methods: This is a single-center pre-post study evaluating adults who received intravenous insulin infusion starting in the emergency department for treatment of DKA from July 1st, 2021 to May 31st, 2022. Patients under the age of 18, those that are pregnant, and patients who do not meet DKA diagnostic criteria will be excluded. The primary outcome will be time to anion gap resolution (12 mEq/L). The secondary outcomes will be ICU and hospital length of stay, duration of insulin infusion, time to bicarbonate >18 mmol/L, and time to first blood glucose reading <250 mg/dL. Other measures will include incidence of hypokalemia, the rate of re-initiation of IV insulin, rate of glucose correction, number of IV fluid bags used, and in-hospital mortality. Data after transition to subcutaneous insulin such as the daily subcutaneous dose and glycemic control will also be collected. Results and Conclusion: To be presented at the Great Lakes Pharmacy Residency Conference

Learning Objectives:

Review the literature for the two-bag method in adult patients with DKA

Describe algorithms for both the two-bag method and conventional DKA management

Self Assessment Questions:

Which outcome has NOT been previously associated with implementation of the two-bag method?

A Decreased time to anion gap closure
B: Decreased waste of IV fluid bags
C: Decreased incidence of hypoglycemia
D: Decreased mortality

Which is NOT a criterion to transition a patient from intravenous insulin infusion to subcutaneous insulin?

A Resolution of elevated anion gap (e.g. less than 12)
B Resolution of acute kidney injury (e.g. serum creatinine less than 1
C Resolution of hyperglycemia (e.g. less than 200-250 mg/dL)
D Resolution of acidosis (e.g. pH >7.3)

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-436-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IMPACT OF DAPAGLIFLOZIN ON DIURETIC EFFICIENCY DURING HOSPITALIZATION FOR HEART FAILURE

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Dapagliflozin, a sodium-glucose cotransporter-2 inhibitor (SGLT2i), possesses a unique mechanism for diuresis that is not exploited by conventional diuretics. Like thiazide diuretics, dapagliflozin may augmen diuretic efficiency in heart failure patients on loop diuretic therapy. Three studies have addressed this question, but notably all have assessed either empagliflozin or canagliflozin with conflicting results. Two studies reported improved diuretic efficiency with empagliflozin and canagliflozin However, the EMPA-RESPONSE-AHF trial found no improvement in diuretic response when empagliflozin was given with loop diuretics. The objective of this study was to assess the impact of dapagliflozin on diuretic efficiency in patients hospitalized for heart failure.This was a retrospective, quasi-experimental study. Patients admitted to The Ohio State University Wexner Medical Center between November 1, 2020, and November 8, 2021, were included if they were hospitalized for heart failure, received dapagliflozin 10 mg on top of loop diuretic therapy, and had at least 24-hours of urine output recorded immediately before and after receiving dapagliflozin. Data from up to 72- hours before and after dapagliflozin initiation were included if available. Pregnant patients, incarcerated patients, patients aged <18 or >89 years, and patients with an estimated glomerular filtration rate <25 mL/min/1.72m2 were excluded. Patients prescribed dapagliflozin before admission, or who received a vasopressin antagonist, thiazide/thiazide-like diuretic, epinephrine, or intravenous inotropes during the minimum 48-hour observation period were also excluded. The primary outcome was the change in diuretic efficiency pre- and post-dapagliflozin exposure. Diuretic efficiency was defined as: 24-hour mL urine output/40 mg IV furosemide equivalents and 24-hour weight loss (kg)/ 40 mg IV furosemide equivalents. Safety endpoints reported included percentage of patients who continued dapagliflozin until discharge and the incidence of acute kidney injury and diabetic ketoacidosis after receipt of dapagliflozin. Data analysis is ongoing. Results and conclusions will be presented at the conference.

Learning Objectives:

Discuss the diuretic mechanism of dapagliflozin

Identify sodium glucose cotransporter-2 inhibitors which are indicated fo the treatment of heart failure

Self Assessment Questions:

The diuretic mechanism of dapagliflozin relates to which of the following

A Antagonism of Na+/Cl-/K+ transporters in the distal tubule

B: Natriuresis and osmotic diuresis due to blocking the reabsorption

C: Prevention of the breakdown of b-type natriuretic peptide

D: Antagonism of antidiuretic hormone receptors in the kidney

JT is a 64-year-old male with a PMH of HFrEF, CKD-3, obesity (BMI 38) and hypertension admitted to the cardiac service for volume overload. He is prescribed dapagliflozin at discharge, but it is not covered by his insurance. Which other SGLT2i is indicated for treatment of HFrEF?

A Ertugliflozin

B Canagliflozin

C Empagliflozin

D Sotagliflozin

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-437-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EFFECTIVE CLINICAL HEMOSTASIS FOLLOWING WEIGHT-BASED VERSUS FIXED-DOSE 4-FACTOR PROTHROMBIN COMPLEX CONCENTRATE (4F-PCC) FOR WARFARIN AND DIRECT ACTING ORAL ANTICOAGULANT (DOAC) REVERSAL IN THE SETTING OF MAJOR BLEED

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To determine whether the implementation of a fixed-dose 4-factor prothrombin complex concentrate (4F-PCC) reversal protocol for warfarin and direct acting oral anticoagulants (DOACs) leads to equally effective clinical hemostasis as weight-based dosing in the setting of major bleed.

Learning Objectives:

Discuss current evidence for the use of fixed-dose 4F-PCC for warfarin and DOAC reversal in the setting of major bleed

Recognize the International Society on Thrombosis and Haemostasis (ISTH) definition of effective clinical hemostasis

Self Assessment Questions:

What is the recommendation from the anticoagulation forum for reversal in patients with DOAC (rivaroxaban, apixaban or edoxaban) associated major bleeding?

A If andexanet alfa is not available, treat with 2000 units 4F-PCC

B: 2000 units 4F-PCC

C: Andexanet alfa

D: Activated charcoal

Following the ISTH definition of effective clinical hemostasis, what criteria must all patients meet to achieve effective clinical hemostasis, regardless of type of major bleeding?

A Cessation of bleeding

B Avoided invasive interventions or invasive interventions with minim

C No need for further hemostatic agents, coagulation factors or bloo

D No neurologic dysfunction at discharge

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-438-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IMPACT OF PHARMACIST-DRIVEN POSITIVE CULTURE FOLLOW-UP IN A COMMUNITY EMERGENCY DEPARTMENT (ED)

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Purpose: Antimicrobial agents are commonly prescribed to patients discharged from the Emergency Department (ED). Antimicrobial stewardship practices such as culture follow up are important to ensure appropriate and effective treatment. Pharmacists have a unique skill set that can aid in optimizing antimicrobial therapy for these patients and prevent their re-visit to the ED and subsequent hospital admission. Additionally, therapy adjustments can often be made without a return visit to the ED. Admission and ED re-visit rates following the implementation of a pharmacist-implemented culture follow-up program have not been well characterized, particularly when compared with a nursing-driven practice. Additionally, it is unknown whether readmission rates improve when cultures that have previously been lost to follow up are included. The objective of this study is to evaluate the impact of a pharmacist-implemented culture follow up program on clinical outcomes in the ED. Methods: This is a single-center, pre-implementation post-implementation quasi-experimental analysis comparing current practice retrospectively with prospective pharmacist follow-up. Adult patients who are discharged from the ED between September 2021 and April 2022 and have a positive culture result after discharge will be included. Patients will be excluded if they were discharged from the ED to an inpatient setting. The primary outcome is ED re-visit within 96 hours. Secondary outcomes will include 7-day ED re-visits, 30-day hospital admissions, proportion of positive cultures followed up on, time from culture result to patient follow up, and type of interventions made on follow up (i.e. antimicrobial change, discontinuation, recommended ED re-visit, etc.). Data collected to support these outcomes will include age, sex, weight, height, race and ethnicity, past medical history, social history, vitals and laboratory findings, culture identification, infection characteristics, antimicrobials prescribed, and length of ED stay.Data collection is ongoing. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review outcomes associated with pharmacist ED culture follow up.

Identify different types of interventions pharmacists can make during follow up.

Self Assessment Questions:

Which of the following benefits of pharmacist culture follow up in the ED have been explored in previous literature but have not been found to be statistically significant?

A Decreased ED revisits in 96 hours

B: Decreased 30-day readmission rates

C: Decreased time to follow up

D: Decreased time to culture review

KC is a 42-year-old male who was discharged from the ED on cephalexin 500 mg QID x 10 days for UTI. A few days later, the urine culture reveals pan-susceptible enterococcus. What is the most appropriate intervention?

A Change in dose/duration

B Have patient return to ED for evaluation

C Change in drug

D No intervention indicated

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-439-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EVALUATION OF THE ADDITION OF OLANZAPINE IN THE TREATMENT OF CHEMOTHERAPY-INDUCED NAUSEA AND VOMITING

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Purpose: Nausea and vomiting are some of the common and bothersome side effects that affect patients receiving chemotherapy. Approximately 70-80% of patients will experience chemotherapy-induced nausea and vomiting (CINV). The precise mechanism(s) that cause CINV are not fully understood. CINV is thought to be caused by triggering multiple pathways controlled by the brain that also involve the nervous system and gastrointestinal tract. Olanzapine, an atypical antipsychotic used for conditions such as schizophrenia or bipolar disorder, has been used off-label for the prevention and treatment of CINV. The primary objective of this study is to evaluate whether the addition of olanzapine to an established CINV treatment regimen decreases the likelihood of reported nausea and vomiting from patients undergoing high emetic risk chemotherapy (HEC) regimens.Methods: This was a retrospective, observational chart review of adults at a community healthcare system who received HEC between July 1, 2019 and July 31, 2021.Patients had to receive an established antiemetic regimen consisting of a NK-1 inhibitor, a 5HT-3 inhibitor, and dexamethasone. Patients taking olanzapine were compared to those who did not receive olanzapine. The primary outcome was incidence of nausea/vomiting after chemotherapy. Secondary objectives included the use of breakthrough antiemetics, any reported delays or stopping of treatment due to these side effects, and what medications were used as add-on agents on top of their established CINV regimen. Baseline demographics will be analyzed with descriptive statistics. Categorical and continuous data will be analyzed with Chi-square and Students t test, respectively.Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe chemo-induced nausea and vomiting (CINV) and different types and risk factors associated with it

Explain the role of olanzapine for CINV

Self Assessment Questions:

Delayed-onset nausea/vomiting can be experienced up to how many days post-chemotherapy?

A 2 days

B: 3 days

C: 4 days

D: 5 days

Carboplatin with an AUC of at least ___ puts the drug in the high emetogenic risk category?

A 4

B 4.5

C 5

D 6

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-440-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EVALUATION OF SAFETY, EFFICACY, AND COST OF FOUR-FACTOR PROTHROMBIN COMPLEX CONCENTRATE DOSING FOR INTRACRANIAL HEMORRHAGE IN PATIENTS RECEIVING FACTOR XA INHIBITORS

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Purpose: Intracranial hemorrhage (ICH) is associated with the highest mortality rate among all bleedings related to factor Xa inhibitor use. Expert panels recommend andexanet alfa as first-line and four-factor prothrombin complex (4F-PCC) as an alternative for factor Xa inhibitor bleeding reversal; however, optimal dosing of 4F-PCC is yet to be determined. Prior to 2017, OSF HealthCare used non-standardized 4F-PCC dosing of 25-50 units/kg. After 2017, all hospitals in the health system adopted the 25 units/kg dosing with a maximum of 2,500 units per dose. This study seeks to describe our experience with 4F-PCC in factor Xa inhibitor-related ICH. Methods: A retrospective chart review wil be conducted on adult patients with ICH related to factor Xa inhibitor use who received 4F-PCC between August 2014 and August 2021. A total o fourteen hospitals are included. Patients who are pregnant, allergic to 4F PCC, or received a dose of 4F-PCC outside our institution prior to transfer will be excluded. The primary analysis will evaluate hemostatic efficacy after the administration of 4F-PCC. Positive hemostatic efficacy is defined as improved or stable hematoma volume on repeat head computerized tomography scan compared to the initial scan. Secondary analyses include incidence of in-hospital thrombotic events, in-hospital mortality, 30-day mortality, discharge locations, and 4F-PCC cost. An exploratory analysis will be done to evaluate the safety and efficacy of different 4F-PCC doses measured in units/kilogram.Results and conclusions will be presented at the conference.

Learning Objectives:

Review the current treatment approach for factor Xa inhibitor-associated bleeding

Describe the current treatment approach for factor Xa inhibitor-associated bleeding

Self Assessment Questions:

4F-PCC is FDA-approved to reverse the effects of which of the following class of anticoagulants?

A Vitamin K antagonist

B: Vitamin K antagonist and factor Xa inhibitors

C: Vitamin K antagonist and heparin

D: Vitamin K antagonist and direct thrombin inhibitors

Which of the following is an adverse event of 4F-PCC?

A Pulmonary embolism

B Deep vein thrombosis

C Cerebral vascular accident

D All of the above

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-441-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

SLEEP TREATMENT ON PSYCHOSIS AND ANTIPSYCHOTIC ADMINISTRATION (STOP ANTIPSYCHOTICS)

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Statement of Purpose: The risk of utilizing sleep aids in hospitalized patients is unknown. The purpose of this study is to assess the administration of varying sleep medications and subsequently the risk of antipsychotic exposure.Statement of Methods Used: This is a single-center retrospective review of 9734 adult patients at UK Healthcare between January 1, 2016 and December 31, 2019. Data were sourced via UK Healthcare Enterprise Data Warehouse, TriNetX database, and Sunrise Clinical Manager Electronic Medical Record. Patients admitted to the intensive care unit or diagnosed with alcohol withdrawal, psychiatric illness, altered mental status, hepatic encephalopathy, meningitis, or encephalitis were excluded. All patients received one or a combination of the following sleep aids within 96 hours of admission: melatonin, trazodone, zolpidem, temazepam, hydroxyzine, diphenhydramine, or doxepin. Patients were then cohorted on whether o not they received an antipsychotic (quetiapine, olanzapine, ziprasidone, haloperidol) within 72 hours of the sleep aid. The researchers hypothesized that a significant difference in antipsychotic exposure would be present in patients who received sleep aids, specifically in those who received benzodiazepines or anticholinergics.Summary of Results to Support Conclusion: Overall, 516 patients received a sleep aid followed by an antipsychotic, while 9218 were administered a sleep aid only. Bivariate analysis revealed significance ($p<0.05$) for melatonin, zolpidem, trazodone, hydroxyzine, diphenhydramine, and age. Melatonir and zolpidem administration were associated with less antipsychotic exposure. The remaining significant variables were associated with the opposite Logistic regression revealed that trazodone (OR 1.69, CI 1.38-2.06, $p<0.01$), hydroxyzine (OR 2.13, CI 1.78-2.55, $p<0.01$), and diphenhydramine (OR 1.91, CI 1.59-2.29, $p<0.01$) were independently associated with increased odds of antipsychotic exposure. Conclusions Reached: These results demonstrate that trazodone, hydroxyzine, and diphenhydramine are independently associated with subsequent antipsychotic exposure. However, further prospective studies are warranted to validate these results.

Learning Objectives:

Review the pharmacology of commonly utilized sleep aids

Discuss the potential risk of antipsychotic exposure for delirium symptoms following varying sleep aid medication

Self Assessment Questions:

Which of the following sleep aids is appropriately matched with its mechanism of action?

A Temazepam â€“ blocks histamine

B: Zolpidem â€“ inhibits the reuptake of serotonin

C: Doxepin â€“ Z-hypnotic that enhances GABA

D: Melatonin â€“ MT1/MT2 receptor agonist

Which medications in this study were independently associated with increased odds of antipsychotic exposure?

A Trazodone, Hydroxyzine, Diphenhydramine

B Melatonin, Zolpidem, Doxepin

C Doxepin, Hydroxyzine, Temazepam

D Zolpidem, Temazepam, Diphenhydramine

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-442-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IDENTIFICATION OF PREDICTIVE FACTORS FOR PROPOFOL-INDUCED HYPERTRIGLYCERIDEMIA AND FUTURE PROGNOSTIC IMPLICATIONS

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Purpose: Propofol is an intravenous sedative that is commonly used for continuous sedation in mechanically-ventilated patients. The 2018 Pain, Agitation/Sedation, Delirium, Immobility, and Sleep Disruption in Adult Patients in the ICU (PADIS) guidelines recommends propofol as a first-line agent due to its short duration and favorable kinetic profile. Hypertriglyceridemia is a side effect that can develop with propofol use due to its lipid emulsion formulation, as well as having an inhibitory effec on fatty acid oxidation. This can lead to discontinuation and use of non-preferred, second-line sedative agents. The incidence of propofol-induced hypertriglyceridemia is not well established, but the rise in triglycerides can increase the risk of hypertriglyceridemia-related pancreatitis and be a surrogate marker for the rare development of propofol-related infusion syndrome (PRIS). There may be risk factors that may place patients at a higher risk for developing increased triglyceride levels, but these remain unknown. The purpose of this study is to identify predisposing factors to developing hypertriglyceridemia to assist in tailoring patients optimal sedation regimen.Methods: This was a retrospective, single-centered, cohort study of patients who were mechanically-ventilated and received continuous propofol >48 hours from July 1st, 2019 to July. 31st, 2021 at Loyola University Medical Center. The primary outcome was to identify potential predisposing factors associated with development of propofol-induced hypertriglyceridemia, defined as triglycerides levels >500. Factors evaluated included gender, past medical history, concomitant medications, body mass index and propofol exposure. Secondary outcomes included the mean time and frequency to developing hypertriglyceridemia levels, duration of mechanical ventilation, duration of propofol administration, sedative replacements, triglyceride level trends, levocarnitine use and development of pancreatitis. A multivariate linear regression was used to determine factors independently associated with development of hypertriglyceridemia.Results: Results and conclusions will be presented at the 2022 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Recognize why propofol is the preferred sedative and its potential risks.

Identify potential risk factors that could increase occurrence of propofol-induced hypertriglyceridemia.

Self Assessment Questions:

Per the 2018 PADIS guidelines, which of these agents is considered firs line for sedation?

A Propofol

B: Midazolam

C: Ketamine

D: Lorazepam

What is a mechanism of propofol that causes hypertriglyceridemia?

A HMG-CoA reductase inducer

B Lipid emulsion formulation

C PCSK9 gene inducer

D Chylomicron vehicle

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-443-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EVALUATING THE MEDICATION RECONCILIATION PROCESS TO ASSESS THE HISTORY OF BETA LACTAM ALLERGIES, ANTIBIOTIC USAGE, AND TO FIND AREAS OF IMPROVEMENT FOR ALLERGY DOCUMENTATION.

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Purpose: Beta-lactams are commonly reported antibiotic allergies. However, many of these patients do not have a true IgE mediated type 1 allergy. Type 1 allergies can decline, with 80% of patients losing their sensitivity over 10 years. Inappropriate documentation can result in use of second line broad spectrum agents. Medication Reconciliations, including allergy documentation, are the first step in ensuring safe and proper use of medications. An allergy documentation initiative will be developed and used with medication reconciliation technicians. This evaluation aims to assess the impact of our initiative on allergy documentation and antibiotic utilization.Methods: This is a multi-phase review of inpatients >18 years of age with a documented allergy to penicillins or cephalosporins. Phase I, includes a retrospective chart review and evaluation of the current documentation process. Phase II includes creation of a standardized question set for pharmacy technicians. Following appropriate staff education, a post-implementation assessment will be completed to evaluate the outcome of the updated medication allergy documentation guidelines. Primary outcome is the number of incomplete/inaccurate allergy documentation. Secondary outcome is the percentage of patients on second line therapy and potential de-escalation. Results: During Phase I, there were a total of 106 documented beta lactam allergies in 81 patients. Only 10 patient charts had additional information documented regarding their allergy and 13 had an unknown reaction listed. Approximately 22% of patients received second line therapy and 30% had the potential to be deescalated given their documented reaction. Conclusion: Phase I demonstrated the need for improvement in the allergy documentation process through several incomplete or inaccurate patient charts. Phase also demonstrated the potential to deescalate some patient's antibiotics which ultimately will improve patient care by reducing exposure to broad spectrum antibiotics. Evaluation of Phase II will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify problems/ areas of improvement with allergy documentation in patient charts.

Review the effects of the allergy documentation initiative on improving documentation.

Self Assessment Questions:

What problems have occurred through the allergy documentation process?

A Patients are unaware or provide little detail regarding their allergy

B: Intolerances and side effects are documented as allergies.

C: A and B

D: None of the above

How will an updated allergy documentation process improve patient care?

A Lead to an increase in inaccurate and incomplete patient charts.

B Lead to increased documentation, decrease use of second line ag

C A and B

D None of the above

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-810-L05-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EXTENDED-RELEASE TACROLIMUS AND RENAL FUNCTION IN DE NOVO LIVER TRANSPLANT RECIPIENTS

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Purpose: Tacrolimus nephrotoxicity is a major contributing factor of rena dysfunction after liver transplantation. Compared to immediate-release tacrolimus (IR-Tac; Prograf), it has been proposed that LCP-Tacrolimus (LCPT; Envarsus XR) may be less nephrotoxic due to less peak-to-trough fluctuation and lower peak concentration. Fast metabolizers, as noted by a low tacrolimus concentration to dose (C/D) ratio, require higher daily tacrolimus doses and are more likely to experience tacrolimus nephrotoxicity. An increase in the C/D ratio after conversion from IR-Tac to LCPT has been shown to be nephroprotective. However, the potential nephroprotective effect of LCPT compared to IR-Tac has not been studied in de novo liver transplant recipients (LTRs). The objective of this study is to compare the change in renal function between LCPT and IR-Tac in de novo LTRs as well as between subgroups based on tacrolimus formulations and C/D ratios.Methods: This single-center, retrospective chart review will include LTRs between July 1st, 2019 and March 31st, 2021 who were discharged on either LCPT or IR-Tac. Exclusion criteria included: multiorgan transplant, transplant failure defined by death or graft loss within one-month post-transplant, conversion to cyclosporine-based or calcineurin inhibitor-free immunosuppression within one-year post-transplant, chronic renal replacement therapies at baseline (one-month post-transplant) and waitlisted for kidney transplantation at baseline. The primary outcome is the difference in eGFR by MDRD-4 between one month and 12 months post-transplant ("eGFR). A subgroup analysis evaluating "eGFR among four groups, fast metabolizers on LCPT, slow metabolizers on LCPT, fast metabolizers on IR-Tac, slow metabolizers on LCPT, will be performed. The secondary outcomes are the incidence of the following adverse outcomes between one month and 12 months post-transplant: biopsy-proven acute rejection, graft loss, death, emergency department or hospital readmission, new-onset diabetes mellitus, new-onset hypertension, and tremor.Results and Conclusions: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the similarities and differences between immediate-release tacrolimus (IR-Tac) and extended-release Tacrolimus (LCPT)

Explain tacrolimus concentration to dose ratio and its association with nephrotoxicity after liver transplantation

Self Assessment Questions:

Which of the following is a correct statement?

A IR-Tac has a higher bioavailability than LCPT.

B: LCPT has less peak-to-trough fluctuation compared to IR-Tac.

C: LCPT has been proven to be more nephroprotective than IR-Tac i

D: IR-Tac has a lower peak concentration than LCPT.

Which of the following is a true statement regarding tacrolimus metabolism?

A Fast metabolizers have a high tacrolimus concentration to dose ra

B Slow metabolizers require higher daily tacrolimus doses to ensure

C Fast metabolizers experience an increased risk of tacrolimus neph

D Slow metabolizers experience a higher tacrolimus peak concentrat

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-444-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

ANALYSIS OF REVENUE GENERATION BY AMBULATORY CARE PHARMACISTS GRANTED PROVIDER STATUS BY CONTRACTED PROVIDER

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Purpose: Pharmacists are valuable members of the interdisciplinary healthcare team but are often inhibited from practicing at the top of their license and not recognized for their contributions. One limiting factor is that pharmacists are not recognized as healthcare providers. This study aims to answer the question of how much additional revenue ambulatory care pharmacists are able to generate by billing visits at higher levels. In order to confirm that the pharmacists are also positively impacting patients clinical outcomes, hemoglobin A1c will be tracked. Positive financial outcome, paired with clinical improvement, strengthens justification to increase pharmacist recognition as providers. Methods: Per their usual practice, pharmacists will manage select patients referre by their primary care physicians for chronic care management, accordin to network-approved protocols. One private contractor has approved pharmacists to bill these chronic care visits at higher levels. Each week the pharmacists will track the number and level of billable visits they complete. After six-months, revenue will be calculated and compared to the amount of revenue that would have been generated if all included visits had been billed at the lowest complexity level. This will help show what revenue would have totaled without any provider recognition. At the end of the six-month research period, 5% of patients referred to and managed by pharmacists for diabetes across all clinics, to ensure appropriate distribution of data, will be randomly selected for clinical outcomes tracking. Those patients A1c values, before and after pharmacist management, will be tracked. The A1c values and change in A1c for patients managed by pharmacists will be compared to an equal number of patients managed by providers alone to determine the extent of positive impact by pharmacists.Results and conclusions: This study is ongoing; thus, results and conclusions will be presented at the 2022 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Classify the various Current Procedural Terminology (CPT) codes by increasing complexity.

Relate revenue generated from pharmacists to patient clinical outcomes

Self Assessment Questions:

1.Which of the following Current Procedural Terminology (CPT) code is billed for a low-level evaluation and management (E/M) service?

A 99211

B: 99212

C: 99213

D: 99214

Which Medicare Part does not recognize pharmacists as healthcare providers?

A Medicare Part A

B Medicare Part B

C Medicare Part C

D Medicare Part D

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-695-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

THE EFFICACY OF CRYOTHERAPY IN ORAL MUCOSITIS PREVENTION IN PATIENTS ON ANTHRACYCLINE AGENTS

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Background: Chemotherapy- and radiotherapy- induced mucositis result from damaging deoxyribonucleic acid (DNA) targets. This damage leads to the loss of mucosal integrity and development of mouth ulcerations that may result in a secondary bacterial colonization. The Multinational Association of Supportive Care in Cancer and International Society for Oral Oncology guidelines recommend the use of cryotherapy to prevent mucositis associated with short half-life chemotherapeutic agents. Clinical trials have demonstrated the efficacy of cryotherapy with intravenous (IV) bolus fluorouracil and high dose melphalan, however there is a paucity of literature supporting its benefit in the prevention of anthracycline-induced mucositis. Current outpatient infusion practice at Indiana University Simon Cancer Center is to utilize cryotherapy during IV push anthracycline treatment. This study will evaluate the efficacy of cryotherapy in this setting.Methods: This is a prospective study of adults receiving treatment with an IV push anthracycline at our outpatient infusion center. Patients who receive dexrazoxane prior to treatment, have poor dentation, prior HSV lesions, or prior head and neck radiation will be excluded. Patients will be treated in two 8-week cohorts. The first 8-week cohort will consist of patients receiving cryotherapy with anthracycline IV push therapy. The second 8-week cohort will consist of patients receiving anthracycline IV push therapy without cryotherapy. The primary endpoint is the incidence of mucositis, defined as the development of mouth sores within 14 days of treatment. The secondary endpoints, if statistically appropriate, will include: incidence of grades 3 and 4 mucositis and mean grade of mucositis. Primary and secondary endpoints will be assessed using patients diary, according to the Common Terminology Criteria for Adverse Events version 5.0. Results/Conclusions: Results pending

Learning Objectives:

Define the pathophysiology of chemotherapy-induced mucositis

Explain why cryotherapy could prevent mucositis associated with fluorouracil and melphalan

Self Assessment Questions:

How does chemotherapy damage the oral mucosal barrier?

A Chemotherapy affects and injures slow-dividing cells which include
B: Damaging DNA targets results in reactive oxygen species which ir
C: Damaging DNA targets results in proinflammatory cytokines which
D: Damaging DNA targets results in bacterial activation which injures

What drug properties make cryotherapy effective with fluorouracil and melphalan?

A The short half-lives of melphalan and fluorouracil makes it feasible
B The long half-lives of melphalan and fluorouracil makes it feasible
C The large molecular sizes of melphalan and fluorouracil restrict the
D The small molecular sizes of melphalan and fluorouracil restrict th

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-445-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

ANALYSIS OF PHARMACOGENOMICS CLINICAL DECISION SUPPORT ON MEDICATION ORDERING HABITS BY PROVIDERS

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Purpose: Pharmacogenomics is a facet of precision medicine that optimizes medication therapy by studying how a patients genetic makeup affects their pharmacokinetics and pharmacodynamics of medications. Using pharmacogenomics testing, a provider can order the optimal drug therapy to maximize medication efficacy while minimizing adverse effects. Due to increased costs and turnaround time, pharmacogenomics testing is not routinely performed for every patient but has become more available in recent years. When available, pharmacogenomics should be incorporated into a patients care.Methods: In February 2021, Indiana University Health implemented clinical decision support alerts that would notify providers if a patient has had pharmacogenomics testing and if an ordered medication would be inappropriate. This study is a multicenter, retrospective chart review that included patients from February 2021 to December 2021 who had a pharmacogenomics alert fire. The primary endpoint is the number and percentage of orders changed by the point of the patients discharge according to recommendations of the clinical decision support alerts. Secondary endpoints include number and percentage of alerts overridden, time for pharmacogenomics testing to result, stratification by pharmacogenomics alert, and any safety or efficacy events. Descriptive statistics will be used to analyze the collected data. Nominal data will be analyzed with Chi-square test or Fishers exact test as appropriate.Results/Conclusion: Data collection and analysis are currently underway. Results and conclusion will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify the impact of pharmacogenomics testing on provider medication ordering habits

Recognize the benefits of using clinical decision support to promote safety and efficacy in medication ordering

Self Assessment Questions:

Tramadol and codeine are metabolized by CYP2D6. What effect would be noticed in an ultrarapid metabolizer?

A Decreased plasma concentration and decreased efficacy
B: Increased plasma concentration and increased toxicity
C: Decreased plasma concentration and increased toxicity
D: Increased plasma concentration and decreased efficacy

A patients pharmacogenomics testing indicates they are a CYP2B6 poo metabolizer. Which of the patients medications could increase the risk o toxicity in this patient?

A Warfarin
B Abacavir
C Efavirenz
D Citalopram

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-811-L05-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

APPROPRIATENESS OF PNEUMONIA-DIRECTED EMPIRIC ANTIBIOTIC PRESCRIBING IN A MEDICAL INTENSIVE CARE UNIT (MICU)

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Statement of Purpose: To assess the appropriateness of empiric antibiotic therapy for patients with VAP, HAP, and severe CAP based or The Ohio State University Wexner Medical Center (OSUWMC) guideline MICU Algorithm for Empiric Treatment of Ventilator Associated Pneumonia (VAP), Hospital Acquired Pneumonia (HAP), and Severe Community Acquired Pneumonia (CAP) updated in March of 2020. Statement of Methods Used: A single-center, retrospective descriptive study was conducted evaluating a random sample of OSUWMC MICU patients with gram-negative pneumonia from March 2020 to August 2021. Patients were included if they had a diagnosis of gram-negative pneumonia, and excluded if determined to have bacterial respiratory colonization. Based on chart review, patients were categorized as VAP, HAP, or CAP. Patients with HAP were further categorized based on the presence or absence of risk factors for multidrug resistant (MDR) organisms or high risk of death, and CAP patients based on risk factors for methicillin-resistant Staphylococcus aureus or Pseudomonas aeruginosa infection. The primary outcome was the percent of patients for whom the empiric, algorithm-directed antibiotic(s) covered the gram-negative organism(s) that isolated from respiratory culture. Summary of (preliminary) Results to Support Conclusion: A total of 107 patients with a gram-negative respiratory culture were evaluated with 75 patients being included (35 VAP, 20 HAP, 20 CAP). The MICU algorithm-directe empiric antibiotic regimens covered the isolated gram-negative organism in 65.3% of patients (VAP 65.7%, HAP 65%, CAP 65%).Conclusions Reached: Final results and conclusions will be presented at the GLPRC Conference.

Learning Objectives:

Discuss current clinical guidelines on VAP, HAP, and severe CAP.

Recognize algorithm-resistant organisms which our algorithm was not designed to cover.

Self Assessment Questions:

Select all that are true: (1.) Per the current IDSA and ATS guidelines for management of HAP and VAP, the most predictive factor for MDR Pseudomonas pneumonia was prior use of intravenous antibiotics. (2.) Healthcare-associated pneumonia (HCAP) is a categorization that is par of current IDSA and ATS treatment guidelines (3.) Current empiric antibiotic recommendations for severe inpatient CAP in patients without risk factors for MRSA or Pseudomonas aeruginosa include a beta-lactam with a macrolide, or a beta-lactam with a respiratory fluoroquinolone. (4.) The category of HCAP has been eliminated as it inaccurately identified risk for drug-resistant pathogens

A 1 and 3 are true

B: 2 and 3 are true

C: 1, 3, and 4 are true

D: All of the above

In HAP and VAP patients within our study, which algorithm-resistant organisms were identified that our algorithm was not designed to cover? Select all that are true. (1.) Pseudomonas aeruginosa (2.) ESBL Klebsiella pneumonia (3.) Stenotrophomonas maltophilia (4.) Burkholderia cepacia complex

A 1, 2, and 4

B 1, 3, and 4

C 2 and 3

D 2, 3, and 4

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-446-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
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DEVELOPMENT OF A STANDARDIZED NONFORMULARY MEDICATION (NFM) USE PROCESS IN AN ACADEMIC HEALTH SYSTEM

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A standard process for the management of nonformulary medications (NFM) is an important part of an efficient, safe, and cost-effective formulary system. The Joint Commission requires hospitals have a formalized process for selecting, approving, and procuring NFMs. Best practices describing NFM processes are not well established leading to variation in meeting this requirement.Froedtert & the Medical College of Wisconsin (F&MCW) maintains a single system formulary. Currently, F&MCW uses a dashboard tracking hospital NFM administrations. While the NFM dashboard and associated metrics provide important information to guide formulary management, F&MCW does not have a standardized process for managing NFMs by pharmacy staff. The purpose of this study is to establish an efficient process for F&MCW to manage NFMs.This quasi-experimental pre-post study involves developing and implementing a system-wide policy and procedure for NFM use during an inpatient admission. The policy and procedure address requirements for review and approval of high-cost, high-risk, and urgently needed NFMs. The primary outcome is percent of NFM orders with administrations escalated to a pharmacy manager for approval. Key secondary outcomes include percent of NFM orders administered, percent of high-cost NFM requests escalated to a pharmacy manager, and cost associated with NFM purchases. Sources for data collection include reports of NFM dispenses from the electronic health record, medication purchase reports, and manual data collection.Data are being collected during a 3-month pre-intervention period and 3-month post-intervention period. Preliminary results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference. Future goals include improving NFM management strategies in outpatient settings, improving electronic health record ordering decision support, and improving transparency of NFM inventory

Learning Objectives:

Describe the benefits of implementing a NFM process

Identify strategies that a health-system can utilize to improve the NFM process

Self Assessment Questions:

Which of the following is a benefit of implementing a NFM process?

A Improve central pharmacy efficiency

B: Improve transparency and communication of NFM pharmacy decis

C: Meet ASHP requirements

D: A & B

Which strategy can a health-system utilize to improve the NFM process?

A Defer first assessment of NFM order to the pharmacy manager

B Use patient supplied medications when possible

C Use a standardized criteria to assess NFM orders

D Escalate all NFM orders to the pharmacy director

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-696-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

PHARMACIST AVOIDANCE OR REDUCTIONS IN MEDICAL COSTS ASSOCIATED WITH A CLINICAL GENERAL MEDICINE PHARMACIST (PHARM-GEM)

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Purpose: According to the American Hospital Association, in 2019, there were an estimated 36 million hospital admissions in the U.S. costing approximately $161 billion. Many of these patients require inpatient management by the multidisciplinary internal medicine team that includes general medicine clinical pharmacists. These medication experts provide vital modifications to medication therapy plans such as tailoring antibiotic and pain regimens, pharmacokinetic monitoring, and renally adjusting medications. As rising healthcare costs continue in the ongoing COVID-19 pandemic, limited pharmacy resources warrant evaluation of patient care services provided by general medicine pharmacists. Several studies evaluating clinical pharmacist interventions in various inpatient settings have demonstrated significant cost avoidance yet, few have focused on the impact of general medicine pharmacists. The purpose of this study is to quantify the clinical interventions and associated cost avoidance performed by Loyola University Medical Center (LUMC) general medicine clinical pharmacists and pharmacy residents.Methods: From September 2021 through April 2022, LUMC clinical general medicine pharmacists or pharmacy residents collected clinical interventions based on a list with intervention types with pre-determined costs. Costs for each interventions was extrapolated from primary literature found on cost avoidance data. From this, each intervention was placed into specific categories to aide in organization and ease of use for classifying their interventions. Intervention categories were: adverse drug event prevention, resource utilization, hands-on care, individualization of patient care, and administrative and supportive tasks. Interventions were collected electronically on a secured database. The primary endpoint is the total cost avoidance generated by a clinical general medicine pharmacist. Secondary endpoints include calculated a cost-to-benefit ratio, cost avoided per intervention and all accepted interventions, and a pharmacist salary to benefit ratio. All cost values will be adjusted for cos inflation to the present year.Results: Results and conclusions to be presented at the 2022 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the financial impact of the clinical pharmacist on a general medicine team by being able to extrapolate cost avoidance and cost-to-benefit ratios.

Identify and discuss the various interventions clinical pharmacists can make on an interdisciplinary healthcare team.

Self Assessment Questions:

Which of the following is a potential intervention a pharmacist can provide?

A Medication Reconcilation

B: Pharmacokinetic Monitoring

C: Discontinuation of Clinically Unwarranted Therapy

D: All of the Above

What is a common chronic condition seen in the general medicine unit?

A Diabetic ketoacidosis

B Acute hypoxic respiratory failure

C Heart failure exacerbation

D Rapidly decompensating septic shock requiring pressors

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-697-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

IMPACT OF TRANSITIONS OF CARE PHARMACIST ON HEART FAILURE READMISSION WITHIN 30 DAYS AT A COMMUNITY TEACHING HOSPITAL

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The overall purpose of this study is to evaluate the impact of a transitions of care (TOC) pharmacists on Heart Failure readmission within 30 days at a community teaching hospital. The hypothesis is that direct implementation of a pharmacist in this TOC role will reduce readmissions. In order to evaluate this research question, a prospective-retrospective cohort study will be conducted. The selected patients will those who are admitted to Med Center Health at Bowling Green with their index Heart Failure diagnosis according to ICD-10-CM diagnostic codes retrieved from Meditech. The identified patients will be placed on a unique Meditech Surveillance Dashboard to track their progress in the study throughout their respective study period. Once patients are enrolled, patients will receive multiple pharmacist encounters during thei inpatient stay and following their discharge. These encounters will include; a thorough medication history interview at the time of admissior an admission medications order reconciliation, a discharge medication reconciliation, discharge medication counseling, and post discharge telephone follow-up at 72 hours and day 15. This prospective cohort will be compared to a retrospective control group that will be identified using identical ICD-10-M diagnostic codes in MediTech for patients admitted t Med Center Health at Bowling Green between 2018-2019.Preliminary results demonstrate the pharmacist impact has a positive impact on readmissions of heart failure patients that meet inclusion criteria. The conclusions that have been reached at this point in the research data collections is that patients who receive pharmacist intervention throughout their diagnosis and follow-up care are less likely to be readmitted to the hospital.

Learning Objectives:

Describe the transitions of care pharmacist role on heart failure readmission

Recognize goal directed medication therapy for patients with a heart failure diagnosis

Self Assessment Questions:

Which of the following is the correct timeline in which patients will receive follow-up from a pharmacist?

A 72 hours and 15 days

B: 48 hours and 7 days

C: 72 hours and 21 days

D: 24 hours and 7 days

Which of the following is correct about the design of the study?

A Retrospective cohort

B Prospective cohort

C Prospective-retrospective cohort

D Retrospective only

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-447-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

DEVELOPMENT OF AN INPATIENT PHARMACY TECHNICIAN PRODUCTIVITY MODEL AT A LARGE ACADEMIC MEDICAL CENTEI

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Background: Productivity aims to translate day-to-day tasks into operational metrics to quantify workload. OSUWMC published a productivity model in 2015 for the inpatient setting. In this model, the workload was divided into three roles: clinical specialist pharmacists, generalist pharmacists, and pharmacy technicians. The primary workload driver for both pharmacists and technicians was medication order verification. To effectively reflect the work of inpatient pharmacy technicians, a medication dispense percentage multiplier and other adjustment factors were applied to the order verification driver.Purpose: The primary objective is to build a pharmacy technician productivity model using validated data from operational technology systems, EHR data, and observational data. The secondary objective is to validate this model by comparing it to a historic three-month period. This newly established model will be utilized as a tool to establish appropriate technician staffing needs throughout the various inpatient pharmacies. Methods: Establishing an effective tool to assess productivity in health-system pharmacy is a complex process due to the variable tasks that both pharmacists and technicians undertake daily. A well-established productivity model is a useful tool for health systems to assess pharmacy workload and establish appropriate staffing levels. The projec methods include establishing a productivity model integrating newly available data-driven sources, validating the model using a historic three month period, and comparing the workload assessment to the current existing productivity model. To establish the model, we will create a comprehensive list of tasks, identify available data sources, establish a productivity driver, assign weighted times to establish RVU, and finally apply this data to a historic time period and assess unit of service (UOS) produced.

Learning Objectives:

Identify key steps in building an operational productivity model

Define key sources in establishing a data-driven productivity model

Self Assessment Questions:

Internal benchmarking can best be used by health systems to

A Allow an organization to compare processes and performance ove
B: Compare pharmacist productivity across the inpatient and outpatie
C: Assess staffing models in comparison to competitor health system
D: Evaluate inventory trends over time

A workload driver is utilized to

A assess return on investment on FTE resources
B evaluate the amount of work that needs to be done in a given day
C validate the model against external productivity metrics
D quantify the amount of time it takes to perform common daily tasks

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-698-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

PILOTING A DECENTRALIZED MEDICATION DISTRIBUTION MODEI IN AN ACADEMIC MEDICAL CENTER

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Purpose: UW Health's University Hospital (UH) and American Family Childrens Hospital (AFCH) utilize a hybrid distribution model where 85% of medications are dispensed from a central pharmacy for unit doses and 15% of medications are dispensed from decentral locations for medication orders. Dispense logic is set up such that all unit dose PRN, once orders, and controlled substances will dispense from a decentral location while all scheduled doses dispense from central pharmacy automation. With the increased acuity of patients and reduction in lengtl of stay, increasing inefficiencies of a centralized distribution model, it is appropriate to examine the benefits of transitioning to a decentralized distribution model. Methods: Baseline assessment of workload, automation utilization, medication inventory needs, distribution model efficacy, and staff perception of the dispensing system were evaluated. Analysis of pharmacy and nursing workload was performed through direct and indirect time observations. Automation software was used to measure dispenses in automated dispensing cabinets (ADCs) vs centralized pharmacy automation, and overall ADC capacity utilization. Distribution efficacy was measured by reviewing on-time administrations. Inventory software was utilized to evaluate the carrying cost and medication line items in the ADCs. Surveys were distributed to all patient care staff to assess staff perception of the medication distribution model. Pharmacy and nursing leadership identified pilot units used for decentralized distribution. Dispense logic was adjusted on pilot units such that all scheduled doses dispense from decentral locations if available. Throughout implementation, key stakeholders were engaged using regular pharmacy and nursing huddles. Impact on measures will be assessed and utilized to create a recommendation to pharmacy leadership on the optimal distribution model at UH and AFCH.Outcomes Outcomes will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the strengths and weaknesses of a decentral or central medication distribution model

Describe potential measures for evaluating the efficacy of an inpatient medication distribution model

Self Assessment Questions:

Which of the following should be considered when deciding on a medication distribution model?

A Automation capacity in decentral locations
B: Diversity of medication use within a unit
C: Impact on medication carrying cost
D: All of the above

What stakeholders should be included in assessing a medication distribution model?

A Pharmacists, pharmacy technicians and pharmacy leaders
B Nurses, nurse assistants and nursing leaders
C Informational technology and pharmacy informatics team
D All of the above

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-699-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EVALUATING THE EFFICACY AND TOXICITY OF USING REDUCED DOSE PEGYLATED ASPARAGINASE IN COMBINATION WITH THERAPEUTIC DRUG MONITORING

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Purpose: Half of acute lymphoblastic leukemia (ALL) diagnoses are in pediatric patients but pediatric patients only account for 13% of deaths due to ALL. The Cancer and Leukemia Group B 10403 trial assessed outcomes associated with using a pediatric ALL regimen with an asparaginase backbone for adolescent and young adult (AYA) patients and found a significant increase in survival when compared to historical outcomes with adult regimens. Asparaginase toxicity was higher than that observed in pediatric patients with a dose of 2500 international units/m2. The incorporation of asparaginase-based therapy in the real world is limited by the high incidence of adverse events which increase with age. Monitoring PEG-asparaginase activity levels can be utilized to ensure adequate activity when using lower doses of PEG-asparaginase while potentially reducing drug toxicity in the adult population. At the University of Michigan Health System, AYA and adult patients are initiated on PEG-asparaginase at 500 international units/m2 to 2500 international units/m2 with a dose cap of 3750 international units based on patient-specific factors that may increase the risk of toxicity. Therapeutic drug monitoring (TDM) of asparaginase activity levels is then utilized to inform further dosing. The purpose of this study is to compare the efficacy and toxicity outcomes of 1000 international units/m2 of PEG-asparaginase or less to those who received greater than 1000 international units/m2 during induction using TDM of asparaginase levels. Methods: This is a retrospective cohort study of Philadelphia chromosome-negative ALL adult patients enrolled from January 2015 to June 2021 who received at least 1 dose of PEG asparaginase during induction. The primary outcome is event-free survival at 1 year. Secondary outcomes include complete response, incomplete response, overall survival, and rates of toxicity. Findings of this study will be used to direct PEG-asparaginase dosing using therapeutic drug monitoring. Results: Results are in process.

Learning Objectives:

Describe the use of pegylated (PEG) asparaginase in adult acute lymphoblastic leukemia (ALL)

Define the toxicities of PEG-asparaginase in adults

Self Assessment Questions:

What is the mechanism of action of PEG-asparaginase?

A Inhibits dihydrofolate reductase

B: Tyrosine kinase inhibitor

C: Microtubule inhibitor

D: Deplete asparagine in lymphoblasts

Which of the following toxicities was increased when using PEG-asparaginase in adults?

A Liver toxicity

B Renal toxicity

C hyperammonemia

D hyperglycemia

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-448-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

SIMPLIFYING ANTIRETROVIRAL TREATMENT REGIMENS IN PATIENTS WITH MULTI-DRUG RESISTANT HIV

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Effective, safe, and simplified antiretroviral therapy (ART) is essential to optimal sociologic, epidemiologic, and therapeutic outcomes for all people living with HIV/AIDS, but especially those who have multi-drug resistant HIV. While current standards of care generally recommend patients be initiated on simplified regimens with the fewest drugs possible to maintain or achieve virologic suppression, there is limited data and guidance on modernizing therapy in treatment-experienced patients. Simplification of treatment-experienced patients regimens should be pursued in order to improve adherence, limit adverse effects, decrease likelihood of drug interactions, and decrease pill-burden. The purpose of this research is to evaluate the impact of simplifying ART in a real-world population of treatment-experienced patients with HIV on patient outcomes and identify characteristics of patients who successfully achieved a 50% or greater reduction in ART daily pill burden. This study is a single-center, retrospective, pre- and post-hoc analysis including adult patients (age 18 and older) with multi-drug resistant HIV who had ART regimens simplified by providers at the UC Health Infectious Diseases Clinic between September 2019 and September 2021. The primary outcomes are to analyze the characteristics and demographics of patients achieving a 50% or greate reduction in daily ART pill burden and to evaluate the proportion of study patients with maintained or improved HIV-RNA levels after transitioning to a simplified ART regimen. Additional outcomes include evaluating the tolerability of simplified regimens and the impact of simplification on CD4 count. It is hypothesized that there will be no difference in virologic outcomes in patients with a 50% or greater reduction in daily ART pill burden.Data collection, analysis, and key takeaways are currently in process and will be presented at GLPRC in April of 2022.

Learning Objectives:

Review the benefits of simplifying antiretroviral therapy

Discuss strategies to simplify antiretroviral therapy in patients with multi-drug resistant HIV

Self Assessment Questions:

Which of the following statements is correct?

A Simplifying antiretroviral therapy (ART) in patients with multi-drug r

B: Simplified ART is negatively correlated with medication adherence

C: A benefit of simplifying ART is reduced risk of transmission throug

D: Modernized ART causes increased economic burden on the healtl

Which of the following is correct when modernizing antiretroviral therapy (ART) salvage regimens?

A Review all known genotype and phenotype results as well as histo

B Previous ART regimens are not relevant, only current ART

C Specific mutations are not necessary to consider when determinin

D Modern ART have significantly less drug and disease state interac

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-678-L02-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IMPACT OF LONG-ACTING NALTREXONE INJECTIONS PROVIDED BY A RURAL HEALTHCARE SYSTEM: A RETROSPECTIVE REVIEW

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Purpose: Between 1999 and 2019, nearly 500,000 individuals died from an overdose involving an opioid. The opioid epidemic remains prevalent in the United States, particularly in Appalachian regions. The overdose rate in 2017 for Appalachian counties was 72% higher than non-Appalachian counties of the United States. There is a clear need for appropriate management of opioid use disorder and prevention of opioid overdose. Intramuscular naltrexone injections prevent the binding of exogenous opioids and are a key component in the medical management of opioid use disorder. Primary care provider scarcity in rural areas may lead to increased appointment burden and result in loss to follow up, increasing the risk of opioid relapse and overdose. This study aims to evaluate the current practice of naltrexone injection administration with regards to adherence, rate of opioid overdose, and rate of relapse.Methods: This single center retrospective chart review was conducted at St. Claire HealthCare in Morehead, Kentucky. All patients 18 years of age and older who were prescribed long-acting naltrexone injections for opioid use disorder from January 1, 2019 to December 31, 2021 were included for analysis. Patients who were prescribed long-acting naltrexone injections for any indication except opioid use disorder were excluded from analysis. Data collected from patient charts included patient demographics, urine drug screen results, incidence of opioid overdose, reported adverse drug reactions, adherence, and provider time utilized at each appointment. The primary objective of this study is to evaluate adherence to monthly naltrexone injection schedule. Secondary objectives included the evaluation of rate of opioid relapse, opioid overdose, and adverse drug reaction.Results/Conclusions: This study is still under investigation. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify the patterns of adherence, opioid overdose, and opioid relapse in patients receiving long-acting naltrexone injection therapy

Discuss methods to improve efficacy of long-acting naltrexone injection therapy

Self Assessment Questions:

Which of the following statements is true regarding the incidence of opioid overdose in Appalachian and non-Appalachian counties?

A A.In 2017, Appalachian counties had an opioid overdose rate 72%

B: B.In 2017, non-Appalachian counties had an opioid overdose rate

C: C.In 2017, the opioid overdose rate was similar in Appalachian and

D: D.A direct comparison cannot be made.

Which of the following is a method to increase efficacy of naltrexone therapy?

A Supplementation of injections with tablets

B Discontinue injections and start oral tablets

C Increased patient and provider education

D Decrease appointment times

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-449-L08-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EFFICACY OF CLINICAL DECISION SUPPORT SOFTWARE GUIDED EMPIRIC ANTIBIOTIC SELECTION IN PATIENTS PRESENTING WITH SEVERE SEPSIS OR SEPTIC SHOCK

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Purpose:Over the last two decades, numerous advancements have been made in the care of sepsis and septic shock patients but these diagnoses continue to carry high mortality rates. The Surviving Sepsis Campaign recommends starting appropriate broad-spectrum antibiotics within one hour of diagnosis in order to improve patient outcomes. Data shows that failure to administer appropriate antimicrobials significantly reduces rates of survival in this patient population. Currently, there is little data looking at the use of highly individualized clinical decision support (CDS) software in the care of these patients. The purpose of this study is to assess the impact of Sepsis Advisor, a CDS tool, on the rate of effective empiric antibiotic regimen attainment.Methods:This is a retrospective, single-center, cohort study conducted at a community hospital with 35 ED beds in Lexington, KY. Data will be collected from November 1, 2018 through July 31, 2021 via electronic health record review. Patient demographics, Sequential Organ Failure Assessment, Charlson Comorbidity Index, relevant visit information, and treatment course data will be collected. Patients who present to the ED that are at least 18 years old, diagnosed with severe sepsis or septic shock as defined by CMS, and had positive culture results within 48 hours will be included. Exclusion criteria include vulnerable populations as well as death, transfer to hospice, or withdrawal of care within 24 hours of presentation. Primary outcome is efficacy of empiric antibiotic therapy initiated in the ED for severe sepsis and septic shock. Efficacy will be based on final culture and susceptibility results. Secondary endpoints include mortality, time to empiric antibiotics, appropriate sequence of antibiotics, time to effective antibiotics, ICU & total hospital length of stay, and 30-day readmission. Data will be analyzed with appropriate statistical methods utilizing 95% confidence intervals and a p value of 0.05 for significance.

Learning Objectives:

Review severe sepsis and septic shock criteria per CMS SEP-1 definitions

Discuss the importance of starting appropriate empiric antibiotic regimens in the setting of sepsis

Self Assessment Questions:

Which patient meets severe sepsis criteria?

A HR 115 BPM, SCr 4.2 mg/dL, WBC 14,000/m3, RR 22 BPM

B: RR 24 BPM, SCr 2.2 mg/dL, HR 105, suspected UTI

C: WBC 18,000/mm3, Tmax 101.4â„‰, suspected pneumonia

D: Tmax 100.1â„‰, MAP 55 mmHg, HR 100

Per the 2021 Surviving Sepsis Campaign guidelines, which statement is correct?

A Adults with possible sepsis should receive broad-spectrum antibio

B Antibiotics should not be deferred in patients with a low likelihood

C In adults with possible sepsis without shock, antibiotics should be

D Inappropriate empiric antibiotics do not affect mortality

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-450-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATING EARLY INTERCLASS TRANSITIONS BETWEEN ORAL P2Y12 RECEPTOR INHIBITORS IN A COMMUNITY HEALTH-SYSTEM

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Purpose:Dual antiplatelet therapy (DAPT) with a P2Y12 receptor inhibitc and aspirin is recommended for patients with acute coronary syndromes and for those undergoing percutaneous coronary intervention. After initial DAPT is started, several factors may influence the pursuit of switching to a different P2Y12 inhibitor. Due to drug-drug interactions resulting from pharmacodynamic differences among the P2Y12 inhibitors, there are safety concerns when transitioning between the agents. An International Expert Consensus document offers general guidelines for providers transitioning between P2Y12 inhibitors to mitigate these interactions. Despite these recommendations, variability in transition practices remains. Given the importance of appropriate dosages and transition timing, the projects aim was to evaluate current interclass transition practices in order to characterize the impact on clinical outcomes, and identify opportunities for improvement to ensure future transitions align with evidence-based recommendations.Methods: This process improvement project utilized the Define-Measure-Analyze-Improve-Control design. During the define phase, best practice recommendations for loading doses and timing for oral interclass P2Y12 inhibitor transitions were identified. The measure phase described current practice by collecting data on patients that received 2 or more P2Y12 inhibitor agents during one hospitalization. Patients included for review underwent PCI within 30 days prior to transition, presented with ACS, or had an ACS event within the prior 30 days. Transition practices were analyzed to determine alignment with pre-defined evidence based recommendations. The occurrence of the clinical outcomes of bleeding and thrombotic complications were reviewed. Process mapping and gap analysis were performed to identify barriers to alignment with evidence-based recommendations and opportunities for improvement. During the improve phase, changes were implemented to resolve the identified barriers associated with transitions. Lastly, the success of the improvement strategy was validated by completing a pre- and post-implementation comparison.Results/Conclusions: To be presented at the 2021 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify the clinical implications associated with oral P2Y12 inhibitor transitions

Select an evidence-based transition between interclass oral P2Y12 receptor inhibitor therapies

Self Assessment Questions:

A patient is transitioned from clopidogrel to ticagrelor due to rash on clopidogrel. Patient received 75 mg of clopidogrel at 0900 and received ticagrelor 180 mg at 1330 (4.5 hours later). Which of the following is a possible clinical implication associated with the patients transition from clopidogrel to ticagrelor?

A High platelet reactivity

B: Thrombotic events

C: Decreased dyspnea

D: Bleeding

A patient was initiated on ticagrelor therapy following PCI but the medications copay is unaffordable. The provider is wanting to transition the patient to clopidogrel prior to discharge and calls to ask for your dosing recommendations. The patient received 90 mg of ticagrelor at 0830 this morning. Which of the following dosing regimens would align with existing literature and the International Expert Consensus on Switching Platelet P2Y12 Receptor Inhibiting Therapies?

A Start clopidogrel 75 mg daily maintenance dosing tomorrow

B Give clopidogrel 600 mg load now, then start 75 mg daily maintena

C Time clopidogrel 600 mg load for 2030 tonight, then start 75 mg m

D Start clopidogrel 75 mg daily maintenance dosing at 2030 tonight

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-451-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EVALUATING THE SAFETY AND EFFICACY OF A SIMPLIFIED INSULIN INTRAVENOUS INFUSION PROTOCOL COMPARED TO A TRADITIONAL PROTOCOL IN PATIENTS WITH DIABETIC KETOACIDOSIS: A RETROSPECTIVE ANALYSIS

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Diabetic Ketoacidosis (DKA) is a condition that develops due to insulin insufficiency leading to ketogenesis becoming the principal source of energy for cells and a subsequent acidotic state. Patients who have developed DKA commonly present with complaints of polyphagia, polydipsia, and altered mental status. Ultimately, if left untreated, DKA can lead to coma and/or death.Because of the lack of insulin being the central issue, prompt initiation of insulin is the primary treatment for these patients. In patients diagnosed with DKA, the American Diabetes Association recommends starting with 0.15 unit/kg bolus followed by 0.1 unit/kg/hour IV infusion of insulin regular with hourly blood glucose tests and rate titrations based on these results. However, there is wide variability in protocols that are used by healthcare institutions, with some using slightly different starting rates or bolus doses.Franciscan Health recently revised their insulin infusion protocol for treatment of DKA, opting for a more simplistic algorithm. This algorithm negates an insulin bolus in favor of starting an insulin infusion at 0.1 unit/kg/hour and titrating based on blood glucose results as well as any electrolyte abnormalities This allows for more simplified and easier management fo nurses in the ER or unit that the patient is transferred to. Our goal with this study is to compare safety and efficacy outcomes in patients who were treated with the previous protocol to those who were initiated on the updated one.

Learning Objectives:

Identify a patient with diabetic ketoacidosis

Discuss the role of intravenous insulin in the treatment of diabetic ketoacidosis

Self Assessment Questions:

What criteria does the ADA use to define diabetic ketoacidosis?

A Arterial pH < 7.3, blood glucose >250 mg/dl, and ketonuria

B: Arterial pH <7.4, blood glucose >200 mg/dl, and absence of keton

C: Arterial pH <7.35, blood glucose > 300 mg/dl, and ketonuria

D: Arterial pH >7.45, blood glucose >250 mg/dl, and ketonuria

What starting bolus dose and rate does the ADA recommend for initial treatment of diabetic ketoacidosis with intravenous insulin regular?

A 0.1 unit/kg bolus, followed by 0.05 unit/kg/hour IV infusion

B 0.2 unit/kg bolus, followed by 0.1 unit/kg/hour IV infusion

C 0.15 unit/kg bolus, followed by 0.1 unit/kg/hour IV infusion

D 0.18 unit/kg bolus, followed by 0.12 unit/kg/hour IV infusion

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-452-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

IMPLEMENTATION AND EVALUATION OF A LEARNER-DRIVEN LEADERSHIP INITIATIVE FOR PHARMACY STUDENTS AND PHARMACY RESIDENTS.

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The aim of this study is to enhance pharmacy student and resident leadership skills to prepare future pharmacists to stand out and help progress the future of pharmacy. Students with leadership training are better prepared to optimize patient care, create innovative solutions, and foster the training of future practitioners. This study will compare the impact of a pharmacy leadership initiative at different points of pharmacy education and evaluate self-assessments of the participants self-confidence in leadership skills, perceived benefit of the initiative, and ability to lead. Study participants will include third year doctor of pharmacy students completing a leadership elective course at Manchester University, fourth year Advanced Pharmacy Practice Experience (APPE) students on rotation at Saint Joseph Health System (SJHS), and post-graduate year one (PGY1) pharmacy practice residents at SJHS. As part of the leadership initiative, study participants will be responsible for reading and facilitating a learning session over one of the following books: Crucial Conversations, Who Moved my Cheese or The 5 Dysfunctions of a Team. This series will also include, at a minimum, one professional development session via a residency preparation question and answer session, a curriculum vitae workshop, or a professional organization and advocacy meeting. Students in the leadership elective will have differing leadership activities that ultimately target the same leadership goals through their course work. Students and residents will be given the survey prior to their learning experience, allowing the learner to reflect on their current perceptions of leadership, benefits of leading, and goals of developing into a leader. The learners will conduct a post-survey prior to their graduation or completion of the course. The post-experience survey will evaluate if the learners perspectives changed, and if the lessons learned through this initiative were utilized during the remainder of their year.

Learning Objectives:

Describe different elements of the 2016 ACPE standards that encourage schools to foster leadership development in doctor of pharmacy students

Discuss different benefits students may gain from participating in leadership initiatives

Self Assessment Questions:

Standard 4 describing "Personal and Professional Development" encourage colleges to equip students with which different skills?

A Self-awareness

B: Leadership and professionalism

C: Innovation

D: All of the above

Standard 9 describing "Organization Culture" encourages colleges to promote

A self-directed lifelong learning

B professionalism

C leadership

D All of the above

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-700-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

COMPARISON OF A SUBCUTANEOUS INSULIN ALGORITHM TO AN INTRAVENOUS INSULIN INFUSION FOR GLYCEMIC CONTROL IN THE INTENSIVE CARE UNIT: A RETROSPECTIVE ANALYSIS

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Hyperglycemia is a major concern in critically ill patients and is associated with worse clinical outcomes, including higher rates of nosocomial infections, longer lengths of stay, and increased mortality. The consensus statement from the American Association of Clinical Endocrinologists and American Diabetes Association recommends intravenous insulin therapy over subcutaneous insulin for achieving glycemic control in patients admitted to the intensive care unit (ICU). Studies have shown that the use of subcutaneous insulin in critically ill patients achieves similar clinical outcomes and rates of glycemic control when compared to intravenous insulin. The purpose of this study was to evaluate the impact of a simple subcutaneous insulin algorithm on rates of glycemic control in the ICU compared to intravenous insulin therapy.

Learning Objectives:

Recall the clinical practice guideline recommendations for glycemic control therapy in critically ill patients

Discuss the pharmacokinetic advantages and disadvantages of intravenous insulin and subcutaneous insulin

Self Assessment Questions:

The Society of Critical Care Medicine suggests utilizing subcutaneous insulin in which patient population?

A Select ICU patients who are clinically stable with low insulin requir

B: Select ICU patients who are clinically stable with high insulin requi

C: Select ICU patients who are clinically unstable.

D: Non-ICU patients.

Which of the following is an advantage of IV insulin over SQ insulin?

A More accumulation of insulin over time.

B Better absorption in patients with edema or decreased perfusion.

C Less labor-intensive protocol

D Less expensive.

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-453-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

INSULIN PEN IMPLEMENTATION IN A LARGE ACADEMIC MEDICAL CENTER

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Purpose: To operationalize the transition from shared, multi-dose insulin vials to patient-specific insulin pens in a large academic medical center. Methods: A multidisciplinary workgroup was convened to evaluate best practices and guide implementation efforts to facilitate successful transition from shared multi-dose insulin vials to patient specific insulin pens. Prior to the transition, insulin glargine and insulin lispro were stored on patient units as shared, multi-dose vials. Insulin pen products were selected for transition taking into consideration both adult and pediatric patients would be impacted. Other insulins previously dispensed as patient-specific vials from central pharmacy were excluded from transition to pen devices during this implementation. The decision was made to dispense insulin pens to patients at discharge, with a goal of limiting waste and enhancing the patient experience. To comply with regulatory requirements for dispensing medications at discharge, a new label was designed for insulin pens. UW Health has a heavily centralized distribution model and determining where insulin pens would be stored and dispensed was a crucial decision point during the planning phase. Due to the risk of transmitting blood-borne infections if an insulin pen is reused for multiple patients, thorough education was critical to ensure patient safety. Educational materials were developed for pharmacy and nursing staff to emphasize, one pen, one patient, no sharing. Written and verbal training was tailored to each audience focusing on key areas, including labeling, storage, and administration. Following implementation, audits were conducted to ensure proper labeling, storage, and administration technique. Insulin pen barcode scanning compliance was assessed to ensure barcoded medication administration compliance rates met organizational goals. Lastly, drug spend was compared pre- and post-implementation for all insulin products converted to pens.Results/Conclusions: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recognize the importance of multidisciplinary collaboration when operationalizing insulin pens

Identify barriers and solutions in the transition to patient-specific insulin pens

Self Assessment Questions:

Which of the following fields were modified to create the new insulin pen label?

A Patient Name

B: Frequency

C: Patient Location

D: Medication Name

Which of the following was a primary area of focus identified during the implementation of insulin pens?

A Operational workflows

B Training and education for nursing staff

C Medication record and label build within the EHR

D All of the above

Q1 Answer: B Q2 Answer: D

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MUSIC INTERVENTION AND USUAL CARE COMPARISON OF SEDATION EXPOSURE IN INTENSIVE CARE UNIT PATIENTS RECEIVING MECHANICAL VENTILATION (MUSIC): A PROSPECTIVE RANDOMIZED CONTROLLED TRIAL

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Pain, agitation, and delirium (PAD) are common issues faced by critically ill patients that have important implications. Pharmacologic management of PAD is associated with a myriad of risks including oversedation, drug dependence, and prolonged mechanical ventilation duration. Music may be used as a non-pharmacologic treatment strategy for pain and is suggested by the 2018 Society of Critical Care Medicine PAD guidelines. Current literature describes a wide variety of music intervention strategies including music selection, method of administration, frequency of intervention, and research endpoints.This institutional review board approved, prospective, randomized, single-center study will include adult patients admitted to the medical or surgical ICU at an academic level 1 trauma center. Patients will be included if they are mechanically ventilated for at least 24 hours with anticipated mechanical ventilation duration of at least 72 hours. Eligible patients will be randomized to music intervention or usual care. Patients in the music intervention group will undergo a second randomization to Commercial Music Intervention or Preference Music Intervention administered using an electronic tablet positioned near the patient bedside. The primary endpoint is sedation exposure, an aggregate of sedation frequency and sedation intensity previously used in similar studies. Secondary outcomes include percentage of time within goal Richmond Agitation Sedation Scale, delirium- and mechanical ventilation-free days, and percent of Clinical Pain Observation Tool scores <3. Sedation intensity score, sedation frequency, and other aims will be analyzed with Student's t-test for parametric data or Mann-Whitney U test for non-parametric data as appropriate. As of 1/29/22, 7 of 40 planned patients have been enrolled. This research will add to existing literature and knowledge by evaluating a replicable and protocolized music intervention in a typical ICU patient population on the objective measure of sedation exposure.

Learning Objectives:

Describe the association between PAD with mechanical ventilation duration and clinical outcomes.

Discuss pharmacological and non-pharmacological prevention and management therapies for PAD.

Self Assessment Questions:

Which of the following is a guideline driven and evidence-based recommendation for critically ill adults?

A Recommend against music therapy to reduce pain in critically ill pa

B: Recommend opioids at maximally tolerated dose for pain manage

C: Recommend benzodiazepine continuous infusion for sedation

D: Recommend against atypical antipsychotics to prevent delirium

Which of the following statements is correct?

A Controlling pain, agitation, and delirium in critically ill patients is ur

B Delays in extubation prolong ICU length of stay and increase costs

C Optimizing non-pharmacologic patient factors may facilitate succe

D Successful extubation is entirely dependent on optimal pharmacol

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-843-L08-P

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EVALUATION OF OUTCOMES IN THE MANAGEMENT OF UNFRACTIONATED HEPARIN IN MICROAXIAL PERCUTANEOUS VENTRICULAR ASSIST DEVICES

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Purpose: The Impella is a percutaneous ventricular assist device indicated for the management of cardiogenic shock or hemodynamic support in high-risk percutaneous coronary intervention (PCI). An Impella requires anticoagulation with unfractionated heparin (UFH) and careful monitoring to prevent adverse events. Both bleeding and thrombosis are associated with the Impella and include access site bleeds, pump thrombosis, and limb ischemia, among others. While the Impella manufacturer recommends using the activated clotting time (ACT) to monitor the UFH, there is minimal literature available to suppor the superiority of ACT versus other methods of monitoring. The purpose of this study is to evaluate the combined ACT and activated partial thromboplastin time (aPTT) values in patients on an Impella to determine the impact on bleeding and thrombotic events.Methods: This is a single-center, retrospective study conducted at the University of Cincinnati Medical Center in Cincinnati, Ohio. Adult patients admitted between January 2013 and October 2021 with an Impella heart pump anticoagulated with UFH will be included. Concomitant ACT and aPTT for the first 36 hours after Impella implantation will be collected and patients with at least one concomitant ACT and aPTT drawn will be included in data analysis. Exclusion criteria are pregnancy, extracorporeal membrane oxygenation, and Impella removal immediately after assisted PCI. The primary outcome will evaluate ACT and aPTT values to determine the impact on bleeding and thrombotic events. Linear regression will evaluate correlation between concomitant ACT and aPTT. Receiver operating characteristic curve of ACT and aPTT on rates of bleeding and thrombotic events will be evaluated. Secondary outcomes will describe in-hospital mortality, intensive care unit and hospital length of stay, and need for renal replacement therapy. Results/conclusions: Data collection has been completed and final results will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe strategies for the management and monitoring of unfractionated heparin for patients with a microaxial percutaneous ventricular assist device (pVAD).

Recognize the purpose and function of key components of a microaxial pVAD.

Self Assessment Questions:

Which strategy does the Impella manufacturer recommend using to monitor anticoagulation in patients with an Impella?

A INR (international normalized ratio)

B: ACT (activated clotting time)

C: aPTT (activated partial thromboplastin time)

D: Anti-Xa

What is the purpose of the Impella purge solution?

A To adjust the overall flow rate of the ImpellaÂ®.

B To periodically flush out the ImpellaÂ®.

C To keep the ImpellaÂ® in place across the aortic valve.

D To prevent backflow into the ImpellaÂ® motor.

Q1 Answer: B Q2 Answer: D

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PRIOR TO ADMISSION PHARMACY ALLERGY REVIEW TO IMPROVE PREFERRED GROUP B STREP (GBS) PROPHYLAXIS USE IN LABORING PATIENTS

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Background/Purpose: Group B streptococcus (GBS) is the leading caus of neonatal sepsis. After the implementation of guidelines steering appropriate GBS intrapartum antimicrobial prophylaxis (IAP), the incidence of GBS early onset disease (EOD) was drastically reduced. Current guidelines (American College of Obstetrics and Gynecologists) for GBS prophylaxis recommend penicillin as first line treatment and cefazolin for low-risk beta-lactam allergies. Vancomycin or clindamycin are recommended for severe beta-lactam allergies, and both are associated with increased adverse effects and risk of inadequate prophylaxis coverage. The purpose of this project is to design and implement a process to provide an in-depth prospective pharmacist-performed review of allergy history for pregnant patients with documented beta-lactam allergies with intent to increase the proportion of patients who receive penicillin or cefazolin as GBS IAP. Methodology: All pregnant patients preregistered for a labor and delivery admission with documented beta-lactam allergies were eligible for a prior-to-admission comprehensive allergy review with associated recommendations by a pharmacist. The recommendations included a description and risk evaluation of the allergy, an account of any previously tolerated beta-lactam antibiotics, GBS IAP recommendations and a recommendation regarding penicillin skin testing. All eligible patients received allergy history reviews; however, only patients who delivered vaginally and were GBS positive were included in the final data analysis. The study group was compared to patients prior to process implementation. Primary outcomes are the percentage of the patient population who received penicillin or cefazolin for GBS IAP and neonata length of stay. Secondary outcomes include the percentage of the patient population with adequate GBS IAP, neonates with GBS early onset disease (EOD), the percentage of patients who had a reaction to a recommended antibiotic, the percentage of allergies adjusted, and the percentage of total recommendations accepted. Results & Conclusion: Results and conclusion to be presented at the Wisconsin Pharmacy Residency Conference.

Learning Objectives:

Identify antimicrobial regimens that provide adequate coverage for GBS intrapartum antibiotic prophylaxis (IAP) and consequences of inadequate coverage.

Describe the ramifications of inaccurately documented beta-lactam allergies.

Self Assessment Questions:

Identify an antimicrobial agent with an antepartum duration that provides adequate coverage for GBS IAP:

A Cefazolin administered for 2 hours prior to delivery

B: Clindamycin administered for 6 hours prior to delivery

C: Penicillin administered for 5 hours prior to delivery

D: Vancomycin administered for 8 hours prior to delivery

Select a potential consequence of a documented beta-lactam allergy with a misclassified severity in the context of GBS IAP:

A Reduced resistance rates

B Increased risk of neonatal early onset disease

C Increased maternal mortality

D Longer maternal labor and delivery length of stay

Q1 Answer: C Q2 Answer: B

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IMPLEMENTATION OF RISK MITIGATION STRATEGIES IN A COMMUNITY BASED OUTPATIENT CLINIC (CBOC) PHARMACY FOLLOWING A HEALTHCARE FAILURE MODE AND EFFECTS ANALYSIS (HFMEA) - C.DAMLOS

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Purpose: The purpose of this HFMEA focused on prospectively identifying and improving steps in the outpatient prescription process at the new Veteran Health Indiana (VHI) CBOCs to ensure safe and clinically desirable outcomes for Veterans. Of note, this CBOC opened October 25, 2021 and did not have live pharmacy automation (OptiFill). Methods: Define the Topic: The scope of this HFMEA focused on the outpatient prescription process at the new CBOC outpatient pharmacies. Team Formation: A multidisciplinary team of thirteen members, including patient safety, informatics, medication safety, pharmacy supervisors, outpatient pharmacists, and pharmacy technicians was formed. Defining the Process Flow: Team members defined steps of prescription processing and clinic medication deliveries These process steps were broken down into subprocesses. Conduct the Analysis: Each subprocess step was divided into failure modes and analyzed utilizing the failure mode analysis. For each subprocess, potential causes were identified. The severity and probability of each cause produced a hazard score. Based on the hazard score, the cause of the failure mode was evaluated utilizing a decision tree as a single point weakness or having an existing control. If no existing control measure is in place, the subprocess was evaluated on how detectable a failure would be. Identify Actions and Outcomes Measures: Team members identified risk mitigation actions based on potential causes of failure modes. Outcomes were assessed utilizing measurable metrics when possible to ensure actions were carried out appropriately. The pharmacy residents were responsible for scheduling and leading following up meetings to evaluate the completion status of actions and report on outcome measures. Results and Conclusion: In total,113 possible failure modes were identified for the subprocesses outlined in the outpatient pharmacy workflow. Further analysis and outcomes will be discussed at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recall the purpose of conducting a Healthcare Failure Mode and Effects Analysis (HFMEA).

Identify the appropriate steps needed to to complete a Healthcare Failure Mode and Effects Analysis (HFMEA).

Self Assessment Questions:

Which of the following appropriately defines a Healthcare Failure Mode and Effects Analysis (HFMEA)?

A A prospective risk management tool that focuses on improvement

B: A retrospective risk management tool that focuses on improvemer

C: A retrospective risk management tool used to assess patient spec

D: A prospective risk management tool used to assess patient specifi

Which of the following correctly matches the order and step in the Healthcare Failure Mode and Effects Analysis (HFMEA) process?

A 2. Defining the Process Flow

B 1. Define the Topic

C 4. Team Formation

D 3. Identify Actions and Outcomes Measures

Q1 Answer: A Q2 Answer: B

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IMPACT OF NOREPINEPHRINE WEIGHT-BASED DOSING COMPARED WITH NON-WEIGHT-BASED DOSING ON 24-HOUR VASOPRESSOR REQUIREMENTS IN TRAUMA PATIENTS

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Purpose: Norepinephrine is often used as a first line vasoactive agent fo hemodynamic instability in the intensive care unit (ICU). Dosing must be optimized to restore adequate perfusion while avoiding detrimental adverse events, such as arrhythmias, extravasation, and iatrogenic vasopressor-induced shock. Both weight-based (WB) and non-weight based (NWB) dosing strategies are used in clinical practice. The true impact of WB versus NWB dosing strategies on patient outcomes remains undetermined within the trauma population. This retrospective review aimed to assess the effect of norepinephrine WB dosing compared with NWB dosing on 24-hour vasopressor requirements in trauma patients.Methods: This is a single-center, retrospective, cohort study of adult trauma patients admitted to the ICU at UofL Health " UofL Hospital from August 1, 2019 to August 31, 2021. Patients receiving norepinephrine infusions for greater than 24 hours were evaluated for inclusion in this study. Patients were excluded if they were transferred from an outside hospital on a vasopressor, post-cardiac arrest, spinal cord injury, previous vasopressor requirement during hospitalization, or i norepinephrine was not the initial vasopressor. The primary endpoint was the 24-hour norepinephrine weight-based dosing equivalents (mcg/kg/min). Secondary endpoints included total norepinephrine weight based dosing equivalents (mcg/kg/min), addition of second vasopressor time to second vasopressor (hours), time to goal MAP (hours), total vasopressor duration (hours), total vasopressor cost, incidence of arrythmias and extravasation, ICU length of stay (days), and in-hospital mortality.Results: Data collection is ongoing. Results and conclusions will be presented at the 2022 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recall dosing strategies of norepinephrine in the intensive care unit.

Discuss risks and benefits of each norepinephrine dosing strategy.

Self Assessment Questions:

Weight-based dosing of norepinephrine has been proposed for which of the following reasons?

A Norepinephrine has a high volume of distribution

B: Weight-based dosing leads to decreased total drug exposure

C: Weight-based dosing has been shown to decrease the incidence c

D: Norepinephrine has a linear relationship between the patientâ€™s

For a 140kg patient, which of the following is a potential risk when utilizing a weight-based (WB) (0.01-3 mcg/kg/min) dosing strategy for norepinephrine?

A Lower maximum norepinephrine rates compared to most non-weig

B Higher initial doses of norepinephrine compared to most NWB stra

C Potential delay in therapy escalation based on misinterpreted total

D No concerns exist; dosing appears to be generally the same in a 1

Q1 Answer: D Q2 Answer: C

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EVALUATION OF HIGH DOSE VS. LOW DOSE STEROIDS ON IN-HOSPITAL MORTALITY IN PATIENTS WITH COVID-19

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COVID-19 was declared a pandemic by the World Health Organization in March 2020 and as of December 2021 it has been linked to 831,640 deaths. Steroid therapy has been one of the only treatment modalities to provide a mortality benefit in the setting of COVID-19, as demonstrated in the RECOVERY trial. The RECOVERY trial was followed by the CoDEX trial which used a higher dose of IV dexamethasone resulting in an improvement of ventilator-free days in patients with severe COVID-19. More recent studies demonstrated benefit of high dose compared to low dose steroids in the treatment of COVID-19, however these studies did not evaluate in-hospital mortality. The primary purpose of this project is to evaluate the effect of high dose vs. low dose corticosteroids on in-hospital mortality in patients hospitalized with COVID-19.

Learning Objectives:

Classify a steroid regimen as high dose or low dose according to our study protocol

Discuss the adverse effects of corticosteroids

Self Assessment Questions:

1)According to our study protocol, which of the following regimens is considered a high dose steroid?

A a.A 120 kg female who received dexamethasone 6 mg/day IV for 1

B: b.A 100 kg male who received prednisone 40 mg/day PO for 10 da

C: c.A 85 kg male who received methylprednisolone 120 mg/day IV fo

D: d.A 90 kg female who received methylprednisolone 40 mg/day IV f

2)Which of the following is a side effect of corticosteroids?

A a.Bradycardia

B b.Bacterial infection

C c.Somnolence

D d.Hypoglycemia

Q1 Answer: C Q2 Answer: B

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EVALUATION OF SUB-DISSOCIATIVE DOSE KETAMINE FOR PROCEDURAL SEDATION IN THE EMERGENCY DEPARTMENT

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Ketamine has emerged as an agent of choice for procedural sedation and analgesia (PSA) in addition to a variety of other indications due to its unique pharmacologic profile. While current guidelines recommend a dose of ketamine 1 mg/kg intravenously for PSA in the emergency department (ED), recent literature has shown safety and efficacy of sub-dissociative dose ketamine (<0.5 mg/kg) for acute pain management while also minimizing its adverse event profile. There remains a paucity of literature evaluating the safety and efficacy of sub-dissociative dose ketamine for indications other than analgesia. This study aims to evaluate the safety and efficacy of sub-dissociative dose ketamine (SDK, <0.5 mg/kg) compared to dissociative dose ketamine (DK, 0.5 mg/kg) for PSA in the ED. This two-center, retrospective, case-matched cohort study included adult patients admitted to the ED between 2016-2021 who received intravenous push (IVP) ketamine for PSA. Patients were stratified into two cohorts based on ketamine dose (i.e., SDK versus DK), and case-matched based on age, blood pressure, and procedure type. The primary outcome is the comparative differences in adjunctive analgosedative requirements up to two hours after ketamine administration for PSA. Secondary efficacy outcomes include the change in numeric rating scale pain scores before versus after ketamine time to first administered adjunctive analgosedative, and PSA success rates, defined as completion of procedure as documented in notes and confirmed by imaging. Safety endpoints include the incidence of adverse events, type of adverse event (i.e., psychiatric, respiratory, cardiovascular, gastrointestinal), and medications administered for management of such events. A multivariate logistic regression will be performed to identify predictors of PSA success for those receiving SDK Data analysis is ongoing. Results will be presented at the 2022 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Explain the versatility of ketamine and various dosing strategies based on its indications for use

Discuss current guidelines and literature to date regarding ketamine dosing in procedural sedation

Self Assessment Questions:

Which of the following indications has sub-dissociative dose ketamine been evaluated in recently published literature and shown safety and efficacy?

A Acute pain

B: Rapid sequence intubation

C: Procedural sedation

D: Anesthesia

Which of the following is the current recommended dose of ketamine IVP for adult patients undergoing procedural sedation and analgesia per the ACEP 2011 guidelines?

A 0.5 mg/kg

B 1 mg/kg

C 1.5 mg/kg

D 2 mg/kg

Q1 Answer: A Q2 Answer: B

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ANTIBIOTIC STEWARDSHIP INTERVENTION TO OPTIMIZE ANTIBIOTIC DURATION OF THERAPY FOR COMMUNITY ACQUIRED PNEUMONIA

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Purpose: Community Acquired Pneumonia (CAP) is a common reason for hospitalization among adults in the United States and is a frequent indication for antibiotic therapy. Current clinical practice guidelines recommend five day courses of therapy for stable adult patients with CAP. CAP is frequently treated for durations longer than five days. The duration of therapy at transitions of care from inpatient to outpatient settings have presented challenges to existing antimicrobial stewardship efforts. The purpose of this study is to evaluate total duration of antibiotic therapy for CAP before and after providing targeted provider education and prospective audit and feedback by pharmacy. Methods: The institutional review board approved this Quasi-Experimental study using chart reviews to evaluate antibiotic duration of therapy for adult patients treated for community acquired pneumonia at a single center. This study is exempt from informed consent and HIPPA authorization. The pre-intervention study population was reviewed during the provider-driven antibiotic duration phase. The intervention is a provider report card evaluating prescribing trends and prospective pharmacy driven stop date assistance. The post-intervention study population will be reviewed following implementation of the intervention. The primary objective is an evaluation of antibiotic total duration of therapy for adults with community acquired pneumonia before and after intervention. Secondary objectives include evaluating a change in percentage of patients on guideline recommended antibiotic regimens and evaluating a change in percentage of patients readmitted with pneumonia within 30 days of discharge. Results/Conclusions: This study is ongoing. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recognize the appropriate duration of antibiotic therapy for most adults with community acquired pneumonia

Indicate the importance for antimicrobial stewardship for community acquired pneumonia

Self Assessment Questions:

The most recent treatment guidelines recommend which duration of antibiotic therapy for stable adults with community acquired pneumonia?

A 2 days

B: 5 days

C: 7 days

D: 10 days

Which of the following is a reason why antimicrobial stewardship is important for community acquired pneumonia at transitions of care?

A Inpatient antibiotic use for CAP has decreased since the start of th

B CAP requires at least 14 days of antibiotic therapy and patients ma

C Patients are frequently discharged from the hospital with excessive

D Transitions of care present no challenges to existing antimicrobial

Q1 Answer: B Q2 Answer: C

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CLINICAL PHARMACIST'S IMPACT IN EMERGENCY MEDICINE

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Due to the ongoing pandemic and a rise in emergency room visits, it would be advantageous to integrate a pharmacist within the emergency department. In rural areas many patients use the emergency departmen for their primary care along with more emergent cases, including COVID 19; therefore it is anticipated that implementation of an emergency room pharmacist will be meaningful given the sheer volume currently seen. The purpose of this study is to determine the impact a clinical pharmacist can make within an emergency department by implementing review of cultures from patients that were not admitted to the hospital.

Learning Objectives:

Identify the number of encounters in which mid-level providers changed an antibiotic based on the clinical pharmacist's recommendation

Identify the percentage of patients who were prescribed an antibiotic tha appropriately covered the bacteria found on the culture in those patients that were reviewed by a clinical pharmacist

Self Assessment Questions:

How much has the accredited training positions dedicated to emergency medicine risen by?

A 100%

B: 1000%

C: 2000%

D: 150%

Which organization consider emergency medicine pharmacists essentia healthcare providers?

A American College of Emergency Medicine

B American College of Medical Toxicology

C : American Society of Health System Pharmacists

D All of the above

Q1 Answer: C Q2 Answer: D

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DEVELOPING MEDICATION THERAPY MANAGEMENT PROGRAM VALUE CAPTURE FRAMEWORK WITHIN A MEDICARE HEALTH PLAN

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Purpose: Medication Therapy Management (MTM) services contribute to the safe, appropriate, and effective use of medications. These services offer value by improving the quality of patient care and outcomes, reducing health care expenditures, and medication-related adverse events. Per CMS, all Medicare Part D programs are required to provide MTM services to beneficiaries who meet specific qualification criteria. Despite CMS mandating MTM programs, robust studies are lacking to evaluate the programs potential cost savings or return on investment (ROI). There are limited studies available that tie medication-related interventions to measurable clinical outcomes or cost avoidance. The goal of this research project is to develop a framework to capture the value of an MTM program within a health plan and estimate its potential ROI. Methods:A retrospective analysis was conducted utilizing health plan pharmacy and medical claims data of MAPPO members (n = approximately 12,000) who received MTM services from January through December 2020. Medication-related alerts with sufficient claims 120 days post intervention were considered to be measurable. If the recommended change in therapy was seen in prescription claims, this constituted an accepted recommendation, which served as the baseline population for this framework. The first step to develop the framework was to conduct a detailed literature review for each intervention to determine a relevant, measurable clinical outcome (e.g., decreased length of hospital stay). The next step was to coordinate with the internal actuarial team to certify the methodology and translate the health outcome into cost savings based on membership and network contracting. All adherence-related alerts were excluded to avoid overlap with existing programs specifically targeting medication adherence. Results and Conclusions:Results and conclusions will be shared at the 2022 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Classify prescriber acceptance of medication interventions by category

Outline a general framework for assessing cost savings associated with Medication Therapy Management interventions

Self Assessment Questions:

What intervention category projected the highest cost savings ?

A Therapy duplication

B: Drug-disease interactions

C: High-risk medications

D: Chronic oral corticosteroid

What intervention category had the highest prescriber response?

A Usage of antipsychotics in Alzheimerâ€™s Dementia

B Muscle relaxants in elderly [Beers Criteria/High risk medication]

C Warfarin and CYP2C9 inhibitor drug-drug interaction

D Beta blocker therapy duplication

Q1 Answer: D Q2 Answer: B

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SOCIAL FRAILTY AS A PREDICTOR OF OUTCOMES AFTER AUTOLOGOUS OR ALLOGENEIC STEM CELL TRANSPLANTATION

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Hematopoietic Stem Cell Transplant (HSCT) is a curative treatment for malignant hematological disorders. Both autologous and allogeneic transplants require many considerations including toxicities, disease relapse, infection, and GVHD. Social frailty is a potentially modifiable risk factor for adverse outcomes. Previously, lower socioeconomic status1,2 non-white race3, and community risk scores4,5 have been associated with poor outcomes from and/or reduced access to HSCT. We aim to show that social frailty can be used as part of a multidisciplinary assessment to predict successful treatment outcomes following HSCT.This single-center qualitative retrospective review consists of patients who underwent HSCT between 2014 and 2021 at University of Illinois Health (UIH) and had a pre-HSCT social worker consultation/screening note containing qualitative information assessing the patients suitability for HSCT. Data will be quantified and collected on many social frailty domains including living arrangements, transportation, family structure, level of education, etc. The primary objective is to develop a pre-transplant assessment tool that evaluates social frailty as a risk factor for poor outcomes following HSCT. Secondary objectives include determining the prevalence of social frailty among patients undergoing HSCT and correlating the social frailty score with other established HSCT prescreening tools such as the hematopoietic cell transplant comorbidity index (HCT-CI). Baseline characteristics will be compared between patients with and without social frailty using the Mann-Whitney U-test or Student t tests for continuous variables and the Fisher exact test for categorical variables. The probability of PFS and OS will be estimated using the Kaplan-Meier method and compared using the log rank test. The prognostic impact of social frailty will be evaluated using univariate and multivariate Cox proportional hazards analyses. Variables that are associated with social frailty or have p values <.01 in univariate analysis will be further tested in multivariate analysis. This study is IRB approved and research is in progress.

Learning Objectives:

Define Social Frailty as a predictor of outcomes in stem cell transplant.

Describe the risk factors for poor outcomes following autologous and allogeneic stem cell transplant related to social frailty.

Self Assessment Questions:

What is social frailty?

A An assessment tool of risk factors for poor outcomes following allo

B: A continuum of being at risk of losing, or having lost, resources tha

C: Any condition of the body or mind that makes it more difficult for th

D: A chronic mental health condition in which social interactions caus

Which of the following best represents risk factors studied and hypothesized to correlate with poor outcomes following stem cell transplant?

A Survival outcomes between autologous vs allogeneic stem cell tra

B Conditioning regimen and diagnosis.

C Financial difficulties, lack of insurance, lack of family support, trans

D Age, weight, and BMI at time of transplant.

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-703-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

IMPLEMENTATION OF A PENICILLIN ALLERGY TESTING PILOT IN A HEALTH SYSTEM

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PurposePenicillin allergies are commonly reported by patients, despite up to 90% being tolerant to penicillins. Patients labeled with a penicillin allergy are more likely to experience increased length of stay, increased rates of infection with multidrug resistant organisms, and increased mortality in certain groups. Penicillin skin and oral testing have proven to be a safe and effective means of delabeling false allergies, with studies reporting up to 90% of tested patients are not allergic. The purpose of this quality improvement project was to implement a pilot penicillin allergy delabeling program within our network and evaluate its efficacy in delabeling patients.MethodsA pharmacist-led protocol for identifying, testing, and delabeling patients with penicillin allergies was developed. The pilot was conducted between January and February 2022. Patients aged 18 years or older who had a penicillin allergy labeled in the electronic medical record were included in the project. Patients who were pregnant or nursing, immunocompromised (including those on steroids), taking antihistamines, had a skin condition that would interfere with testing, or had past positive result to a penicillin test were excluded. Patients who met inclusion criteria were interviewed for an allergy history. Interview responses determined the patients risk for a positive allergic response. Patients with a low risk were eligible for a direct oral amoxicillin challenge, while those in higher risk categories were offered a skin test. Patients with a negative allergy test had their allergy label removed from the patient chart. The primary aim was to delabel 75% of patients interviewed in the pilot. Data collected includes the number of positive results, the number of patients interviewed/tested, the time taken per allergy consult, and the number of patients requiring emergency medication after an allergic response.Results and conclusion will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the general process for testing a patient's penicillin allergy

Recognize the barriers to implementation of a penicillin allergy testing program

Self Assessment Questions:

Which of these patients would most likely be eligible for penicillin allergy testing?

A 49 YOM who was told not to take penicillins due to a rash during c

B: 72 YOF with a history of toxic epidermal necrolysis after taking am

C: 32 YOF who experienced hives and facial swelling after taking Aug

D: 55 YOM with chronic urticaria who reports shortness of breath afte

Which is a modifiable barrier to successful implementation of a penicilli allergy testing program?

A Use of antihistamines prior to and during admission

B Inclusion/exclusion criteria for allergy testing

C Limitations in inventory/shortages in testing supplies

D Number of patients admitted who have a penicillin allergy

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-460-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

THE PRICE IS RIGHT! REVAMPING MEDICATION PRICING STRUCTURE FOR AMBULATORY PHARMACIES

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Purpose: UW Health operates an ambulatory enterprise comprised of 11 community pharmacies and a specialty mail order pharmacy. The current charge structure for retail prescriptions is average wholesale price (AWP) minus a percentage of AWP, plus a dispensing fee. This structure is applied to all prescriptions regardless of if they are multi-sourced (generic) or branded. This charge structure has not been evaluated to determine if it is market competitive or if it generates maximum reimbursement. The current charge structure also negatively impacts patients of lower socio-economic status, as they are charged exorbitant prices for multi-sourced products when purchasing without insurance. The purpose of this project is to determine a new charge structure while developing a framework and process to analyze future structures.Methods: The current charge structure will be assessed using internal data provided from the ambulatory retail sites. An initial analysis will be conducted to determine reimbursement with the existing charge structure for multi-sourced and branded products. A simulation of multiple new charge structures will be completed. An analysis of the proposed structures will be completed to evaluate potential new charge and impact on contractual reimbursement. These new charge structures will utilize different equation methods, and dispensing fees. Lastly, the new proposed structure will be presented and agreed upon by the ambulatory leadership team prior to implementation within the UW Health dispensing software system. Results: Will be presented at the Great Lakes Pharmacy Resident Conference.Conclusion: The primary goal is the development of a charge structure that is affordable for patients who do not have prescription drug insurance and avoids exorbitant charges for generic products derived from average whole price (AWP). The secondary outcome of this project is establishing framework for future analyses of UW Health retail pharmacy charge structures.

Learning Objectives:

Explain how third-party payers (Pharmacy Benefit Mangers) reimburse based on retail charges for medications

Identify unique strategies to combat inflated pricing derived from average wholesale price (AWP)

Self Assessment Questions:

A patient comes to your pharmacy and has commercial prescription drug coverage. The patient has a prescription for 30 tablets of furosemide which costs your pharmacy $2 to purchase (Acquisition Cost) and you set your charge as acquisition cost plus $5 (total charge = $7). The insurance company is willing to pay your pharmacy $10 for the prescription dispensed. How much will the insurance company reimburse for this prescription?

A $10

B: Average Wholesale Price ($4.29)

C: $7

D: Wholesale Acquisition Cost ($2.10)

What strategy can health-system pharmacies utilize to combat inflated charges derived from average wholesale price (AWP)?

A Allowing patients to utilize prescription discount cards

B Setting an increased price for a specific group of medications

C Charging patients without insurance a different price than insured

D Increasing the dispensing fee in the charge structure

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-704-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

GENDER BIAS IN PGY1 APPLICANT LETTERS OF RECOMMENDATION

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In the competitive pharmacy residency application process, letters of recommendation are essential to evaluating pharmacy residency candidates since they provide insight and experiences regarding the applicant. Previous literature across medical disciplines have focused or the potential gender bias that may be present in medical fields such as urology, ophthalmology, and oncology. One recent study looked at gender bias in pharmacy residency letters of recommendation, but there is limited data for pharmacy residency programs and no multicentered studies to our knowledge. The purpose of this retrospective, multicentered study is to assess whether there is gender bias in PGY1 Pharmacy Applicant Letters of Recommendation. This was a non-randomized, retrospective study that included applicants to seven participating pharmacy residency programs during the 2019-2021 applicant cycles. Gender was categorized by the pronouns utilized in the letters of recommendation submitted by others on behalf of the applicants. Validated Linguistic Inquiry Word Count software was used t evaluate the language variables present in the letters of recommendation to compare the men and women candidates. Additionally, a subgroup analysis was to compare the language variables present in letters of recommendation between applicants who were offered interviews and those who were not. Other potential identified confounders for interview applications include pharmacy school GPA, pharmacy school attended, number of pharmacy work experiences, presentations, posters, publications, leadership positions, and awards. Data collection is currently in progress, with 7274 letters of recommendation submitted on behalf of 2290 applicants to seven PGY1 programs between 2019 and 2021. Conclusions for this study are pending.

Learning Objectives:

Define gender bias and identify how gender bias may affect PGY1 Applicant Letters of Recommendation

List potential confounders that could influence whether PGY1 Applicants receive interview offers from pharmacy residency programs.

Self Assessment Questions:

Which medical disciplines have data on gender bias in letters of recommendation?

A Oncology

B: Ophthalmology

C: Urology

D: All of the above

Which of the following was collected in this study as a potential confounder that might influence whether a PGY1 Applicant receives interview offers?

A APPE rotation schedule

B Pharmacy school attended

C Undergraduate GPA

D Number of pets the applicant owns

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-705-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

INTRAVENOUS THERAPY VERSUS ORAL STEP-DOWN THERAPY FOR TREATMENT OF UNCOMPLICATED ENTEROCOCCAL BLOOD STREAM INFECTIONS: MISSED OPPORTUNITIES?

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Although enterococcal infections can be acquired in the community setting, they are predominantly of nosocomial source. Data supporting the use of oral agents for the treatment of enterococcal infections is lacking, and there is a tendency to prescribe intravenous antibiotics over oral step-down therapy. Several oral antibiotics would be considered more favorable for the treatment of enterococcal infections as they have good oral bioavailability, provide sufficient activity against enterococcus species, and are not associated with risk for line infections. The objective of the study was to evaluate the safety and efficacy of intravenous versus oral step-down antibiotic therapies in patients with enterococcal blood stream infections (BSI) and to assess for missed opportunities in utilization of PO step down therapy.

Learning Objectives:

Explain the antibiotic prescribing tendency in patients with enterococcal blood stream infections.

Describe the efficacy of oral antibiotics for treatment of enterococcal blood stream infections.

Self Assessment Questions:

What is the antibiotic prescribing tendency in patients with enterococcal blood stream infections?

A A.Oral antibiotic therapies are prescribed more than intravenous ar

B: B.Intravenous antibiotic therapies are prescribed more than oral ar

C: C.Both oral and intravenous antibiotic therapies are prescribed equ

D: D.Oral antibiotic therapies are never prescribed for patient with ent

What are some characteristics of oral antibiotics that make them more favorable than intravenous antibiotics for the treatment of enterococcal bacteremia?

A A.Good oral bioavailability

B B.Sufficient activity against enterococcus species

C C.No risk for line infections

D D.All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-461-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF LONG-TERM OUTCOMES OF A PHARMACIST-LEI HEART FAILURE CLINIC

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Purpose:Heart failure with reduced ejection fraction (HFrEF) causes significant morbidity and mortality, with a one-year mortality rate of approximately 27% after an admission for exacerbation. Approximately 30% of patients discharged are readmitted within one month. It has beer shown that involvement of a pharmacist can increase rates of achievement of guideline directed medical therapy (GDMT) by 25-40%, however, the pharmacists role on the impact of readmissions is not well described. At Henry Ford Hospital, the Cardiovascular Disease (CVD) Ambulatory Care Pharmacy Clinic was established to increase achievement rates of GDMT with the intent of decreasing hospital readmissions for heart failure. Methods:This is an IRB approved retrospective cohort comparing rates of hospitalization at 12 months in HFrEF patients managed by the CVD Ambulatory Care Pharmacy Clinic versus standard of care. Inclusion criteria includes ejection fraction 45%, age of 18 years and 80 years, hospitalization in the previous 12 months, followed by a Henry Ford cardiologist, and not on maximum tolerated doses of GDMT. The primary outcome is the number of hospitalizations at 12 months from the initial visit with either the pharmacist or the cardiologist for their respective group. Secondary outcomes include HFrEF readmissions at 12 months, ED visits at 12 months, cardiovascular readmissions at 12 months, percent of patients achieving GDMT, and time to GDMT. Patients were enrolled from October 1, 2019 through December 31, 2020. Patients were followed for a total of 12 months. Continuous, normally distributed data will be compared with Students t-test and continuous, nonnormally distributed data will be compared using Mann Whitney U test. Categorical variables will be compared via Chi-square or Fishers exact test, as appropriate.Results & Conclusion:Data collection and analysis in process. Results will be presented at the conference.

Learning Objectives:

Discuss the impact pharmacists have on hospital readmissions in patients with heart failure with reduced ejection fraction (HFrEF)

Explain the clinical outcomes between those seen by the CVD Ambulatory Care Pharmacy Clinic and those managed by their cardiologist.

Self Assessment Questions:

What percentage of HFrEF patients are typically readmitted within one month of discharge?

A 10%

B: 15%

C: 30%

D: 50%

The CVD Ambulatory Care Pharmacy Clinic is responsible for all functions EXCEPT:

A Scheduling one-on-one appointments with PharmD

B Prescribing and escalating doses of cardiovascular medications

C Scheduling one-on-one appointments with the cardiologist

D Providing medication and disease state education

Q1 Answer: C Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-462-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

IMPLEMENTATION OF A BEST PRACTICE ALERT ON EXTENDED RELEASE OPIOIDS

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Opioids led to 64,000 deaths in 2016 as well as significant healthcare costs for health systems. The Center for Disease Control (CDC) and the Joint Commission have made efforts to systemically reduce the burdens of opioids. Froedtert Health made a pain stewardship goal of improving to increase compliance with the Institute for Safe Medication Practices (ISMP) best practices for inpatients number 15. This is a multi-center, single system, quasi-experimental post-only study from May 1st, 2021, implementation of intervention, through November 1st, 2021.The intervention is a change to the electronic health record (EHR) order composer for ER opioids which prompts the provider to classify the patients pain as either acute or chronic, and their opioid status as tolerant or not. Should the answers identify an extended release opioid used to treat acute pain and/or a non-opioid tolerant patient, then the best practice alert (BPA) will fire. Inclusion criteria was the ER opioid BPAs that fired on inpatient orders for ER opioids. BPAs were excluded if the override rationale would have excluded the patient from the BPA firing.In total, 204 BPAs were included in the post intervention study. In total, 49 (24%) BPAs were due to fentanyl patches, 43 (21%) were ER morphine tablets, and 112 (55%) were ER oxycodone tablets. Of the 20 orders have triggered the BPA, 42 (20%) were discontinued in response to the BPA. Discontinued orders were composed of 10 (20% of 49) fentanyl patches, 9 (21% of 43) ER morphine tablets, 23 (21% of 112) ER oxycodone tablets. Additionally, 29 (14% of 204) orders were revised after the alert fired and order questions were re-answered. Of the remaining 133 alerts, 32 (24% of 133) were not administered to a patient. Overall, 103 (50%) of the orders which led to BPAs were revised, removed, or never administered.

Learning Objectives:

Recognize which patients are opioid tolerant according to the CDC.

Recall which clinical scenarios, according to the ISMP, are appropriate for extended release opioids.

Self Assessment Questions:

Which patient below is opioid tolerant according to the CDC?

A A patient receiving, for 1 week or longer, at least: 60 mg oral morp

B: A patient receiving, for less than a week, at least: 90 mg oral morp

C: A patient receiving, for 1 week or longer, at least: 20 mg oral oxyC

D: A patient receiving, for 1 week or longer, at least: 50 mg oral HYDI

Which clinical scenarios, according to the ISMP, are appropriate for extended release opioids?

A Extended-release formulations are for the management of pain, re

B Extended-release formulations are for the management of pain se

C Extended-release formulations are for the management of pain se

D Extended-release formulations are interchangeable for all patients

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-844-L08-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EVALUATING THE IMPACT OF THE FLIP THE PHARMACY ADVANCED PHARMACY PRACTICE EXPERIENCE ON STUDENT KNOWLEDGE, SKILLS, ATTITUDES, AND CONFIDENCE TO INITIATE PRACTICE TRANSFORMATION

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Purpose:The Community Pharmacy Enhanced Services Network (CPESN) has created an avenue for more community pharmacies across the United States to offer patient care services beyond that of dispensing. In their efforts, they have created the Flip the Pharmacy (FtP) program. This program allows pharmacies to implement new appointment-based services such as immunizations, blood pressure measurements, medication synchronization programs, and adherence packaging, all of which are tracked by electronic care plans submitted by pharmacists. With the help of resources found in Change Packages and Practice Transformation Coaches (PTCs), pharmacies work to implement these new services. APPE students at Purdue University College of Pharmacy have the unique opportunity to participate in an FtP Advanced Pharmacy Practice Experience (APPE) at twelve of the FtP Team Indiana pharmacies. Students and their preceptors act as co-PTCs to assist pharmacies in their implementation of services. The primary objective of this project was to evaluate the degree to which students acquired the intended knowledge, skills, attitudes, and confidence to initiate practice transformation after completing the FtP APPE.Methods:The study population included APPE students from the Purdue University College of Pharmacy program who completed the FtP APPE during the 2021-2022 academic year. The retrospective pre-post survey study was electronically administered via RedCap and contained survey items rated on a five-point Likert scale (1=strongly disagree to 5=strongly agree). Survey items were developed from the FtP APPE learning objectives and framed using Level 2 of Kirkpatricks Four-Level Training Evaluation Model. This level of the Kirkpatricks Model is focused on measuring the transformation of learners and how an activity has developed their skills, attitudes, knowledge, and confidence of an educational program. Likert-scaled survey items were analyzed using descriptive statistics and Wilcoxon signed-rank tests.Results/Conclusion:Results and conclusion to be presented at Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss the importance of advancing community pharmacy practice.

Recall the measures that students are evaluated on after their APPE experience.

Self Assessment Questions:

What is the goal of CPESN with the FTP program?

A For pharmacists to obtain provider status.

B: To advance community pharmacy beyond that of dispensing.

C: To aid pharmacies in implementing billable, appointment-based se

D: B and C

Which of the following is measured by the APPE students upon completion of the learning experience?

A Confidence gained

B Growth in professionalism

C Leadership abilities

D Problem-solving skills

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-706-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

INCIDENCE OF VIRAL INFECTIONS IN KIDNEY TRANSPLANT RECIPIENTS USING REDUCED INDUCTION AND STEROID FREE MAINTENANCE IMMUNOSUPPRESSION

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Purpose: Viral infections (VI) commonly occur post-transplant, higher cumulative doses of rabbit antithymocyte globulin (rATG) have been correlated with higher rates of infection. However, basiliximab (BAS) has decreased risk of infection but increased risk of rejection due to a lower immunosuppressive profile. This study evaluated incidence of VI in kidney transplant recipients (KTR) receiving BAS, rATG low (< 3mg/kg), or high dose (>3mg/kg) within 180 days post-transplant. Methods: Single center, retrospective study of KTR from July 2020-March 2021. Exclusion criteria included: multi-organ transplant, no induction, or maintenance immunosuppression besides tacrolimus (TAC) and mycophenolate. The primary objective compared incidence of VI with BAS, rATG low and high dose. Secondary outcomes included incidence of cytomegalovirus (CMV), BK virus (BKV), Epstein-Barr virus (EBV), Herpes simplex virus (HSV), COVID-19, delayed graft function (DGF), biopsy-proven acute rejection (BPAR), de novo donor specific antibody (DSA), eGFR, TAC levels, graft loss, and mortality within 180 days post-transplant. Results: 44 KTR received BAS, 43received rATG low dose, and 129 received rATG high dose. Significant differences in baseline demographics included age, race, calculated panel reactive antibody (cPRA), and kidney donor profile index (KDPI) . A larger proportion of high rATG patients experienced VI, followed by low rATG patients, $p<0.01$. Increased incidence of CMV, BKV, and COVID-19 occurred in patients receiving rATG. Infections occurred earlier in the rATG groups. DSA was highest in the high dose rATG (14%) which was attributed to high risk factors for rejection, p=0.0146. No differences in BPAR, DGF, graft failure, or mortality were seen between all groups within 180 days. Conclusion: KTR that received any rATG dose had a higher incidence of VI compared to BAS. Induction with rATG may lead to an earlier onset o VI compared to BAS. Further review at one-year post-transplant is planned to strengthen the results of this study.

Learning Objectives:

Review induction therapy strategies and viral infections in the post-transplant period

Describe the incidence of viral infections between a non-T-lymphocyte depleting induction agent, basiliximab, and T-lymphocyte depleting agent, rabbit antithymocyte globulin, at two different dose schemes

Self Assessment Questions:

Which viral infections are covered by valganciclovir prophylaxis during the post-transplant period?

A BKV and HSV

B: BKV and CMV

C: CMV and HSV

D: EBV only

Based off the results of this study, which induction agent is considered t have the lowest risk of viral infection?

A Basiliximab

B rATG < 3mg/kg

C rATG >/= 3 mg/kg

D rATG </ = 1.5 mg/kg

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-463-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

THE IMPACT OF PHARMACIST INTERVENTION ON WHOLE-PACKAGE CONTROLLED SUBSTANCE WASTE AT AN ACADEMIC MEDICAL CENTER

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Background: Controlled substance (CS) wastage is partially expended o unusable drug after being dispensed for administration. Waste of an entire unit-dose package (e.g. 2 mL of a hydromorphone 2mg/2mL syringe) is considered whole-package CS waste. Whole-package waste is a potentially inefficient practice that can be exploited for drug diversion. The objective of this study is to determine the impact of pharmacist interventions to decrease whole-package CS waste. Statement of Purpose: The objective is to determine pharmacys impact on decreasing whole-package CS waste.Methods: This is a single-cente quality improvement project. Five nursing units with the highest number of whole-package CS waste transactions over three months received tw pharmacist interventions: nursing staff education (in-person and written) and unit report card summarizing the units whole-package CS waste practices. Education included staff and individualized instruction for nurses with high amounts of whole-package CS waste transactions compared to peers. The primary outcome is the rate of whole-package CS waste per nursing unit determined by automated dispensing cabinet reports (Omnicell) compared between observation periods (no intervention), both interventions (education + report cards), and report cards only. Secondary outcomes include a per-unit analysis, the percentage of whole-package waste from total waste, drug-specific whole-package waste amount, and cost savings associated with whole-package waste reduction. We will analyze results using descriptive statistics. Results: Interventions for all units are ongoing. To date, three units have received both interventions, and one nursing unit is now only receiving report card feedback. Among units receiving both interventions, whole-package waste was reduced next month by 21% overall (52 vs. 41 transactions), though per-unit changes varied.

Learning Objectives:

Discuss the importance of reducing whole-package controlled substance waste

Describe the consequences of failing to appropriately monitor controlled substance waste

Self Assessment Questions:

What is a potential risk of whole-package controlled substance waste?

A Drug diversion

B: Lost opportunity to reuse/return medication

C: Decreased drug budget

D: Both A and B

What is an example of a potentially avoidable whole-package waste event?

A Wasting a tablet that a patient spit out

B Wasting an unopened syringe that a patient refused

C Wasting the rest of an IM injection when only partial contents neec

D Wasting the remainder of a partially used IV infusion after the orde

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-707-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF A THERAPEUTIC OUTCOME MONITORING PROGRAM FOR RHEUMATOID ARTHRITIS

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Purpose: UI Health Specialty Pharmacy Services (SPS) offers medication management services to patients with complex disease states. Effective management of complex disease sates, through provision of patient monitoring and clinical support, is required to receive reimbursement from payers, and provide patients with quality care. To comply, UI Health SPS has implemented disease specific therapeutic outcome monitoring programs including a program for patients with rheumatoid arthritis (RA). The Routine Assessment of Patient Index 3 (RAPID-3) survey was chosen as the clinical outcome measure for patients receiving medication from UI Health SPS for management of RA. The RAPID-3 survey is a validated disease activity measure of RA that can be conducted either in person or via telephone by a UI Health SPS staff member. The primary objective of the study is to determine if an association exists between RAPID-3 scores and satisfaction with therapy for patients with RA receiving care from a health-system based specialty pharmacy. Methods: UI Health SPS implemented the therapeutic outcome monitoring program for RA patients on September 1st, 2021. All patients started on a pharmacologic treatment approved for RA will have received a RAPID-3 survey at pre-specified points starting at baseline, then three and six months after initiation. At these designated points, a technician will call the patient to complete the monthly clinical assessment (MCA) survey and evaluate tolerability, missed doses, recent hospital encounters, and satisfaction with therapy. After completion of the MCA, the RAPID-3 survey is completed by UI Health SPS clinical pharmacists and documented in the patients profile.Preliminary Results: Research still in progress. Conclusions: Therapeutic clinical outcome monitoring is a novel form of medication management for patients who receive specialty medications from a health-system based pharmacy. It better identifies the need for treatment escalations and can further improve patient satisfaction with their pharmacologic treatment.

Learning Objectives:

Describe the key characteristics of a Routine Assessment Patient Index Data 3 (RAPID-3) survey.

Recognize the benefits of implementing a therapeutic outcome monitoring program for rheumatoid arthritis patients.

Self Assessment Questions:

Which is false regarding the Routine Assessment Patient Index Data 3 (RAPID-3) survey?

A The RAPID-3 is composed of a series of 3 questions

B: The RAPID-3 evaluates a patientâ€™s pain score due to rheumat

C: The RAPID-3 assessment is completed only in person

D: The RAPID-3 is calculated using a weighted score

Which of the following is not a benefit of a therapeutic outcome monitoring program for specialty pharmacy patients?

A Reduce or delay progression of the disease

B Improved patient outcomes

C Improved relationships with providers

D Payor reimbursement

Q1 Answer: C Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-464-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

USE OF METHICILLIN RESISTANT STAPHYLOCOCCUS AUREUS (MRSA) NASAL POLYMERASE CHAIN REACTION (PCR) SCREENING TO DECREASE DURATION OF VANCOMYCIN FOR THI TREATMENT OF PNEUMONIA

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Purpose: The management of adults with lower respiratory tract infections (LRTIs) commonly involves the initiation of broad-spectrum antibiotics, which may include anti-MRSA coverage with vancomycin. Current literature supports using nasal swab PCR to screen for MRSA and help guide antibiotic de-escalation. A pharmacist-driven MRSA nasal PCR protocol was implemented in February 2021 within the Indiana University (IU) Health West Central Region (WCR), which includes IU Health Arnett, White Memorial, and Frankfort hospitals. The purpose of this study is to determine if a pharmacist-driven MRSA nasal swab PCR protocol decreased duration of vancomycin therapy.Methods This multicenter, retrospective chart review evaluated adult patients who presented to an IU Health WCR hospital and were given at least 1 dose of vancomycin for suspected LRTI and on therapy for at least 2 hours. The pre- and post-implementation periods included patients admitted between February 1st, 2020 to July 31st, 2020 and February 1st, 2021 to July 31st, 2021, respectively. The primary outcome was the difference in duration in hours of vancomycin therapy between pre- and post-implementation of a MRSA nasal swab PCR protocol for suspected LRTI. Secondary outcomes included hospital length of stay in hours, incidence of acute kidney injury (AKI) after initiation of vancomycin, cost difference per patient, and 30-day readmission rate. Results: The final analysis included 121 patients in the pre-implementation group and 76 patients in the post-implementation group. Difference in median hours of vancomycin therapy was significantly shorter in the post-implementation group (31.6 vs. 45.6; p = 0.018). Cost difference was also significantly reduced (p = 0.031). There was no difference between groups in length of stay (p = 0.394), incidence of AKI (p = 0.511), and readmission rate (p = 0.916).Conclusion: A pharmacist-driven MRSA nasal swab PCR protocol reduced duration of vancomycin therapy and cost in patients with LRTIs.

Learning Objectives:

Describe the indication for which MRSA nasal PCR screening can be used to help guide antibiotic de-escalation

Identify the potential benefits of a pharmacist-driven MRSA PCR nasal swab protocol

Self Assessment Questions:

Nasal MRSA PCR screening can be used to help guide de-escalation of MRSA targeted therapy with what diagnosis?

A Sepsis

B: Skin and soft tissue infections

C: Lower respiratory tract infections

D: Meningitis

Studies have determined that a pharmacist-driven nasal MRSA swab protocol can lead to which of the following?

A Increased duration of hospital length of stay

B Decreased duration of MRSA targeted therapy

C Broadening of antibiotic coverage

D Aiding providers in targeting MRSA with vancomycin

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-465-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

3-DAY CEFTRIAXONE VS. LONGER DURATIONS OF THERAPY FOR INPATIENT TREATMENT OF UNCOMPLICATED UTIS

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Purpose: Urinary tract infections (UTIs) are a common cause of hospital admissions and are responsible for almost one million emergency department visits in the United States each year. The most recent IDSA guidelines do not address duration of intravenous (IV) antibiotic therapy for treatment of uncomplicated UTI.Ceftriaxone, a third-generation IV cephalosporin, possesses a favorable tolerability and safety profile, requires only once-daily dosing, and has a suitable spectrum of activity for common causative pathogens of UTI, making it an ideal antibiotic for use in this application. Antibiotics often are prescribed empirically, and patients may receive a 3-day course by the time urine culture and susceptibility results are available. The purpose of this study is to compare three days of ceftriaxone with longer durations of antibiotic therapy to add to the body of knowledge on ideal durations for inpatients with UTI. Methods: This retrospective cohort study includes patients who received an antibiotic for treatment of uncomplicated UTI between July 1, 2015 and June 30, 2021. The primary objective is to compare clinical cure ratein hospitalized patients treated for uncomplicated UTIs with a 3-day course of ceftriaxone versus a longer duration of antibiotic therapy. Secondary outcomes that will be evaluated include hospital length of stay, rate of return visit within 30 days due to recurrent UTI, and the rate of C. difficile within 30 days of antibiotic administration. The study population and data will be collected by utilizing the electronic medical record and appropriate statistical analysis will be used to analyze the outcomes. Data collection is ongoing; results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify common causative pathogens associated with UTI

Explain the benefit of shorter durations of antibiotic therapy for UTIs

Self Assessment Questions:

Which of the following is a common causative pathogen in UTI?

A Neisseria meningitidis

B: Streptococcus agalactiaeâ€¯

C: Eikenella corrodensâ€¯

D: Klebsiella pneumoniaeâ€¯

Which of the following is a patient-centered benefit to shorter durations of antibiotic therapy?

A Increased costâ€¯

B Less convenient

C Fewer treatment-related adverse effects

D Increased global spread of antimicrobial resistanceâ€¯

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-466-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF BILIARY TOXICITY IN PATIENTS WITH HEPATIC ARTERY INFUSION PUMPS

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Purpose: Liver metastases are common among patients with colorectal cancer and often reoccur despite surgical resection and a variety of chemotherapeutic agents. Emergence of hepatic artery infusion pumps (HAIP) over the past few decades offers a targeted approach through the delivery of floxuridine (FUDR), a cytotoxic chemotherapeutic agent, directly to liver metastases. However, biliary toxicity remains as a major consequence of administering FUDR via HAIP, and the incidence reported in studies varies widely. Therefore, the objective of this study is to identify the incidence and risk factors related to biliary toxicity secondary to HAIP therapy with FUDR at Michigan Medicine. Methods: A single center, retrospective, case control, study at Michigan Medicine will be conducted to identify the incidence of and risk factors for the development of biliary toxicity in adult colorectal cancer patients with liver metastases who received at least one cycle of FUDR via HAIP from January 1, 2017, to October 1, 2021 by evaluating patients who developed biliary toxicity and those who did not. Biliary toxicity will be defined as a 3 fold increase in AST or 2 fold increase in alkaline phosphatase from the reference value and a total bilirubin level of 3. Data collection will encompass demographic data, past medical and medication history, malignancy characteristics, laboratory values, and FUDR dosing information. Univariate analysis will be performed to explore the association between individual risk factors and biliary toxicity by using descriptive statistics for demographic data, Fishers exact or Chi Square test for dichotomous variables, and two-tailed students t-test for continuous variables. A logistic regression analysis will then follow to further elucidate the relationship between data points.Preliminary Results/Conclusion: Five out of 39 patients met the biliary toxicity criteria. There were no risk factors identified between the patients who developed and did not develop biliary toxicity.

Learning Objectives:

Identify the major complication of hepatic artery infusion pump therapy.

Explain the purpose of each agent administered via the hepatic artery infusion pump.

Self Assessment Questions:

Which of the following is a major consequence of hepatic artery infusion pump therapy?

A Portal vein thrombosis

B: Hepatic pseudoaneurysm

C: Biliary duct toxicity

D: Hepatic steatosis

Which of the following chemotherapeutic agents is administered via the hepatic artery infusion pump because of its favorable pharmacokinetic profile for targeting liver metastases?

A 5-fluorouracil

B Trifluridine

C Methotrexate

D Floxuridine

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-467-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

IMPACT OF CYP3A5 GENOTYPE ON EXTENDED-RELEASE TACROLIMUS DOSING REQUIREMENTS IN LUNG TRANSPLANT RECIPIENTS

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Purpose: Tacrolimus pharmacokinetic characteristics vary among individuals due in part to genetic variations in CYP3A5. Individuals who carry two CYP3A5 (*3, *6, or *7) variants have no CYP3A5 enzyme activity (CYP3A5 nonexpressers), while those who have at least one CYP3A5*1 allele (CYP3A5 expressers) have an active enzyme. Immediate release tacrolimus (IR-tac) undergoes rapid absorption in the proximal small bowel, resulting in significantly different dose requirements for CYP3A5 expressers and nonexpressers. LCP-tacrolimus (LCPT; Envarsus XR) has delayed tacrolimus absorption and improved bioavailability regardless of CYP3A5 genotype. Currently there are no guidelines on LCPT dosing strategies for CYP3A5 expressers. The objective of this study is to assess the impact of CYP3A5 phenotype on dose-adjusted steady state tacrolimus concentrations (C/D) in lung transplant recipients taking LCPT.Methods: This is a retrospective analysis of adult lung transplant recipients who are enrolled in the Michigan Genomics Initiative (MGI), an internal research biorepository, and who were converted from IR-tac to LCPT post-transplant and had at least one steady-state tacrolimus trough concentration for LCPT. The primary outcome will be the first steady state C/D after conversion to LCPT. The impact of CYP3A5 phenotype on C/D will be assessed with a multivariate linear regression controlling for drug-drug interactions and cystic fibrosis (CF) diagnosis. Secondary outcomes will be time to first therapeutic steady-state tacrolimus concentration after conversion to LCPT and change in eGFR.Preliminary Results: Sixteen patients were included in the study, eight were women, and the majority (15) were Caucasian. Five patients with CF were included. One patient was diagnosed with chronic lung allograft dysfunction and three died within 1 year from switch to LCPT.Conclusion: Final results and conclusions will be presented at the 2022 Great Lakes Pharmacy Residency Conference

Learning Objectives:

Review the relationship of CYP3A5 genotype and tacrolimus pharmacokinetics.

Recall the differences between tacrolimus formulations

Self Assessment Questions:

Which of the follow is true regarding the absorption of tacrolimus?

A There is no difference in absorption between the different formulat

B: IR-tac undergoes rapid absorption in the small bowel and there is

C: LCPT has improved bioavailability regardless of CYP3A5 phenotyp

D: The Clinical Pharmacogenetics Implementation Consortium (CPIC

Which of the following factors influence tacrolimus pharmacokinetics?

A Ethnicity

B Concomitant medications

C Genetic polymorphisms

D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-468-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

INCIDENCE AND IMPLICATIONS OF RELATIVE HYPOGLYCEMIA IN HYPERGLYCEMIC EMERGENCY MANAGEMENT

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Purpose: Glycemic management in the ICU has evolved including exploration into patient specific targets. Hypoglycemia, both relative and absolute, has been shown as a marker of poorer outcomes for patients in the ICU, including mortality. The incidence of relative hypoglycemia in patients being treated for diabetic ketoacidosis (DKA) or hyperosmolar hyperglycemic syndrome (HHS) has not been established to date. The purpose of this study will be to examine the incidence of relative hypoglycemia as well as the impact of this relative hypoglycemia in patients with diabetes admitted to the ICU for management of hyperglycemic emergencies, including DKA and HHS. Methods: This study will examine the hypothesis that patients with DKA or HHS also experience relative hypoglycemia events, which will be a predictor of absolute hypoglycemia and ICU outcomes, such as length of stay. Patients admitted to the adult medical intensive care unit for a hyperglycemic emergency such as DKA or HHS, with a hemoglobin A1c (HbA1c) reading within 3 months of their admission will be identified via retrospective chart review utilizing ICD9 and ICD10 codes. Data will be collected regarding the patients past medical history, baseline glycemic status, and details regarding their care. Baseline glycemic status will be estimated from the patients HbA1c,and relative hypoglycemia will be defined as 30% below that value. The primary outcome examined will be the incidence of relative hypoglycemia during ICU admission. Secondary outcomes will include rate of absolute hypoglycemia, ICU length of stay, glycemic variability, and in-hospital mortality. Data will be analyzed using descriptive statistics. Multivariate logistic regression analyses will also be conducted to determine risk factors for development of relative and absolute hypoglycemic specifically analyzing the interaction between relative and absolute hypoglycemia. Summary of results: Data collection and analysis is currently in progress. Results and conclusions will be presented during the meeting.

Learning Objectives:

Recognize the history of glycemic management for critically ill patients.

Describe the current definitions of relative hyperglycemia.

Self Assessment Questions:

Which of the following regarding hyperglycemia management in critically ill patients is correct?

A Glucose control focuses on fasting blood glucose goals less than 1

B: Current standards of practice in ICU care cites the NICE-SUGAR t

C: Tight glycemic control (<110mg/dL) is the standard of practice for

D: ICU glycemic control has no impact on mortality or patient outcom

Which of the following describes the concept of relative hypoglycemia as it relates to ICU glycemic management?

A Serum blood glucose 30% below a patientâ€™s baseline

B Blood glucose less than 100mg/dL

C Fluctuations in a patientâ€™s glucose throughout the day

D POCT glucoses less than 70mg/dL

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-469-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

RELATIVE EXPOSURE TO PSYCHIATRIC DISEASE STATES AND MEDICATIONS IN PHARMACY EDUCATION

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PurposeThis study aims to evaluate the exposure to psychiatric disease states as comorbidities within the curriculum at a college of pharmacy. Psychiatric medications made up 20% of the top 200 medications in 2021. The prevalence of common psychiatric conditions, such as anxiety and depression, approaches the prevalence for common medical conditions including hypertension, hyperlipidemia, and diabetes. Multiple studies have shown that targeted academic interventions in the form of both required and elective activities decrease student bias and improve student attitude towards patients with psychiatric conditions. Relative exposure to psychiatric and medical disease states in curriculum has not been studied. This study aims to assess case-based learning materials across the first three years of a four-year Doctor of Pharmacy program. MethodsResearchers will review patient cases from didactic course materials for instances of specific conditions as comorbidities and related medications. The comorbidities evaluated fall into two categories psychiatric conditions, including depression, anxiety, bipolar disorder, and schizophrenia and non-psychiatric conditions, including hypertension, diabetes, hyperlipidemia, COPD, and atrial fibrillation. The primary outcome will be the frequency at which each studied comorbidity appears within course case content. Secondary outcomes will include characterization of instances of comorbidities, including the semester, course topic, whether the disease state versus medication versus both were mentioned, and corresponding segment of the Pharmacists' Patient Care Process. Descriptive analysis will be conducted on data collected from the course materials. ResultsThis research is ongoing and results will be presented at the conference. ConclusionsThe goal of this study is to evaluate the exposure of pharmacy students to psychiatric topics within the didactic course sequence. With this knowledge, educators may identify potential opportunities for enhancing the curriculum around psychiatric illnesses.

Learning Objectives:

Review the prevalence and common comorbidities for anxiety, depression, bipolar disorder, and schizophrenia.

Describe the current frequency of psychiatric conditions as comorbidities in patient cases versus non-psychiatric conditions in patient cases across one pharmacy curriculum.

Self Assessment Questions:

Which statement is accurate?

A Anxiety and depression occur at rates similar to some of the most

B: There are few psychiatric medications in the top 50 most-common

C: Psychiatric disease states rarely appear as comorbidities in patien

D: Psychiatric medications do not need to be considered when mana

Which of the following findings is false?

A Psychiatric topics appear throughout the curriculum, from P1-P4 y

B Students must consider patient comorbidities in both therapeutics

C Patient cases do not include diseases as comorbidities until they h

D Most cases provide the diagnosis along with the drug, rather than

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-708-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

PROCESS IMPROVEMENT: CENTRAL PHARMACY PHONE TREE

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The University Hospital central pharmacy of Michigan Medicine Health averages roughly 230 " 300 phone calls every day. A common concern raised by pharmacy technician team members is that much of their time is spent answering phone calls, inhibiting them from completing other duties as outlined by their shift description. Current workflow dictates that the brunt of calls are answered by two pharmacy technicians staffin the central pharmacy. Recent staffing shortages causing increased individual workload have highlighted the need to reduce telephone burden on pharmacy staff to allow completion of other vital tasks. The purpose of this project is to implement a process to streamline calls to the appropriate pharmacy employee and improve communication between pharmacy staff and non-pharmacy colleagues.

Learning Objectives:

Define the need to implement an automated telephone system

Discuss preliminary feedback and changes made to process

Self Assessment Questions:

What issues compounded workload and led to need for decreased telephone burden?

A The hiring of staff members

B: Staff shortages

C: Inexperienced medicine team members

D: Drug shortages

What were some main reasons for contacting the central pharmacy?

A Missing medication

B Drug compatibility questions

C Other pharmacist questions

D All the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-709-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

CLINICAL AND SAFETY OUTCOMES WITH DOSES GREATER THAN 2G DAILY OF CEFTRIAXONE FOR PNEUMONIA

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PurposeCeftriaxones long duration of action and significant protein binding allows for once daily dosing. Its bactericidal effects are linked to free drug concentration-time above the minimum inhibitory concentratior (fT>MIC), which is decreased in critical illness, hypoalbuminemia, and augmented renal clearance (ARC). Monte Carlo simulations have investigated various doses, however there is a paucity of literature evaluating clinical and safety outcomes with >2g daily of ceftriaxone. This study aims to evaluate such outcomes in patients with pneumonia.MethodsA retrospective cohort review of patients from January 1, 2013 to October 31, 2021 included patients 18 years old treated with ceftriaxone for >50% duration of their pneumonia treatment. Patients who were pregnant, incarcerated, treatment course lasted <5 o >14 days, and those who received concurrent antibiotics for >48 hours during definitive therapy were excluded. Patients were enrolled in a 1:1 reverse chronological fashion. The primary outcome included clinical cure between patients receiving 2g and >2g ceftriaxone daily. Clinical cure was defined as the completion of a treatment course without re-initiation of antibiotics within 48 hours. Secondary outcomes included microbiologic cure, multi-drug resistant organism development, hospital length of stay, mortality, and adverse effects. Summary of ResultsDemographic and outcome data has been collected on 150 patients. Statistical analysis is forthcoming. Propensity matching will be performed based on logistic regression including demographic data between treatment groups with a p-value <0.2 and ceftriaxone >2g daily as the independent variable. Primary and secondary outcomes will be analyzed in matched and unmatched patient populations. Preplanned subgroup analyses for all outcomes will further evaluate how hypoalbuminemia, ARC, and critical illness effect clinical outcomes. Conclusions reachedResults of this study are in progress. The authors hope to provide more data about safety and efficacy of doses >2g daily of ceftriaxone in patients diagnosed with pneumonia.

Learning Objectives:

Explain ceftriaxone's pharmacokinetics and pharmacodynamics and the relationship with various dosing strategies

Describe the differences in clinical and safety outcomes associated with a >2g total daily dose of ceftriaxone when compared to 2g daily

Self Assessment Questions:

1.Which of the following is a correct?

A Ceftriaxone is a concentration dependent antibiotic

B: Ceftriaxone has good oral absorption

C: Ceftriaxone is highly protein bound

D: Ceftriaxone has a short duration of action

Which patient may benefit from greater than 2 grams daily of ceftriaxone?

A Patient admitted to the ICU with bacterial pneumonia

B Patient who has a CrCl of 180mL/min

C Patient who is malnourished with an albumin of 2.4g/dL

D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-710-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

COMPARISON OF VANCOMYCIN ORAL CAPSULES VERSUS ORAL SOLUTION FOR TIME TO CLINICAL IMPROVEMENT OF CLOSTRIDIOIDES DIFFICILE INFECTION IN A COMMUNITY HOSPITAL

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Purpose:Clostridioides difficile infection (CDI) is one of the leading causes of antibiotic associated diarrhea. Multiple risk factors have been associated with CDI, including age >65 years, antibiotics, gastrointestinal surgery, stool softener usage, and concomitant administration of proton pump inhibitors. Baptist Health Lexington (BHL) changed the CDI treatment order set in November 2020 to include oral vancomycin capsules as the preferred product over oral vancomycin solution. The purpose of this study is to determine the effectiveness of oral vancomycin capsules versus oral vancomycin solution when treating CDI in a community hospital setting. Methods: This IRB-approved, single center, retrospective chart review was conducted to analyze time to clinical improvement of CDI in patients receiving either vancomycin oral capsules or oral solution. Clinical improvement was defined as fewer than three stools per day, white blood cell count less than 12,000/mm3 and fever < 100.4 for 24 hours. Charts were reviewed and data was collected from patients who received oral vancomycin solution (January 1st, 2019 - July 31st, 2019) and oral vancomycin capsules (January 1st, 2021 - July 31st, 2021). The primary outcome is time to clinical improvement in days. The secondary endpoint will be to assess the blended cost of oral vancomycin capsules in comparison to oral vancomycin suspension. Results (preliminary)Of the 320 patients evaluated thus far, 99 patients were included based on inclusion criteria: 44 patients for oral vancomycin solution and 55 patients for oral vancomycin capsules. Clinical resolution was met in 91% of both the capsule and solution cohorts. The average number of days until clinical resolution was three days in both cohorts. The mean length of hospital stay for the oral solution was nine days compared to eight days with oral capsules. ConclusionData collection is ongoing. Results and conclusions will be finalized after all patient data is analyzed.

Learning Objectives:

Discuss vancomycin formulations, doses, and duration of therapy for treatment of Clostridioides difficile infection.

Identify the duration of time to clinical improvement of a Clostridioides difficile infection.

Self Assessment Questions:

According to the IDSA, which formulation of vancomycin is most appropriate for treatment of Clostridioides difficile infection?

A Intravenous via peripheral line

B: oral

C: rectal

D: Intravenous via central line

What is the dose of vancomycin for an initial episode of Clostridioides difficile infection?

A 500 mg intravenously once daily x7 days

B 100 mg by mouth four times daily x7 days

C 125 mg by mouth four times daily x10 days

D 500 mg by mouth once daily x10 days

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-470-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IMPLEMENTATION OF A PHARMACIST-LED GLUCOSE MANAGEMENT CONSULT SERVICE AT A COMMUNITY HOSPITAL

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Purpose:Among hospitalized patients, poor glucose management is associated with adverse outcomes such as prolonged hospitalization stay, decreased wound healing, increased infection risk, and death. Optimizing blood glucose management of these patients is critical to their care and has shown direct benefits such as shortened hospital stays, reduced readmissions, and overall improved patient outcomes including decreased morbidity and mortality. By implementing a pharmacist-led glucose management consult service, it is expected that patients admitted to the service will have improved blood glucose control and blood glucose readings within defined guideline goals. Methods:Policy development for a pharmacist consult service for glucose management began in Spring of 2021. An original policy was written and approved by the Clinical Practice Committee, but many changes were needed to update the policy with best-practice recommendations. Due to the complexity of glucose management, a weekly meeting amongst a subgroup of pharmacists was created to review and discuss the most recent American Diabetes Association guideline recommendations, review available literature, review the current policy draft, and identify areas for improvement. The primary author served as the primary contact for questions and concerns that arose during these meetings. Once the policy was complete and met established expectations, workflows were developed including the consult initiation process, initiation of therapy depending on pre-determined patient factors, and a daily assessment algorithm. Final drafts of the policy and workflows were approved at the January 2022 Clinical Practice Committee meeting for implementation at the hospital. Creation of education materials began, and education was scheduled in preparation of go-live. The consult service will initially be rolled out on one floor of the hospital to troubleshoot any gaps in the policy and find areas of improvement to address prior to hospital-wide implementation.

Learning Objectives:

Describe the process for developing and implementing a pharmacist-led glucose management consult service.

Identify appropriate guideline and literature-based recommendations for inpatient glucose management.

Self Assessment Questions:

Which of the following statements is correct regarding blood glucose goal ranges for inpatient as compared to outpatient management?

A They are the same.

B: The ranges are more stringent for outpatient management.

C: The ranges are more stringent for inpatient management.

D: The ranges do not matter for inpatient management.

According to the ADA which insulin type is most appropriate to initiate for steroid induced hyperglycemia?

A NPH

B Insulin glargine

C Insulin aspart

D Insulin regular

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-711-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IMPACT OF NEWLY IMPLEMENTED HEPARIN-INDUCED THROMBOCYTOPENIA (HIT) ANTIBODY ASSAY ON UTILIZATION OF DIRECT THROMBIN INHIBITORS

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Purpose: Indiana University Health implemented a new assay to detect heparin-induced thrombocytopenia (HIT) antibodies. The new assay, called the Latex Immunoturbidimetric Assay (LIA), results quicker than the traditional Lifecodes PF4 Enhanced HIT antibody assay. Given the quicker turn around time of LIA, in patients with low suspicion for HIT and absence of acute thrombosis, providers are encouraged to wait for the assay to result prior to switching anticoagulation therapy. The goal o waiting for the antibody result is to reduce challenges associated with switching to an alternative agent. Challenges include delays in achieving therapeutic anticoagulation and increased cost. The purpose of this study is to evaluate the impact of a new HIT antibody assay on the utilization of direct thrombin inhibitors (DTI), including the percentage of patients switched to an intravenous DTI and average duration of DTI therapy.Methods: This retrospective, single-center, cohort study is a comparison of DTI utilization before and after the implementation of the heparin antibody LIA. Adult patients admitted to IU Health Methodist Hospital, for which a HIT antibody assay was ordered after receiving therapeutic or prophylactic dosing of unfractionated or low molecular weight heparin, were included. The primary outcome is the proportion of patients with suspected HIT who were switched to a DTI pre- and post-implementation of the new HIT antibody assay.Results: Results and conclusions will be presented at the 2022 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss clinical recommendations based upon pretest probability of HIT

Recognize potential benefits of waiting for the HIT antibody assay to result prior to switching anticoagulant therapy from heparin-based to direct thrombin inhibitor.

Self Assessment Questions:

A patient presents with a 50% decrease in platelets two days after starting heparin. He is one day post-procedure, and there are no signs o newly developed thrombosis. What is the most appropriate action?

A Discontinue heparin, send heparin antibody.

B: Switch to fondaparinux 2.5 mg daily, send heparin antibody.

C: Switch to argatroban, send heparin antibody.

D: Continue heparin, donâ€™t send a heparin antibody.

What is a potential benefit of waiting for the HIT antibody assay to result prior to switching anticoagulant therapy?

A There is an increase in cost associated with switching patients to a

B Patients are likely to spend more time in therapeutic aPTT range v

C Patients with a true heparin allergy may be at an increased risk of

D Patients may experience a delay in the alternative agent being sta

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-471-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF PROPHYLACTIC ENOXAPARIN DOSING IN UNDERWEIGHT, HEALTHY WEIGHT, OVERWEIGHT, AND OBESE PEDIATRIC PATIENTS

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Purpose: Venous thromboembolism (VTE) is defined as a deep vein thrombosis (DVT) or pulmonary embolism (PE). Between 2001 and 200 there were an estimated 34 to 58 pediatric VTE events per 10,000 admissions. Certain conditions in pediatric patients are associated with an increased incidence of VTE. Pediatric patients at high risk for VTE receive pharmacologic prophylaxis, most commonly with low molecular weight heparin (LMWH). In pediatric patients, the CHEST guidelines recommend using an age-dependent mg/kg dose for prophylactic enoxaparin in which patients >2 months receive 0.5 mg/kg/dose subcutaneous every 12 hours. With increasing rates of pediatric obesity and not well-defined dosing for weight extremes, underweight and overweight/obese patients may receive suboptimal or supratherapeutic dosing. The objective of this study is to evaluate dosing requirements fo prophylactic enoxaparin in underweight and overweight/obese pediatric patients in comparison to healthy weight patients. Methods: This study was approved by the Indiana University Institutional Review Board. The retrospective chart review included pediatric patients, aged 2 to 12 years old, prescribed prophylactic enoxaparin from January 2016 to January 2021. The primary objective of this study was to determine if underweight or overweight/obese patients will have a lower anti-Xa level in comparison to healthy-weight patients. The secondary objectives of this study were whether the anti-Xa level was within goal, the number of levels checked before within goal range, development of VTE during the length of stay, or presence of bleeding during the length of stay for all groups. Appropriate statistical analyses were utilized to analyze the outcomes. Results: Results and conclusions will be presented at the Great Lakes Pharmacy Residents Conference.

Learning Objectives:

Classify a pediatric patient and explain pharmacokinetic differences in underweight, healthy weight, overweight, and obese

Identify risk factors for VTE (venous thromboembolism) development in pediatric patients

Self Assessment Questions:

What percentile range is categorized as healthy weight in a pediatric patient >2 years old?

A Less than the 5th percentile

B: 5th percentile to less than 85th percentile

C: 85th to less than the 95th percentile

D: Equal to or greater than the 95th percentile

Which risk factor is the most common for VTE in pediatrics as identified in primary literature?

A Central Line

B Estrogen Use

C Infection

D Thrombophilia

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-472-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF ANTICOAGULATION PRE AND POST CARDIOVERSION IN PATIENTS WITH ATRIAL FIBRILLATION

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Purpose: Electrical and chemical cardioversion can increase the risk of stroke in patients with atrial fibrillation (AF), particularly within the first week following cardioversion. Current guidelines provide strong recommendations regarding anticoagulation in patients with AF lasting greater than 48 hours; however, data surrounding anticoagulation in hospitalized patients with new onset or unknown duration of AF is less robust, which creates challenges in clinical decision making. The purpose of this study is to evaluate the incidence of ischemic stroke in patients with new onset or unknown duration of AF in the hospital who undergo cardioversion with and without anticoagulation. Methods: This multicenter, retrospective, two-arm study evaluated patients admitted to a large health system between April 1, 2016 and September 1, 2021. Data was collected and analyzed for patients who received either electrical or pharmacologic cardioversion for the treatment of new onset or unknown duration of AF. Patients were identified using International Statistical Classification of Diseases and Related Health Problems 10th edition (ICD-10) codes for cardioversion as well as by screening all AF patients with rapid ventricular response (RVR) who received a pharmacologic cardioverting agent including flecainide, propafenone, dofetilide, ibutilide, or amiodarone. Patients with known or permanent AF, those receiving anticoagulation prior to AF onset, pregnant patients, and incarcerated individuals were excluded from the study. Patient specific data was collected and assessed through the electronic health record (EHR). The primary outcome was the incidence of ischemic stroke. Secondary outcomes included the incidence of systemic emboli, bleeding events, and all-cause mortality. Bleeding events were classifiec using the International Society on Thrombosis and Haemostasis (ISTH) bleeding score. All-cause mortality was further reported as cardiovascular or non-cardiovascular death. Results/Conclusions: Results and conclusions will be presented at Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the current guideline recommendations and literature regarding the use of anticoagulation in patients with new onset or unknown duration of atrial fibrillation.

Discuss the incidence of ischemic stroke and embolic events in patients with new onset or unknown duration of atrial fibrillation.

Self Assessment Questions:

Current literature suggests that the risk of ischemic stroke in those with new-onset atrial fibrillation is higher in patients with which of the following comorbidities?

A Benign prostatic hyperplasia

B: Cancer

C: Gout

D: Heart failure

AHA/ACC/HRS guidelines recommend that anticoagulation after cardioversion is not required in those with an onset of <48 hours and a CHADsVASc score of:

A 0 in men and 1 in women

B 1 in men and 2 in women

C 2 in men and 3 in women

D 3 in men and 4 in women

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-473-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

STANDARD ELECTROLYTE DOSING IN LOW WEIGHT ADULTS IN THE EMERGENCY DEPARTMENT: TOO MUCH OF A GOOD THING?

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Purpose: Electrolyte disturbances are common among critically ill patients. Electrolyte abnormalities present in a variety of clinical manifestations, with more significant deficiencies often resulting in a more severe presentation including risk of acute respiratory failure, arrythmias, seizure or death.No literature exists assessing outcomes associated with electrolyte replacement in underweight patients. Previous literature has demonstrated that body composition and total body water varies based on patient weight. With body composition varying based on weight, it is possible that underweight patients may respond differently to the standard electrolyte replacement often used regardless of patient weight. Underweight patients may be at an increased risk of electrolyte overcorrection when standard electrolyte dosing is utilized.This study aims to assess outcomes associated with electrolyte replacement in underweight patients, defined as 45 kg or less, in the emergency department setting. This study will assess whether underweight patients are at an increased risk of electrolyte overcorrection and thus increased risk of adverse effects related to inappropriate electrolyte replacement. The results of this study will be utilized to assess the need for and aid in the formation of an electrolyte protocol specific to underweight patients requiring electrolyte replenishment in the emergency departmentMethods: This study will be conducted as a retrospective chart review for patients in Michigan Medicines Emergency Department who received at least one dose of calcium, magnesium, phosphorus or potassium for electrolyte replacement while in the emergency department. Data will be collected from a collection period of August 2020"July 2021, with all patients weighing less than 45 kg being included in the active arm. Each patient in the active arm will be randomly paired with 3 patients weighing >45 kg, which will become the control arm. Results/conclusions: Results an conclusions will be presented at the Great Lakes Pharmacy Residency Conference

Learning Objectives:

Review common electrolyte abnormalities requiring supplementation seen in the emergency department and the risks associated with overcorrection of serum electrolyte levels

Describe the risk of electrolyte overcorrection utilizing standard electrolyte dosing in underweight patients

Self Assessment Questions:

Which of the following is a potential clinical manifestation of severe hypokalemia?

A ECG Changes

B: Cardiac arrhythmias

C: Sudden death

D: All of the above

Hypocalcemia is an adverse effect associated with overcorrection of which electrolyte?

A Potassium

B Calcium

C Phosphorus

D Magnesium

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-814-L05-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

DIABETES OUTCOMES IN PATIENTS WITH LIMITED ENGLISH PROFICIENCY

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Purpose: Previous studies have demonstrated that limited English proficiency (LEP) in patients with Type 2 Diabetes Mellitus (T2DM) is associated with poor glycemic control and increased hospitalizations. It is necessary to analyze Community Health Networks (CHNw) performance within this population and to subsequently develop strategies to increase our standard of care. Despite having 24/7 access to interpreters at CHNw, the language barrier continues to be a challenging obstacle for patients to overcome when interacting with providers, potentially leading to worse outcomes. The purpose of this study is to identify differences in diabetes outcomes between patients with T2DM and LEP vs. patients with T2DM who primarily speak English within CHNws ambulatory care setting.Methods: A retrospective cohort study via chart review will be performed to evaluate the clinical outcomes of patients seen by CHNw ambulatory care clinics for management of T2DM. The timeframe for chart review will be July 1st, 2020 to June 30th, 2021. Data will be collected from encounters coded for diabetes management. The data gathered from the initial time frame (July 1st, 2020 - December 31st, 2020) will be compared to the data in the follow up period (January 1st, 2021 to June 30th, 2021) to detect changes in the specified outcomes. The changes will then be compared in the patients with LEP cohort vs the patients who primarily speak English cohort. The primary outcome will be assessing the difference in change of HgbA1c in patients with LEP vs. patients who primarily speak English The secondary outcomes will include assessing the difference in hospitalizations, reduction of LDL, and percentage of patients meeting blood pressure goals between the two cohorts.Results/Conclusion: To be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Review the prevalence of patients whose first language is not English within the United States.

Identify the impact that language disparities have on diabetes outcomes

Self Assessment Questions:

What is the percentage of patients in the United States who do not speak English at home according to the Migration Policy Institute?

A 5%

B: 12%

C: 15%

D: 22%

Which of the following aspects of healthcare have patients with limited English proficiency identified as being areas of difficulty?

A Experience with a medication reaction due to lack of understandin

B Confusion about how to use a medication

C Difficulty understanding a label on medication

D All of the above

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-712-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

COMPARISON OF DOCETAXEL HYPERSENSITIVITY RATES UTILIZING AGGRESSIVE VERSUS CONVENTIONAL PREMEDICATION STRATEGIES

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Hypersensitivity reactions (HSRs) to docetaxel occur in 5-20% of patients and are characterized by urticaria, rash, angioedema, and hypotension. These reactions typically occur during the first or second exposure to the agent and are thought to be due to the solubilizing agen polysorbate 80, rather than the medication itself. The docetaxel packag insert recommends dexamethasone premedication beginning the day prior to prevent both HSRs and fluid retention. There is some concern that premedication with dexamethasone alone is inadequate in preventing HSRs to docetaxel. Therefore, a more aggressive premedication regimen containing a histamine-1 receptor antagonist (H1RA) and histamine-2 receptor antagonist (H2RA) in addition to dexamethasone is sometimes utilized at our institution; however, it is unknown if this strategy provides additional benefit. The purpose of this study is to determine if the use of an aggressive premedication strategy (dexamethasone, H1RA, and H2RA) results in fewer HSRs compared to the conventional strategy (dexamethasone alone).Retrospective chart review was performed on 396 patients (144 conventional and 252 aggressive) who received at least one dose of docetaxel at the James Cancer Hospital between February 2020 and September 2021. Patients with known allergies to taxanes or any class of medication given concomitantly with docetaxel were excluded. Patients who received the aggressive strategy were more likely to be female, have breast cancer, receive other intravenous anti-cancer agents with docetaxel, and be treated at the Comprehensive Breast Center. Significantly more patients who received the aggressive strategy experienced at least one HSR necessitating the use of rescue medication (9.9% vs 3.4%, p=0.008), demonstrating a lack of benefit for the aggressive strategy. The higher incidence of HSRs in these patients who received additional premedications was likely due to factors other than the premedications themselves. Further analyses to identify these factors are ongoing.

Learning Objectives:

Describe the incidence, grading, and treatment of taxane hypersensitivit reactions.

Review recommended premedication strategies used to prevent taxane hypersensivity reactions.

Self Assessment Questions:

What is the reported incidence of hypersensitivity reactions to docetaxel

A 8-45%

B: 5-20%

C: 2-15%

D: 50-75%

Which compound is thought to be responsible for hypersensitivity reactions to docetaxel?

A Cremaphor EL

B Polyethylene glycol

C Polysorbate 80

D Docetaxel

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-474-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IMPACT OF AZITHROMYCIN ON 30-DAY READMISSION RATES AFTER ACUTE MYOCARDIAL INFARCTION: A RETROSPECTIVE ANALYSIS OF A US INSURANCE CLAIMS DATABASE

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Background: Inflammation plays a damaging role in cardiac tissue following acute myocardial infarction (MI), thereby contributing to readmission rates and adverse long-term outcomes. Post-MI, pro-inflammatory macrophages can cause unfavorable left ventricular remodeling and subsequent heart failure. Alternatively, reparative macrophages enhance tissue healing. Azithromycin is a macrolide antibiotic known to polarize macrophages towards the reparative phenotype. Because the drug may reduce cardiac inflammatory damage, we hypothesized that patients who received azithromycin concurrent to their MI would have lower 30-day hospital readmission rates than comparable patients.Methods: This is a retrospective analysis using the MarketScan Commercial and Medicare Supplemental Database. Data were obtained from the University of Kentucky HealthCare Center for Clinical and Translational Science and approved by the Institutional Review Board. This study included adult patients with a MI from 01/01/2016 " 12/31/2016. Patients who filled an outpatient azithromycin prescription within 7 days before to 3 days after their MI formed the azithromycin cohort, while those who did not were deemed controls (no azithromycin). Differences across the 2 cohorts were examined using chi-squared and t-tests for categorical and continuous variables, respectively. Outcomes of interest were 30-day all cause and 30-day MI-related hospital readmission.Preliminary Results: There were 544 patients with exposure to azithromycin within 7 days before to 3 days after their MI event and 61,899 without azithromycin exposure in the allotted time frame. Thirty-day MI-related readmission was slightly lower in the azithromycin cohort (6.4% vs 7.7%, p = 0.28) with no statistical significance before adjusting for relevant baseline and clinical characteristics. Thirty-day all-cause hospital readmission was approximately equal across both cohorts (12.0% vs 11.7%, p = 0.83).Conclusion: Unadjusted analyses show no significant reductions in 30-day all cause readmission or 30-day MI-related readmission rates across the 2 cohorts. Regression modelling to account for differences in the cohorts is planned.

Learning Objectives:

Review the post-myocardial infarction inflammation pathway

Describe the proposed mechanism of action behind azithromycin utility in myocardial infarction

Self Assessment Questions:

Select the proposed role of azithromycin in the treatment of myocardial infarction:

A Antiplatelet
B: Antiarrhythmic
C: Analgesic
D: Anti-inflammatory

Heart failure is a common complication of MI, with the estimated incidence varying from:

A 5 - 10%
B 10 - 40%
C 50 - 60%
D Heart failure is not a common complication after MI

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-475-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IMPLEMENTATION OF A PHARMACIST-LED HYPOGLYCEMIC EVENT INTERVENTION POLICY IN A HOSPITAL SETTING

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Purpose: Hypoglycemia is associated with increased morbidity and mortality in the inpatient setting. To prevent recurrent hypoglycemic events in hospitalized patients, the American Diabetes Association recommends a review of a patients diabetes treatment regimen whenever the patient has a blood glucose reading of < 70 mg/dL. Columbus Regional Hospital currently has a nurse-driven hypoglycemia treatment protocol; however, hypoglycemic events are often under-reported and under-documented, leading to preventable recurrent episodes of hypoglycemia. The purpose of this study is to implement a pharmacist-led intervention policy to reduce the rate of hypoglycemia among patients receiving insulin while admitted to Columbus Regional Hospitals second floor cardiac stepdown unit and third floor medical surgical unit. Methods: This single-center, prospective, quasi-experimental study conducted at Columbus Regional Hospital includes all patients aged 18 years or older located on Columbus Regional Hospitals second floor cardiac stepdown unit and third floor medical surgical unit who had a blood glucose reading of < 70 mg/dL and who had received insulin within the 24 hours prior to the reading. Data will be collected from May 11, 2021 to November 10, 2021 and March 1, 2022 to March 31, 2022. Patients were excluded if they received a dose of insulin for the treatment of any condition that is not hyperglycemia. Pharmacists will be alerted to all hypoglycemic glucose levels through the electronic health record alert system for all patients who meet the inclusion criteria. Pharmacists will then evaluate each alert by reviewing the patients chart and report the event to the patients attending provider with an appropriate recommendation for insulin dose adjustment. Results/Conclusion: Results and conclusion will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify the morbidity and mortality risks associated with hypoglycemia in the inpatient setting.

Explain common preventable causes of hypoglycemia in the inpatient setting.

Self Assessment Questions:

According to the American Diabetes Association, which of the following is the recommended blood glucose target range for the majority of critically ill and non-critically ill diabetic patients in the inpatient setting?

A 100-120 mg/dL
B: 120-160 mg/dL
C: 140-180 mg/dL
D: 100-140 mg/dL

Which of the following blood glucose readings is associated with level 1 hypoglycemia?

A 70-90 mg/dL
B 54-70 mg/dL
C < 54 mg/dL
D < 30 mg/dL

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-815-L05-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF PROPHYLACTIC VALGANCICLOVIR DOSING IN KIDNEY TRANSPLANT RECIPIENTS AT AN URBAN TRANSPLANT INSTITUTION

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Purpose: Dosing and duration of cytomegalovirus (CMV) prophylaxis with valganciclovir (VGC) in kidney transplant (KT) recipients is variable by transplant center. Prior studies have shown VGC 450 mg daily is non inferior to 900 mg daily for CMV prophylaxis in KT recipients. There are limited outcomes reported about efficacy of VGC 450 mg daily in high immunologic risk and obese KT recipients.Methods: This was a single-center retrospective chart review of adult patients who underwent an isolated KT and received VGC 450 mg for CMV prophylaxis. The primary outcome was CMV viremia. Baseline characteristics and secondary outcomes were assessed, comparing patients who met the primary outcome of CMV viremia to those who did not. Results: A total of 74 patients met inclusion criteria. Patients were predominantly black (50.0%) males (54.1%) with an average age of 51.5 years and a mean body mass index of 34.2. Seventeen patients (23.0%) developed CMV viremia and 2 patients (2.7%) developed CMV disease. Baseline characteristics were similar between patients with CMV viremia and those without. The rate of thymoglobulin induction was not statistically different between groups (80.7% vs 94.1%; P= 0.188). No patients who received basiliximab induction developed CMV viremia. Most patients (76.5%) with CMV viremia were no longer on VGC prophylaxis at the time of CMV viremia. All patients that developed breakthrough CMV viremia (4/17) were on an appropriate VGC dose at the time of CMV viremia, of which 50% developed UL97 resistance. There was no statistically significant difference in rate of belatacept maintenance therapy between groups (21.1% vs 5.9%; P =0.149). Conclusions: Although data collection is ongoing, these results suggest that the efficacy of VGC 450 mg daily in preventing CMV disease and viremia extends to high-immunologic risk and obese populations, as well as patients on novel immunosuppression agents, such as belatacept.

Learning Objectives:

Identify two common valganciclovir dosing strategies for the prevention of CMV in kidney transplant recipients

Explain the potential risks and benefits associated with dosing valganciclovir 450 mg daily for CMV prophylaxis in kidney transplant recipients.

Self Assessment Questions:

Which of the following is true regarding dosing strategies for valganciclovir in CMV prophylaxis in kidney transplant recipients?

A No studies have compared valganciclovir 900 mg daily vs. valganc
B: It has been well-documented that valganciclovir 900 mg daily is su
C: Studies have found that valganciclovir 450 mg daily is non-inferior
D: Neither dosing strategy is effective in preventing CMV in this popu

What is one potential risk of dosing valganciclovir 450 mg daily for CMV prophylaxis in kidney transplant recipients?

A Reduced incidence of neutropenia
B Increased risk of CMV resistance
C Reduced cost
D Increased risk of CMV seroconversion

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-476-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF OUTCOMES IN PATIENTS DIAGNOSED WITH PLASMABLASTIC DISEASE RECEIVING EPOCH VS V-EPOCH VS VD-PACE

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Plasmablastic diseases are rare and aggressive neoplasms presenting with overlapping features of multiple myeloma and non-Hodgkin's lymphoma (PBL). Prognosis remains poor, for patients who receive treatment, overall survival (OS) ranges from 14-62 months. The preferred recommendation from the National Comprehensive Cancer Network (NCCN) includes dose-adjusted EPOCH. Depending on the physician background, presence of adenopathy at diagnosis, and presenting cytogenetic profile of the patient, patients may also be candidates for VD-PACE. Although not stated in the NCCN guidelines, multiple retrospective analysis and case reports have demonstrated that the addition of bortezomib (V) has improved length of OS. Currently, there are no prospective trials evaluating the use of bortezomib in the front line or relapsed/refractory setting. This is a single center, retrospective chart review study with the purpose of evaluating and describing the progression free survival (PFS) and OS of EPOCH vs V-EPOCH vs VD-PACE in patients with plasmablastic disease. Secondary outcomes include objective response, time to progression, safety, and next line of therapy including autologous stem cell transplant. Twenty-six adult patients diagnosed with plasmablastic disease, received at least one cycle of EPOCH (30.8%), V-EPOCH (69.2%), or VD-PACE (4.2%) between January 2010 and September 2021. One patient received VD-PACE after failing V-EPOCH. Approximately 77% of the observed population was male and the median age of 54 years old. Twenty-two (84.6%) patients presented with PBL, three (11.5%) with plasmablastic myeloma, and one (3.8%) with plasmablastic PTLD. With current preliminary data, a compete response was obtained in nine (37.5%) patients and a partial response in 4 (16.7%) patients. Disease progression was observed in twelve (46.2%) patients (median 5.8 months), and eight (38.1%) patients died from their disease. With further data analysis, we hope to further describe the differences between these groups and conclude if the bortezomib provides survival benefit to patients without considerable toxicity.

Learning Objectives:

Describe the progression-free survival and overall survival of EPOCH vs V-EPOCH vs VD-PACE regimens in patients with plasmablastic disease

Describe the safety of EPOCH vs V-EPOCH vs VD-PACE and the treatment options available for patients after progression

Self Assessment Questions:

The current NCCN guideline names which regimen as the preferred treatment for plasmablastic lymphoma?

A Dose-adjusted EPOCH
B: V- EPOCH
C: VD-PACE
D: R-IVAC/M-CODOX

What is the mechanism of action of bortezomib?

A Topoisomerase II inhibitor and appears to cause DNA strand brea
B Inhibits chymotrypsin-like activity at the 26S proteasome, leading t
C Binds to tubulin and inhibits microtubule formation, therefore, arres
D Inhibits DNA and RNA synthesis by intercalation between DNA ba

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-477-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

WEIGHT LOSS IN PATIENTS WITH TYPE 2 DIABETES MELLITUS TREATED WITH GLUCAGON-LIKE PEPTIDE-1 RECEPTOR AGONISTS VS. SODIUM-GLUCOSE COTRANSPORTER-2 INHIBITORS

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Purpose: Among adults diagnosed with diabetes in the United States, 89% are overweight or obese. Even modest weight loss (3-5%) in these patients can help improve glucose tolerance, lower glycated hemoglobin (A1c), and decrease complications of diabetes. Glucagon-like peptide-1 receptor agonists (GLP-1 RAs) and sodium-glucose cotransporter-2 (SGLT-2) inhibitors are both drug classes indicated to treat patients with type 2 diabetes. Beyond their blood glucose lowering effect, GLP-1 RAs and SGLT-2 inhibitors have both demonstrated significant weight loss in patients. Although the weight loss effects have been well established, there are few studies directly comparing the weight loss between these two classes of drugs. The purpose of this study is to determine the effec on body weight in patients with type 2 diabetes when treated GLP-1 RAs or SGLT-2 inhibitors.Methods: This is a single-center retrospective chart review of patients with an ICD-10 diagnosis code of type 2 diabetes initiated on either a GLP-1 RA or SGLT-2 inhibitor from January 1, 2015 to May 31, 2021. This study includes patients seen at 31 different Bronson ambulatory practice sites in southwest Michigan. The primary outcome of this study is the percent weight change at 6 months in patients initiated on a GLP-1 RA compared to patients initiated on an SGLT-2 inhibitor. Secondary outcomes include a comparison of the following: percent weight change at 3, 9, 12, and 18 months, proportion of patients with 5% weight loss, and A1c change from baseline at 3, 6, 9 12, and 18 months. Results/Conclusions: Data collection and analysis are ongoing. Results and conclusions will be presented at the 2022 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify medications used to treat type 2 diabetes that have established weight loss benefit

Discuss approaches pharmacists can implement to help patients with type 2 diabetes decrease their body weight

Self Assessment Questions:

Which of the following medications have been shown to promote weight loss?

A Glipizide
B: Dulaglutide
C: Insulin glargine
D: Pioglitazone

Which of the following are ways that pharmacists can help their patients with type 2 diabetes lose weight?

A Initiate dapagliflozin
B Provide education on following a healthy diet
C Encourage exercise
D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-478-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

COMPARISON OF SAFETY AND EFFICACY OF CEFEPIME ADMINISTERED VIA INTRAVENOUS PUSH VERSUS INTRAVENOUS PIGGYBACK INFUSION IN PATIENTS WITH GRAM-NEGATIVE BACTEREMIA

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Purpose: In hospitalized patients, gram-negative infections including bacteremia are a major cause of mortality. Optimizing management is key in improving patient outcomes. Beta-lactam antibiotics such as cefepime exhibit the best antibacterial effect based on the time free concentrations exceed the minimum inhibitory concentration. There is limited data assessing clinical outcomes using beta-lactams as intravenous push (IVP) compared to intravenous piggyback (IVPB) in serious infections. The purpose of this study is to compare safety and efficacy of cefepime administered via IVP versus IVPB in patients with gram-negative bacteremia.Methods: This is an IRB-approved, retrospective cohort study of patients hospitalized from January 1, 2014 to December 31, 2021 who were administered cefepime IVP or IVPB for at least 48 hours. Patients included had gram-negative bacteremia of pathogens where cefepime was indicated including Pseudomonas aeruginosa and AmpC beta-lactamase producers. Two cohorts were included; one group included patients who received cefepime IVPB and the second group included patients who received cefepime IVP. The primary outcome was a tailored desirability of outcome ranking on a five point ordinal scale that included clinical cure and neurologic adverse effects during cefepime treatment up to 30 days or at hospital discharge whichever occurred first. Secondary outcomes included frequency of antibiotic escalation from cefepime to a broader spectrum agent, development of cefepime resistance, time to administration of first cefepime dose, time to defervescence, vasopressor use, neurologic adverse effects, hospital length of stay, and in-hospital mortality. A sample size of 127 patients per group will provide 80% power. Data is collected from electronic medical records through chart review. Data will be analyzed using measures of central tendency and variability for descriptive data, chi-square testing for categorical data, and students T test or Mann-Whitney U for continuous data.Results & Conclusion:Data is being collected. Results will be presented at the conference.

Learning Objectives:

Discuss pharmacodynamic considerations for dosing in beta-lactam antibiotics used in gram-negative bacteremia.

Discuss desirability of outcome ranking (DOOR) as a strategy to assess optimal antibiotic use.

Self Assessment Questions:

Which of the following best predicts the antibacterial pharmacodynamic properties of beta-lactam antibiotics?

A Time > MIC
B: AUC / MIC
C: Cmax / MIC
D: None of the above

Which of the following is true regarding desirability of outcome ranking (DOOR) analyses?

A The DOOR endpoint gives each patient a ranking on an ordinal sc
B DOOR ranking includes efficacy outcomes
C DOOR ranking includes safety outcomes
D All of the above

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-479-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

HYDROCORTISONE AND FLUDROCORTISONE VERSUS HYDROCORTISONE ALONE IN PATIENTS WITH SEPTIC SHOCK RECEIVING CORTICOSTEROIDS

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Purpose: Septic shock is a subset of sepsis with circulatory and cellular/metabolic dysfunction with reported mortality rates as high as 50%. The Surviving Sepsis Campaign guidelines weakly recommend intravenous hydrocortisone to treat septic shock patients if adequate fluid resuscitation and vasopressor therapy are not able to restore hemodynamic stability. While hydrocortisone is the guideline recommended treatment for septic shock, a study published in 2018 showed fludrocortisone in addition to hydrocortisone may reduce 90-day mortality. The purpose of this study is to evaluate if the addition of fludrocortisone to hydrocortisone improves time to shock reversal compared to hydrocortisone alone.Methods: The institutional review board approved this single-center, retrospective study of adult patients admitted to John H. Stroger Jr., Hospital of Cook County from March 1, 2018, to August 31, 2021. Patients will be included if they have a diagnosis of septic shock, had a serum lactate of 2 mmol/L, required vasopressor support, and received 200 mg of hydrocortisone per day for at least 48 hours. Pregnancy, hypersensitivity to either hydrocortisone or fludrocortisone, and positive test for SARS-CoV-2 are criteria for exclusion. The primary outcome of interest is the time to shock reversal, defined as the time taken to reach the mean arterial pressure goal of 65 mmHg for greater than 24 hours without the use of vasopressors or inotropes. Secondary outcomes include in-hospital death from any cause and intensive care unit and hospital length of stay. Safety outcomes include hyperglycemia (glucose 180 mg/dl), hypernatremia (sodium 150 mmol/L), and hypokalemia (potassium 3mEq/L). Other data collected includes cortisol level, mechanical ventilation needs, and renal replacement therapy. Data is currently being collected, and results will be presented at the conference.

Learning Objectives:

Identify the potential roles of corticosteroids in septic shock patients.

Review the major findings in patients receiving hydrocortisone compared to placebo in the ADRENAL trial.

Self Assessment Questions:

Which of the following is not considered a potential benefit of corticosteroids in septic shock patients?

A Increase blood pressure

B: Decrease inflammation

C: Improve renal function

D: Improve endothelial dysfunction

Which of the following is a major clinical finding of the ADRENAL trial in patients receiving hydrocortisone compared to placebo?

A Shorter median time to resolution of shock

B New onset bacteremia or fungemia

C Increased temperature

D Improved renal function

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-480-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

CLINICAL IMPACT OF AUTOMATED DOSE-ROUNDING OF CHEMOTHERAPY IN PATIENTS WITH METASTATIC PANCREATIC CANCER AT A TERTIARY ACADEMIC MEDICAL CENTER

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Background:Dose rounding to the nearest vial size, within an established percentage of difference, has become an acceptable practice within the oncology community and is supported by single institution cost-analyses estimating savings ranging from tens of thousands to millions of dollars. Recommendations exist from the Hematology Oncology Pharmacy Association regarding how to best navigate dose rounding, with statements supporting rounding to the nearest vial size, within 10% of the prescribed dose. The rationale for this recommendation is that a difference of 10% from the prescribed dose will not compromise the safety or efficacy of therapy, but literature evaluating this is limited. In 2018, Henry Ford Health System (HFHS) began an electronic healthcare software-initiated dose rounding of chemotherapy and monoclonal antibodies to the nearest vial size and/or within 10% of the prescribed dose. The purpose of this project is to evaluate the clinical impact of dose rounding chemotherapy in the metastatic pancreatic disease patient population. Methods:This retrospective non-inferiority study includes adult patients with stage IVadvance stage pancreatic cancer, who received treatment with gemcitabine and protein-bound paclitaxel. Patients will be reviewed retrospectively with data collected from the electronic medical record. Patients will be categorized into one of two groups, depending on whether they were treated prior to the dose rounding initiative or with dose-rounded chemotherapy. The primary composite endpoint is the percentage of patients free from progression or death (PFS) at 12 months. Secondary endpoints include 3 month PFS, 6 month PFS, overall survival, estimated financial savings from dose rounding, and reasons for treatment discontinuation. Financial savings from dose rounding will be calculated based on prior ongoing data collected on a monthly basis since the start of the dose rounding initiative at HFHS.Results: Data collection is ongoing; results and conclusions will be presented at the conference.

Learning Objectives:

Describe the rationale behind the recommendation for dose rounding of chemotherapy

Report the clinical impact of dose rounding chemotherapy in advanced pancreatic cancer treatment

Self Assessment Questions:

What percentage of dose rounding is considered acceptable for biologic and cytotoxic anticancer treatments based on recommendations by organizations including the Hematology Oncology Pharmacy Association?

A 10% or less of a prescribed dose

B: 5% or less of a prescribed dose

C: 10-20% of a prescribed dose

D: Within 1% of a prescribed dose

Which of the following is not one of the possible advantages of dose rounding chemotherapy?

A Dose rounding can save money

B A difference of 10% or less from the prescribed dose is unlikely to

C Dose rounding reduces medication waste

D Dose rounding is more clinically effective

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-481-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IMPLEMENTATION OF A CONTROLLED SUBSTANCE DIVERSION DETECTION SOFTWARE AT UNIVERSITY OF WISCONSIN (UW) HEALTH

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The purpose of this project is to enhance UW Healths controlled substance diversion prevention and detection program through the implementation of a new controlled substance diversion detection software and assess the impact of this implementation. This diversion detection software integrates reports for controlled substance dispensing and waste documentation from pharmacy automation, medication administration information from the electronic health record and employee information from human resources and time and attendance information systems. Prior to implementation, the current processes and workflows of diversion detection were reviewed and evaluated to determine and assess gaps and future directions. Technology stakeholders from each data source were consulted to facilitate data transfers to the software program. Routine communication and workgroup meetings were established with software vendors to complete the implementation phase. Following successful implementation, standard work documents will be created to guide controlled substance diversion investigations. Results to be analyzed include the number of diversions investigated per month, the quantity and scope of metrics measured, and time studies of diversion investigation through self-reporting and workload data. Finally, the impact of the diversion detection software on efficiency and accuracy of drug diversion detection will be assessed. This will be determined by comparing time standards for aggregating and analyzing data pre and post implementation and completing a retrospective review of one year of data prior to implementation to determine any overlooked potential diverters identified through the implemented software. Results will be presented at the Great Lakes Pharmacy Resident Conference. Following implementation of the diversion detection software, the efficiency of diversion investigations should increase by decreasing the time of investigations while increasing the quantity and scope of metrics measured.

Learning Objectives:

Recognize potential harm of controlled substance diversion to the patient, diverter, and organization.

Identify key stakeholders and associated information to assess and evaluate to detect controlled substance diversion.

Self Assessment Questions:

Which of the following is not a type of harm that could be caused directly by controlled substance diversion?

A Patient Safety

B: Workforce Recruitment

C: Organization Liability

D: Diverter's ability to care for patients

Which of the following demonstrates improved efficiency in diversion detection through implementation of a controlled substance diversion detection program?

A Decrease time to complete diversion investigation

B Decrease quantity and scope of metrics measured

C Decrease number of diversions detected per month

D Decrease compliance with best practice standards

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-713-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EVALUATION OF PROTON PUMP INHIBITOR (PPI) ADMINISTRATION AND PATIENT OUTCOMES IN SUSPECTED UPPER GASTROINTESTINAL BLEEDING

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The American College of Gastroenterology guidelines for the management of upper gastrointestinal (GI) and ulcer bleeding include a strong recommendation for high dose proton pump inhibitor (PPI) therapy, at least 80 mg per day. The authors state there is insufficient evidence to make a recommendation for or against continuous infusions compared to intermittent administration of PPIs after endoscopy is change from past recommendations favoring continuous infusions. At University Hospitals Cleveland Medical Center (UHCMC) providers may utilize intermittent or continuous PPI administration at their discretion. The purpose of this study is to evaluate patient outcomes after continuous or intermittent administration of PPIs for suspected upper GI bleeds.

Learning Objectives:

Review American College of Gastroenterology upper gastrointestinal and ulcer bleeding guideline recommendations

Discuss current literature regarding PPI dosing for upper gastrointestinal and ulcer bleeding

Self Assessment Questions:

Which therapy best represents the 2021 ACG Ulcer Bleed Guideline concerning a patient with an actively bleeding vessel requiring endoscopic therapy?

A 40 mg IV QD

B: No therapy indicated

C: 40 mg PO QD

D: High-dose therapy (at least 80 mg/day)

Which dosing(s) can be considered high-dose PPI therapy according to the 2021 ACG Ulcer Bleed Guideline for use after ulcer bleeding requiring endoscopic therapy?

A 40 mg PO BID

B PPI drip at a rate of 8 mg/hr

C 40 mg IV BID

D All of the above

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-482-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

THE ADDITION OF BORTEZOMIB TO A RITUXIMAB-BASED LUNG ANTIBODY MEDIATED REJECTION TREATMENT PROTOCOL

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Purpose: To evaluate the impact of antibody mediated rejection (AMR) treatment with rituximab combined with bortezomib vs. rituximab alone on patient survival, graft survival, and the clearance of donor specific antibodies (DSAs) in lung transplant recipients (LTRs). Methods: A retrospective single center, observational cohort study of 47 adult LTRs who received bortezomib and rituximab (BR) or rituximab alone (R) for treatment of pulmonary AMR from January 2014 to December 2020 was conducted. Patient survival and graft survival 1 year post treatment were compared. Absolute reduction in individual DSA mean florescence intensity (MFI), and clearance of DSA were compared. Results: No significant differences were found between the BR and R groups in mortality (47% v 64%, p = 0.34) or graft loss (14% v 0, p = 0.57) at one year. When individual DSAs were compared, there was no difference in absolute MFI reduction (3161 v 2898, p = 1.00) or proportion of DSA cleared (30% v 25%, p = 0.77). Of note, a majority of DSAs were Class II. Conclusions: In a population of primarily Class II DSAs, no significant differences in outcomes were seen when bortezomib and rituximab were used concurrently compared to rituximab alone for AMR treatment.

Learning Objectives:

Explain the role of antibody directed therapy in the treatment of antibody mediated rejection

Discuss clinical outcomes in lung transplant patients when bortezomib is combined with rituximab for the treatment of pulmonary antibody mediated rejection

Self Assessment Questions:

Which treatment modality is commonly seen amongst AMR protocols?

A Rituximab

B: Bortezomib

C: Intravenous Immunoglobulin and plasma exchange

D: Eculizumab

What is the most common patient reported adverse drug reaction of bortezomib?

A Peripheral neuropathy

B Gastrointestinal discomfort

C Thrombocytopenia

D Neurotoxicity

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-483-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EVALUATION OF APIXABAN VERSUS WARFARIN AFTER HOSPITALIZATION IN PATIENTS WITH SEVERE RENAL IMPAIRMENT

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Purpose: Patients with chronic kidney disease (CKD) have been found t be at an increased risk for cardiovascular disease including atrial fibrillation and venous thromboembolism. In these patients, a delicate balance exists in the anticoagulation needed to treat and prevent blood clots while also avoiding bleeding complications. While there is data to support the use of direct oral anticoagulants in patients with mild to moderate kidney disease, a lack of data exists in patients with severe kidney disease including end-stage renal disease (ESRD) and dialysis. The primary objective is to compare the incidence of major or clinically relevant non-major bleeding events between patients with severe renal impairment taking apixaban versus warfarin after hospitalization. Methods: This retrospective, single-center, cohort study was reviewed and approved by the Institutional Review Board. Subjects were enrolled for data analysis if they had a documented Baptist Health Louisville hospital admission between December 1, 2018 and December 31, 2020 Subjects must have had a documented diagnosis of CKD stage 4 or 5, ESRD, or end-stage renal failure and concurrent administration of either apixaban or warfarin during hospital admission. Exclusion criteria include 17 years or younger, switching oral anticoagulant during the study period, lack of documentation to confirm anticoagulant was continued after initial hospital discharge, cessation of anticoagulant prior to any outcome occurrence, mechanical valve, pregnancy, or if the indication for anticoagulation was not for atrial fibrillation or treatment of active thrombosis. The primary outcome was a composite of major bleeding or clinically relevant non-major bleeding defined according to the criteria of the International Society on Thrombosis and Haemostasis. Secondary outcomes included a composite of venous thromboembolism or stroke, all-cause hospitalization, and all-cause mortality during the follow-up period following the initial hospital discharge. Results/Conclusions: To b presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the impact of CKD on kidney function and the cardiovascular risks that are associated with CKD

Identify the manufacturer label dose adjustment recommendations for apixaban to prevent stroke and systemic embolism in atrial fibrillation

Self Assessment Questions:

Which of the following is true about patients with CKD in comparison to the general population?

A Patients with CKD have a decreased risk for cardiovascular diseas

B: Patients with CKD have an increased glomerular filtration rate

C: Patients with CKD have an increased risk of bleeding

D: Patients with CKD are less likely to require anticoagulation

Which of the following is a characteristic that may affect the dosage adjustment of apixaban to prevent stroke and systemic embolism in atrial fibrillation?

A Hepatic impairment

B Concomitant aspirin therapy

C Weight

D CYP2C9 genetic deficiency

Q1 Answer: C Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-484-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

GABAPENTIN FOR INPATIENT TREATMENT OF ALCOHOL WITHDRAWAL

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Purpose: Guidelines support the use of gabapentin in the management of alcohol withdrawal. However, studies examining its use differ in setting, outcomes measured, exclusion criteria and dosing. Addition of gabapentin may result in less benzodiazepine use, which can be favorable considering the concerns with these therapies (i.e. dependence, misuse and respiratory depression, in addition to frequent supply shortages). The purpose of this study is to compare outcomes between patients receiving and not receiving gabapentin with the intent of developing evidence-based recommendations on where gabapentin should be considered in the inpatient management of alcohol withdrawal/detoxification.Methods: Retrospective, observational study using Carle Foundation Hospital (CFH) electronic medical record (EMR) data during a 53-month study period from Jan 1, 2017 to May 31, 2021. Patients 18 years or older, admitted to CFH, and receiving at least one dose of protocol/order set-driven benzodiazepine for withdrawal symptom management will be analyzed. The primary outcome to be evaluated is the difference in total quantity of benzodiazepine (in milligrams) administered between groups. Secondary outcomes for analysis between groups will include the duration of clinically significant alcohol withdrawal, time to CIWA-Ar score < 10 and mean CIWA-Ar score within the required duration of gabapentin/alcohol withdrawal pharmacotherapy. Results and Conclusion to be presentation at Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss renal thresholds surrounding the study design and treatment protocol

Name the assessment tool used to quantify alcohol withdrawal symptoms within this treatment protocol and analysis

Self Assessment Questions:

A patient with which of the following estimates of renal function would have been excluded from study analysis?

A 12 mL/min

B: 23 mL/min

C: 45 mL/min

D: A and B

AB is a 78 year-old male presenting to the emergency department with signs of alcohol withdrawal. Which assessment tool can be used to determine the patients level of withdrawal?

A CPOT

B RASS

C CIWA-Ar

D CAM-ICU

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-485-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

AN ASSESSMENT OF THE USE OF SODIUM-GLUCOSE COTRANSPORTER-2 INHIBITORS (SGLT-2I) AND GLUCAGON-LIKE PEPTIDE-1 RECEPTOR AGONISTS (GLP-1RA) IN A VETERAN POPULATION

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Limited studies have been conducted assessing the use and prescribing of concomitant sodium-glucose cotransporter-2 inhibitors (SGLT-2Is) and glucagon-like peptide-1 receptor agonists (GLP-1RAs) in a Veteran population. It is vital to gain a better understanding of the clinical decision tree that leads to the prescribing of these agents with consideration of efficacy, cardiovascular and renal benefits, tolerability, and cost of therapy. This study was a retrospective electronic chart review of patients concurrently prescribed a SGLT-2I and a GLP-1RA. Patients were included if they were 18 years of age, had a diagnosis of type 2 diabetes mellitus and were prescribed both a SGLT-2I and a GLP 1RA from October 1, 2017, to December 31, 2020. Patients were excluded if they were managed by a non-VA provider, had no HgbA1c measured within 12 months prior to or 12 months after starting therapy, resided in a long-term care facility, or had an interruption in combination therapy. The primary outcomes were proportion of patients with HgbA1c < 7% and change in HgbA1c. Secondary outcomes included rationale fo initiation of medications, duration of combination therapy, sequence of medication initiation; change in weight, blood pressure, estimated glomerular filtration rate (eGFR), insulin doses, and medication therapy; adherence with SGLT-2i and GLP-1RAs; incidence of adverse drug reactions, hospitalizations, cardiovascular events, and deaths. Patients who had a SGLT-2I added to their existing regimen experienced a HgbA1c reduction of 1.15% and lost 4.06 kg. 12 months post-initiation. Patients who had a GLP-1RA added to their existing regimen experienced a HgbA1c reduction of 1.01% and lost 4.38 kg. 12 months post-initiation. These findings, in addition to secondary outcomes, support the conclusion that adding an SGLT-2i or GLP-1RA to an existing regimen that includes the other agent appears to lead to clinically significant reductions in HgbA1c and weight.

Learning Objectives:

Recognize that adding a SGLT-2I or GLP-1RA to a medication regimen that includes the other agent will likely lead to clinically significant reductions in HgbA1c and weight

Identify patients that may benefit from combination GLP-1RA + SGLT-2I medication therapy

Self Assessment Questions:

Mr. Parker is a 72 YOM with a PMH of T2DM, HTN, and CKD. His medication regimen for T2DM includes metformin 1000mg PO BID, insulin glargine 40 units SQ daily, and empagliflozin 25mg PO daily. Mr. Parker is trying to lose weight, and his most recent HgbA1c is 7.8% (Goal <7%). Provided no contraindications to any medications exist, which medication would be most appropriate to initiate for Mr. Parker to reach his treatment goals?

A Acarbose 25 mg PO TID

B: Semaglutide 0.25 mg SQ weekly x4 weeks

C: Pioglitazone 15 mg PO daily

D: Dulaglutide 3 mg SQ weekly

You are a pharmacist working in a primary care clinic. One of your new patients is currently taking metformin 1000mg BID, and empagliflozin 25 mg daily. Upon conversing with the patient and reviewing the chart, you plan to initiate semaglutide 0.25 mg SQ weekly x4 weeks. What information is reasonable to share with the patient?

A "This medication may help with weight loss, but is unlikely to have

B "This medication is inexpensive, even for patients without insuranc

C "This medication will help you lose some weight, and can also help

D "Make sure to inject this medication every day."

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-486-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EVALUATION OF SEDATION PRACTICES IN MECHANICALLY VENTILATED PATIENTS TO ENSURE ADEQUATE SEDATION IS OBTAINED PRIOR TO THE ADMINISTRATION OF PARALYTICS

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Purpose: The 2018 Society of Critical Care Medicines Pain, Agitation, Delirium, Immobility, and Sleep (PADIS) guideline suggests using bispectral index (BIS) monitoring tool to assess sedation levels in mechanically ventilated patients receiving a paralytic. While BIS quantifies levels of deep sedation and anesthesia, the Richmond Agitation-Sedation Scale (RASS) measures levels of agitation to assess adequate sedation prior to the administration of paralytics. Despite efforts to adequately sedate patients, about one in ten critically ill patients receiving therapeutic paralysis may be inadequately sedated. The objective of this study is to assess the appropriateness of sedation prior to initiation of paralysis by analyzing RASS scores in the intensive care unit (ICU) patients receiving mechanical ventilation.Methods: This single-center retrospective study reviews the percentage of RASS scores within the targeted range prior to the administration of paralytics in mechanically ventilated patients. Data will be analyzed from January 1, 2020 to June 21, 2021. Inclusion criteria includes > 18 years of age, admitted to the intensive care unit (ICU) receiving mechanical ventilation, and administration of a continuous sedative and paralytic. The study will exclude patients given a paralytic or sedative prior to hospitalization or outside of the ICU, and on CIWA protocol. The intervention will include updating the standardized sedation-monitoring template utilized by pharmacists and educating hospital staff about the data and available monitoring tools used in this patient population.The primary outcome of this study is the percentage of RASS scores within targeted range prior to initiation of paralysis in patients receiving mechanical ventilation. Secondary outcomes include: mean ICU length of stay, time on mechanical ventilation and paralytic, percentage of RASS scores not documented, and the percent changes in sedative doses while receiving paralytics. Results/Conclusions: Results and conclusions will be presented at the Great Lakes Pharmacy Residents Conference.

Learning Objectives:

Review specific recommendations for sedation management prior to the use of paralytic in mechanically ventilated patients.

Identify alternative sedation monitoring tools while mechanically ventilated patients are on continuous paralytics and receiving sedatives.

Self Assessment Questions:

Which of the following evidence based scales has been validated to assess the level of sedation in mechanically ventilated patients receiving paralytics?

A BIS

B: CAM-ICU

C: RASS

D: CPOT

Which of the following evidence based scales has been validated to assess the level of sedation prior to receiving paralytics?

A BIS

B CAM-ICU

C RASS

D CPOT

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-714-L05-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

LEVERAGING THE ELECTRONIC HEALTH RECORD FOR ANTIMICROBIAL STEWARDSHIP: ASSESSING THE IMPACT OF A REQUIRED INDICATION AND DURATION INTERVENTION ON LENGTH OF ANTIBIOTIC THERAPY

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In order to uphold requirements of The Joint Commission Antimicrobial Stewardship Standard MM.09.01.01, Eskenazi Health implemented a series of clinical decision support tools in the electronic health record (EHR) in June 2018. These tools included required fields on all inpatient antimicrobial orders for indication, type of therapy (empiric, definitive based on cultures, definitive no cultures), and duration of therapy. The ultimate goal of this implementation was to improve antimicrobial selection, shorten time to de-escalation of antibiotics/ selection of definitive therapy, and improve appropriate duration of therapy. The objective of this study is to determine the impact of implementation of the antimicrobial ordering clinical decision support tools in the EHR. This study specifically evaluates antibiotic regimens used for the treatment of community acquired pneumonia (CAP) and urinary tract infections (UTI) in a pre- and post-intervention group. A single-center, retrospective, observational chart review will be conducted in adult patients (18 years) who were hospitalized and prescribed antibiotics for the treatment of CAP or UTI from July to December 2017 for the pre-intervention group and from July to December 2018 for the post-intervention group. Data to be collected includes antimicrobial order information, and clinical outcome at discharge. Additional information to be collected for the CAP group includes presence of bacteremia, culture and susceptibility results need for respiratory support, and presence of lung abscess or empyema For patients with UTI, additional data includes presence of urinary catheter at diagnosis, presence of pyelonephritis or bacteremia, urinalysis results, as well as culture and susceptibility information. The primary outcome is the overall length of therapy between the pre- and post-intervention groups for CAP and UTI. Secondary outcomes include duration of empiric/broad-spectrum therapy, duration of definitive therapy, time to de-escalation/ definitive therapy, length of hospital stay, C. difficile infections, 30-day readmission, and cost of antimicrobial therapy.

Learning Objectives:

Review the Eskenazi Health antimicrobial ordering clinical decision support tools in the electronic health record (EHR)

Describe the impact of these tools on antimicrobial selection, time to selection of definitive therapy, and appropriate duration of therapy

Self Assessment Questions:

Which of the following is a required field for an inpatient antimicrobial order as part of this studys electronic health record build?

A Patient allergies

B: Type of therapy (empiric, definitive based on cultures, definitive nc

C: Culture data

D: End date of therapy (for all orders)

When does the Best Practice Advisory (BPA) fire to alert providers of an empiric antimicrobial order?

A 24 hours

B 36 hours

C 48 hours

D 72 hours

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-487-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

KETOROLAC CEILING DOSE IMPLEMENTATION IN THE EMERGENCY DEPARTMENT

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Purpose:Ketorolac is a nonsteroidal anti-inflammatory drug (NSAID) utilized for short-term management of moderately severe acute pain. As with many of the NSAIDs, ketorolac use has potential adverse reactions including thrombotic and gastrointestinal effects, as well as acute kidney injury. Literature suggests a ceiling effect associated with ketorolac where higher doses do not provide further pain relief. For intravenous administration, the proposed ceiling dose is 10-mg; however, typical dosing used in the emergency department (ED) for acute pain ranges from 30- to 60-mg parenterally, increasing risk for adverse events. The purpose of this research is to evaluate efficacy and safety of a ketorolac ceiling dose for patients presenting to the emergency department with acute pain. Methods:This is a retrospective chart review of ketorolac administration in the emergency department at Parkview Regional Medical Center (PRMC) and Parkview Hospital Randallia (PVH). A ceiling dose of ketorolac 15-mg for intravenous and intramuscular administration was established in the ED on October 27, 2021. Data analysis included a pre-implementation cohort with data collection from July 1, 2021 through October 26, 2021 and a post-implementation cohor with data collection from October 26, 2021 to February 28, 2022. Included in the study were patients 18 years and older having received at least one dose of ketorolac in the ED for acute pain. Patients who received alternative analgesic medication prior to ketorolac administration in the ED were excluded from analysis. The primary endpoint was difference in pain scores with a 15-mg ceiling dose compared to higher doses. Secondary endpoints included time to any rescue analgesia use, and ED discharge disposition. Regarding safety evaluation, change in serum creatinine was evaluated for admitted patients.Results and Conclusion: Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Recall the mechanism of action and possible adverse drugs reactions fo nonsteroidal anti-inflammatory drugs, specifically ketorolac.

Outline evidence from primary literature evaluating ceiling dose concepts to ketorolac and the clinical implications compared to current practice.

Self Assessment Questions:

The duration of ketorolac use should be limited to how many days due to risk of adverse events:

A 3 days
B: 5 days
C: 7 days
D: 10 days

Ketorolac is a/an _____ COX _____ inhibitor.

A Reversible, COX-2 selective
B Irreversible, COX-2 selective
C Irreversible, COX-1 and -2 nonselective
D Reversible, COX-1 and -2 nonselective

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-845-L08-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATING THE TOTAL NUMBER AND DOSAGES OF GUIDELINE DIRECTED MEDICAL THERAPY (GDMT) MEDICATIONS PRESCRIBED FOR ADMITTED PATIENTS WITH HEART FAILURE WITH REDUCED EJECTION FRACTION (HFREF)

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Purpose: Heart failure is a major health burden to many patients across the United States and can lead to a high degree of healthcare utilization. This is due to an inherently high rate of hospital readmissions that can stem from undiscovered or unresolved medication related problems. Examples of this includes prescribing inappropriate medications and/or dosages. The literature reveals that pharmacists can positively impact readmission rates and improve patient outcomes by providing heart failure patients with services such as medication education and medication reconciliation. At MyMichigan Medical Center, there is currently a lack of clinical pharmacy services directly dedicated to our heart failure patient population. The purpose of this study is to assess the total number of guideline-directed medical therapy (GDMT) medications and dosages prescribed for each patient in order to determine the overall need for these types of services at our health system.Methods: This study will utilize a retrospective chart review and will include patients with heart failure with reduced ejection fraction (HFrEF) admitted to the hospital from September 1, 2021 through December 31, 2021. To be included in this analysis, a patients admission diagnosis must either be new diagnosis of heart failure or heart failure exacerbation. The primary endpoint of this study will be to identify the total number of GDMT medications listed on each patients discharge medication list. In addition, the dosages of these GDMT medications will be compared to target dosing listed in the heart failure guidelines. Secondary endpoints will be to determine the average 30-day readmission rate over the course of the study and also the total number of patients newly diagnosed with HFrEF.Results/Conclusion: The results and conclusion of this study will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss the initiation and titration of GDMT medications in patients with HFrEF.

Identify possible barriers to achieving optimal GDMT medications in patients with HFrEF.

Self Assessment Questions:

Which of the following options is considered an evidenced-based beta blocker and is a first line treatment option for stage C HFrEF?

A Propranolol
B: Carvedilol
C: Atenolol
D: Sotalol

Which of the following is a contraindication for sacubitril/valsartan?

A Moderate hepatic impairment (Child-Pugh class B)
B An episode of hypotension following the initial dose
C Concurrent use with heparin
D History of angioedema with previous ACE inhibitor therapy

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-488-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

PATIENT ORIENTED ECZEMA MEASURE (POEM) ASSESSMENT FOR IMPROVEMENT OF ATOPIC DERMATITIS IN SPECIALTY PHARMACY: DOES ENROLLMENT IN A PHARMACIST-LED PATIEN MANAGEMENT PROGRAM IMPROVE SCORES OVER TIME?

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Statement of Purpose: Atopic dermatitis (AD) is a complex disease that requires a multidisciplinary approach to address the many factors that impact symptom control. Pharmacists have been shown to be effective in helping patients better understand and manage medication regimens for the treatment of AD. There is currently little research on the effectiveness of patient management programs (PMPs) for AD patients being treated in the specialty pharmacy setting. The purpose of this study is to assess the impact of a pharmacist-led PMP on improvement of AD in patients of a national independent specialty pharmacy. Statement of Methods: This is a retrospective, single-site cohort study using review of electronic medical records (EMRs). Patients aged 18 years who received AD therapy from the specialty pharmacy between March 22, 2021 and March 22, 2022 will be assessed. Patients were enrolled in a PMP and given monthly assessments using the Patient Oriented Eczema Measure (POEM) " a validated survey tool utilized to assess AD severity. Changes in POEM scores over six months will be assessed using univariate analysis with a score reduction of at least 3.4 considered as a minimal clinically important difference (MCID). Time-series analyses will be performed to examine trends in the changes of POEM scores from month to month. Subgroup analyses will be performed on gender, race, and length of time on therapy to determine correlations between specific variables and changes in POEM scores. Preliminary Results/Conclusions: Data collection and analysis is currently ongoing. Preliminary results will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recognize common risk factors for atopic dermatitis

List common skin care recommendations for managing atopic dermatitis

Self Assessment Questions:

Which of the following statements about atopic dermatitis is true?

A Atopic dermatitis most commonly begins in adulthood

B: Exposure to allergens can contribute to a worsening of atopic derm

C: Genetics do not play a role in the development of atopic dermatitis

D: Atopic dermatitis can be cured with proper skin care and medicatic

Which of the following is a correct counseling point for the treatment of atopic dermatitis?

A Take long, hot baths to help soothe the skin

B Apply a scented moisturizer to help hydrate the skin

C Using a daily skin ointment instead of a lotion will result in better s

D Oral antihistamines are first line treatment for atopic dermatitis

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-489-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

DEVELOPMENT OF A WORKFLOW FOR DEPRESCRIBING ASPIRIN

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Purpose: Aspirin has been widely prescribed for cardiovascular disease prevention. Unnecessary aspirin use is currently defined as the use for primary atherosclerotic cardiovascular disease prevention in patients > 60 years of age or at a higher risk for bleeding. This is based on the updated 2021 U.S. Preventive Services Task Force recommendations. The purpose of this project is to decrease unnecessary aspirin use among patients that follow with the anticoagulation clinic. Methods: To identify potentially unnecessary aspirin, an algorithm was created based on current guidelines including the U.S. Preventive Services Task Force recommendation statement, 2020 American College of Cardiology/American Heart Association Guideline for Management of Patients with Valvular Heart Disease, 2019 American College of Cardiology/American Heart Association Guideline on the Primary Prevention of Cardiovascular Disease, and recent literature. Patients were identified if they had aspirin on the medication list in the electronic health record and followed with the anticoagulation clinic. Chart review was conducted to identify patients taking aspirin without a clear indication for aspirin use. A workflow for connecting with prescribers was developed.Results: The anticoagulation clinic follows 823 total patients on warfarin therapy. The mean age was 73 with the most common comorbidities being atrial fibrillation (59.9%), aortic valve replacement (8.5%), and history of deep vein thrombosis or pulmonary embolism (35.2%). Out of the 257 patients identified on both warfarin and aspirin therapy, 140 patients did not have a clear indication for aspirin use. Many of these patients had stable coronary artery disease at least one year following percutaneous coronary intervention or a heart valve without a stroke history. Conclusions: Next steps include contacting providers to recommend aspirin deprescribing. Final results will be presented at the 2022 Great Lakes Pharmacy Resident Conference. Based on previous literature, it is expected that around 25% of unnecessary aspirin will get deprescribed.

Learning Objectives:

Describe when aspirin use is appropriate in clinical scenarios

Recall the potential risks of taking aspirin therapy

Self Assessment Questions:

What is an appropriate indication for aspirin therapy in a patient greater than 60 years old?

A Primary atherosclerotic cardiovascular disease prevention

B: Stable coronary artery disease beyond 1 year after stenting in a pa

C: Antiphospholipid syndrome

D: Primary stroke prevention

What may occur if a patient takes aspirin without an appropriate indication?

A Major gastrointestinal bleeding

B Intracranial bleeding

C Increase in overall risk of bleeding

D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-490-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IMPLEMENTATION OF PHARMACIST TRANSITIONS OF CARE PROTOCOL ON RECENTLY DISCHARGED PATIENTS WITH COPD

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Ineffective transitions of care (TOC) can lead to increased readmission rates and inadequately controlled disease states. There is limited data on the effect pharmacist implemented TOC services have on reducing readmission rates of patients recently discharged from the hospital. The objective of this study is to evaluate the impact of a TOC protocol of inpatient and ambulatory care pharmacists in managing the care of patients with COPD. This retrospective, single-center, pre- and post-intervention cohort study, will assess the impact of pharmacist intervention during discharge and in ambulatory care clinics on readmission rates of patients recently discharged with COPD. The electronic medical record will be used to identify patients who were admitted to IU Health Bloomington between October and November 2019 or October and November 2021, age forty or above admitted with COPD exacerbation or pneumonia with a history of COPD. Patients are excluded if they have active cancer, history of COVID-19 infection in the past 90 days, transferred from another institution, or discharged to a facility other than home. The primary endpoint of this study is the readmission rate for patients with a COPD exacerbation or pneumonia with a history of COPD within 30-days following discharge. The secondary endpoints include rates of emergency department visits for patients with a COPD exacerbation or pneumonia with a history of COPD within 30-days following discharge and the number of medication related problems identified by the pharmacists. The intervention includes an admission medication reconciliation. An inpatient pharmacist completes a discharge medication reconciliation with an electronic handoff provided to ambulatory care pharmacists for qualified patients; with ambulatory evaluation within two weeks post-discharge. Data from the pre-intervention period will be collected and compared to data from the post-intervention period.Results and conclusions will be presented a the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Define transitions of care and how it can affect the care of patients.

Explain the different roles pharmacy staff can perform to impact a patient's transitions of care.

Self Assessment Questions:

What is transitions of care?

A Switching the physician following the patient during a hospital stay

B: Patient changing from one medication to another

C: Movement of patients between different levels of care as their care

D: Change in appointment time for a patient

Which of the following was the most common medication related problem not addressed at discharge in the pre-intervention subgroup?

A Duplicate inhalers prescribed

B No rescue inhalers prescribed

C Inappropriate deprescribing

D No change to COPD therapy after a COPD exacerbation

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-491-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

DEVELOPMENT AND UTILIZATION OF A MEDICATION ADHERENCE ASSESSMENT TOOL AT TWO PROGRAM OF ALL-INCLUSIVE CARE FOR THE ELDERLY (PACE) FACILITIES

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Purpose: Medication nonadherence has been shown to affect between 40-50% of patients prescribed long-term medications for chronic disease states.1 Patients do not always adhere to how medications are prescribed for a multitude of reasons. Some barriers to adherence include lack of perceived benefit, side effects, inadequate education, cost, and complexity.2 Taking medications as directed is critical as it can lead to better clinical outcomes, decreased morbidity and mortality, and decreased healthcare expenditures.3 The goal of this project was to create a medication adherence questionnaire to identify patient barriers and to improve patient care in a nursing-home eligible, community-dwelling elderly population.Methods: The ten-question adherence questionnaire was developed by a survey development team consisting of ambulatory care pharmacists, pharmacy technicians, and a statistician. There were two phases of the questionnaire process. A pilot survey was administered to a small subset of the intended population in October and November 2021 for phase one. The results were analyzed and feedback was assessed to guide survey revisions. The revised survey was then administered to a larger subset of the intended population starting February 2022 for phase two.Subjects were chosen based on the current schedule for bi-annual reassessment appointments, which is a standard of care within the PACE program. The reassessment schedule is pre-set by administration based on the initial enrollment date of the participant. Eligible participants at two PACE facilities in Michigan undergoing reassessment during the specified time period were asked to complete a questionnaire. A caregiver was contacted if a participant was unable to complete the questionnaire. Participants were excluded if they were receiving end-of-life care, resided at an assisted or skilled nursing facility, or if a participant/caregiver was unable to complete a questionnaire. Results: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recognize common barriers to medication adherence in an elderly patient population.

Identify medication adherence tools used in an elderly patient populatior

Self Assessment Questions:

Which of the following is the most common reason participants missed a dose of their prescribed medications?

A Could not afford medication

B: Forgot to take

C: Side effects

D: Taking pills too many times during the day

What is the most common medication adherence tool utilized in this patient population?

A Alarms

B Caregiver assistance

C Medication box

D Phone call reminders

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-715-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

RISK FACTOR ANALYSIS FOR TREATMENT FAILURE OF NICARDIPINE IN ACUTE STROKE PATIENTS

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Purpose: Acute blood pressure reduction improves survival and neurological outcomes for patients experiencing an ischemic or hemorrhagic stroke, however, the preferred intravenous anti-hypertensive agent remains unclear. The objective of this study was to determine risk factors predictive of treatment failure in nicardipine-treated stroke patients.Methods: This institutional review board approved, retrospective, single center, risk factor analysis was performed at a community healthcare system over a period of approximately 2 years. Patients were included if they were > 18 years old, admitted to the neuroscience ICU, and had a confirmed ischemic or hemorrhagic stroke, and excluded if they received other antihypertensive infusions. Data collected includes baseline demographics, prior to admission (PTA) medications, baseline clinical characteristics, clinical interventions, and discharge disposition. Descriptive and univariate statistics were performed for continuous and categorical variables, and all p-values > 0.2 were included in a multivariate logistic regression. Results: Of 118 patients included, 41 failed nicardipine treatment and required clevidipine. Factors associated with nicardipine failure include black race [12 (15.6%) vs. 16 (39%), p = 0.002], ESRD on dialysis [1 (1.3%) vs. 4 (9.8%), p = 0.049], higher NIHSS score at baseline [7 (IQR 1.5 " 1.75) vs. 14 (IQR 3 " 24), p = 0.05], and not receiving statin therapy PTA [40 (51.9%) vs. 30 (73.2%), p=0.025]. The multivariate regression revealed that patients taking a vasodilator PTA were 6.90 times more likely to fail nicardipine treatment (95% CI: 1.336 " 35.312, p = 0.021).Conclusion: Possible risk factors for treatment failure with nicardipine alone include black race, dialysis, elevated baseline NIHSS score, PTA vasodilator therapy, and not receiving statin therapy PTA. Clinicians may consider the use of clevidipine as an alternative antihypertensive agent in these patient populations. These results should be confirmed with a larger, randomized-controlled trial.

Learning Objectives:

Discuss the gaps in literature regarding the preferred anti-hypertensive agent of choice.

Recognize intravenous antihypertensive options and their pharmacologic features.

Self Assessment Questions:

Which anti-hypertensive agent is recommended by the guidelines?

A Nicardipine

B: Clevidipine

C: Either agent

D: No recommendations

What features of clevidipine make it an attractive agent for acute blood pressure reduction?

A Long half-life and small infusion volume

B Long half-life and rapid onset of action

C Short half-life and rapid onset of action

D Long half-life and small infusion volume

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-492-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

APPROPRIATENESS OF THIRTY DAY PROPHYLACTIC DOSE ANTICOAGULATION UPON HOSPITAL DISCHARGE FOR COVID 19 PATIENTS

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Introduction/BackgroundIn 2019, a severe acute respiratory syndrome coronavirus 2, SARS- COV-2 took the world by storm. Coronavirus disease of 2019, COVID 19, is a viral disease that effects the lungs, heart, and brain. COVID 19 has infected more than 325 million individuals worldwide and caused more than 5.5 million deaths. There has been some evidence that COVID 19 exacerbates the progression of thrombosis, disseminated intravascular coagulation and even cytokine storms. Patients with COVID 19 are at an increased risk for atrial and venous thrombosis. Due to majority of studies looking into thrombosis, there is still a large unknown when it comes to major bleeding events, true hemorrhagic events or the association between bleeding and worsening status among COVID 19 patients. Individuals who are hospitalized with COVID 19 have an increased chance of experiencing thrombosis and are associated with poor clinical outcomes. These patients will most likely be started on inpatient anticoagulation therapies while admitted. The real dilemma is whether to discharge patients on anticoagulation therapy. The goal of this study is to assess if a COVID 19 positive patient will benefit from being discharged on an anticoagulant. Finally, if there is a benefit, this study will assess which anticoagulant worked best.Design MethodRetrospective study from September 2020 to November of 2021 at Union Health in Terre Haute, Indiana. Results/Conclusion There will be three anticoagulation groups to be compared: prophylactic, therapeutic, and the combination of both, while inpatient before being discharged. The anticoagulants being evaluated are rivaroxaban 10mg daily for 30 days or apixaban 2.5mg twice a day if there is a contraindication against rivaroxaban. The primary endpoint would be rehospitalization due to bleeding or clotting after discharge. This study will provide more data on which anticoagulan provides the most benefit in patients with COVID 19 when discharged.

Learning Objectives:

Discuss possible discharge options for anticoagulation in positive COVID 19 patients.

Select thrombotic conditions during COVID 19 and the appropriateness of using anticoagulation.

Self Assessment Questions:

Based off of the MICHELLE Trial what duration of anticoagulation in COIVD 19 patients is recommended?

A Rivaroxaban 20mg daily for indefinitely

B: Rivaroxaban 10mg daily for 30-35 days

C: Apixaban 5mg daily for indefinitely

D: Apixaban 2.5mg daily for indefinitely

Which drug class could a COVID 19 patient benefit from for prophylaxis protection against a possible thrombosis?

A Antiplatelet

B Antihypertensive

C Anticonvulsant

D Anticoagulant

Q1 Answer: B Q2 Answer: D

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Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATING THE EFFECTIVENESS OF A PHARMACIST-DRIVEN MRSA NASAL POLYMERSE CHAIN REACTION (PCR) PROTOCOL FOR PNEUMONIA

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Purpose: One of the main roles of the SSM Health Wisconsin Regional Antimicrobial Stewardship (AMS) program is to create antimicrobial stewardship resources to guide provider prescribing and management o antimicrobial therapy for infectious diseases. De-escalation of therapy, when appropriate, is a crucial stewardship practice to minimize the development of antimicrobial resistance. Methicillin resistant Staphylococcus aureus (MRSA) polymerase chain reaction (PCR) nasal swabs have been shown through multiple studies to have a negative predictive value of >98% for ruling out MRSA pneumonia. Given this strong negative predictive value, discontinuation of vancomycin is recommended with a negative nasal swab result when using vancomycii for suspected pneumonia. The objective of this study is to evaluate the effectiveness of a pharmacist-driven MRSA nasal PCR protocol.Methods: The electronic medical record (EMR) system was used to identify all patients admitted to St. Marys Hospital during the study period who were started on vancomycin for a respiratory tract infection. Patients will be excluded from this study if they have a positive MRSA PCR result or if they have a different positive MRSA culture (such as a tracheal aspirate, sputum or wound culture). A retrospective chart review will be performed for all patients meeting study inclusion criteria with data analysis according to the primary and secondary outcomes. Patient identifiers and all protected health information (PHI) will be maintained in an encrypted computer database housed within the hospital network system. The primary outcome in this study is time to discontinuation of vancomycin after a negative MRSA PCR result. The secondary outcomes include frequency of appropriate MRSA PCR ordering per protocol, appropriateness of vancomycin empiric therapy, and average total number of days of empiric vancomycin therapy.Results and Conclusion: To be presented at Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss the appropriate indications or risk factors for utilizing vancomycin as empiric therapy for respiratory tract infections.

Discuss the role of a pharmacist in antimicrobial stewardship

Self Assessment Questions:

For which suspected infection is it appropriate for a pharmacist to order a MRSA PCR (per this institutions protocol) if vancomycin is also ordered?

A Intra-abdominal infection

B: Lower respiratory tract infection

C: Skin and soft tissue infection

D: Urinary tract infection

Which risk factor would be an appropriate reason for empiric use of vancomycin for a suspected respiratory infection?

A Patient admitted who received electrolyte infusion at infusion cente

B Patient admitted from a skilled nursing facility for which they have

C Patient admitted who was recently hospitalized two weeks ago for

D Patient admitted who was hospitalized two months ago and receiv

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-493-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

PHARMACOGENETIC EVALUATION OF HOSPITALIZED PATIENTS REQUIRING NALOXONE ADMINISTRATION

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Opioids are commonly utilized to control acute pain in hospitalized patients, though their use is not without the potential risk of an unintentional acute opioid overdose leading to increased length of stay and additional complications. Evaluating the genotypes of patients who receive naloxone following opioid administration could determine the presence of high-risk genetic polymorphisms, which may alter opioid metabolism or elimination. The project will retrospectively evaluate this relationship by determining the frequency of opioid-related pharmacogenetic polymorphisms among hospitalized patients receiving naloxone compared to a control cohort.Current naloxone administration tracking infrastructure will be utilized to identify and screen potential patients for study enrollment. The study aims to enroll 45 patients, and screening for enrollment is planned to begin no later than March 2022. Upon receiving informed consent, a buccal sample will be collected for genotyping of thirteen select opioid-related genes identified from primary literature, including CYP2D6, OPRM1, and COMT which have clinically actionable guidelines published by the Clinical Pharmacogenetics Implementation Consortium (CPIC). Genotypic data will be analyzed to determine the incidence of polymorphisms present in the study cohort compared to an internal control cohort. Further comparison will also be completed using population incidence rates for genetic polymorphisms as defined by CPIC and the 1000 Genomes Project. Patient-specific information and internal independent analysis categorizing naloxone use as preventable or not preventable will be taken into consideration to determine other root causes of naloxone administration.This proof-of-concept study will enroll a small cohort to characterize trends and allele frequency disparities among patients that receive naloxone while hospitalized. The study aims to provide evidence regarding the implementation of genotype-guided opioid therapy within the pain management services at Froedtert & the Medical College of Wisconsin. This evidence will be used to promote proactive interventions and testing to enhance patient safety and treatment effectiveness.

Learning Objectives:

Recall the 2 major groups of enzymes responsible for opioid metabolism

Identify the 3 genes that affect opioid metabolism and action that have clinically actionable guidelines.

Self Assessment Questions:

What 2 major enzyme groups are responsible for opioid metabolism?

A CYP450 and UDP-glucuronyltransferases

B: Blood esterases and N-acetylgalactosaminyltransferase

C: CYP450 and Blood esterases

D: Carboxylases and UDP-glucuronyltransferases

What gene has clinically actionable Clinical Pharmacogenetics Implementation Consortium (CPIC) guidelines to guide opioid prescribing based on genotype?

A CYP2C19

B CYP2D6

C UGT2B7

D ABCB1

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-846-L08-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

TRANSITION TO A NEW PHARMACY AUTOMATION PLATFORM FOR UW HEALTH

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PurposePharmacy automation is essential to operations across the UW Health system, and current equipment is reaching end of life and must be replaced. As part of that replacement UW Health will be moving to our automation vendors new technology backbone. Integrating the plethora of technology that exists in the current pharmacy landscape is essential to increase efficiency and ensure maximum operational and clinical benefit. The new platform aims to meet this challenge by providing greater integration across systems and combining multiple systems on a single database. The purpose of this project is to begin to transition operations from the current automation software platform to a new more unified platform.MethodsAn oversight group of key stakeholders from across UW Health and the vendor was formed. The unique needs for each site were assessed by interviewing stakeholders, obtaining physical measurements, and developing a conversion tool to convert current cabinet configurations to the new products. The assessment included configuration needs for new cabinets, and a thorough review of existing technology to determine what needed to be replaced. A process for developing an implementation timeline based or budgetary and operational needs was created.ResultsA process and spreadsheet tool were developed to assess configuration needs. Quotes were obtained from the vendor based on these configuration needs. A timeline and rolling process for go-lives was developed.ConclusionA transition in pharmacy automation provides an opportunity for increased efficiency in operations. A thorough assessment of needs is key to developing an implementation timeline.

Learning Objectives:

Identify the specific data points that are needed to assess configuration needs for pharmacy automation and the process for assessing those needs.

Describe a process for developing an implementation timeline based on budget and operational needs.

Self Assessment Questions:

What considerations are key when assessing configuration needs for automated dispensing cabinets?

A Physical measurements

B: Inventory

C: Max/par levels

D: All of the above

The process for developing an implementation timeline included the following:

A Comparing vendor quotes to the budget

B Considering operational needs

C Consulting key stakeholders

D All of the above

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-716-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EFFECT OF EMPAGLIFLOZIN INITIATION ON LOOP DIURETIC DOSING IN PATIENTS WITH HEART FAILURE

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Purpose: Heart failure (HF) is associated with many complications including cardiac arrhythmias, respiratory failure, cachexia, end-organ damage, and death. Recently, sodium-glucose cotransporter-2 (SGLT2) inhibitor use in the HF population has been growing, resulting in an increased number of patients concurrently on a SGLT2 inhibitor and a loop diuretic. One proposed mechanism of SGLT2 inhibitor effect in HF is through the stimulation of diuresis/natriuresis. Despite the significant increase in use, their combined effect on kidney function has not been well studied. Safety and efficacy data is limited by the number of patients included in studies, the type of HF and the doses of SGLT2 inhibitor studied. Evaluating the concomitant use of loop diuretics and SGLT2 inhibitors can provide guidance on potential need for medication dose adjustments and appropriate monitoring. This study will provide further insight, as it will look at all HF patients, including both HF with reduced ejection fraction and HF with preserved ejection fraction and a range of SGLT2 inhibitor doses. The purpose of this study is to assess changes in loop diuretic dosing when empagliflozin is added to current HF regimens in patients at the Jesse Brown Veteran Affairs Medical Center (JBVAMC).Methods: This study will be a retrospective, electronic chart review of patients with HF who were prescribed empagliflozin while concurrently on a loop diuretic. Data will be collected from August 1st, 2014 through March 31st, 2021. The primary endpoint is the percentage of patients that required a decrease in their loop diuretic dose within 3 months of initiating empagliflozin. Multiple secondary endpoints will be performed, including mean change in diuretic dose within 3 months, time to first change in diuretic dose, and time to discontinuation of loop diuretic. Results: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the benefits of using Sodium-Glucose Cotransporter-2 Inhibitors (SGLT2) inhibitors in heart failure patients.

Recognize the proposed mechanism of action of SGLT2 inhibitors in HF

Self Assessment Questions:

Which of the following is a benefit seen with empagliflozin use in HF patients?

A Composite of reduced risk of hospitalizations for HF and cardiovas

B: Reduced risk of urinary tract infections

C: Ability to de-escalate doses of ACE inhibitor therapy

D: Improved potassium levels

What is one proposed mechanism of action of SGLT2 inhibitors in HF?

A Stimulation of natriuresis/diuresis

B Increase in urinary glucose excretion

C Slows down the inactivation of incretin hormones

D Inhibits the effect of aldosterone

Q1 Answer: A Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-495-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

LONG-TERM EFFICACY OF LOWER-GASTROINTESTINAL DELIVERY FECAL MICROBIOTA TRANSPLANTATION (FMT) FOR RECURRENT CLOSTRIDIOIDES DIFFICILE INFECTION (RCDI)

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Purpose: Clostridioides difficile infection (CDI) is a major cause of hospital admissions and mortality. Rate of recurrent rCDI) is about 15-28% for those that initially respond to antibiotics and increases to about 50% in those with at least two recurrences. Fecal microbiota transplantation (FMT) is a treatment option for patients that have failed antibiotics for at least two rCDIs. There are limited clinical studies that assess the long-term efficacy of FMT beyond 1 year of follow-up. The objective of this study is to evaluate the long-term efficacy of lower-gastrointestinal delivery FMT for rCDI vs. patients that received standarc of care pharmacotherapy.Methods: This is a retrospective, single-center cohort study. Patients were included if they were 18 years or older and received standard of care pharmacotherapy or FMT treatment for rCDI between January 1, 2018 and December 30, 2020. Patients were excluded if they were pregnant or received upper-gastrointestinal delivery FMT. The primary endpoint is rCDI within 12 months. Secondar endpoints are all-cause mortality at 6, 12, 18, and 24 months, rCDI at 6, 18, and 24 months, time to first recurrence of CDI (months), number of CDI recurrences, and hospital admission due to CDI.Results/Conclusion Data analysis is currently in progress. Results will be presented at the Great Lakes Pharmacy Conference.

Learning Objectives:

Define the background and treatment options for rCDI

Recognize current literature regarding the efficacy of FMT

Self Assessment Questions:

Which of the following is considered a treatment option for initial recurrence of Clostridioides difficile infection?

A Fidaxomicin 200 mg PO BID for 10 days

B: Fecal microbiota transplantation

C: Metronidazole 500 mg PO TID for 10 days

D: Vancomycin 20 mg/kg IV for 10 days

According to current IDSA guidelines, which patient would be a candidate for fecal microbiota transplantation?

A Initial non-severe episode of CDI

B First recurrence of non-severe CDI

C Third recurrence of CDI after antibiotics

D CDI prophylaxis

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-496-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

TO ASSESS THE IMPACT OF THE STRATEGY OF UTILIZING CD3 COUNTS TO MANAGE THE DOSE OF ANTITHYMOCYTE GLOBULIN AS INDUCTION THERAPY IN ORTHOTOPIC HEART TRANSPLANT

Primary Investigator: Jeremy Gregersen*, PharmD Lutheran Hospital PGY1 Resident Co-Investigators: Jennifer McComb, PharmD Asim Mohammed, MD Sara Westfall, PA Laura Thomas, NP

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Antithymocyte Globulin (ATG) is commonly administered as induction therapy in patients undergoing solid organ transplantation, including orthotopic heart transplant. ATG targets and diminishes circulating T-cells, thereby reducing natural immune response. CD3 is a surface antigen on T-cells and provides patient specific insight into circulating T-cell counts. By utilizing measured CD3 counts, ATG dosing can be tailored specific to each patient to regulate the appropriate immune response to prevent cardiac rejection and at the same time, minimize risk and side effects of over immune suppression. The purpose of this study is to evaluate cardiac transplantation outcomes using CD3 directed ATG dosing.

Learning Objectives:

Recognize how CD3 counts serve as a marker in assessing immune suppression

Explain how anti-thymocyte globulin dosing based off CD3 levels can adequately provide immune suppression to delay tacrolimus initiation and preserve kidney function

Self Assessment Questions:

Which of the following cells contain CD3 as a surface antigen?

A B Cells

B: T Cells

C: Plasma Cells

D: Red Blood Cells

When would it be most appropriate to initiate tacrolimus post cardiac transplantation?

A Tacrolimus should be started day 1 post-transplant

B When serum creatinine is trending up, increasing above baseline

C Tacrolimus should be started after 5 doses of anti-thymocyte globu

D When serum creatinine is trending down, returning closer to basel

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-497-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

IMPACT OF URINE CULTURE ALGORITHM ON INAPPROPRIATE SCREENING OF ASYMPTOMATIC BACTERIURIA IN THE EMERGENCY DEPARTMENT

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Purpose: Infectious Diseases Society of America guidelines recommenc against the screening and treatment of asymptomatic bacteriuria (ASB), except for patients undergoing urologic surgery or pregnant females. Despite these recommendations, patients are frequently screened and treated for ASB in emergency departments. Inappropriate ordering of urine cultures leads to antibiotic overuse causing development of antimicrobial resistance, Clostridioides difficile infection, and misuse of resources. Our study aims to evaluate the incidence of inappropriately ordered urine cultures prior to and following the implementation of a urine culture algorithm in a single emergency department. Methods: This is a single center, retrospective, pre- and post-intervention cohort study. Patients in the pre-intervention group were 18 years or older and had a urine culture ordered within the emergency department from January 2018 to March 2018. Patients in the post-intervention group me the same inclusion criteria but presented from January 2021 to March 2021. Patients were excluded if actively being treated for urinary tract infection (UTI), planning to undergo urologic procedure, met sepsis criteria, neutropenic, pregnant, or admitted. The algorithm requires providers to enter a patient-specific sign or symptom of UTI or a qualifying special population prior to placing an order for urinalysis (UA) with reflex to culture, if indicated. The primary outcome will compare the incidence of inappropriate urine culturing for ASB between groups. The secondary outcome will compare the incidence of administration or prescription of antimicrobial therapy for ASB between groups. For the primary endpoint, assuming 30% of pre-intervention urine cultures are inappropriate, achieving 80% power to detect a difference of 15 requires a sample size of 120 patients per group. Alpha will be set a priori at 0.05. Results & Conclusions: To be presented at the 2022 Great Lakes Pharmacy Resident Conference

Learning Objectives:

Recall current guideline recommendations for asymptomatic bacteriuria

Discuss literature evaluating interventions to reduce asymptomatic bacteriuria screening and treatment

Self Assessment Questions:

Which of the following is a potential patient outcome resulting from the treatment of asymptomatic bacteriuria?

A Increased risk of Clostridioides difficile infection

B: Increased risk of antimicrobial resistance

C: Decreased risk of future urinary tract infections following therapy

D: Both A & B

According to Infectious Diseases Society of America guidelines, which c the following patients would it be considered appropriate to screen and treat for asymptomatic bacteriuria?

A Patient with history of dementia

B Patient with planned urologic surgery

C Patient with history of chronic urinary incontinence

D Patient with a change in their urine quality (color, smell, sediment,

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-717-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

IMPLEMENTATION OF A PHARMACY PROTOCOL AND ELECTRONIC MEDICAL RECORD OPTIMIZATION TO REDUCE OVERNIGHT MEDICATION ADMINISTRATIONS IN A HEALTH SYSTEM

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Purpose: Overnight medication administrations are one of the primary interruptions in a patients sleep while in the hospital. Reducing quality of sleep increases a patients risk for delirium. Previous studies have established that delirium has been linked with worse patient outcomes and extended hospital length of stay. A study published by the "Journal of Hospital Medicine" found that delirium was significantly decreased by limiting nighttime sleep disruptions from hospital staff. The purpose of this quality improvement project is to decrease the administration of frequently scheduled medications between the hours of 2200 and 0400 (identified as "quiet hours"). Methods: A report ran from the electronic medical record (EMR) gathered the top 20 scheduled medications between 2200 and 0400. The report pulled data from all Community Health Network inpatient hospitals between May 1, 2021 and May 31, 2021. Continuous infusions, as-needed medications, one-time doses, and maternity units were excluded. Ten of the top 20 medications were selected for planned intervention based on factors such as frequency of administrations during quiet hours, EMR default times, order set inclusion, and feasibility of pharmacist impact. The Pharmacy and Therapeutics Committee currently maintains a protocol approved to guide standard administration times. Of note, the protocol excludes anti-infective agents and several of the specified standard administration times fall within the hours of 2200 and 0400. This presents an opportunity to optimize medication timing to reduce overnight medicatior administrations. Therefore, the data collected from the EMR will be usec to expand this preexisting protocol in an effort to reduce overnight administrations, improve patient sleep, and allow nurses to cluster care. The primary aim of this quality improvement project is to reduce overnight medication administrations between the hours of 2200-0400 b 30% in Community Health Networks hospitals by June 2022.

Learning Objectives:

Recognize the importance of a patient's quality and quantity of sleep while in the hospital.

Reproduce a pharmacy protocol to help reduce overnight medication administrations at one's own hospital and identify potential barriers.

Self Assessment Questions:

Which of the following is expected to occur by decreasing overnight medication administrations?

A Decrease delirium and improve patient outcomes

B: Increase delirium and worsen patient outcomes

C: Lengthen hospital stays and worsen patient outcomes

D: Improve renal function and improve patient outcomes

Which of the following every 6 hours administration time intervals meets our protocol recommendations to avoid quiet hours?

A 0000 â€“ 0600 â€“ 1200 â€“ 1800

B 0400 â€“ 1000 â€“ 1600 â€“ 2200

C 0200 â€“ 0800 â€“ 1400 â€“ 2000

D 0230 â€“ 0830 â€“ 1430 â€“ 2030

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-718-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

IMPACT OF A LOCAL CYSTITIS AND PYELONEPHRITIS ANTIBIOGRAM-DERIVED ALGORITHM ON EMPIRIC OUTPATIENT ANTIBIOTIC PRESCRIBING IN THE EMERGENCY DEPARTMENT OF A COMMUNITY HOSPITAL

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Purpose: Patients who are diagnosed with acute urinary tract infections (UTIs) are often treated in the outpatient setting. Previous studies have shown that antibiotic prescribing is often unnecessary or inappropriate and can lead to an increase in antimicrobial resistance. Many institutions have implemented inpatient and outpatient UTI algorithms based on local resistance patterns to increase the use of appropriate empiric antibiotic regimens. The purpose of this study is to expand antimicrobial stewardship efforts in the emergency department (ED) at Baptist Health Floyd and increase the appropriateness of empiric antibiotic regimens used to treat cystitis and pyelonephritis for patients discharged on oral antibiotics from the ED.Methods: This study is a retrospective chart review of patients at least 18 years old who are diagnosed with acute cystitis or pyelonephritis and are discharged directly from the ED. Patients will be excluded from the study if they are discharged without an antibiotic, received antibiotics in the past 30 days, have a concurrent infection, are pregnant, have obstructing urological abnormalities, or their urine culture grows a microorganism other than bacteria. The primary outcome of this study is the difference in appropriateness of empiric outpatient antibiotic regimens prescribed before and after implementation of a local antibiogram-derived cystitis and pyelonephritis treatment algorithm. Secondary outcomes include the difference in individual deviations from the algorithm of prescribed antibiotic regimens, difference in bug-drug mismatch percentage, comparison of 30-day return visits, and comparison of adverse drug events within 14 days from discharge. Data collection includes demographics, diagnosis of cystitis or pyelonephritis, antibiotic selected, dose, frequency, and duration of antibiotics. Results/conclusion: Results and conclusions are to be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the management of acute uncomplicated cystitis and pyelonephritis based on the 2010 Infectious Disease Society of America (IDSA) and the European Society for Microbiology and Infectious Diseases (ESCMID) updated guidelines.

Discuss the Baptist Health Floyd cystitis and pyelonephritis empiric outpatient treatment algorithm including rationale behind first, second, and last-line agents.

Self Assessment Questions:

According to the IDSA/ESCMID guidelines, what is the treatment duration for nitrofurantoin for uncomplicated cystitis?

A 3 days

B: 5 days

C: 7 days

D: 10 days

According to the Baptist Health Floyd cystitis and pyelonephritis treatment algorithm, which of the following would be an appropriate first line agent for uncomplicated pyelonephritis?

A Nitrofurantoin

B Sulfamethoxazole/trimethoprim

C Cefdinir

D Levofloxacin

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-498-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

REDUCING POTASSIUM SUPPLEMENTATION IN TPN PATIENTS

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Background: Total parenteral nutrition (TPN) compounds are not ordered from a single nutrition team at Henry Ford Macomb (HFM) Hospital. Consequently, pharmacists have noticed variation amongst TPN orders from different providers. Pharmacists have reported that electrolytes are not always ordered, which makes it difficult to verify the contents of the TPN. They also noted that supplemental electrolytes are frequently ordered outside of the TPN without altering the daily compound when needed (i.e., providers re-order the same TPN from the previous day even when patients have new lab values that warrant change to the TPN order). Constantly supplementing electrolytes outside of the TPN without updating the TPN orders (where appropriate) increases workload for pharmacists, pharmacy technicians, and nurses while increasing the number of infusions needed per patient. Statement of Purpose: This study aims to compare how many supplemental potassium and magnesium doses are administered outside of the TPN and compare appropriateness of electrolyte lab orders before and after implementation of TPN education and reference tools. Education was conducted and reference tools were distributed to both physicians and pharmacists. Methods: This is a quasi-experimental study. Inclusion criteria includes patients >18 years old admitted to HFM hospital who have received TPN. Vulnerable populations, patients receiving dialysis and patients with End Stage Renal Disease were excluded. The pre-intervention group included patients from 08/01/2020 to 07/31/2021 and the post-intervention group included patients from 12/13/2021 to 03/11/2022. Data collection from electronic health records includes demographic information, TPN order details, electrolyte lab values and supplemental electrolyte orders. Nominal data was analyzed using Chi-Squared or Fishers Exact test. Ordinal Data was analyzed using Mann-Whitney U or Wilcoxon Signed Rank Sum. Continuous/Interval data was analyzed using parametric T-Test or Mann-Whitney U.Results and conclusions will be presented at Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss how insufficient ordering of electrolytes is an unsafe practice considering adverse events that could result from electrolytes being too high or too low.

Describe how supplementing our patients with electrolytes outside of the TPN without updating the TPN orders (where appropriate) is problematic.

Self Assessment Questions:

Which of the following are true regarding electrolyte labs in relation to TPN compounds?

A Electrolyte labs are not needed for patients receiving TPN compou

B: Electrolyte labs are a useful resource that help providers and phar

C: If electrolyte labs are assessed for the initial TPN compound, furth

D: Electrolyte labs must be ordered every single day that a TPN orde

Increasing the number of supplemental electrolytes ordered outside of the TPN is problematic for which for which of the following?

A Pharmacists and pharmacy technicians

B Nurses

C Patients

D All the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-719-L05-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IMPLEMENTING SERVICES FOR PEDIATRIC CYSTIC FIBROSIS TREATMENT IN A COMMUNITY HOSPITAL

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Patients with cystic fibrosis (CF) require a higher level of care than most pediatric patients. For appropriate care, the Cystic Fibrosis Foundation recommends each healthcare team involve not only a physician, respiratory therapist, and dietician, but a pharmacist as well. As the CF population in Fort Wayne, Indiana transitioned their care to Parkview Health several new services required initiation. Few studies evaluate initiation of pharmacy services, and none look at specifically starting CF services. The purpose of this research project is to prepare the pharmacy department in a community hospital to care for pediatric patients with CF. Based on the lack of resources currently published, a secondary goal is to publish findings and guide other institutions on how best to initiate CF services. The three objectives to accomplish these goals were as follows: (1) prepare pharmacy for inpatient treatment of CF patients; (2) provide staff pharmacists with appropriate training and resources; (3) create and manage electronic support needed within the institution. The main aspect of preparing inpatient pharmacy to care for CF patients was the development of an antibiotic dosing protocol. As kinetics in children with CF are unique, so is the subsequent drug dosing and monitoring. An intravenous and oral antibiotic dosing protocol and order set were designed with up-to-date citations and references. Similarly, an aminoglycoside and vancomycin kinetics guide was designed with a concurrent kinetics calculator. To achieve objective 2, presentations were provided on the disease state and medications used commonly in CF. As the newly designed protocols were enacted, education was provided on when and how to use them. Lastly, any changes and updates needed regarding electronic support (i.e., electronic medical record, drug ordering, and pump calibration) were evaluated and addressed. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Explain the importance of developing policies, procedures, dosing protocols, and education for pediatric cystic fibrosis patients

Recall key areas of development when implementing new pharmacy services

Self Assessment Questions:

Cystic fibrosis patients require specific medications and drug dosing due to:

A Additional genetic material at chromosome 21

B: Genetic mutation in the CFTR protein

C: Genetic mutation in the hemoglobin-Beta gene on chromosome 11

D: Genetic mutation in the FBN1 gene

A key area in implementing new pharmacy services is:

A Improve marketing strategies

B Evaluate insurance coverage

C Provide education to staff

D Increase ordering of medications

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-499-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IMPACT OF CHRONIC MEDICATION DE-ESCALATION IN PATIENTS WITH CYSTIC FIBROSIS (CF) TAKING ELEXACAFTOR, TEZACAFTOR, IVACAFTOR (ETI): A RETROSPECTIVE REVIEW

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The purpose of this study is to evaluate the effects of de-escalating chronic cystic fibrosis (CF) therapies for patients on the highly effective cystic fibrosis transmembrane conductance regulator (CFTR) modulator therapy, elexacaftor/tezacaftor/ivacaftor and ivacaftor (ETI). For many patients with CF, the clinical benefit seen from this precision therapy often exceeds that of supportive care therapy, and therefore we anticipated that patients would desire to discontinue many of their standard of care treatments.

Learning Objectives:

Identify the patient population eligible for ETI therapy

Explain the rationale for the de-escalation of chronic CF medications

Self Assessment Questions:

1.Which of the following patients with CF would NOT be eligible for ETI therapy?

A a.12 year old homozygous for the F508del mutation

B: b.30 year old heterozygous for the F508del mutation

C: c.1 year old heterozygous for the F508del mutation

D: d.15 year old currently on tezacaftor-ivacaftor and ivacaftor

2.What are the possible benefits of de-escalating chronic CF medications?

A a.Decrease in medication costs

B b.Increase in quality of life

C c.Increase in hospitalizations

D d.A & B

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-500-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

COMPARISON OF PERIPHERAL NERVE BLOCK PAIN PUMPS TO STANDARD OF CARE IN PATIENTS FOLLOWING CARDIOTHORACIC SURGERY

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Purpose: One of the challenges following cardiothoracic surgery is post operative pain management. Opioids have historically been the standard of care but adverse effects of this therapy include constipation, ileus, potential for misuse, and possible increased length of hospital stay. Peripheral nerve block pain pumps are a potential alternative, however, the evidence supporting their use is limited. This study aimed to evaluate the use of peripheral nerve block pain pumps in patients following cardiothoracic surgery.Methods: This was a quasi-experimental study that included adult patients admitted to the cardiac intensive care unit at a large, academic medical center following cardiothoracic surgery. The intervention group included those who received peripheral nerve block pain pumps and it was compared to the standard of care. The primary endpoint was the total amount of opioids used in morphine milligram equivalents in the 4 days following cardiothoracic surgery. Additional data collected included adverse events, incidence of post-operative ileus and time to resolution, pain scores, length of hospital stay and cost of intervention. Statistical tests used included chi-squared tests for nominal data, Mann-Whitney U for ordinal data, and parametric T-test for continuous/interval data. Based on existing literature, a sample size of 126 was calculated to achieve an alpha of 0.05, beta of 0.2, and power of 80% with respect to the primary endpoint.Results: To be presented at Great Lakes Pharmacy Resident ConferenceConclusion: To be presented at Great Lakes Pharmacy Resident Conference

Learning Objectives:

Describe the role of peripheral nerve block pain pumps in post-operative pain management

Identify patients that may benefit from use of a peripheral nerve block pain pump

Self Assessment Questions:

What is a possible benefit of using a peripheral nerve block pain pump i a patient following cardiothoracic surgery?

A Decreased opioid requirements

B: Decreased incidence of post-operative bleeding

C: Decreased post-operative nausea and vomiting

D: Decreased post-operative consumption of acetaminophen

Which of the following medications may be useful in a patient experiencing pain at the incision site after open-heart surgery when the patient is already on a hydromorphone PCA, as needed acetaminophen and scheduled methocarbamol? (choose the best answer)

A Scheduled fentanyl 50 mcg intravenous pushes

B Ropivacaine 0.2% via pain pump infusion

C Topical diclofenac 1% gel

D Ketorolac 15 mg IV every 6 hours as needed

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-847-L08-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATING THE MANAGEMENT OF DIABETIC KETOACIDOSIS AND HYPEROSMOLOAR HYPERGLYCIMIC STATE (DKA/HHS) IN ICU PATIENTS FOLLOWING IMPLEMENTATION OF A MULTI-PHASI POWER PLAN

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Purpose: A new multi-phase power plan for the management of diabetic ketoacidosis (DKA) and hyperosmolar hyperglycemic state (HHS) was introduced at our institution following the implementation of a new electronic medical record (EMR). The aim of this study is to evaluate th management of DKA/HHS using the new multi-phase power plan. Methods: This study is a retrospective chart review of patients who were started on an insulin infusion at McLaren Oakland Hospital between February 1st, 2021 to August 31st, 2021 and who were diagnosed with either DKA/HHS. Institutional review board approval was obtained. A sample was generated by running a medication use report with the keyword insulin 100 units/100 mL NaCl. The primary objective is to assess the compliance to the insulin infusion titration protocol. Secondary objectives include quantifying the utilization of the multi-phase plan, assessing the time to anion gap closure, the use of bicarbonate infusions and maintenance fluids. Results: 71 insulin infusions were ordered during our study period. A total of 49 patients were included, 44 (89.8%) patients were diagnosed with DKA and 5 (10.2%) patients with HHS. Compliance to the insulin infusion titration protocol was 28.6%. The correct insulin infusion titration reference char was ordered 46.9% of the time. On average, it took 15 hours (+/- 7.3) for anion gap closure in the compliant group versus 17 hours (+/- 8.5) in the non-compliant group. The power plan was utilized to change maintenance fluids 16% of the time. A total of 6 bicarbonate infusions were ordered. 3 (50%) for a pH < 6.9 and 5 (83.3%) were continued inappropriately. Conclusion: There is a lack of compliance to the DKA/HHS insulin infusion titration protocol and the multi-phase power plan is not often utilized.

Learning Objectives:

Describe the management of DKA/HHS according to the American Diabetes Association treatment guidelines

Identify when maintenance fluids should be changed and appropriate use of bicarbonate infusions

Self Assessment Questions:

Which of the following is a diagnostic criterion for HHS?

A pH < 7.0

B: Blood glucose > 600 mg/dL

C: Serum bicarbonate < 10 mEq/L

D: Anion gap > 18

When should maintenance fluids be changed from sodium chloride to dextrose and half-normal saline during the treatment of DKA?

A Blood glucose < 400 mg/dL

B Blood glucose < 300 mg/dL

C Blood glucose < 200 mg/dL

D Blood glucose < 100 mg/dL

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-501-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

THE IMPACT OF KETAMINE ON OPIOID REQUIREMENTS FOR ACUTE PAIN IN ADULT BURN PATIENTS

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Purpose:Due to inherent risks associated with opioids, the utilization of alternative medications with analgesic properties is an area of interest. Low-dose intravenous ketamine has been shown to reduce pain and opioid consumption in the emergency department. The purpose of this project is to determine the impact of low-dose ketamine on opioid requirements for acute pain in adult burn patients.Methods:This single center, retrospective study included adult burn patients that received opioids and ketamine via a specific order set. All patients that received ketamine from January 1st, 2020 to December 31st, 2021 were includec in the ketamine group. All burn patients that didnt receive ketamine in the first 48 hours of admission from January 1st, 2016 to August 31st, 2016 were included in the control group. Patients were excluded for the following reasons: known opioid abuse, ICU admission, and for anesthesia events during the 48 hours period. The average MME per day in the first 48 hours after admission or first ketamine dose for each patient was averaged together for the primary outcome of average MME Secondary outcomes include rates of various opioid-related adverse events. Continuous variables were analyzed with students t-test and categorical variables were analyzed with Chi-Squared test. Preliminary results:Patient demographics and alternative pain medications between the groups were similar at baseline. Average MME in the ketamine group was 113 compared to 175 MME in the control group ($p < 0.05$) (n=100). Secondary outcomes and final results will be analyzed further.Preliminary conclusions: Low-dose ketamine in our adult burn patient population has significantly reduced the average MME a patient receives and has the potential to positively impact the rate of opioid-related adverse events. Future expansion of utilization of low-dose ketamine into other populations may provide a similar impact.

Learning Objectives:

Recognize the importance of reducing the opioid burden

Describe the impact of low-dose ketamine on pain

Self Assessment Questions:

What is the most appropriate dose for IV low-dose ketamine used for pain?

A 1.5-3 mg/kg

B: 1-2 mg/kg

C: 0.25-0.5 mg/kg

D: 0.1-0.15 mg/kg

Ketamine is associated with which type of side effect?

A Respiratory depression

B Dissociation

C Constipation

D Urinary retention

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-848-L08-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IMPACT OF AN ANTIMICROBIAL STEWARDSHIP PACKAGE ON THE MANAGEMENT OF ASYMPTOMATIC BACTERIURIA

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Purpose: Asymptomatic bacteriuria (ASB) is prevalent in many populations, including the veteran patient population. Overtreatment of ASB with antibiotics contributes to antimicrobial resistance worldwide. Current Infectious Diseases Society of America (IDSA) guidelines identify diagnostic stewardship efforts as an important component to reduce ASB overtreatment. To this end, the Lexington Veterans Affairs Health Care System (VAHCS) developed and implemented a computerized clinical decision tool to assist providers is appropriately ordering a urinalysis (UA) versus a UA with reflex to culture, in conjunction with provider education in the fall of 2021. This project is designed to evaluate the impact of this program on the proportion of lab orders for a UA versus a UA with reflex to culture and examine the effects on ASB overtreatment. Methods: The UA/UA with reflex to culture order set was implemented within the Computerized Patient Record System (CPRS) on December 1, 2021. Lab orders for a UA and UA with reflex to culture within the Lexington VAHCS from December 1, 2020 to December 31, 2020 (pre-implementation cohort) were compared with lab order from December 1, 2021 to December 31, 2021 (post " implementation cohort). The primary outcome was the difference in the percentage of lab orders for a UA vs. UA with reflex to culture. Retrospective chart review was conducted for patients with a positive urine culture to determine the percentage of patients that were inappropriately treated for ASB.Results and Conclusions: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss the prevalence of asymptomatic bacteriuria (ASB) in the United States.

Review the 2019 update of the 2005 IDSA Clinical Practice Guidelines for the Management of ASB.

Self Assessment Questions:

Based on the 2019 IDSA Clinical Practice Guideline for the Managemen of ASB, which of the following is an appropriate subset of patients to screen for and treat asymptomatic bacteriuria (ASB)?

A Patients who have received a kidney transplant

B: Patients with diabetes

C: Pregnant women

D: Pediatric patients

Treatment of asymptomatic bacteriuria (ASB) in most patient populations has the potential to lead to which of the following:

A Lower healthcare costs

B Increased antimicrobial resistance

C Decreased risk of adverse effects from medications

D Lower risk of Clostridioides difficile infection

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-503-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF CIPROFLOXACIN AND CEPHALEXIN COMBINATION ANTIMICROBIAL PROPHYLAXIS IN HEMATOPOIETIC CELL TRANSPLANTATION RECIPIENTS COMPARED TO FLUOROQUINOLONE PROPHYLAXIS ALONE

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Purpose: Fluoroquinolone prophylaxis is recommended for patients with prolonged neutropenia. At our facility, combination cephalexin and ciprofloxacin are used. Ciprofloxacin has a greater concentration maintained within the gastrointestinal tract compared with levofloxacin. Cephalexin provides expanded Gram positive coverage. This study evaluated the association between combination antimicrobial prophylaxis and incidence of bacterial infections in patients undergoing hematopoietic cell transplant (HCT). Methods: This retrospective cohort study included patients undergoing autologous or allogeneic HCT between January 2018 to December 2020 receiving combination antimicrobial prophylaxis during neutropenia post-transplantation. Patients were excluded if there was infection or broad spectrum antimicrobial use at onset of neutropenia or hypersensitivity to ciprofloxacin or cephalexin. The primary outcome was incidence of breakthrough bacterial infections. The data was compared to historical studies evaluating fluoroquinolone monotherapy for antimicrobial prophylaxis. Results: A total of 222 patients were included and 9.9% breakthrough infections occurred. All Gram positive infections showed intermediate susceptibility or resistance to penicillin, as well as cephalexin. Gram negative infections demonstrated fluoroquinolone resistance. Results were compared to a 2017 retrospective study evaluating breakthrough infections in autologous HCT patients with multiple myeloma receiving ciprofloxacin or levofloxacin for prophylaxis. A total of 22.7% breakthrough infections occurred with ciprofloxacin and 18.9% for levofloxacin. The comparator study utilized date of transplantation as time of enrollment, with only 69% of cultures obtained during neutropenia. To increase comparability between this study and our data, patients excluded for presence of infection or use of broad spectrum antibiotics at onset of neutropenia were re-evaluated. New overall breakthrough infection rate was 12.7%. When evaluating only autologous transplant patients as the comparator study did, breakthrough infection rate was 10.3%. Conclusion: The data suggests combination prophylaxis could reduce incidence of breakthrough infections in HCT patients but could propagate growth of more resistant bacteria.

Learning Objectives:

Discuss the benefits of utilization of ciprofloxacin over levofloxacin for antimicrobial prophylaxis for patients undergoing hematopoietic cell transplantation.

Explain how addition of cephalexin to a fluoroquinolone for antimicrobial prophylaxis impacts incidence of bacterial breakthrough infections.

Self Assessment Questions:

Why is ciprofloxacin preferred over levofloxacin for prophylaxis in patients with prolonged neutropenia?

A Benefit of once daily dosing

B: Fewer adverse drug reactions

C: Fewer drug interactions

D: Greater concentration maintained within the gastrointestinal tract

What benefit does the addition of cephalexin add to fluoroquinolone prophylaxis?

A Added Gram-negative coverage

B Added Gram-positive coverage

C Added anaerobic coverage

D Both A and B

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-502-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

SINGLE DOSE AMINOGLYCOSIDE FOR THE TREATMENT OF UNCOMPLICATED CYSTITIS IN THE EMERGENCY DEPARTMENT

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Purpose: Over one million patients seek care for an uncomplicated urinary tract infection in the emergency department annually in the United States. While many infections are treated in the outpatient setting with antibiotics for three to five days, a single dose of an aminoglycoside has been shown to be comparable to standard oral regimens for uncomplicated cystitis in multiple studies. This approach eliminates several barriers to treatment adherence including patient transportation to a pharmacy, outpatient prescription copays, and questionable patient adherence to multi-day oral regimens. In addition to the potential of relapsing infections associated with treatment failure, poor adherence has the potential to place additional strain on the health system if patients require repeat emergency department visits or hospitalizations. In our observational study, we aim to observe the clinical success and therapeutic appropriateness of a single dose of an aminoglycoside antibiotic for the treatment of uncomplicated cystitis in patients presenting to the emergency department compared to a concurrent control receiving antibiotics other than an aminoglycoside.Methods: This is a single center, retrospective study including female patients presenting to the emergency department at Jewish Hospital or an outlying medical center with uncomplicated cystitis between June 1, 2021 and January 31, 2022. Patients treated with a single dose of an aminoglycoside antibiotic will be compared to those treated with other antibiotics. Exclusion criteria include pyelonephritis or severe cystitis, structural urinary abnormalities, and underlying renal dysfunction. The primary outcome is the percentage of patients requiring treatment with an alternative antibiotic for the initial infection after culture results are available. Secondary outcomes include the percentage of patients returning to the emergency department for cystitis within 30 days, antibiotic susceptibility, and rates of isolated bacterial pathogens.Results/Conclusions: Data collection is ongoing, and results will be presented at the 2022 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

List the signs and symptoms, etiologies, and classification of bacterial cystitis

Recall the results of a retrospective chart review on the use of aminoglycosides for the treatment of uncomplicated cystitis in the emergency department

Self Assessment Questions:

Which pathogen is the leading cause of bacterial cystitis?

A Enterococcus faecalis

B: Proteus mirabilis

C: Escherichia coli

D: Staphylococcus saprophyticus

Which of the following patient characteristics would suggest a complicated urinary tract infection?

A Premenopausal female

B Indwelling catheter

C Immunocompetent

D Poor health literacy

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-504-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

INTERRUPTED TIME-SERIES ANALYSIS COMPARISON OF ACUTE KIDNEY INJURY (AKI) RATES DURING TRANSITION FROM VANCOMYCIN TO DAPTOMYCIN FOR OUTPATIENT PARENTERAL ANTIMICROBIAL THERAPY (OPAT)

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Background: Outpatient parenteral antimicrobial therapy (OPAT) is the administration of antibiotics of intravenous antibiotics in the community and relieves the needs for extended inpatient hospital stays. OPAT allows patients to receive the proper care they need while freeing up a hospital room for a more acutely ill patient allowing patients to heal in the comfort of their own home, leading to high patient satisfaction and overall reducing healthcare costs. In most OPAT programs, vancomycin as a continuation of inpatient antimicrobial therapy is more commonplace. However, emerging data demonstrates that daptomycin can be both equally effective, and less toxic from a patient-safety perspective when employed in an OPAT treatment program.Statement of Purpose: The objective of this study is to determine the need for treatment discontinuation, acute kidney injury, and/or intolerance to therapy between patients receiving vancomycin and patients receiving daptomycin in the University of Kentucky (UK) OPAT program.Methods: This is a retrospective, case-control study whereby patients who receive vancomycin OPAT treatment (control) will be compared to those who receive daptomycin. The primary objective of this study is the composite endpoint of need for treatment discontinuation, adverse drug reaction, acute kidney injury, and/or intolerance to therapy between patients receiving vancomycin and patients receiving daptomycin in the UK OPAT program. Patients were included if they were 18 years of age enrolled in the OPAT treatment program at UK HealthCare. Patients with a creatine clearance < 50 mL/min will be excluded.Conclusions: Final results will be presented at the 2022 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss differences in vancomycin acute kidney injury rates and daptomycin acute kidney injury rates in the rural OPAT setting.

Identify optimal treatment regimens for patients receiving outpatient parental antibiotic therapy.

Self Assessment Questions:

Which of the following may represent a benefit of outpatient parental antibiotic therapy?

A Shorter hospital stays

B: Higher associated healthcare costs

C: Lower patient satisfaction

D: Guaranteed transitions of care

Which is true regarding IDSA OPAT recommendations of laboratory test monitoring while on therapy?

A Patients do not require laboratory test monitoring while on therapy

B Vancomycin blood levels are generally recommended to be monito

C Odds of readmission were similar in patients who had vancomycin

D Vancomycin blood levels only need to be monitored on a monthly

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-505-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

IMPACT OF STAFF PHARMACIST-LED CLINICAL COMPETENCY SELECTION ON ANNUAL COMPETENCY SATISFACTION, ENGAGEMENT, AND APPLICATION

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Purpose: The purpose of this research study is to determine the impact of pharmacist selection of annual acute-care clinical competency modules on engagement, satisfaction, and application of selected concepts.Background: There is little research around administration of annual learning and clinical competencies for staff pharmacists in the community and regional hospital settings. Comprehensive Pharmacy Services (CPS) frequently partners with community and regional hospitals to manage their pharmacy departments. A resource offered by CPS, known as the RxLearningCenter, provides Accreditation Council for Pharmacy Education (ACPE) approved learning modules for pharmacists that cover a variety of clinical topics. Pharmacists that work at CPS partner sites do not often have a decision point in which learnings they complete on an annual basis. Often, annual learning modules are assigned at random through the RxLearningCenter or other external resources available to satisfy regulatory requirements for pharmacy staff members.Methods: This multicenter study administered a pre/post-continuing education survey to determine the impact of staff-pharmacist led selection of annual learnings on satisfaction, engagement, and application of annual learning. Annual learnings are grouped by five competency domains: pharmacotherapy, therapeutic drug monitoring, pharmacy stewardship, medication safety, and medication-use system evaluation and optimization. The pharmacotherapy domain contains two sub-domains: population-based pharmacotherapy and disease-state management. This totals six categories of competency, to which seven unique learning modules are assigned to each of the six categories. Pre/post continuing education survey questions are designed to measure the impact on pharmacist engagement, satisfaction, and application of annual learning process compared to previous processes of annual learning assignments.Data is currently being collected, and results will be further presented at the GLPRC conference.

Learning Objectives:

Identify opportunities for improvement in pharmacist annual learning and competency models

Explain the need and value of enhancing pharmacist ownership of annual learning and competency programs

Self Assessment Questions:

What are challenges faced when utilizing a single source for various methods of competency assessment?

A Dedicating a resource to maintain educational materials

B: Both A and C

C: Ensuring material remains up-to-date

D: Staff members are able to easily access educational materials

The Joint Commission standards for ensuring hospital staff members have knowledge and skills necessary to perform job duties requires:

A Staff participate in ongoing education and training

B Education must be specific to needs of population

C Should include elements of team communication/collaboration

D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-720-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

IMPLEMENTATION OF A PHARMACY TRAINEE-BASED CLINICAL SERVICE FOR QUALITY IMPROVEMENT

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Ambulatory care pharmacists providing direct patient care services have limited opportunities for direct revenue generation in traditional fee-for-service payment models. Value-based payment models have created a unique opportunity for pharmacists to leverage their pharmacotherapy expertise to improve patient- and population-level outcomes and generate revenue. Though clinical pharmacy services are consistently linked to improved outcomes for patients through chronic disease state management, patient volume, other clinical duties and academic responsibilities limit pharmacists ability to make extensive, population-level interventions. This study aims to quantify the rate of pharmacist-actionable quality improvement interventions in a managed care population after implementation of a pharmacy trainee-based clinical service. Student pharmacists and residents are currently using insurer-generated population lists to conduct telehealth outreach to patients not meeting health plan clinical quality measures. Interventions will be retrospectively quantified and categorized to determine a rate of pharmacist-actionable interventions. Results will be presented at the Great Lakes Pharmacy Resident Conference. This study will provide the basis for future studies evaluating the change in institutional performance on clinical quality measures, institutional payer ratings, and associated revenue generation after implementation of a pharmacy trainee-led clinical service.

Learning Objectives:

Describe a value-based payment model.

Recognize the role of an ambulatory care pharmacist in improving patient- and population-level clinical outcomes and subsequent revenue generation.

Self Assessment Questions:

Which of the following accurately describes the payment model?

A Fee-for-service payment model: an example is an accountable car
B: Value-based payment model: reimbursement is based on the qual
C: Fee-for-service payment model: emphasizes quality of services pr
D: Value-based payment model: healthcare providers charge based c

Which of the following is true?

A Ambulatory care pharmacists providing direct patient care services
B Improvement in clinical quality measures related to diabetes and h
C Quality-based payment models incentivize providers for higher rat
D Clinical pharmacy services have not yet demonstrated improved o

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-506-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

ANTICOAGULATION AND ITS EFFECT ON CARDIAC ALLOGRAFT VASCULOPATHY POST-HEART TRANSPLANT

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Purpose: Cardiac allograft vasculopathy (CAV) is the leading cause of morbidity and mortality in heart transplant recipients. It is a chronic type of rejection defined as concentric fibrous intimal hyperplasia and results in narrowing of the lumen in 29% of patients 5 years post-transplant. Many proposed mechanisms are due to inflammation and endothelial injury which in turn leads to intimal hyperplasia and vasculopathy. Additionally, rodent models have shown association between hypercoagulable microvasculature and development of CAV. If a hypercoagulable state contributes to CAV, the use of anticoagulants may protect against CAV development. The purpose of this study is to determine if there is a correlation between anticoagulation with warfarin or a direct-acting oral anticoagulant post-heart transplantation and the incidence of CAV.Methods: This was a retrospective, observational, single-center cohort study comparing heart transplant recipients who received at least 3 months of anticoagulation versus those that didn't. Patients were included if they received a heart transplant between April 1992 to August 2016 at Loyola University Medical Center. Patients were excluded if they were less than 18 years old at the time of transplant, had a dual transplant, expired within 1-month post-transplant, or insufficient data was available. The primary endpoint was the incidence of CAV at 5 years post-transplant. CAV was defined by physician documentation based on clinical assessment, coronary angiography and/or intravascular ultrasound findings. Secondary endpoints included time-to-event at 5 years post-transplant and for life of the graft, incidence of CAV at 5 years post-transplant in patients who were treated with anticoagulation for more than 6 months, who started anticoagulation within 1 month or 6 months post-transplant, who started anticoagulation alone vs. aspirin alone within 6-months post-transplant, and in those who were on aspirin within 6 months post-transplant. Results: Results will be presented at the 2022 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Review cardiac allograft vasculopathy

Identify the role of antithrombotics in cardiac allograft vasculopathy

Self Assessment Questions:

How is cardiac allograft vasculopathy defined?

A Thrombus in the native heart vessel
B: Concentric fibrous intimal hyperplasia along the vessels
C: Unilateral atherosclerosis of the heart vessels
D: Reperfusion injury in the heart

Which of the following antithrombotics is currently used for cardiac allograft vasculopathy prophylaxis?

A Warfarin
B Apixaban
C Aspirin
D Enoxaparin

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-507-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EFFECT OF BONE MODIFYING AGENTS IN PATIENTS RECEIVING ACTIVE TREATMENT FOR MULTIPLE MYELOMA WITHOUT PRESENCE OF OSTEOLYTIC BONE LESIONS

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Statement of PurposeMyeloma bone disease occurs in approximately eighty percent of patients with multiple myeloma (MM) and carries the potential to result in skeletal related events (SRE), including pathologic fracture, spinal cord compression, and the need for surgery or radiation. For this reason, bone modifying agents (BMA) are commonly used treatment modalities in this patient population. Guidelines recommend the administration of pamidronate, zoledronic acid, or denosumab for all patients receiving primary treatment for MM, regardless of osteolytic disease status. Although the literature surrounding BMAs in MM is robust, there is a lack of data and controversy regarding therapy initiation in the subset of patients presenting without osteolytic disease. While patients with osteolytic lesions typically receive some duration of BMA therapy, use in the setting of MM without such lesions varies as treatment approaches are often prescriber dependent. The aim of this study is to identify the impact of BMAs, particularly in the subset of patients diagnosed with MM in the absence of osteolytic bone disease.Statement of Methods UsedThis single-health system, retrospective, observational study will be conducted at UC Health. The primary objective is to compare incidence of SRE in patients receiving a BMA against those not receiving such therapy in patients without bone involvement at diagnosis. Additional aims include analysis of the impact of BMA in patients with bone involvement at diagnosis, time to SRE and overall survival, BMA adverse event rate, evaluation of length of BMA therapy, BMA dose intensity, and predictive factors associated with SRE Study will include adult patients with symptomatic MM on active therapy at UC Health between January 2013 and November 2021. Exclusion criteria includes pregnancy, incarceration, and chronic dialysis. Results/ConclusionData collection and analysis are ongoing. Results and conclusion to be presented at Great Lakes Pharmacy Residents Conference in April 2022.

Learning Objectives:

Discuss the role of bone modifying agents in multiple myeloma.

Outline practices regarding the use of bone modifying agents in patients presenting without osteolytic lesions at diagnosis of multiple myeloma.

Self Assessment Questions:

Which of the following is true about bone modifying agents in multiple myeloma?

A Alendronate and ibandronate are commonly used therapies for MM

B: Denosumab works directly on osteoclasts and osteoclast precurso

C: Bone modifying agents are recommended in all patients with SMM

D: Zoledronic acid is associated with decreased incidence of patholo

Which of the following patients will NOT be included in this study?

A Patient diagnosed with MM receiving bortezomib/lenalidomide/dex

B Patient diagnosed with MM receiving bortezomib/lenalidomide/dex

C Patient diagnosed with smoldering myeloma.

D Patient diagnosed with MM receiving bortezomib/lenalidomide/dex

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-508-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

BETA-LACTAM VERSUS NON-BETA-LACTAM ALTERNATIVE REGIMENS FOR SURGICAL PROPHYLAXIS IN PATIENTS UNDERGOING COLORECTAL SURGERY

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Purpose: Surgical site infections (SSIs) are responsible for increased morbidity, readmissions, and costs. The use of antibiotic prophylaxis to prevent SSIs is a well-established practice. -lactams are preferred over non--lactam alternative therapy for prophylaxis due to their targeted bactericidal activity, favorable kinetics, relative safety and low cost. Several studies have shown reduced SSIs in patients receiving -lactam prophylaxis; however, these studies have limitations including not controlling for prophylaxis timing and dosing. The studys primary objective is to analyze the incidence of SSIs comparing -lactams vs. non--lactam alternative agents for preoperative prophylaxis in colorectal surgeries when controlling for prophylaxis timing and dosing.Methods: A retrospective cohort study was performed in adult patients receiving surgical prophylaxis for colorectal procedures between 2012 and 2021. A 70-hospital multidisciplinary collaborative database (Michigan Surgical Quality Collaborative) will be utilized to obtain all study data. Patients were excluded if they received emergent or urgent surgeries, had infection present at the time of surgery, or had exploratory procedures. The primary objective, incidence of SSIs, will be evaluated while controlling for comorbidities, social demographics, and clinical risk factors (appropriate drug dose and preoperative administration time). Secondary analysis includes; adverse drug events between groups (acute kidney injury, and post-operative C.difficile); comparison of surgical approach (open surgeries verses minimally invasive) and variance of outcomes between differing types of elective colorectal surgeries. Summary of data and Conclusions: Data extraction on-going

Learning Objectives:

Identify 3 common complications of surgical site infections

Outline considerations for preoperative colorectal surgery antibiotic prophylaxis medications

Self Assessment Questions:

What are 3 common complications of surgical site infections?

A Increased morbidity, readmissions, and increased cost

B: Repeat surgeries, amputations, and extended recovery time

C: Viral infection, increased morbidity, and diabetes

D: Pneumonia, readmissions, and additional scarring

Which of the following is true?

A SCIP guidelines recommend 2gm cefazolin doses for patients wei

B Intravenous antimicrobials are preferred to oral formulations when

C Vancomycin plus gentamicin given within 2 hours of incision provi

D Cefoxitin plus metronidazole is a preferred colorectal surgery preo

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-509-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

DISCONTINUING DISEASE MODIFYING THERAPY (DMT) IN PATIENTS 50 YEARS OR OLDER WHO HAVE REACHED STABLE MS DISEASE

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To evaluate the impact of discontinuing disease-modifying therapy (DMT) in multiple sclerosis (MS) patients 50 years of age or older, determine relapse risk, and assess cost-benefit.This project is a retrospective chart review of patients 50 years of age or older who follow with Marshall Health Neurology Clinic for a diagnosis of MS and discontinued DMT. The project obtained IRB approval from Marshall University. Inclusion criteria are as follows: patients 50 years of age or older, discontinued DMT, and seen at Marshall Health Neurology Clinic between January 2019 and October 2021. Exclusion criteria are as follows: DMT was stopped by an outside provider prior to establishing care at Marshall Health Neurology Clinic, under the age of 50 when DMT was discontinued, and patients who have never been on DMT. Data analysis included length of MS diagnosis, age therapy was discontinued history of relapse since DMT discontinuation, date of last dose of DMT received, number of DMTs prescribed, latest MRI, date of last MRI change, and latest clinical relapse. The primary outcome was to evaluate the presence of MS relapses in patients who discontinued DMT.

Learning Objectives:

Review the pathophysiology of multiple sclerosis (MS)

Explain the immunosenescense phenomenon as it relates to discontinuing disease-modifying therapy in multiple sclerosis

Self Assessment Questions:

What is the exact cause of the symptoms that are present with multiple sclerosis?

A B-cell depletion

B: Demyelination within the CNS

C: Infection in the CNS

D: Spinal stenosis

What is the mechanism behind how the immunosenescense phenomenon occurs?

A Poor nutrition leads to immune cell death

B Physical trauma that resulted in immune cell efficacy being compr

C Reduction in the number of peripheral blood naÃ¯ve cells with a re

D Lymphocytes attack other immune cells depleting the total numbe

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-510-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

URINALYSIS (UA) WITH REFLEX TO CULTURE ORDERS AND EFFECT ON ANTIBIOTIC USE

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Purpose: Positive urine cultures encourage antimicrobial use, irrespective of symptoms. Obtaining urine cultures when not clinically indicated promotes inappropriate antimicrobial use, antibiotic resistance medication adverse events and additional costs. Urinalysis with reflex to culture (UAC) testing is included in many screening and diagnostic processes in emergency departments and hospitals. In this approach, when a urinalysis is ordered, it automatically reflexes to a urine culture when specific parameters are positive. Thus, screening with a UAC when clinical signs/symptoms are not present may lead to inappropriate antibiotic use. The purpose of this study was to evaluate the utilization o UAC and implement strategies to decrease treatment of asymptomatic bacteriuria. Methods: This IRB approved retrospective study included ED or hospital patients who had a UAC completed. Exclusions include patients under 18 years old, patients transferred from an outside facility with initial antimicrobial treatment or microbiological work up and patients admitted to the inpatient psychiatric unit.A UAC was considered appropriate if a patient had symptoms consistent with a urinary tract infection (UTI): dysuria, urinary frequency, urinary urgency, suprapubic pain and flank pain. In addition, definition of one or more clinical symptoms: hematuria, altered mental status, unexplained falls, hypotension, tachycardia, elevated WBC and/or fever.UAC costs were obtained from the laboratory and included the cost of the UA and reflex to culture. Antibiotic costs were determined by the number of doses received during hospital admission and prescribed upon discharge. Primary outcome is the number of patients who had a UAC ordered with no UTI symptoms. Secondary outcomes include number of patients who had antibiotics prescribed, and associated laboratory and antibiotic costs. Results/conclusions: Preliminary results demonstrate over 45% o UAC orders were not clinically indicated. This led to 61 patients (44%) receiving inappropriate antimicrobial therapy and $34,914.32 in added costs. Final results and conclusions pending.

Learning Objectives:

State appropriate signs and symptoms of urinary tract infections (UTI) that require urinalysis with reflex to culture tests.

Discuss appropriate patient populations that would require treatment of a UTI.

Self Assessment Questions:

Which of the following would a UA with reflex to culture order be the most appropriate?

A A 78-year-old male admitted to the ED with a new urinary catheter

B: A 24-year-old female visiting her OBGYN for a routine yearly chec

C: A 50-year-old male visiting his primary care physician with new on

D: A 62-year-old female admitted for abdominal pain and vitals: WBC

Which patient population would NOT be appropriate for the treatment of a UTI upon a positive urine culture result?

A Patients undergoing a urological procedure

B Patients admitted to the ED from a long-term care facility with long

C Patients with a chief complaint of dysuria and flank pain

D Pregnant patients during their first trimester checkup

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-511-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EVALUATION OF THE PHARMACIST'S ROLE IN THE TRANSITIONS OF CARE PROCESS IN A COMMUNITY HOSPITAL

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Purpose: Transitions of care (TOC) is the movement of a patient from one setting of care to another. TOC is one of the three key areas identified in the World Health Organizations third Global Patient Safety Challenge: Medication Without Harm. For patients who had significant changes to home medication lists during hospitalization, the transition from the inpatient to outpatient setting can be challenging. Pharmacists play a key role in TOC by providing interventions and services designed to improve medication outcomes for patients. The purpose of this study is to evaluate the current pharmacy TOC process at SSM Health St. Marys Hospital " Madison, with an emphasis on TOC at discharge, and identify gaps where pharmacy could intervene to improve overall patient care and reduce readmissions. Methods: The electronic medical record system was used to identify adult patients admitted to the general medical floor at SSM Health St. Marys Hospital " Madison during the study period. A retrospective chart review was performed of admission medication reconciliations performed by medication reconciliation technicians (MRTs) and pharmacists, discharge medication reconciliations and consults performed by pharmacy residents, and readmission within 30 days of discharge. The patients admission diagnosis, demographic information, and comorbidities were collected. Patient identifiers and all protected health information (PHI) were maintained in an encrypted computer database housed within the hospital network system. All patient identifiers were removed in the database during data analysis. The primary outcome is the all-cause readmission rate 30 days post hospital discharge of patients with a face-to-face pharmacist discharge consults compared to those without.Results/Conclusion: Data collection and analysis are ongoing. The final results will be presented at the 2022 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Define the role of pharmacists in transitions of care

Identify common medications related to hospital readmissions

Self Assessment Questions:

Which of the following is a service that inpatient pharmacists provide in transitions of care?

A Schedule follow-ups after discharge

B: Administer vaccinations

C: Reconcile discharge medication lists

D: Fill discharge prescriptions

Which of the following medications increases a patient's risk for readmission to the hospital?

A Sertraline

B Pantoprazole

C Ondansetron

D Potassium chloride

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-816-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IMPLEMENTATION OF A PHARMACY-DRIVEN PNEUMOCOCCAL VACCINE INTERVENTION PRIOR TO DISCHARGE FOR IMPROVED TRANSITIONS OF CARE

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Purpose: Involving pharmacy in the administration of pneumococcal vaccines can increase the percentage of patients who follow CDC recommendations and improve transitions of care. The purpose of this study is to assess a pharmacy-driven pneumococcal vaccine intervention prior to inpatient discharge from the study site to improve transitions of care to an affiliated Federally Qualified Health Center (FQHC). Methods: The study was conducted from November 2021 to February 2022. Patients were eligible if they were aged 19 or older, established as an outpatient with the FQHC affiliated with the study hospital, and were admitted to the study sites inpatient medical resident rounding services, and are eligible for pneumococcal vaccination. Pharmacists assessed vaccine history and patient eligibility prior to discharge and provided a recommendation regarding vaccination, per CDC guidelines, via the discharge summary. At subsequent hospital follow-up visits in the FQHC, providers followed the vaccine schedule that is recommended. The following data was collected: patient age, past medical history that indicates vaccine administration, provider seen in clinic (resident physician vs resident pharmacist), vaccine qualified for vaccine received, appropriate vaccine administration, duplicate administration, and vaccine refusal. The primary outcome was measured by assessing pneumococcal vaccine administration pre and post intervention implementation. Secondary outcomes included appropriate recommendation, duplicate administration, and vaccine refusal rate. Sample size required to detect a 25% difference between groups is 140 patients, 70 per group.Results and Conclusions: Data collection and analysis remain ongoing. Results and conclusions will be presented at the 2022 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss the benefits of a pharmacy-driven pneumococcal vaccine protocol.

Review the pharmacist's impact on vaccine administration in patients who transitions out of the hospital.

Self Assessment Questions:

Which of the following are benefits seen from integrating a pharmacy-driven vaccine protocol?

A To decrease average length of stay in the hospital.

B: To increase the number of patients following CDC guideline recom

C: To reduce duplicate vaccine administrations.

D: Both B & C.

The role of the pharmacist in improving transitions of care for vaccine administration may include which of the following?

A Reviewing previous vaccine administrations.

B Identifying the appropriate vaccine for administration.

C Counseling patients on the importance of pneumococcal vaccine a

D All the above.

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-835-L06-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

AN EVALUATION OF THE OUTCOMES AND SAFETY OF THE JESSE BROWN VETERANS AFFAIRS MEDICAL CENTER GLP-1 CONVERSION INITIATIVE

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Background: In October 2020, semaglutide became the Veterans Affairs (VA) preferred Glucagon-like Peptide-1 (GLP-1) receptor agonist medication. Patients at the Jesse Brown VA Medical Center (JBVAMC) on dulaglutide for type 2 diabetes were approved by the Pharmacy and Therapeutics Committee to be converted to semaglutide. Clinical Pharmacy, Endocrinology, and General Medicine Clinic providers at JBVAMC assessed their patients on dulaglutide for appropriateness of conversion to semaglutide. Eligible patients were converted to semaglutide by Pharmacy based on the dose deemed appropriate by the provider. Patients were notified by Pharmacy of the conversion via phone call and an informational letter. Patients with underlying diabetic retinopathy were recommended for Eye Clinic follow up.Purpose: While dulaglutide and semaglutide are both GLP-1 medications, they are structurally distinct drugs that possess minor differences in A1c lowering potential, weight loss potential, and side effect incidences. The purpose of this study was to assess the safety and outcomes of the pharmacist-led GLP-1 conversion initiative from dulaglutide to semaglutide for patients with type 2 diabetes at JBVAMC to ensure the quality of care provided by the two medications was equitable.Methods: This retrospective chart review evaluated patients converted from dulaglutide to semaglutide as part of the pharmacist-led GLP-1 conversion initiative between January 1, 2021 and July 31, 2021. The primary endpoint was the change in A1c following the conversion. This compared the most recent A1c during the 6 months prior to conversion and the first A1c 3 to 6 months after the conversion. Key secondary endpoints included reported adverse events to GLP-1 medications, change in patient body weight, and development or progression of diabetic retinopathy.Results/Conclusion: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review the 2021 ADA guideline recommendations regarding GLP-1 receptor agonist medications.

Discuss the safety and efficacy of GLP-1 receptor agonist medications i Type 2 Diabetes Mellitus.

Self Assessment Questions:

When does the ADA generally recommend adding a GLP-1 receptor agonist to a patients treatment regimen?

A As the first line medication in patients with baseline A1c is greater
B: As the first line medication in patients who failed lifestyle modificat
C: As a second line medication in patients above their A1c goal on m
D: As a last line medication in patients above their A1c goal

Which of the following GLP-1 receptor agonist medications has been associated with diabetic retinopathy?

A Semaglutide
B Dulaglutide
C Liraglutide
D Both A and B

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-722-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

PATIENT REPORTED OUTCOMES FOR ORAL ONCOLYTIC THERAPY - A QUALITY IMPROVEMENT INITIATIVE

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Purpose: Oral oncolytic therapy is a growing field of oncology that allows patients to manage their treatment at home. Patient-reported outcome measures improves communication with providers and has demonstrated positive patient outcomes. An electronic questionnaire via the MyChart app was developed to allow patients to report adherence and side effects directly to their providers. The purpose of this quality improvement initiative is to determine the impact of utilizing an app on adherence and side effect monitoring and documentation for patients receiving oral oncolytic therapy. Methods: This quality improvement initiative comprised of a retrospective and prospective chart review. Patientswere included if they are>18 years old, prescribed an oral oncolytic, received comprehensive oral oncolytic education,able to read and write in English, and agree to participate in utilizing the app. Patients were excluded if they are receiving an oral oncolytic as part of a clinical trial. Prior to the initiation of the questionnaire, charts were retrospectively analyzed for the previous four months to determine how frequently oral oncolytic monitoring was conducted and documented by the provider in the patient chart. After implementation of the questionnaire, patient charts were analyzed for four months prospectively for adherence and side effect monitoring and documentation via responses from the questionnaire. The primary outcome was to compare pre- and post-documentation of adherence and side effect monitoring after implementing the questionnaire. Secondary outcomes from the questionnaire were to determine the adherence rate for patients taking oral oncolytics, evaluate side effect score and trends, identify if follow-up was documented by providers for patients who had flagged responses, determine the percentage and reason for self-discontinuation of an oral oncolytic, and determine the number of days from when the oral oncolytic prescription was written to when it was started. Results/Conclusions: To be presented at the 2022 Great Lakes Pharmacy Residents Conference.

Learning Objectives:

Discuss the importance of monitoring patient reported outcomes for patients taking oral oncolytic therapy.

Identify when patient reported outcomes should be monitored for patients receiving oral oncolytic therapy

Self Assessment Questions:

Which of the following statements is true about monitoring patient reported outcomes for patients taking oral oncolytic therapy?

A Patient reported outcomes should be monitored to evaluate severi
B: Monitoring patient reported outcomes is too time consuming for pr
C: Patient reported outcomes should be monitored to maximize effica
D: Oral oncolytics do not require monitoring since therapy is manage

At what time frame(s) should patient reported outcomes be monitored?

A Once monthly after the initiation of an oral oncolytic
B At week 1, 2, and 4, followed by once monthly after the initiation o
C Once weekly for the first month, followed by quarterly (every 3 mo
D Quarterly (every 3 months) after the initiation of an oral oncolytic

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-512-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

ASSESSING APPROPRIATENESS OF CYCLING OR SWITCHING BIOLOGIC THERAPIES IN A TREAT TO TARGET WORLD - PREPARING FOR THE FUTURE OF BIOSIMILARS

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Rheumatoid arthritis (RA), spondyloarthritis (SpA), psoriatic arthritis (PsA), inflammatory arthritis (IA), and juvenile idiopathic arthritis (JIA) are common autoimmune conditions for which a patient may be treated with biologic therapies. These therapies often place financial burden on patients, healthcare systems, and payors. These specialty conditions have treatment pathways that drive the escalation of medication selection. Escalation to biologic therapies can occur preemptively at times when a patient experiences side effects that can be mitigated or when the adherence to prior treatments has been less than the recommended 80% threshold. There is opportunity for assessment and potentially re-education of care team members as we prepare for biosimilars of TNF- inhibitors to become widely available. The data on appropriateness of therapy modifications and reasons for therapy changes is lacking. The purpose of this study is to evaluate the current state of progression of biologic therapies for selected specialty conditions and identify opportunities to optimize adherence to recommended guidelines of care. This is a retrospective chart review cohort study of adult patients with select rheumatology conditions. Patients with select conditions of interest, who had Quartz insurance coverage, utilized UW Health specialty pharmacy, and have filled at least one biologic agent within the past 12-month period, were identified using a dispense report. Patients who received dual biologic therapy, had malignancy, contraindications to biologic therapy, severe liver, or renal impairment, or were pregnant were excluded from the study. The primary outcome is the total number of appropriate therapy progressions. Secondary outcomes include the number of therapy cycle (progression to agents with the same mechanism of action), number of therapy switches (progression to agents with different mechanism of action), adherence, and reason for therapy discontinuation.

Learning Objectives:

Recall first line pharmacologic guideline-based therapy for rheumatoid arthritis (RA)

Identify appropriate duration of pharmacotherapy prior to therapy modification

Self Assessment Questions:

According to American College of Rheumatology 2021 guidelines for treatment of rheumatoid arthritis, what is the recommended initial therapy for treatment-nave patients with moderate-to-high disease activity?

A Adalimumab
B: Hydroxychloroquine
C: Sulfasalazine
D: Methotrexate

According to American College of Rheumatology 2021 guidelines for treatment of rheumatoid arthritis, what is the minimum duration of therapy prior to considering therapy modification?

A Two weeks
B Six months
C Three months
D Four weeks

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-513-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

CANCER IS CHRONIC BUT ANTIMICROBIAL STEWARDSHIP IS ICONIC: OPPORTUNITIES TO IMPROVE ANTIMICROBIAL USE IN AMBULATORY ONCOLOGY CLINICS

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Purpose:One of the first questions every cancer patient asks is will I lose my hair?, but a complication they may not expect is infections. Approximately 60% of cancer deaths are infection related. Antimicrobial stewardship practices outside the acute care setting are somewhat limited, particularly in a focused, high-risk population like those with cancer. The purpose of this study is to evaluate antimicrobial prescribing patterns in ambulatory oncology clinics in a healthcare system, and to identify potential areas to improve antibiotic use. Methods:This was a retrospective cohort evaluating antibiotic prescriptions from 5/1/21-8/1/2 across 4 outpatient cancer centers. Adult patients were included if they received a prescription for uncomplicated respiratory tract, urinary tract, or skin and soft tissue infection and were actively receiving care from a hematologist/oncologist for a cancer diagnosis. The primary endpoint was the proportion of patients who received optimal treatment, defined as a composite of optimal drug, dose, and duration. Optimal was determined according to National Comprehensive Cancer Network (NCCN) guidelines and institutional policies. The secondary endpoints were treatment failure, individual elements of the composite outcome, delays in chemotherapy, and adverse drug events. Baseline patient characteristics was characterized using descriptive statistics. Continuou variables were expressed as either a mean (SD) or median (IQR) and categorical variables will be expressed as a proportion. Multivariable logistic regression analysis was performed on baseline and clinical risk factors to assess factors associated with optimal antibiotic prescribing. Any variable identified as plausible or having a p value < 0.25 was considered for regression analysis. An a priori subgroup analysis of shor versus long antibiotic duration of therapy was performed to assess antibiotic prescribing based on indication. Long duration is defined as days of therapy exceeding institutional and NCCN recommended durations.Results to be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Recognize optimal antimicrobial treatment for hematology/oncology patients

Describe opportunities to improve antimicrobial use in outpatient hematology/oncology clinics

Self Assessment Questions:

Which of the following increase the risk of infection in patients with solid tumors?

A Prior antibiotic use
B: Disruption of anatomic barriers
C: Obstruction due to primary or metastatic tumor
D: All the above

Which of the following are causes of suboptimal antibiotic prescribing?

A Clinician workload
B Lack of knowledge
C Fear of complications from infections
D All the above

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-514-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

CLINICAL IMPACT OF A PHARMACIST-LED CISATRACURIUM DOSING PROTOCOL IN COVID-19

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Purpose: Cisatracurium is a neuromuscular blocking agent (NMBA) that is utilized as a continuous infusion to facilitate ventilator synchrony in ARDS. Guidelines recommend a NMBA may be used in this population for up to 48 hours. Throughout the COVID-19 pandemic, SwedishAmerican Hospital (SAH) has seen a significant increase in the utilization of cisatracurium in ARDS patients. This study will compare cisatracurium use before and after protocol implementation with a goal of improving NMBA stewardship.Methods: A single-center retrospective chart review was conducted from March 2020 to October 2021 prior to the SAH protocol and from January 2022 to February 2022, post-protocol initiation, including all patients 18 years and older who are admitted to the SAH Critical Care Unit (CCU) with COVID-19 and have related hypoxia or ARDS and received cisatracurium as a continuous infusion. Patients will be excluded if they are pregnant, are a prisoner, or received a cisatracurium continuous infusion for less than 48 hours. The dosing protocol allows for cisatracurium to infuse at 0.3 to 10 mcg/kg/minute for up to 48 hours. At 48 hours, the infusion will be transitioned to NMBA intermittent dosing. The primary objective is to evaluate dose and duration of cisatracurium. The secondary objectives will include total number of separate infusions, length of CCU stay, and rate of all-cause mortality at 30 days. Safety analysis will include incidence of bradycardia. Summary of preliminary results: Research is currently ongoing and any updates will be shared at the conference.Conclusion: While study results are currently pending, the outcomes will potentially improve cisatracurium stewardship.

Learning Objectives:

Recall the evidence for use of continuous infusion neuromuscular blocking agents (NMBA) in acute respiratory distress syndrome

Explain the dosing protocol for continuous infusion NMBAs in ARDS patients at a single community hospital

Self Assessment Questions:

The 2019 ARDS Formal Guidelines recommend the use a NMBA should probably be considered in moderate to severe ARDS for up to what duration of time?

A 72 hours

B: 48 hours

C: 24 hours

D: 12 hours

Based on the dosing protocol for continuous infusion NMBAs in ARDS patients at a single community hospital, what agent(s) may be used in the event of a cisatracurium drug shortage?

A Rocuronium

B Succinylcholine

C Vecuronium

D Answers A and C

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-515-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF PHARMACY DELIVERED HARM REDUCTION EDUCATION IN PATIENTS WITH SUBSTANCE USE DISORDERS

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Purpose: Harm reduction (HR) is a set of practical strategies aimed at reducing negative consequences associated with substance use. This approach is increasing as an evidence-based practice and may provide promising benefits for patients with substance use disorders (SUD). The objective of this project is to evaluate the impact of pharmacy delivered harm reduction education on health and safety outcomes in patients with substance use disorders.Methods: This prospective cohort study will be completed through patient chart reviews at the Robley Rex VA Medical Center (RRVAMC). Pharmacy delivered HR education sessions, lasting approximately forty minutes, will be provided to patients with active SUDs while admitted to the Substance Abuse Residential Rehabilitation Treatment Program (SARRTP) or the inpatient psychiatric unit. Health and safety outcomes will be collected for these patients who receive the education. Groups will be matched by location and by primary SUD diagnoses. The primary endpoint will include a composite outcome of emergency department visits at the RRVAMC relating to SUD, fatal overdoses related to substance use, non-fatal overdoses related to substance use, SARRTP readmissions, and hospitalizations related to SUD or other mental health conditions. Secondary endpoints will include each individual component of the composite primary outcome, a breakdown of hospitalizations related to SUD and hospitalizations related to other mental health conditions, the number of times each patient received the education, and patient understanding of HR strategies based on Likert scale survey responses before and after receiving the education. Outcomes data will be assessed at one, three, and six months after the patients day of discharge and will be compared to a historical control group in order to assess the effectiveness of the intervention. Results: As of January 31, 2022, twenty education groups have been given, with a total of sixty-one patients educated. Other results are pending. Conclusions: Pending.

Learning Objectives:

Identify what harm reduction is and discuss the role in patients with substance use disorders

Review specific harm reduction strategies and how these may practically be implemented

Self Assessment Questions:

What is the goal associated with implementation of harm reduction strategies in patients with substance use disorders?

A To educate patients on easier techniques to use illicit substances

B: To provide encouragement that there does not need to be changes

C: To improve health and safety outcomes

D: To directly avoid legal consequences associated with substance u

What key harm reduction strategies may be used for patients with opioid use disorder?

A Utilization of sterile syringes

B Naloxone access

C Avoidance of using alone

D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-723-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF RESOURCE UTILIZATION TO ACHIEVE A SUPRAPHYSIOLOGIC MEAN ARTERIAL PRESSURE (MAP) GOAL IN HEPATORENAL SYNDROME

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Purpose: Treatment of hepatorenal syndrome (HRS) is associated with significant resource utilization, imposing a clinical and pharmacoeconomic burden on patients and healthcare facilities. To reverse the pathophysiologic state of renal hypoperfusion in HRS, the augmentation of blood pressure via pharmacologic and procedural interventions are often utilized. A 2019 pilot trial at UofL Hospital examined clinical outcomes in patients randomized to a MAP goal of >6 versus >85 mmHg, which was not powered to prove non-inferiority between a low and high target MAP in patients with HRS. Institutional utilization of supraphysiologic MAP goals remains common practice at UofL, which frequently requires a more resource-intensive treatment regimen. This study aims to evaluate clinical outcomes as well as the pharmacoeconomic impact of healthcare resource utilization when targeting a supraphysiologic MAP in patients with HRS.Methods: This was a single-center, retrospective, cohort study with a pharmacoeconomic emphasis. Adult patients admitted to UofL Hospital between 2017 and 2021 with a diagnosis of HRS were evaluated for inclusion. Patients who were transferred for liver transplant evaluation, discharged or deceased prior to day four, pregnant, or incarcerated were excluded. The primary outcome was healthcare resource utilization, which was defined as the measurement of costs and consequences of treatment. Secondary outcomes include change in serum creatinine fron baseline to day four and discharge, change in urine output at day four and at discharge, incidence of renal replacement therapy, hospital lengtl of stay, intensive care unit (ICU) length of stay, incidence of central line associated bloodstream infections, and all-cause mortality. Additional data was collected to identify inadvertent adverse outcomes associated with necessary therapy such as pneumothorax secondary to central line placement, new-onset arrhythmias, and ischemia-related events from vasopressor use.Results/Conclusions: Data collection and analysis is ongoing. Results and conclusions to be presented at Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Review current evidence and treatment modalities used in hepatorenal syndrome with respect to outcomes of care.

Describe the pharmacoeconomic impact of resource utilization when targeting a supraphysiologic MAP goal in patients with hepatorenal syndrome.

Self Assessment Questions:

1.What is the current recommendation set forth by the American Association for the Study of Liver Diseases when establishing a MAP goal in patients with HRS?

A >65 mmHg

B: >85 mmHg

C: Increase in baseline MAP by at least 10 mmHg

D: Increase in baseline MAP by at least 15 mmHg

Which of the following is NOT associated with increased healthcare resource utilization in HRS?

A Admission to the ICU

B Adverse events related to medication use

C Procedural intervention

D Rapid resolution of acute kidney injury

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-516-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

DEVELOPMENT OF A PHARMACIST-RUN MEDICATION THERAPY MANAGEMENT SERVICE WITHIN AN EXISTING PAIN CLINIC IN A COMMUNITY SETTING

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Purpose: Barriers to effective pain management, the need to reduce overall opioid use and concomitant use of benzodiazepines, and requirements for pain prescribing are all increasing. Pharmacists continue to expand the depth of care provided. They are an easily accessible resource that can be utilized in a variety of different ways. It has been identified by our system that pharmacists can make meaningful interventions in pain management. To ensure all patients are maximizing their pain medication therapies, a service is being developed within an already established pain clinic to provide primary care providers with an additional resource to utilize.Methods: A steering team was created to help provide oversight and expertise throughout all phases of development. They are able to give recommendations and ensure the service is practical and will serve as a tool to the primary care providers. A referral with a cascade of questions will be created in the electronic health record for providers to indicate if they wish to defer care to the pharmacy medication therapy management service within the pain clinic. This will indicate the official diagnosis and associated patient-specific goals to the pharmacist. Based upon benchmarking with similar organizations and following recommended guidelines, a protocol will be created to ensure pharmacists are able to have guidance when making treatment decisions. A whole patient approach will be used, and the pharmacist will evaluate the patient for needs beyond medications to ensure appropriate care and promote decreasing the usage of opioids. The protocol will include provision to refer to additional resources as appropriate for the patient, such as mental health counseling, physical therapy, social work, and others. Pharmacists and patients will have access to the pain specialists if an emergency would arise or additional guidance is needed. Results/Conclusion: Presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss different barriers that prevent a patient from receiving effective pain management.

Identify key steps in developing a pharmacist-run medication therapy management service.

Self Assessment Questions:

What is a barrier that prevents patients from receiving effective pain management in rurul areas?

A Cost of service

B: Lack of pain specialists

C: Decrease in opioid prescribing

D: No barriers exist

How will providers refer patients to the pharmacist-run medication therapy management pain service?

A EHR

B Telephone

C Letter

D Verbal order

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-849-L08-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

IMPLEMENTATION OF A PHARMACIST-TO-PHARMACIST TRANSITIONS OF CARE PROTOCOL ON RECENTLY DISCHARGED PATIENTS WITH DIABETES

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Poor care coordination at discharge can lead to worse patient outcomes communication lapses from inpatient to outpatient settings, medication errors, and can ultimately increase hospital readmissions. Previous research has shown that an effective transition of care (TOC) team includes pharmacists, however, there is limited data on the effectiveness of the collaboration between inpatient and ambulatory care pharmacists. The objective of this study is to determine the impact of a standardized TOC model, involving inpatient and ambulatory care pharmacists, on 30 day readmission rates in patients with diabetes associated complications

Learning Objectives:

Identify how a poor transition of care might potentially impact the patient during discharge.

Describe the several steps in which pharmacists can participate to impact a patient's transitions of care.

Self Assessment Questions:

Which of the following might result from a poor transitions of care model

A Communication lapses

B: Medication errors

C: An increase in hospital readmissions

D: All of the above

Which of the following is incorrect?

A A successful transitions of care model only involves communicatic

B Poor transitions of care plan at discharge can lead to increased hc

C Patients with uncontrolled diabetes can have a higher risk of readr

D : Effective communication is a key factor for a successful transitior

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-517-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

PATIENT, PROVIDER, AND PHARMACIST PERCEPTIONS OF THE CONVERSION OF AN ESTABLISHED AMBULATORY CARE CLINICAL PHARMACY SERVICE TO TELEHEALTH AT A LARGE ACADEMIC MEDICAL CENTER IN RESPONSE TO THE SARS-COV-2 PANDEMIC

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The SARS-CoV-2 pandemic created a variety of challenges to healthcare delivery across the United States. COVID-19 remains a significant obstacle as organizations and health systems continue to adapt and find ways to provide safe and effective care. As a result, there has been significant expansion of telehealth among outpatient clinics across the country with the goal of upholding or exceeding quality of car while maintaining patient and provider safety. As telehealth delivery continues to evolve, continuous quality improvement is important to ensure organizations continue to meet the Quadruple Aim. The purpose of this study is to capture the perceptions of patients, providers, and pharmacists on the conversion of an established ambulatory care clinica pharmacy service to telehealth within 14 Patient Centered Medical Hom (PCMH) clinics in family and internal medicine with the goal of highlighting areas of strength as well as identifying areas for improvement and future adaptations of care.This is a single-center, prospective survey-based study. Institutional Review Board has been obtained. A survey was sent to all providers and ambulatory care pharmacists at each PCMH. Furthermore, patients who engaged in at least three care encounters from 7/1/2020 to 8/31/2021 were surveyed. Survey questions include, but are not limited to pharmacist engagement convenience of care, satisfaction and accessibility of pharmacy services impact of pharmacist-provided care, and timeliness of follow-up. Descriptive statistics will be used to describe the results.This study will provide insight into how patients, providers, and pharmacists perceive the implemented telehealth adaptions and identify areas of strength and improvement. Based on survey feedback, areas of strength identified may provide opportunity for permanent practice adaptation whereas areas of improvement may lead to opportunities for quality improvement initiatives.

Learning Objectives:

Identify the perceptions of patients on the conversion of an established ambulatory care clinical pharmacy service to telehealth.

Describe the perceptions of providers on the conversion of an established ambulatory care clinical pharmacy service to telehealth.

Self Assessment Questions:

Identify one common perception patients have had towards pharmacists providing telehealth care.

A It was convenient to have telehealth (video or phone) appointment

B: The pharmacist did not clearly discuss my medications and instruc

C: I am somewhat satisfied with the care provided from my pharmaci

D: The pharmacist was difficult to access to answer my questions an

Describe one common perception providers have had towards pharmacists providing telehealth care.

A The pharmacist does not follow up with my patients in a timely ma

B The pharmacist rarely provides useful communication to me regar

C The pharmacist positively impacts the clinical outcomes for my pa

D The pharmacist is not accessible to me to address clinical questio

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-724-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IMPACT OF BLOOD GLUCOSE CONTROL ON HOSPITAL LENGTH OF STAY IN SEPSIS PATIENTS

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Purpose: Infections leading to sepsis and septic shock plagues hospitals across the US as one of the leading causes of death. Per the CDC, at least 1.7 million adults develop sepsis, and approximately 270,000 Americans die annually due to sepsis. There have been few studies looking at blood glucose control in sepsis and its effect on length of stay readmission, all-cause mortality, and cost of hospitalization. The purpose of this study is to assess the impact of controlled versus uncontrolled blood glucose on hospital length of stay.Methods: This is a retrospective, single-center, cohort study designed to compare septic patients with controlled vs uncontrolled glucose levels and its impact on hospital length of stay. Patients for data collection will be classified as ICD-10 diagnosis code DRG-871, defined by the Centers of Medicare and Medicaid Services as septicemia or severe sepsis without mechanical ventilation >96 hours with multiple chronic conditions. It will be performed at a 433- bed community hospital in Lexington, KY. The following data will be collected via electronic health record: patient age, sex, race, height, weight, comorbidities included in Charlson Comorbidity Index, steroid use, blood glucose measurements, intensive care unit LOS, total hospital LOS, total hospital cost, 30-day readmission rates, and incidence of all-cause in-hospital mortality. Exclusions will include DKA, pregnancy, withdrawal of care within 24 hours of presentation, death, hospice, and transfer to another hospital. Patients will be divided into two cohorts, controlled vs uncontrolled, based on the percentage of time spent controlled. Controlled defined as blood glucose readings <180 mg/dL without hypoglycemia. An independent samples T-test or Mann-Whitney U test will be used to analyze continuous data as appropriate with a Chi square or Fischers exact test utilized for categorical data. All data will use 95% confidence intervals and meet significance with a p-value of 0.05.

Learning Objectives:

Review how sepsis affects US hospitals regarding length of stay and cost.

Discuss how blood glucose control may affect sepsis patient outcomes.

Self Assessment Questions:

What is the CMS classification of severe sepsis?

A Septicemia or severe sepsis without mechanical ventilation <96 ho

B: Septicemia or severe sepsis without mechanical ventilation >96 ho

C: Septicemia or severe sepsis with mechanical ventilation >96 hours

D: Septicemia or severe sepsis without mechanical ventilation >48 ho

Approximately how many Americans die annually due to sepsis?

A 1.7 million

B 80,000

C 270,000

D 850,000

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-518-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

ASSESSMENT OF HOSPITAL RE-ADMISSIONS FOR COPD AND EVALUATING THE NEED FOR PHARMACIST INTERVENTION FOLLOWING DISCHARGE

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PurposeChronic obstructive pulmonary disease (COPD) is a major health concern throughout the United States. Studies have shown that military veterans are at 3 times greater risk than the general public for developing COPD. The high rates of hospital re-admissions for COPD exemplify the need to improve COPD management through optimization of medication and adherence. The purpose of this study was to evaluate the current state of COPD management and identify opportunities for improvement among patients with at least two hospital/emergency room re-admissions for COPD exacerbation. MethodsThis study was a retrospective electronic chart review of fifty patients who have had at least two hospitalizations and/or emergency department visits, with a diagnosis of COPD exacerbation, at Veteran Health Indiana Medical Center from August 1, 2020-August 1, 2021. Patients were included if they had a diagnosis of COPD and were greater than or equal to eighteen years of age. Patients were excluded from the study if they have a diagnosis of COPD and asthma, if managed by pulmonology, or co-managed by a VA provider and Non-VA provider. The primary outcome was to assess the appropriateness of prescribed regimen for chronic management of COPD The secondary outcomes were to assess the frequency of hospital/emergency room re-admissions for COPD within the defined inclusion time and refill history of chronic COPD medications. Data was collected from the electronic health record within the VA. International Classification of Diseases (ICD-9) diagnosis codes were used to identify eligible patients with COPD. Data collected was de identified through utilization of random study number assignments. Patients were not contacted.Results and ConclusionsResults and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify patients that would benefit from Clinical Pharmacist follow up after a hospital admission for COPD exacerbation.

Describe potential advantages of a pharmacist managing patients with COPD post hospital re-admission.

Self Assessment Questions:

Which patient would benefit from medication management after discharge from a COPD exacerbation?

A 58 year old patient, COPD Gold Class C, currently taking montelul

B: 67 year old patient, COPD Gold Class C, currently taking LABA inl

C: 45 year old patient, COPD Gold Class A, currently taking LABA inl

D: None of the above

What is an advantage of pharmacist managed follow up for patients with COPD?

A Educating patients on proper inhaler technique

B Assessing appropriateness and managing COPD medications

C Potentially decreasing hospital re-admissions for COPD exacerbat

D All of the above

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-519-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

THE IMPACT OF THE VERIGENE RAPID DIAGNOSTIC SYSTEM IN COMBINATION WITH STEWARDSHIP EFFORTS ON TIME TO APPROPRIATE ANTIBIOTIC ADMINISTRATION

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Purpose:Multi-drug resistant organisms have steadily increased over the past two decades, posing a serious public health risk. To meet this challenge,rapid microbiology detection systems werecreated such as theVerigene. In combination with stewardship efforts,time to antimicrobial de-escalation, time to effective therapy, and hospital length of stay have decreased. The objective of this study is to determine how the specific stewardship practice of a real time pagingsystemtied toVerigeneresults impacts time to appropriate antimicrobial therapycompared to institutions that do not use this practice. Methods:This study is a single center, observational, retrospective chart review that analyzed data over one year from the infectious disease database, MedMined. Therewasa total of 136 encounters analyzed over 2020, with 67 in each group. The primary endpoint was the time to administration of appropriate antibioticsdefined as from when theVerigeneresult populated to when the antibiotic was administered to the patient. Secondary endpoints included time toappropriateorder entry of antibiotics,median length of stay, secondary infection rates, readmission rates, andmortalityrates. Results:The primary endpoint of median time for administration of appropriate antibiotics at hospitals using the paging system was 7.8 hours compared with 13.5 hours without the paging system (-3.15, 95%CI, -7.55 to -0.15, p:0.035).Secondary endpoints included a lower time to appropriate order entry of antibiotics with a median of 5.4 hours with the paging system compared with 11.8 hours without (-3.10, 95%CI -9.0 to -0.1, p:0.035). Conclusion: This study showed statistically significant difference in time to appropriate antibiotic administration between hospitals that utilize a real time paging system and those that do not.Though the results show a benefit to utilization of the paging system, pharmacy is now taking ownership of furtheroptimizingthe efficiency of initiating appropriate antimicrobial therapy.

Learning Objectives:

Discuss the utility of rapid molecular diagnostics along with their pitfalls.

Identify appropriate antimicrobials for common resistant organisms such as CTX-M, KPC, and VRE.

Self Assessment Questions:

Which of the following havenotbeen proven to improve with utilization of rapid molecular diagnostics with stewardship practices?

A Time to appropriate therapy

B: Time to de-escalation of antibiotics

C: Mortality rates

D: Hospital length of stay

Which of the followingis an appropriate therapy for a result for klebsiella pneumonia carbapenemase (KPC), also known as a carbapenemase

A Meropenem-Vaborbactam

B Meropenem

C Cefepime

D Cefiderocol

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-725-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

COMPARATIVE EFFECTIVENESS OF TARGETED VERSUS BROAD-SPECTRUM BETA LACTAM THERAPY IN PATIENTS WITH METHICILLIN-SUSCEPTIBLE STAPHYLOCOCCUS AUREUS BLOOD STREAM INFECTION

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Purpose: Methicillin-susceptibleStaphylococcus aureus (MSSA) is implicated in blood stream infectionswith high morbidity and mortality.Targeted antibiotic treatment with nafcillin or cefazolinis considered first line therapy. However, patients may still receive broad spectrum therapy for MSSA bacteremia for various reasons despite availability of culture and susceptibility results for targeted therapy. The purpose of this study was to determine if broad-spectrum beta lactams (BL) are effective for blood culture clearance compared to targeted therapy for MSSA bacteremia. Methods: Hospitalized patients >18 years of age with a blood culture positive for MSSA between 7/1/2014 and 12/31/2020 were included. Patients were identified retrospectively through the electronic medical record and must have received either a broad-spectrum BL (ampicillin/sulbactam, ceftriaxone, cefepime, piperacillin/tazobactam, meropenem) or targeted therapy. The targeted therapy cohort was identified by receipt or de-escalation to nafcillin or cefazolin within 72 hours of antibiotic initiation. In patients with multiple admissions for MSSA bacteremia, only the first admission was included. Lack of follow-up blood cultures, bacteremia at time of transfer from another institution, or death or discharge within 72 hours of positive culture were excluded. The primary outcome was duration of bacteremia, defined as the timefrom first positive blood culture to time of first negative blood culture. Secondary outcomes included hospital and intensive care unit (ICU) length of stay (LOS) and inpatient mortality. Summary of (preliminary) results: A total of 1154 patients were identified and are predominantly white (n=1056, 91.5%) males (n=693, 60%) with a mean age of 48 years old. Median hospital LOS was 15 days and mortality was 15% for the entire cohort. Nine-hundred sixty-four patients required ICU admission (60.1%) with a median ICU LOS of 4 days. Further results are pending data analysis.Conclusions: Conclusions are in progress pending final analysis of results.

Learning Objectives:

Review the available literature to support guideline-recommended treatments for methicillin-susceptible Staphylococcus aureus blood stream infections.

Describe gaps in literature that should be considered for the treatment of methicillin-susceptible Staphylococcus aureus blood stream infections.

Self Assessment Questions:

Which of the following statements is correct?

A Due to the emergence of MRSA, MSSA infections are not a conce

B: Available literature supports the use of both targeted and broad-sp

C: Guideline-recommended therapy for MSSA bacteremia includes c

D: Vancomycin is not preferred for the treatment of MSSA bacteremi

Which of the following statements is correct?

A Randomized-controlled trials have compared broad-spectrum and

B Based on available literature, MSSA does not display an inoculum

C Recent retrospective data has found higher mortality rates among

D Studies have confirmed that patients with MSSA bacteremia who r

Q1 Answer: C Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-520-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IMPLEMENTATION OF A MULTIDISCIPLINARY CONTROLLED SUBSTANCE DISCREPANCY FREQUENCY REPORTING SYSTEM IN A COMMUNITY HOSPITAL

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Controlled substance (CS) administration and waste documentation in the hospital setting is a critical and challenging compliance hurdle. Given the volume of CS administrations, auditing discrepancies betweer doses dispensed/administered and waste documented requires the use of reporting and analytic programs to identify highest-frequency outliers. Discrepancy resolution further requires frequent communication and collaboration with nurse leadership to work directly with nursing personnel as needed. The development of a standardized approach to CS discrepancy frequency monitoring coupled with a defined nursing communication format could potentially reduce discrepancy frequency and time spent on audits as we currently do not have a defined process.

Learning Objectives:

Classify the different types of discrepancies commonly produced with daily controlled substance handling

Review the standardized approach used to evaluate discrepancy rates and the role of inter-departmental communication in this process

Self Assessment Questions:

Which of the following IS available on the nursing director report to evaluate the discrepancy reported?

A : Patient name

B: Automated dispensing cabinet username (i.e. nurse name)

C: : Medication indication

D: : List of employees that are suspected of diversion

Which of the following statements is most accurate?

A The nursing director report is distributed on a daily basis

B The primary outcome of this study was to evaluate the time burde

C : The nursing director report is distributed on a weekly basis

D This was a retrospective study without a pre-intervention group

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-726-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

RATE OF OPIOID WITHDRAWAL AMONG INMATES AT A COUNTY CORRECTIONAL FACILITY

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1. The rate of regular opioid use is estimated to be as high as 20% among incarcerated individuals at intake. Jails and prisons in the United States often utilize a symptom-based approach for managing acute opioid withdrawal, with less than 30% providing long-term medication-assisted treatment (MAT). Currently, there is little information regarding incidence and severity of opioid withdrawal among inmates after incarceration. Previous work by Dijkstra et al. found factors associated with opioid withdrawal include heroin use within the past 30 days, symptom severity at time of assessment, generalized anxiety disorder, and cluster C personality disorder. The current study aims to assess the rate of opioid withdrawal symptoms requiring medical intervention among inmates reporting opioid use upon booking.2. The primary investigator performed a retrospective chart review using OffenderTrak to generate a list of bookings from November 15th 2021 to January 17th 2022. The primary objective was to determine the rate of clinically significant opioid withdrawal; defined as withdrawal symptoms requiring pharmacological treatment. At booking, inmates were screened for opioid use disorder via a nurse-administered health form assessing current symptoms, substances used, and physical exam. The primary investigator reviewed inmate records for clinically significant opioid withdrawal and assessed the severity of symptoms by degree of intervention. Secondary outcomes included identifying factors associate with withdrawal, repeat requests for treatment, and transfers to external healthcare facilities. Chi-square test of association was attempted for each criterion assessed on the intake form. To meet study objectives, descriptive analyses of all outcomes of interest was conducted and presented as rates.3. Preliminary results are pending. Data collection in progress. 4. Conclusions are pending. Data collection in progress.

Learning Objectives:

List the possible approaches and medications for managing withdrawal in a correctional setting.

Review evidence supporting the use of medication-assisted treatment (MAT) of opioid use disorder in correctional settings.

Self Assessment Questions:

Which medications may be used for the symptomatic approach to managing opioid withdrawal?

A Clonidine

B: Hydroxycholorquine

C: Burprenorphine

D: Omeprazole

Which of the following statements is correct concerning MAT programs in correctional medicine?

A MAT programs have been shown to increase the number of post-r

B MAT programs have been shown to increase local crime rates.

C MAT programs increase the risk of drug diversion in correctional fa

D MAT programs increase the rate of rearrests.

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-817-L08-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EFFECT OF ANTIBIOTICS ON EFFICACY OF IMMUNOTHERAPY IN NON-SMALL CELL LUNG CANCER

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Purpose: Immune checkpoint inhibitors (ICI) are commonly used agents that have illustrated survival benefit in the treatment of many malignancies. Prior research has shown that ICI response can vary between patients due to differences in the gut microbiome, and one area of interest is the relationship between antibiotics and ICI efficacy. Published retrospective studies have demonstrated decreased survival in patients who receive antibiotics within a 90-day time frame around ICI initiation. The objective of this study was to determine if treatment with antibiotics impacts the efficacy of ICIs in patients with non-small cell lung cancer (NSCLC). Methods: A single-center, retrospective cohort study was conducted on NSCLC patients who received ICI therapy at UofL Health Brown Cancer Center between April 2016 and January 2020. Adult patients (age 18 years) who received antibiotics within 90 days of initiation of an ICI were compared to a cohort of patients who did not receive antibiotics. Patients were excluded if they received prior therapy with an ICI outside of Brown Cancer Center, developed hypersensitivity to ICI, were pregnant, or incarcerated. The primary outcome was progression-free survival. Secondary outcomes included overall survival and the incidence of immune-related adverse events. Survival outcomes were analyzed using Kaplan Meier curves with subgroup analysis by antibiotic class. Categorical variables were analyzed using the Chi-Square test and continuous variables with the Wilcoxon Rank-Sum test. Data collection included baseline demographics, ICI regimen, antibiotic use, immune-related adverse event incidence and survival after initiation of ICI therapy. This study protocol received full approval from the Institutional Review Board.Results: Data collection in progress. Results and conclusions to be shared at the 2022 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss the effect of antibiotics on the gut microbiome and their potential impact on ICI efficacy.

Identify other factors that may impact the gut microbiome and ICI efficacy.

Self Assessment Questions:

What time frame around immunotherapy initiation are antibiotics expected to have the most effect on ICI efficacy?

A 0-90 days

B: 90-120 days

C: 120-160 days

D: 160-190 days

What other medication may alter the gut microbiome composition?

A Ondansetron

B Pantoprazole

C Lisinopril

D Apixaban

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-521-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF CURRENT PRACTICE OF HYPERTONIC SALINE SOLUTIONS FOR TREATING HYPONATREMIA WITH GUIDELINE UPDATE AND ORDER PANEL CREATION

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Hospitalized patients admitted with hyponatremia are at a three times greater risk of mortality, more likely to require intensive care and mechanical ventilation, incur increased hospital costs and have increased mean length of stay than those admitted with normonatremia. Properly correcting sodium levels to avoid adverse events is an important way pharmacists can contribute to improved patient outcomes. The objective of this study was to reassess the current Hypertonic Saline for Symptomatic Hyponatremia guideline to determine appropriateness of sodium correction techniques and clinical impact on our patients. Additionally, the guideline will be updated to allow peripheral administration of 3% saline solution. This was a quasi-experimental study assessing patients admitted for hyponatremia who subsequently received hypertonic saline. Pre-intervention patients received hypertonic saline from February 28, 2018 until September 30, 2021 and post-intervention patients received hypertonic saline from February 28, 2022 through April 30, 2022. Patients included in the study received 1.5%, 2% or 3% hypertonic saline with the indication of hyponatremia. Patients that received sodium tablets or hypertonic saline for reasons other than hyponatremia were excluded. The intervention included implementing the updated treatment guideline, creating and implementing an order panel within the electronic healthcare record and educating providers across the Froedtert system. The primary outcome of this study is analysis of gap in hypertonic saline use compared to our current treatment guidelines. Secondary outcomes include achievement of goal correction, correction in the first 24 hours of therapy, time to peak serum sodium level, delta sodium change per day of therapy, number of demyelination and extravasation events, incidence of additional treatment due to overcorrection, and analysis of hospital length of stay. This study is currently ongoing and the results/conclusions will be reported in the final project manuscript

Learning Objectives:

Describe the pharmacists role in sodium correction techniques

Define appropriate sodium correction techniques including, appropriate administration of solution, appropriate rates of correction, and appropriate laboratory assessments

Self Assessment Questions:

According to the Expert Panel Association, what is the maximum serum sodium increase recommended within 24 hours to avoid osmotic demyelination syndrome?

A 4-6mEq/L

B: 6-8mEq/L

C: 8-10mEq/L

D: 10-12mEq/L

Recent literature regarding administration of hypertonic saline supports which of the following statements?

A Due to a high prevalence of adverse events in recent literature, it is

B Due to a moderate prevalence of adverse events in recent literatur

C Due to minimal reports of adverse events in recent literature, 3% h

D 3% hypertonic saline should never be administered to patients for

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-522-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IMPACT OF PHARMACY INTERVENTIONS ON NUMBER OF INACTIVATED ZOSTER VACCINES ADMINISTERED IN AN OUTPATIENT SETTING

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The Centers for Disease Control and Prevention estimates that over 21 million hospitalizations and 732,000 deaths will be prevented among those born in the last 20 years due to an increase in vaccines. The inactivated zoster vaccine, approved in October 2017, is recommended for most healthy people 50 years and older and is more effective than the previous live zoster vaccine. Evidence shows when community pharmacists provide recommendations, there is an increase in vaccines administered. This project is designed to assess how pharmacy intervention affects the number of inactivated zoster vaccines given in the outpatient setting.

Learning Objectives:

Identify the impact of pharmacy intervention on number of inactivated zoster vaccines given in the outpatient setting.

Discuss how pharmacy can be more involved in increasing the uptake o vaccines at UW Health SwedishAmerican Outpatient Pharmacy.

Self Assessment Questions:

How effective is the new inactivated zoster vaccine after two doses?

A A.Over 90% effective

B: B.80% to 85% effective

C: C.60% effective

D: D.Less than 50% effective

What is the maximum age to receive the inactivated zoster vaccine?

A A.50 years old

B B.65 years old

C C.75 years old

D D.There is no maximum age

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-523-L06-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

REDUCING REDISPENSED MEDICATIONS FROM AN INPATIENT CENTRAL PHARMACY

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Purpose: A redispensed medication is an unplanned, additional dose of medicine sent from a pharmacy to a site of administration after a scheduled dispense has already been processed. When medications ar redispensed pharmacy technician and pharmacist workloads increase. On the back end of the medication use process, the potential for returned medications to the pharmacy and waste increases. The wait time to administer a drug to a patient increases when medications are redispensed. Methods: A collaborative stakeholder group of pharmacy, nursing, and patient unit clerks conducted a root cause analysis. Countermeasures based on the root cause analysis were identified and prioritized for implementation. This process improvement project aims tc decrease the number of unexpected redispensed medications, decrease the number of med messages received by pharmacy from nursing by optimizing automated dispensing cabinets, and improve the pharmacy technician triage position to problem solve missing medications. The project will measure the change in number of redispensed medications and the number of med messages.Results: Pre-countermeasure implementation data shows that Michigan Medicine's University Hospital Central Inpatient Pharmacy redispensed over 156,000 medications between July 2021 to September 2021. Of those medications, 29,549 (18.8%) were unplanned, redispensed medications. Post-countermeasure implementation results will be presented at the Great Lakes Pharmacy Residents Conference March 2022.

Learning Objectives:

Describe causes for redispensed medications.

Identify countermeasures that impact the number of redispensed medications.

Self Assessment Questions:

Which of the following is a process improvement tool?

A Root Cause Analysis

B: The Five Whys

C: Fishbone Diagram

D: All of the above

A redispensed medication is:

A An unplanned, additional dose of medication dispensed after a scl

B A 24-hour supply of medication dispensed from the pharmacy at a

C The first dose of a medication dispensed when a patient is admitte

D A medication returned to the pharmacy unused.

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-727-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EVALUATION OF PEDIATRIC VANCOMYCIN DOSING AT A COMMUNITY HOSPITAL

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Purpose: Over the past decade, optimal vancomycin dosing in pediatric patients has remained dynamic and under review. In 2014, the study institution implemented a pediatric vancomycin protocol of 40-60 mg/kg/day every 6 hours to target troughs of 10-15 mcg/mL or 15-20 mcg/mL based on indication. After analyzing troughs produced by this dosing regimen, it was concluded that the dosing strategy did not consistently produce therapeutic troughs. Several major published studies reaffirmed these findings. Thus, in 2016, the study institution revised the pediatric vancomycin dosing protocol utilizing higher daily dosing to target similar troughs. The objective of this research project was to compare troughs pre- and post- protocol implementation to guide future dosing.Methods: A retrospective chart review was completed of patients >29 days of life to <17 years old admitted between March 1, 2012 and August 31, 2021 who received intravenous vancomycin. Exclusion criteria included intravenous vancomycin for surgical prophylaxis, no measured vancomycin troughs, and patients who presented with renal dysfunction or had a history of renal transplant. Patients with cardiovascular instability or cystic fibrosis were also excluded. Basic demographic data such as age, gender, and dosing height and weight were collected. For each patient the following was assessed: length of stay, vancomycin regimen, timing of initial trough, and all available trough concentrations. Data was also collected to assess secondary endpoints including concomitant nephrotoxic drugs, BUN, serum creatinine, and urine output during stay. Nominal data was analyzed using the chi-square test, and continuous data was analyzed with the student t-test.Results/Conclusions: Data collection and analysis are ongoing. Results and conclusions will be presented at the 2022 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review the American Society of Health-System Pharmacists, Infectious Diseases Society of America, Pediatric Infectious Diseases Society, and the Society of Infectious Diseases Pharmacists revised consensus recommendations for therapeutic monitoring of vancomycin

Discuss current literature regarding vancomycin regimens, therapeutic vancomycin levels, and clinical outcomes in pediatric patients

Self Assessment Questions:

What is the initial recommended vancomycin dosage for children with normal renal function and suspected serious methicillin-resistant Staphylococcus aureus infections?

A 20 to 40 mg/kg/day, divided every 6 to 8 hours

B: 40 to 60 mg/kg/day, divided every 6 to 8 hours

C: 60 to 80 mg/kg/day, divided every 6 to 8 hours

D: 80 to 100 mg/kg/day, divided every 6 to 8 hours

What is the preferred therapeutic monitoring of vancomycin in the pediatric population?

A An individualized AUC/MIC ratio of 400-600

B An individualized AUC/MIC ratio of 500-600

C Targeting higher troughs of 15-20 mcg/mL

D Targeting higher troughs of 20-25 mcg/mL

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-524-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

ASSESSING THE EFFECTIVENESS AND SAFETY OF NETARSUDIL 0.02% AS ADJUNCTIVE THERAPY IN VETERANS WITH OPEN-ANGLE GLAUCOMA

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Background: Glaucoma is a group of ocular neuropathic conditions that results in damage to the optic nerve. If untreated, this damage may cause irreversible blindness. Glaucoma is most commonly associated with an elevation of intraocular pressure (IOP). Reducing IOP is the only modifiable factor known to slow progression. Despite established efficacy of current therapies in lowering IOP, many patients do not meet their IOP goal on one agent and require additional therapy beyond fourth line options. Given the likelihood of blindness with uncontrolled glaucoma, novel agents with unique mechanisms of action that are tolerable are necessary. A new class of IOP-lowering agents was introduced with the approval of netarsudil 0.02% solution. Clinical trials have shown netarsudil to be non-inferior to established therapies when used as monotherapy. Despite this, there are limited studies that assess the efficacy of netarsudil together with additional IOP-lowering agents. Netarsudil is a fifth-line agent on the VA National Formulary and is rarely used as monotherapy at the Jesse Brown Veterans Affairs Medical Center. Understanding the effectiveness and safety of netarsudil as adjunctive therapy is important in this at-risk population. Methods: The study is a retrospective, electronic chart review involving patients prescribed netarsudil for glaucoma treatment between November 1, 2017 until September 1, 2020. Approximately 160 patients were selected and reviewed for potential inclusion. The primary endpoint assesses the mean IOP change from baseline to post-netarsudil initiation. Secondary endpoints include the number of patients requiring intensified therapy or surgical intervention, the incidence and type of adverse drug reactions, and the number of patients who discontinued netarsudil therapy and why. Subgroup analyses evaluate the primary outcome based on the number of concurrent IOP-lowering agents as well as the effect of the primary outcome in patients considered adherent.Results: Results will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the pathophysiology of glaucoma and the modifiable risk factor associated with slowing disease progression

Identify the proposed mechanism of action and safety profile associated with netarsudil

Self Assessment Questions:

Although the exact pathophysiology remains unclear, glaucoma is an ocular neuropathic condition that is associated with which of the following:

A Buildup of aqueous humor in the eye that is unable to drain resulti

B: Breakdown of proteins in the lens of the eye causing blurred visior

C: Formation of abnormal blood vessels in the eye that leak and caus

D: None of the above

Which of the following describes the pharmacologic class of netarsudil?

A Beta-blocker

B Carbonic anhydrase inhibitor

C Rho kinase inhibitor

D Prostaglandin analog

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-525-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IFOSFAMIDE-INDUCED NEUROTOXICITY

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Purpose: Ifosfamide is an alkylating agent used in many pediatric sarcoma and lymphoma treatment regimens. One of the toxicities associated with ifosfamide is neurotoxicity with an estimated incidence of 10 to 20%. Methylene blue is one of the few pharmacologic options for treating ifosfamide-induced neurotoxicity. Since it is relatively safe, methylene blue can also be administered as secondary prophylaxis for subsequent cycles of ifosfamide therapy. Patients who are on medications such as methadone and amphetamine, which are contraindicated with methylene blue, would receive thiamine instead. In fall/winter of 2018, olanzapine was added as a part of the order set for high-risk antiemetic prophylaxis for patients who receive chemotherapy at Riley Hospital for Children. Olanzapine use was sparse prior to this addition to the chemotherapy orders. The purpose of this study is to identify the incidence of ifosfamide-induced neurotoxicity in association with olanzapine at IU Health Riley Hospital for Children.Methods: This was an IRB-approved, single-center, and retrospective cohort study. Patients receiving ifosfamide therapy at IU Health Riley Hospital for Children between July of 2015 and June of 2021 were included in the study. Patients receiving methylene blue or thiamine for an indication other than ifosfamide-induced neurotoxicity were excluded. Baseline characteristics collected included age, gender, weight, type of cancer, ifosfamide dose, frequency, duration of therapy, number of courses, time of day methylene blue or thiamine was initially ordered, concurrent chemotherapy, and symptoms of neurotoxicity. To assess the clinical characteristics that increase the risk of ifosfamide-induced neurotoxicity as the secondary outcome, additional data were collected: hemoglobin, albumin, renal function, administration of lorazepam, and administration of the following nephrotoxic medications. Results/Conclusions: Results and conclusion will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify the risk factors associated with developing ifosfamide-induced neurotoxicity.

Explain the treatment options for ifosfamide-induced neurotoxicity.

Self Assessment Questions:

Which of the following is a risk factor associated with developing ifosfamide-induced neurotoxicity?

A Hepatic dysfunction

B: Use of aprepitant

C: High serum albumin

D: Low serum creatinine

What is the proposed mechanism of methylene blue for ifosfamide toxicity reversal?

A Inhibit the formation of toxic metabolite of ifosfamide

B Enhance the renal removal of ifosfamide

C Prevent the crossing of ifosfamide through the blood brain barrier

D Increase microcirculatory oxygenation

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-728-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

RISK FACTORS FOR MULTI-DRUG RESISTANT ORGANISM INFECTIONS IN CRITICALLY ILL PATIENTS

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Purpose: Multi-drug resistant organisms (MDROs) are responsible for ar increase in morbidity and mortality compared to patients with infections from susceptible bacteria. In the United States, MDROs account for ove two million infections yearly, resulting in more than 20,000 deaths. MDRO may increase the risk of mortality on average by almost three times, increase the average length of hospital stay by seven days, and increase cost compared to susceptible infections. Identifying risk factors for developing multi-drug resistant organisms can help guide initial antimicrobial agent selection which may improve patient outcomes. The purpose of this study is to evaluate patient risk factors as predictors and independent risk factors for MDRO infection with the hypothesis that risk factors will be identified to help guide appropriate therapy. Methods: This retrospective, single center study will evaluate potential patient risk factors associated with first onset MDRO infections from January 1, 2019, to December 31, 2021. Inclusion criteria includes patients at least 18 years of age admitted to an intensive care unit, or medical step-down unit at the University of Cincinnati Medical Center with cultures obtained within 48 hours of admission which resulted in a positive culture for gran negative bacteria. Patients with past medical history of a documented MDRO infection or patients transferred from an outside facility who do not have culture data available in the electronic medical record will be excluded. Results: A total of 130 patients, with 65 patients per group, were included in this analysis. Data collection and analysis are currently ongoing, and results will be presented at the 2022 Great Lakes Pharmacy Resident Conference

Learning Objectives:

Describe common intrinsic and acquired resistant mechanisms utilized by gram-negative bacteria

Discuss established risk factors associated with multi-drug resistant organisms

Self Assessment Questions:

Enterobacteriaceae commonly produce Amp C which is categorized as class C -lactamases which creates resistance to

A ceftriaxone

B: meropenem

C: tobramycin

D: levofloxacin

Select the patient risk factor that has been identified thus far for developing MDROs infections

A Hospitalization for 36 hours

B Patients receiving cefepime 16 days prior

C Patients who had grown Klebsiella pneumonia 2 years ago

D Patients with chronic kidney disease

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-526-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF ADOPTION OF INTEGRASE INHIBITORS (INSTIS) AS GUIDELINE PREFERRED THERAPY AND THE REAL-WORLD INCIDENCE OF INSTI-RESISTANCE

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Purpose: Currently, there are limited data reporting real-world incidence of integrase inhibitor (INSTI) resistance since the approval and first-line recommendation of INSTIs in the United States. In clinical trials, development of INSTI-resistance to second generation agents was absent in treatment-nave patients; however, a recent analysis of the National HIV Surveillance System estimated overall INSTI-resistance prevalence in the United States to be 6.3%. The purpose of this project is to describe the real-world incidence of both transmitted and treatment emergent INSTI-resistance in a major metropolitan area between 2017 and 2020 and identify risk factors for developing resistance.Methods: This is a retrospective cohort study that will include all patients living with human immunodeficiency virus (HIV) who were prescribed an INSTI-based single tablet regimen between September 2017 and September 2020 and followed for at least 12 months at the University of Illinois at Chicago Hospital and Health System Community Clinic Network (UCCN). Data will be collected via retrospective chart review and statistical analysis of all endpoints will be descriptive. The primary endpoint of the study is the difference in INSTI-resistance in UCCN patients compared to the national average. We hypothesize that INSTI-resistance rates among UCCN patients are higher than national INSTI-resistance rates. Other outcomes include development of virologic failure, defined as 2 consecutive HIV-1 viral loads > 200 copies/mL after week 24, as well as documented INSTI-resistance mutations. Patient-specific factors associated with medication nonadherence such as comorbidities, concomitant medications, insurance coverage, and adherence to clinic appointments will also be reported. Data collection is ongoing, and results will be reported at the conference.

Learning Objectives:

Review recommended first-line antiretroviral regimens for the treatment of HIV

Define risk factors for the development of antiretroviral drug resistance mutations

Self Assessment Questions:

1.Which of the following antiretroviral regimens is a recommended regimen in most treatment nave patients initiating antiretroviral therapy?

A Dolutegravir/rilpivirine

B: Elvitegravir/cobicistat/emtricitabine/tenofovir alafenamide

C: Bictegravir/emtricitabine/tenofovir alafenamide

D: Cabotegravir/rilpivirine

Which of the following accurately defines virologic failure?

A Development of new drug resistance mutations

B Two consecutive, detectable viral loads collected at least 24 weeks

C Presence of drug resistance mutations on genotyping

D Two consecutive viral loads > 200 copies/mL collected at least 24

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-679-L02-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EFFICACY OF COVID-19 VACCINATIONS IN PREVENTING SEVERE CLINICAL OUTCOMES

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Since the appearance of COVID-19 in December of 2019, there have been roughly 47 million cases and 762,000 death related to COVID-19 infection. Over the past two years, we have seen the appearance of three new vaccines in the United States, and nearly 60% of the nation's population is now fully vaccinated. With this rapid development timeline, there still remains limited data comparing the three vaccines. The purpose of this study is to determine the effects of vaccination on clinical outcomes such as death, length of stay, oxygen saturation, and treatment use. This was a retrospective, single-center chart review. Patients were identified using positive COVID-19 test results charted within the Indiana University Health Ball Memorial Hospital's EMR. Patient's were included in the study if they had a positive COVID-19 result during admission and were eighteen years of age or older. Excluded from the study were patients who had an admission less than twenty-four hours. The primary outcome was the rate of death in unvaccinated patients admitted with COVID-19 infection versus vaccinated patients. Secondary outcomes include hospital length of stay, highest and lowest oxygen saturation, remdesivir, baricitinib, and steroid use. Include will be analysis allowing for comparison between the three available vaccines. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the effects of COVID-19 vaccination on the clinical outcomes of patients admitted with a COVID-19 infection

Explain how vaccination benefits patients with admitted with COVID-19 infection

Self Assessment Questions:

Which of the following medications works as a Janus kinase inhibitor to treat COVID-19 infection?

A Dexamethasone

B: Baricitinib

C: Remdesivir

D: A and B

Which of the following comorbidities have been shown to pre-dispose patients to severe cases of COVID-19?

A Diabetes

B COPD

C Cancer

D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-836-L06-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EFFECT OF PHARMACIST PATIENT OUTREACH ON ESTABLISHING A DEPRESCRIBING FOCUSED VISIT ON OPIOIDS AND BENZODIAZEPINES

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Purpose: Benzodiazepines (BZDs) and opioids are potentially inappropriate medications (PIMs) due to high risk of adverse effects without proven benefit for certain indications. Risks include sedation, respiratory depression, falls, fractures, and motor vehicle crashes. Older adults are especially sensitive to these adverse effects but may be reluctant to taper/discontinue. Ambulatory pharmacists are equipped to discuss concerns, removing the time consumption from prescribers. It is unknown which motivating factors would effectively engage patients to schedule a deprescribing visit with an ambulatory pharmacist.Methods: Using an informational dashboard, we identified patients prescribed opioids, benzodiazepines, and other Beers list medications in a family medicine residency clinic with approximately 7000 patients. The investigator contacted patients prescribed an opioid or benzodiazepine in the previous 6 months, excluding palliative care and acute pain control. The sample was divided into two groups, balanced for age, gender, and prescriptions for benzodiazepines, opioids, or both. Group one consisted of Your provider asked us to reach out to you concerning [your disease state], while group two verbiage consisted of Your provider asked us to reach out to you concerning [your medication]. Outreach was considered successful if the patient agreed to meet with the pharmacist (either over the phone or in person.) During the pharmacist visit, a medication reconciliation was performed and risk/benefit discussion of PIMs with the patient. Recommendations for deprescribing were forwarded to the provider. Additional outcomes measured include reduction in opioid/benzodiazepine dose or frequency, number of Beers List medications (pre- and post-intervention), number of pharmacist visits and time spent, number of deprescribing recommendations, patient satisfaction survey results, provider survey results (pre-and post-intervention). Outcomes of this study will assist pharmacists to successfully schedule deprescribing visits without an established pharmacist/patient relationship.Results/conclusion: Data collection and analysis is ongoing and will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss depresecribing resources for ambulatory care pharmacists.

Review treatment options for elderly patients with insomnia.

Self Assessment Questions:

What resources are available to guide providers when determining if a medication is a potentially inappropriate medication in the elderly?

A START/STOPP criteria

B: Beers List

C: Lown Institute

D: All of the above

What is a first line treatment option for insomnia?

A Benzodiazepine

B Cognitive Behavioral Therapy

C Z drugs

D High dose opioids

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-818-L05-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

SLIDING INTO A NEW METHOD FOR SLIDING-SCALE INSULIN: IMPLEMENTATION OF AN AUTOMATED DOSE CALCULATOR

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Background: Sliding-scale insulin orders have the potential for misinterpretation and the administration of incorrect doses of insulin when utilized by error prone humans. Our institution is in the process of implementing an automated sliding-scale insulin dose calculator in the electronic medical record (EMR) to reduce this potential for human error in interpreting sliding-scale insulin orders. The purpose of this study is to compare the proportion of insulin dosing errors before and after implementation of the automated dose calculator and evaluate the association between dosing errors and subsequent hypo- and hyperglycemia events. Methods: This is a quasi-experimental study evaluating adult patients admitted to any Henry Ford location who have an active sliding-scale insulin lispro order for at least 48 hours. The automated sliding-scale insulin dose calculator will be implemented into the EMR in early 2022. The pre-intervention group includes patients who received sliding-scale insulin between 9/1/21 and 10/1/21. The post-intervention will include those who received sliding-scale insulin after implementation of the automated dose calculator. Exclusion criteria include patients with a history of pancreas transplant, admission for diabetic ketoacidosis (DKA), or admission to the emergency department operating room, or rehab unit. Data collected includes patient demographics, pertinent past medical history, and data relevant to glucose evaluation (insulin scale sensitivity, diet, doses administered, and glucose values). Preliminary internal data shows that many insulin dosing errors may occur at the night-time glucose evaluation. The primary outcome is the proportion of insulin dose administration errors in night-time insulin doses. Day- and night-time glucose evaluations will be analyzed for a sub-group of patients. The secondary endpoint is the clinical impact of dose errors on subsequent blood glucose values, evaluated by calculating odds-ratios. Results and conclusions: This research is currently in process.

Learning Objectives:

Define the target blood glucose range for patients admitted to the hospital.

Identify appropriate pharmacologic management of hyperglycemia in patients admitted to the hospital.

Self Assessment Questions:

Based on the results of the NICE-SUGAR trial, the target blood glucose range for patients admitted to the hospital is:

A < 100 mg/dL

B: 100 - 140 mg/dL

C: 140 - 180 mg/dL

D: < 200 mg/dL

Which of the following is the most appropriate to manage hyperglycemia in a patient admitted to the hospital?

A No pharmacologic intervention is required

B Metformin 1,000mg by mouth twice daily

C Sliding-scale insulin glargine

D Sliding-scale insulin lispro

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-729-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

IMPLEMENTATION OF CLINICAL PHARMACIST MEDICATION INTERVENTION IN IDENTIFIED SENIORS AT RISK IN THE EMERGENCY DEPARTMENT

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Purpose: Comprehensive medication review is a focus of emergency department clinical pharmacists. Medication review is imperative for older adults visiting the emergency department, for whom adverse effects and drug interactions commonly lead to morbidity, hospitalizatior and premature death. Last year, our facility introduced a protocol for pharmacist-led medication reconciliation for identified seniors at risk. The objective of this study is to assess the impact of pharmacy deprescribing recommendations in identified seniors at risk in the emergency department. Methods: This study will be a retrospective char review of identified seniors at risk at a veteran hospital emergency department. Inclusion criteria will be adults aged 75 years or older who visited the emergency department between October 1, 2019 and February 1, 2022, were deemed as identified seniors at risk, and discharged home. Patients will be split into pre- and post-intervention groups before and after November 2020 respectively. Patients will be excluded if they were receiving hospice/palliative care during pharmacist intervention or were admitted to the hospital from the emergency department. The primary outcome will be a comparison between the percentage of patients who had a Beers medication discontinued, decreased, or substituted in the pre- and post-intervention groups. Secondary outcomes include a comparison of the number of emergency department visits and hospitalizations at 7 and 30 days, mortality at 60 days after emergency department visit, and average number of medications discontinued, decreased, or substituted per patient at 60 days after emergency department visit between the pre- and post-intervention groups. Results and Conclusions: 28 (22.5%) of 124 clinical pharmacist medication reviews resulted in recommendations sent to primary care providers. 43 total recommendations were made, and 16 (37.2%) successfully resulted in a medication decrease, substitution, or discontinuation. Data analysis is ongoing. Finalized results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify drug classes that are listed as potentially inappropriate for use ir older adults by the 2019 Beers List.

Discuss potential barriers to implementing pharmacist medication review in identified seniors at risk.

Self Assessment Questions:

Which of the following drug classes are listed as potentially inappropriate for older adults by the 2019 Beers List?

A Second generation antihistamines

B: GLP-1 Receptor Antagonists

C: ACE-inhibitors

D: Antispasmodics

Which of the following are potential barriers to implementing pharmacist medication review in identified seniors at risk?

A Time burden and staffing shortages

B Prescribers outside of health network

C Lack of standardized documentation

D All of the above

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-819-L05-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

CHRONIC DISEASE MANAGEMENT BY COMMUNITY PHARMACISTS THROUGH A THIRD-PARTY MEDICATION THERAPY MANAGEMENT PLATFORM

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The objective of this study is to assess the clinical impact of community pharmacists use of a third-party medication therapy management (MTM platform to identify medication-related problems (MRPs). At an outpatient pharmacy, patients who have been contacted by a member o the pharmacy team for a targeted intervention in 2020 will be assessed. The blood pressure (BP), low-density lipoprotein (LDL) levels, and/or hemoglobin (Hgb) A1C before and after the first encounter will be compared and each will be categorized as controlled or uncontrolled using clinical guidelines from the American Heart Association/American College of Cardiology and the American Diabetes Association. Patients who primarily fill their prescriptions at one of the institutions outpatient pharmacies will also be assessed for adherence, measured by percent of days covered (PDC). For this subgroup, participation in a pharmacy-based service (PBS) will also be noted. Lastly, the number of hospitalizations due to a complication of HTN, HLD, or T2DM, will be reported. Out of 84 patients included in the primary endpoint, those whose BP, LDL, and/or Hgb A1C improved or stayed controlled were 43% for those with an antihypertensive, 81% for those with lipid-lowering medications, or 61% for those with oral diabetic agents, respectively. Out of 52 patients who primarily fill medications at this institutions outpatient pharmacies, 67% had PDC over 80%. Of those participating in a PBS, patients of the MTM clinic had the highest adherence rates. Finally, 7 of 126 total patients were hospitalized at the academic medica center. These results show that the interventions of the pharmacy team at a hospital-based outpatient pharmacy help improve clinical outcomes for patients, but there is room for additional benefit, especially in meeting patients BP targets. This may indicate the need for additional support from community pharmacists in empowering patients to meet their clinical goals.

Learning Objectives:

Describe the effect on clinical outcomes of community pharmacists' use of a third-party medication therapy management platform to identify medication-related problems

Identify ways in which community pharmacists can continue to support patients' clinical goals and adherence to maintenance medications through pharmacy-based services

Self Assessment Questions:

In this study, what percentage of patients who were contacted for an intervention regarding an anti-hypertensive medication improved or remained controlled?

A 11%

B: 42%

C: 63%

D: 89%

In this study, which of the following pharmacy-based services at UIH had the highest proportion of patients with PDC > 80%?

A Medication Synchronization Program

B Medication Assistance Program

C Mail Order Service

D Medication Therapy Management Clinic

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-730-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

NAVIGATING ACCESS AND OPTIMIZING MEDICATION INFUSIONS (NAOMI) IN AN ACADEMIC MEDICAL CENTER

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BackgroundRising drug prices in oncology and medical infusion have resulted in increased utilization management policies from payors to manage cost. These policies can be disruptive to continuity of care and health-systems should develop a system strategy to address market changes and prevent patient leakage. Another benefit to system level infusion strategy is the ability to standardize operations across similar sites to increase throughput and create additional capacity with existing resources. Key considerations include navigating site of care, 340B drug savings program, white bagging, prior authorization process, and business operations.The health-system operates 3 hospital-based and 1 physician-based infusion centers for oncology and chronic pain patients. Medical infusion patients are served at a neighboring community hospitals infusion center, which the health-system has a joint operating agreement (JOA) with to leverage disproportionate share hospital 340B drug savings. The health-system also has partnerships with a home care provider and regional infusion sites, which expands infusion capabilities further. Factors affecting infusion services include recent rural referral center 340B eligibility for the health-system, payor shift to non-hospital-based settings, preference for white bagging, ensuring prior authorizations operate seamlessly in pharmacy and clinic workflows, and standardizing operations to attain efficiencies for infusion services across the health-system and JOA.PurposeConduct a detailed examination of a health-systems infusion services and explore pathways for administration.MethodsAn interdisciplinary workstream endorsed by senior leadership was created to assess the current state of oncology and medical infusion services and provide recommendations for access improvement and long-term system planning. An organizational assessment of the value stream was completed, which analyzed available infusion capacity, billing strategy, patient mix/volumes, payor mix, staffing levels, and current policies. Interventions implemented after developing the system infusion strategy were triaging patients to the appropriate site of care to increase infusion capacity and eliminating paper orders in one of the health-systems infusion centers.

Learning Objectives:

Describe differences in 340B drug savings eligibility between rural referral centers and disproportionate share hospitals

Identify strategies to increase patient access to outpatient infusion therapies

Self Assessment Questions:

What is a difference in 340B drug savings between rural referral centers and disproportionate share hospitals?

A Rural referral centers are subject to orphan drug exclusion while di
B: Disproportionate share hospitals are subject to GPO prohibition wh
C: Infusions in non-hospital outpatient departments are not eligible fo
D: All the above

What is a strategy to increase patient access to outpatient infusion therapies?

A Increase capacity in lower sites of care including physician-based,
B Streamline patient triaging to the most appropriate site of care
C Optimize infusion center operations in order entry, patient schedul
D All the above

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-731-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

VENOUS THROMBOEMBOLISM PROPHYLAXIS IN RENAL TRANSPLANT RECIPIENTS

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Purpose: Chronic kidney disease alters hemostasis and can increase th risk of thromboembolic and bleeding events. There is little consensus or how to consider these risks when deciding if a renal transplant recipient should receive post-surgical pharmacologic venous thromboembolism (VTE) prophylaxis. Some literature suggests that renal transplant recipients who receive post-surgical pharmacologic VTE prophylaxis may have a lower risk of VTE events without an increased risk of bleeding. However, the evidence is limited and often not statistically significant, necessitating further research. This project aims to assess the difference in thrombotic and bleeding events within 90 days after surgery in renal transplant patients who either received or did not receive VTE prophylaxis with subcutaneous heparin (SQH) during their transplant hospitalization.Methods: This retrospective cohort study includes a population of adult renal transplant recipients at our center from January 2015 through December 2018. Patients are excluded if they received a solid organ transplant other than a renal transplant, received multiple transplants, or were on therapeutic anticoagulation prior to transplant.This study will assess for thrombotic events and bleeding events within 90 days following transplant. Patients who received SQH for VTE prophylaxis during their surgery admission will be compared to those who did not through Kaplan-Meier analysis with associated log-rank tests. VTE events include post-transplant deep vein thrombosis, pulmonary embolism, renal artery thrombosis, or renal vein thrombosis. Bleeding events include a documented gastrointestinal bleed or bleeding that required technical intervention (defined by the patient needing subsequent surgery or interventional radiological procedure) within 90 days following the transplant procedure. Secondary outcomes that will be assessed include one-year patient and graft survival and incidence of thrombotic and bleeding events within 30 days following transplant. Results and Conclusion: Results and conclusions will be presented at the 2022 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss challenges and considerations of providing venous thromboembolism prophylaxis to renal transplant recipients during their transplant surgery admission.

Identify any differences in bleeding or thrombotic outcomes between patients who received subcutaneous heparin for venous thromboembolism prophylaxis during their renal transplant surgery admission and those who did not.

Self Assessment Questions:

What are the current guideline recommendations for venous thromboembolism prophylaxis in renal transplant recipients following the transplant surgery?

A There are no current guideline recommendations for this populatio
B: Subcutaneous heparin: 5000 units twice daily
C: Enoxaparin: 40 mg once daily
D: Renal transplant patients should not receive venous thromboembo

What risk factors could place renal transplant recipients at a higher risk of venous thromboembolism?

A Delayed graft function
B Deceased donor
C Immunosuppressive therapy
D All of the above

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-527-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EFFICACY OF 2-PERSON VERIFICATION DURING INVESTIGATIONAL PRODUCT SHIPMENT RECEIPT IN ERROR DETECTION

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Background: Investigational product (IP) shipment receipt is a complex process investigational drug services (IDS) face on a daily basis. Due to the complexity and manual nature of the workflow, it is an area where errors are often discovered. These errors can lead to delayed patient care, prolong preparation for audits or monitor visits, and result in protocol deviations and corrective and preventive action plans (CAPAs). Although 27 out of 57 hospitals surveyed as a background investigation into this project, employed standard double-check procedures for receiving IP, the efficacy and feasibility of these procedures are lacking in current literature. Therefore, the objective of this study is to evaluate the efficacy of the implementation of 2-person verification during IP shipment receipt. Methods: This was a single-site study comparing the number of IP packages with an error in pre and post-intervention groups. The intervention was a double-check completed by either an IDS pharmacist or technician, who followed a standard work document for consistency. Major errors are defined as any error that may impact patient safety, minor errors were those deemed not to potentially affect patient safety. The initial IP receipt process was completed in most parts by the IDS technicians as is routine. The double-check was alternated between the IDS technicians and pharmacists to ensure uniformity in who was performing the second check. The primary outcome is the difference in the percentage of IP packages with errors between pre and post-intervention and will be analyzed using 2 tests or Fishers exact tests. During statistical planning, we aimed for collecting data on 154 packages in the pre and 308 in the post to detect a 60 percent decrease in error rate. Result/Conclusion: Results and conclusions will be presented at the 2022 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify areas for errors during investigational product (IP) shipment receipt

Explain the consequences of incorrectly receiving IP shipments

Self Assessment Questions:

Which of the following is considered an error that could occur during IP shipment receipt?

A IP packing receipt was placed in the study folder

B: Expiration date was accurately recorded in the DARF

C: Lot number provided by the IRT did not match lot number on-hand

D: Invoice number was correctly written in the DARF

Which of the following is true regarding the consequence of incorrectly receiving IP shipments

A It could potentially delay patient care

B It would not result in protocol deviation

C It would not affect the preparation for monitor visit

D It would not result in a CAPA

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-820-L05-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

CONCORDANCE WITH GUIDELINE-DIRECTED MEDICAL THERAPY (GDMT), INCLUDING ACEI/ARB/ARNI + BETA-BLOCKER + SPIRONOLACTONE + SGLT-2 INHIBITOR, ON INITIAL HEART FAILURE DIAGNOSIS, AND CHANGES AT FOLLOW-UP VISIT

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Background: Guideline-directed management and therapy (GDMT), as defined by the American College of Cardiology/American Heart Association (ACC/AHA), encompasses clinical evaluation, diagnostic testing, and pharmacological and procedural treatments. There are several medication classes that improve mortality in patients with heart failure (McMpHF) with reduced ejection fraction (HFrEF), which is defined as an Ejection Fraction of <40%. For those patients affected by heart failure, therapy includes multiple drug classes, such as an Angiotensin Converting Enzyme-inhibitor (ACEi) or Angiotensin Receptor Blocker (ARB), beta blocker, and aldosterone antagonist, which may present significant pill burden to the patient. Furthermore, while many of these medications are started while a patient is in the hospital, titration to optimal dosages usually occurs in the outpatient setting. Methods: This is a retrospective chart review of patients diagnosed with HFrEF since 2019. Inclusion criteria includes patients over the age of 18 with a diagnosis of HFrEf (defined as an ejection fraction of 40% while in the hospital), who have been seen in the outpatient setting at least twice after initial diagnosis within 3 months of hospital discharge. The objective of the study is to evaluate the utilization of GDMT in patients seen in the outpatient setting after initial hospitalization for HFrEF. The primary outcome of the study is the instance of GDMT agents and dose titration in patients with heart failure and reduced ejection fraction. Secondary outcomes include the instances of hospitalization for acute heart failure exacerbations and instances of dosage titration to GDMT recommend strengths per the ACC/AHA guidelines for the treatment of heart failure.Results: Results have been tallied for instance of medication class and number of titrations relating to maximum doses. This data will be presented at the conference.The speaker has no actual or potential conflict of interest in relation to this presentation

Learning Objectives:

Discuss the usage of medications with proven mortality benefit in heart failure with reduced ejection fraction

Describe the utilization of medication dose titration in the outpatient setting

Self Assessment Questions:

Which of the following is considered an evidence-based beta-blocker per the ACC/AHA Heart Failure Guidelines?

A Metoprolol tartrate

B: Carvedilol

C: Nebivolol

D: Atenolol

If a patient has reported coughing on enalapril, which of the following might be an acceptable treatment alternative?

A Lisinopril

B Captopril

C Valsartan

D Ramipril

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-528-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF AN AUTOMATED, PHARMACIST-DRIVEN, ANTIMICROBIAL PATIENT ACUITY SCORING SYSTEM FOR HOSPITALIZED BACTEREMIC PATIENTS

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Inappropriate antibiotic use contributes to adverse outcomes such as development of antibiotic resistance, adverse drug reactions, secondary infections, and excess healthcare costs. The Ohio State University Wexner Medical Center implemented an automated, pharmacist-driven, antimicrobial scoring system in the electronic medical record (EMR) (Epic) on August 6, 2019. This system triggers a pharmacist to review new positive culture results and susceptibilities.The implementation of an automated, pharmacist-driven, scoring system within the EMR has been shown to improve patient care in patients with Staphylococcus aureus bacteremia by increasing the adherence to disease specific quality-of-care measures. However, there are no studies evaluating the incorporation of blood culture review into standard, non-antimicrobial stewardship pharmacist workflow. This is a retrospective, single-center, quasi-experimental study of hospitalized, non-critically ill adult (18-89 years of age) patients with bacteremia between July 6, 2018 and July 5, 2019 (pre-implementation group) and September 6, 2019 and September 5, 2020 (post-implementation group). Key exclusion criteria include patients with Staphylococcus aureus bacteremia, fungemia, blood culture results deemed contaminants, and patients with a positive blood culture at an outside hospital. The primary outcome is time to directed antibiotic therapy (defined as the difference from the time of rapid molecular diagnostic test results and the time to therapy administration that is guided by these results, which can include either escalations or de-escalations) in patients with positive blood cultures. Secondary outcomes include hospital length-of-stay, days of therapy (DOT) while inpatient, time to effective therapy (defined as antibiotic therapy that includes one antibiotic that has activity against the bacteria that was identified on culture) from rapid molecular diagnostic test result 30-day all-cause mortality, rates of Clostridioides difficile infections documented within 3 months of positive culture results, and time to bacteremia clearance. Data analysis is ongoing and results will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss the impact that an automated, pharmacist-driven, antimicrobial scoring system may have on patient care and the healthcare system

Identify patients who may benefit from pharmacist-driven antimicrobial therapy recommendations

Self Assessment Questions:

Which of the following are risks associated with inappropriate antimicrobial therapy?

A Decreased rate of C. difficile infections

B: Increased amount of adverse drug reactions

C: Increased rate of secondary infections

D: Both B & C are potential risks

What effects were seen after implementation of an automated, pharmacist-driven scoring tool for Staphylococcus aureus bacteremia (SAB)?

A Increased adherence to all 4 SAB quality-of-care components (ID

B Increase in duration of bacteremia

C Increase in hospital length-of-stay

D Both B & C are correct

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-732-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

VENOUS THROMBOEMBOLISM (VTE) PROPHYLAXIS WITH ENOXAPARIN VERSUS UNFRACTIONATED HEPARIN IN PATIENTS WITH LOW BODY WEIGHT

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Purpose: Venous thromboembolism (VTE) is a disease that is associated with significant morbidity and mortality. Enoxaparin and unfractionated heparin are commonly utilized for VTE prophylaxis; however, most data exist in average weight or obese patients. Few studies have evaluated prophylactic anticoagulation strategies in low body weight patients, and all exclude patients with renal impairment. No study to date has compared enoxaparin to unfractionated heparin for VTE prophylaxis in low body weight patients. The purpose of this study i to determine the safest and most efficacious parenteral VTE prophylaxis regimen for patients with low body weight.Methods: This study was a retrospective review of non-critically ill patients admitted to UofL Health hospitals with total body weight of less than 55 kg who received prophylactic enoxaparin or unfractionated heparin for at least three days from January 1, 2019 to June 30, 2021. Patients were excluded if they had a VTE or bleed documented prior to VTE prophylaxis, received concomitant oral anticoagulants, had a diagnosis of thrombophilia or coagulopathy, platelet counts less than 50,000 cells/microliter, or end-stage renal disease requiring dialysis. The primary efficacy endpoint was the rate of VTE events. The primary safety endpoint was the rate of bleeding events as defined by the International Society of Thrombosis and Haemostasis. Secondary endpoints included rates of major bleeding and clinically relevant minor bleeding. Pre-specified sub-analyses were performed evaluating the primary outcomes related to the doses of enoxaparin and unfractionated heparin utilized as well as in patients who had a creatinine clearance less than 30 mL/minute and those with a Padua score greater than or equal to four.Results: To be presented at the conference.Conclusion: To be presented at the conference.

Learning Objectives:

Review current evidence for pharmacologic VTE prophylaxis in low body weight patients.

Discuss the clinical issues encountered with utilizing various pharmacologic VTE prophylaxis regimens in low body weight patients.

Self Assessment Questions:

The following medication is contraindicated for VTE prophylaxis in patients weighing less than 50 kg:

A Enoxaparin

B: Fondaparinux

C: Rivaroxaban

D: Unfractionated Heparin

Which group of patients has not been included in the current data regarding VTE prophylaxis in low body weight patients:

A Patients with cancer

B Patients with a creatinine clearance less than 30 mL/minute

C Patients with surgical procedures

D All of the above

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-529-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

COMPARISON OF STEROID TAPER VERSUS ABRUPT CESSATION FOR RESOLVING SEPTIC SHOCK

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Purpose: The 2016 Surviving Sepsis Campaign Guidelines suggest using intravenous hydrocortisone to treat septic shock in patients unable to restore hemodynamic stability after adequate fluid resuscitation and vasopressor therapy. The guidelines weakly suggest tapering steroids when vasopressors are no longer needed, which is based on low quality of evidence. The appropriate method to withdraw steroids remains unclear. The purpose of this study is to compare the effects of abrupt cessation versus taper of steroids in patients with septic shock.Methods This single center, retrospective cohort study evaluated critically ill adult patients admitted to St. Joseph Mercy Oakland between February 2020 and January 2022. Patients were included if they had septic shock and received at least 200 mg of hydrocortisone within 24 hours. Patients who died within 24 hours of steroid initiation, received steroids prior to initiation of a vasopressor, were on systemic steroids at home, or had history of an adrenal disorder were excluded. The primary endpoint was resolution of shock within 72 hours of the last steroid dose. Resolution o shock was defined as patients who did not require re-initiation of vasopressors. A sub-group analysis will compare outcomes in patients who received steroids for at least 7 days versus less than 7 days. Secondary endpoints include intensive care unit (ICU) and in-hospital mortality, ICU and hospital length of stay (LOS), and adverse effects. Preliminary Results: Of 283 patients evaluated, 117 met inclusion criteria. Mean age was 67.8 12.8 years and most (53%) patients were male. Mean APACHE II score was 31.5 9 and 65% of patients were mechanically ventilated. Steroids were tapered for 50.4% of patients and abruptly stopped for 49.6%. Median ICU LOS was 7.7 (3.9-12.6) days . Additional results and conclusion to be presented at GLPRC.

Learning Objectives:

Discuss the effects of steroid taper versus abrupt cessation for resolving septic shock in critically ill patients.

Identify steroid dosing recommendations for septic shock treatment

Self Assessment Questions:

What is the corticosteroid of choice and dose suggested in the Surviving Sepsis Guideline?

A Hydrocortisone 200â€‰mg/day given as 50â€‰mg intravenously
B: Dexamethasone 200â€‰mg/day given as 50â€‰mg intravenousl
C: IV methylprednisolone 120 mg/day
D: Hydrocortisone at a dose of 300 mg/day given as 100 mg intraven

When it comes to tapering versus abrupt cessation of steroids, the 2016 Surviving Sepsis Guidelines currently suggest the following:

A Abruptly stopping steroids once vasopressors are no longer neede
B Tapering steroids once vasopressors are no longer needed
C Does not make a statement
D Defers the decision to clinical judgement

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-530-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

OPTIMIZING ALBUMIN USE AT AN ACADEMIC MEDICAL CENTER

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Purpose: Albumin is a protein-based colloid used in the inpatient setting for a variety of indications. For most indications, there are more cost-effective alternatives without significant differences in patient outcomes. The purpose of this project is to optimize the use of albumin at UW Health. Methods: A literature review looking at new uses of albumin since the last update to the UW Health Albumin Clinical Practice Guideline (CPG) was conducted. Evidence gathered from the literature review was used to draft changes to the current CPG and will be presented to physician champions for approval. After changes to the CPG are agreed upon, an orderset within the electronic health record (EHR) will be built to support provider ordering of albumin. An albumin pre-implementation audit was conducted via a query of the EHR for all inpatient albumin orders between January 1, 2020 and December 31, 2020. Data collected included ordered dose, ordered concentration, and indication as selected by provider. This audit served to identify high use services and gain insight into how albumin is ordered at UW Health. A post-implementation query of the EHR will be completed to assess impact of the CPG update and orderset implementation on albumin use at UW Health. Results: The literature review supported he following updates to the UW Health Albumin CPG: paracentesis (change dosing), cirrhosis without ascites (new indication) and diuretic resistance (unapproved indication). The audit had a total of 5960 unique albumin orders. An indication of other was selected for 15.4% of albumin orders. Dose and concentration ordered varied significantly within indications and often differed with guideline recommendations. Conclusions: New data supports updates to the UW Health Albumin CPG. Additionally, the development of an orderset may improve ordering of albumin as supported by institutional guidelines.

Learning Objectives:

Identify appropriate and inappropriate uses of albumin.

Identify potential opportunities to optimize albumin use within a health system.

Self Assessment Questions:

In which of the following scenarios would it be potentially appropriate to administer albumin?

A Large volume paracentesis of 3L
B: Diuretic resistance
C: Cirrhosis with serum albumin 2.5 g/dL
D: None of the above

Which of the following interventions have been proposed to optimize the appropriate use of albumin within a health system?

A Creation of an albumin orderset in the EHR
B Educational materials to high use services
C Development of institutional guidelines
D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-733-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

DETERIORATION FREE DISCHARGE COMPARISON OF ANDEXANET-ALFA AND PROTHROMBIN COMPLEX CONCENTRATES FOR REVERSAL OF FACTOR XA INHIBITOR ASSOCIATED BLEEDS

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Background: Oral factor Xa inhibitors are indicated to reduce the risk of stroke in patients with atrial fibrillation, treat deep vein thrombosis (DVT) and pulmonary embolisms (PE), and for DVT/PE prophylaxis following knee or hip replacement surgeries. Due to the inhibition of clotting factor Xa, patients taking these medications are at an increased risk of bleeding. Andexanet-alfa was the first agent with specific activity related to factor Xa, and it was FDA approved in May 2018 for the reversal of apixaban and rivaroxaban. Current national guidelines recommend using andexanet-alfa as the first line agent if it is available and using prothrombin complex concentrates (PCC) if andexanet-alfa is unavailable. Statement of Purpose: To evaluate the outcomes and costs associated with the use of andexanet-alfa compared to PCC in patients with bleeds taking oral factor Xa inhibitors.Methods: This is a retrospective cohort analysis. Inclusion criteria includes patients 18 years old, taking a factor Xa inhibitor that experienced a bleed and required a reversal agent (andexanet-alfa or PCC) during admission. This study will seek to compare cost and clinical outcomes including hemostasis, escalation of care, amount of packed red blood cells administered, and in-hospital mortality between the previous standard of care, PCC, and the new standard of care, andexanet-alfa. The PCC group includes patients admitted to Henry Ford Health System from March 2014 to September 2018 and October 2018 to TBD for the andexanet-alfa group. Data collected from medical records includes patient demographics, the factor Xa inhibitor the patient was taking, measures of hemostasis outcomes, cost of reversal agent used, discharge disposition, hospital and ICU length of stay, thrombotic events, and the time to resumption of anticoagulation following the administration of andexanet-alfa or PCC .Data is currently being collected, and results will be presented at GLPRC.

Learning Objectives:

Discuss current guideline reccomendations for the management of bleeding in patients on oral anticoagulants

Review dosing guidelines for andexanet-alfa

Self Assessment Questions:

According to the 2020 ACC Expert Consensus Decision Pathway on Management of Bleeding in Patients on Oral Anticoagulants which of the following is/are considered a critical site?

A Intracranial

B: Pericardial

C: Gastrointestinal

D: A and B

What is the appropriate dose of andexanet-alfa for a patient taking rivaroxaban 20 mg daily with last known dose taken 12 hours ago?

A 400 mg bolus followed by 4 mg/min infusion for up to 120 minutes

B 400 mg bolus followed by 8 mg/min infusion for up to 120 minutes

C 800 mg bolus followed by 4 mg/min infusion for up to 120 minutes

D 800 mg bolus followed by 8 mg/min infusion for up to 120 minutes

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-531-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

ASSESSMENT OF ANTIBIOTIC TREATMENT IN ACUTE EXACERBATIONS OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE AT A COMMUNITY HOSPITAL

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The Global Initiative for Chronic Obstructive Lung Disease (GOLD) guidelines classify an acute exacerbation of chronic obstructive pulmonary disease (COPD) as an acute worsening of respiratory symptoms that results in additional therapy. Exacerbations of COPD are mainly caused by respiratory infections with viral pathogens being most common. Antibiotics are only recommended if patients exhibit certain combinations of cardinal symptoms, which are outlined in the guidelines as increased dyspnea, sputum purulence, and sputum volume. The purpose of this study is to assess the appropriateness of antibiotic use based on presence of cardinal symptoms. Methods: This study was a single-center, retrospective chart review that was conducted to analyze the use of antibiotics in patients admitted with acute exacerbation of COPD. Patients were identified using ICD-10 codes. The primary outcome was to determine if patients appropriately received antibiotics based on documented cardinal symptoms. Secondary outcomes included the rate of 30-day hospital readmission, hospital length of stay, what antibiotics were prescribed during admission, and the duration of antibiotics prescribed. Patients were included if they were at least 18 years of age and had a diagnosis of acute exacerbation of COPD upon admission. Patients were excluded if they were admitted or transferred to the intensive care unit during admission, had a diagnosis of pneumonia, evidence of sepsis or septic shock, were receiving end of life care while admitted, were pregnant or incarcerated, or had another documented source of infection.Results & Conclusions: Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Recognize the cardinal symptoms in an acute exacerbation of COPD that would warrant antibiotic use

Identify outcomes from previous literature that demonstrate benefit of appropriate antibiotic prescribing in acute exacerbation of COPD

Self Assessment Questions:

According to the GOLD guidelines, which cardinal symptom should be present for a patient to receive antibiotics for an acute exacerbation of COPD?

A Increased dyspnea

B: Increased sputum production

C: Increased sputum purulence

D: Hypoxia

Based on previous literature, appropriate utilization of antibiotics in acute exacerbation of COPD resulted in which outcome?

A Decreased hospital length of stay

B Increased readmission rate

C Increased risk of multi-drug resistant organisms

D Increased risk of hospital-acquired pneumonia

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-734-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EFFECT OF MEDS TO BEDS PROGRAM ON 30 DAY READMISSION

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Purpose: Readmissions are costly to health systems and increase a patients risk of developing unfavorable outcomes. Bronson Methodist Hospital has initiated several interventions to improve patient care and potentially decrease readmissions. One of the interventions initiated from a pharmacy prospective is a bedside medication delivery program, named the Meds to Beds program. Studies evaluating bedside delivery programs have not shown a decrease in readmission rates, but have only evaluated single interventions. The purpose of this study is to evaluate the effect of the medication delivery program on readmission rate. The primary outcome is the difference in the 30 day readmission rate between those who utilized and those who did not utilize the Meds to Beds program. Secondary outcomes include the difference in 30 day readmissions for patients with targeted disease states between those who utilized and those who did not utilize the Meds to Beds program. Results of this study may enhance patient care by prompting expansion of the Meds to Beds program.Methods: Data was collected retrospectively from a single-center electronic medical record database. Patients were included if they had an inpatient visit greater than or equal to two days, then discharged to home from Bronson Methodist Hospital between January 1st 2018 to December 31st 2021. Patients were excluded if they were admitted to the Mother Baby Unit, Labor and Delivery, or NICU. If patients were at the hospital for an outpatient visit such as a surgery or emergency department visit. If the patient passed away during admission or if they were incarcerated they were excluded.Results/Collection: Data collection and analysis are currently in progress. Results and conclusions will be presented at the 2022 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify the four disease states that Bronson Methodist Hospital recognizes as having high risk readmission.

Define what a 30 day readmission is per Medicare's Hospital Readmissions Reduction Program.

Self Assessment Questions:

Which of the following would be considered high risk for readmission rate at Bronson Methodist Hospital?

A Atrial fibrillation

B: Congestive heart failure

C: Pneumonia

D: Both B and C

Which of the following would be considered a 30 day readmission?

A A patient who is admitted for pneumonia and is readmitted at 10 d

B A patient who has an ER visit on the 1st of the month and another

C A patient who visits the hospital with their father and later that wee

D A patient who is admitted for heart failure and visits the ER 4 days

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-735-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

THE EFFECT OF STATINS ON COGNITION IN VETERANS WITH TYPE 2 DIABETES

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Purpose: Diabetes mellitus is a significant risk factor for cognitive impairment and dementia. For adults 40 to 75 years of age with diabetes mellitus, the ACC/AHA guideline for hyperlipidemia recommends moderate-intensity statins. Recently, conflicting research has been published regarding the effect of statins on cognition. A meta-analysis published by Poly T.N. et al. demonstrated that patients on statins had a lower all-caused dementia risk compared to patients without a statin (RR 0.83, 95% CI 0.79"0.87). Another publication in the Journal of Nuclear Medicine used PET scans over the course of 8-years to identify cognitive changes in patients prescribed lipophilic statins. The results demonstrated that lipophilic statins resulted in significant decline in metabolism in the posterior cingulate cortex; a brain region first affected by Alzheimers disease. The purpose of this study is to assess potential risks of lipophilic statins in comparison to hydrophilic statins on cognition in veterans with type 2 diabetes. This study will also examine the statin prescribing patterns related to cognitive impairment.Methods: This study will be a retrospective electronic chart review of patients with a diagnosis of type 2 diabetes and started on atorvastatin, simvastatin, rosuvastatin, or pravastatin between January 1, 2012 and December 31, 2012. Approximately 100 patients will be enrolled for the lipophilic statins (atorvastatin/simvastatin) group and 100 patients for the hydrophilic statins (rosuvastatin/pravastatin) group. Patients will be followed for 8-years to identify documented neurocognitive changes. The primary endpoint is overall number/percentage of patients with change (negative or neutral/positive change) in cognition based on lipophilic vs. hydrophilic statins. Multiple subgroup analysis will be performed including patients switched from one statin to another, duration of statin use, duration of diabetes diagnosis, and changes in LDL levels.Results: Results and conclusions to be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review the 2019 ACC/AHA hyperlipidemia guidelines on the use of statins in patients with type 2 diabetes

Recognize the difference between hydrophilic and lipophilic statins

Self Assessment Questions:

According to the 2019 ACC/AHA guidelines, what intensity statins should be initiated in patients 40-75 years old with a diagnosis of type 2 diabetes?

A High intensity

B: Low intensity

C: Moderate intensity

D: Standard intensity

Which of the following statins is considered lipophilic?

A Simvastatin

B Atorvastatin

C Pravastatin

D A, B

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-532-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

OPTIMIZING OPIOID PRESCRIBING FOR POSTSURGICAL PAIN MANAGEMENT BY STANDARDIZING ORDER PANELS

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The staggering magnitude of the opioid crisis in the United States (US) has been increasing. In 2017, the US Department of Health and Human Services declared the opioid crisis in the US as a public health emergency. The Centers for Disease Control and Prevention (CDC) has created criteria and quality improvement measures for health systems to improve opioid prescribing practices. In order to comply with CDC recommendations, the hospital must ensure that opioid prescriptions are prescribed safely and effectively. This evaluation will help identify prescribing gaps. Order panels were identified as high-priority for optimization in this community hospital due to their frequent use. Order panels are groups of medication orders that are put together for optimizing medication ordering. The objective of this project is to standardize postsurgical pain management orders to improve opioid prescribing, daily morphine milligram equivalents (MME), and increasing prescriber awareness and accountability within a community hospital

Learning Objectives:

Define opioid stewardship and the role of an opioid stewardship clinical pharmacist

Discuss the goals, responsibilities, and metrics of an interdisciplinary opioid and pain oversight committee

Self Assessment Questions:

Which of the following about Daily Morphine Milligram Equivalents (MME) is TRUE?

A MME assess the risk of overdose

B: ALL opioids prescriptions are assigned the same MME dose

C: 20 MME/day puts the patient at an increased risk of overdosing

D: MME is used to calculate an opioid day supply

_____ is known as intentionally using narcotic pain relievers beyond what is

A Dependency

B Addiction

C Misuse or abuse

D Reliance

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-850-L08-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

TREATMENT OF HYPERCALCEMIA OF MALIGNANCY IN PATIENTS WITH RENAL DYSFUNCTION

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Background: Bisphosphonates are the backbone of treatment for hypercalcemia of malignancy (HCM). However, concern exists about the safety of bisphosphonates in patients with renal dysfunction. There are limited data evaluating the safety and efficacy of using bisphosphonates compared to other treatment options in this patient population.Aim: Evaluate safety and efficacy outcomes in patients with HCM and renal dysfunction who received bisphosphonates compared to non-bisphosphonate front-line options.Methods: A retrospective cohort analysis of adult patients with HCM and renal dysfunction (defined as CrCl<60mL/min) from 1/1/2015-4/30/2021 at Michigan Medicine will be conducted. Patients will be divided into two comparator groups based on front-line bisphosphonate vs non-bisphosphonate therapy for HCM. The primary endpoint will be the incidence of decline in renal function by day 30 from initial HCM-directed therapy. Secondary endpoints will include resolution of hypercalcemia (corrected serum calcium 10.5 mg/dL) by day 30 from initial HCM-directed therapy, refractory hypercalcemia requiring additional HCM-directed therapy within 30 days, hypocalcemia need for Ca or vitamin D supplementation, and osteonecrosis of the jaw. A multivariate logistic regression will be utilized to assess for the correlation between our chosen covariates and primary endpoint. Covariates will be selected based on factors that impact HCM based on prior studies. Results: We hypothesize that the use of IV bisphosphonates in patients with impaired renal function does not result in a significant change in renal function. 883 patients have been screened and 117 of those patients have met inclusion criteria. Screening is currently ongoing. Conclusion: This will be the first study comparing the safety and efficacy of bisphosphonate to non-bisphosphonate treatment in patients with HCM and renal dysfunction. Given that there is limited data for the treatment of HCM in this patient population, the results of this study may provide additional insight into optimal treatment strategies.

Learning Objectives:

Outline the pathophysiology of hypercalcemia of malignancy (HCM)

Identify gaps in literature about safety and efficacy of bisphosphonates in renal dysfunction

Self Assessment Questions:

Which treatment for hypercalcemia is generally reserved for severe symptoms and can lose its efficacy after 48hrs of use?

A Normal saline

B: IV bisphosphonates

C: Calcitonin

D: Furosemide

Which of the following is a strategy to minimize renal side effects of IV bisphosphonates?

A Increase the dose

B Prolong the infusion time

C Use zoledronic acid instead of pamidronate

D Bisphosphonates should be avoided in patients with renal dysfunc

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-533-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

DEVELOPMENT AND IMPACT OF A PHARMACIST-PHYSICIAN OUTPATIENT OPIOID STEWARDSHIP PILOT PROGRAM AT A FEDERALLY QUALIFIED HEALTH CENTER

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In 2017, the US Department of Health and Human Services declared the opioid crisis a national emergency.Opioids are associated with severe adverse effects including respiratory depression, mortality, and dependence.Opioid stewardship aims to improve, monitor, and evaluate opioid use while meeting regulatory requirements.The purpose of this study was to evaluate integration of opioid stewardship into physician and pharmacist patient care in the outpatient setting.A single-center, case-control study was completed at Eskenazi Health Center Forest Manor, a federally qualified health center. A three-fold outpatient opioid stewardship intervention was piloted: (1) education for clinic providers outlining analgesia treatment methods and safety measures completed in 2020, (2) group patient education programs led by a clinical pharmacist began in July 2021 and occurred quarterly thereafter, and (3) pharmacist-physician co-visits following the education to discuss the patients pain regimen and adjustments.Outpatient opioid stewardship measures were evaluated by comparing patient data from pre- and post-stewardship implementation. Subjects were 18 years of age who received chronic opioid prescriptions from January 1, 2017 to December 31, 2018 (control patients) and January 1, 2021 to December 31, 2022 (case patients).The primary endpoint was the average morphine milligram equivalent (MME) per prescription per day for the first reported opioid prescription within the designated time period, and for 90 days thereafter, and units per prescription.Secondary endpoints included concomitant non-opioids, naloxone prescriptions, sedating medications, and patient feedback for quality improvement.In preliminary results, case patients experienced more non-pharmacological interventions, concurrent non-opioid analgesics, naloxone prescriptions, and diagnosis documentation compared to control patients.Case patient feedback indicates better understanding of pain characteristics and treatment with further analysis forthcoming.Final results will determine the impact and effectiveness of outpatient opioid stewardship principles with the future aim to expand opioid stewardship to all of Eskenazi Healths primary care sites.

Learning Objectives:

Describe opioid stewardship and its place in both inpatient and outpatient healthcare settings

Explain the role of outpatient opioid stewardship principles and how these principles can improve opioid prescribing practices, patient safety, and pain management

Self Assessment Questions:

What do The Joint Commission's goals for opioid prescribing and the Canadian ISMP Opioid stewardship characteristics have in common?

A Address non-pharmacological pain treatment

B: Address non-opioid treatment

C: Prevent negative future events

D: All of the Above

How many fewer Schedule II opioid prescriptions were recorded after opioid stewardship interventions were implemented in the Brigham Health study?

A 44.5 per month

B 55.5 per month

C 73.5 per month

D 85.5 per month

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-851-L08-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

IMPACT OF AN EMERGENCY DEPARTMENT, PHARMACIST-DRIVEI PROTOCOL TO DISCONTINUE ANTIBIOTICS FOR PATIENTS DISCHARGED FROM THE EMERGENCY DEPARTMENT WITH NEGATIVE SEXUALLY TRANSMITTED INFECTION RESULTS

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Purpose: Emergency medicine (EM) pharmacists play an important role in implementing strategies to improve antimicrobial stewardship and patient outcomes after being discharged from the emergency department (ED). EM pharmacists commonly perform a positive culture call-back program that results in optimized antibiotic prescribing, and reduced unnecessary antibiotic usage, minimizes antibiotic resistance, and adverse events. In June of 2021, the sexually transmitted infection (STI) guidelines were updated. This update emphasized the use of doxycycline empirically over azithromycin for concern of STIs. Typically, patients are discharged from the ED with doxycycline and cultures still pending. At Loyola University Medical Center (LUMC), we proposed an expanded culture call-back protocol that includes de-escalation of antibiotics based on negative cultures. The purpose of this study is to evaluate the potential positive impact on antibiotic free days through this EM pharmacist-driven protocol to contact patients with negative sexually transmitted infection (STI) results who were discharged with antibiotics. Methods: This was a single center, prospective, observational, pre-post cohort study comparing antimicrobial use in patients who had a prospective antibiotic de-escalation compared to a historical control. The control group were patients who visited the ED from January 1, 2019 to July 31, 2021. The de-escalation group were patients who visited the ED after August 1, 2021. Patients were identified by LUMCs daily ED culture call-back report. Patients were contacted regarding their negative STI result, including chlamydia, gonorrhea, syphilis, and to discuss their clinical status. Patients were recommended, safely and appropriately, to stop taking their antibiotic if they expressed improved health and no worsening symptoms combined with the negative STI result. The primary outcome was days free of antibiotics. Secondary endpoints include adverse events, antibiotics prescribed and intravenous antibiotic administration in the ED. Results: Results will be presented at the 2021 Great Lakes Pharmacy Residency Conference

Learning Objectives:

Discuss the new updates to the 2021 IDSA sexually transmitted infection guidelines

Identify increased opportunities and role expansion in antimicrobial stewardship in an ED setting for an EM pharmacist

Self Assessment Questions:

Per the updated 2021 STI guidelines, what is the new recommendation for suspected chlamydia for patients being discharged from the ED?

A azithromycin 1g IM once

B: doxycycline 100mg QD x 14 days

C: azithromycin 500mg IM once

D: doxycycline 100mg BID x 7 days

A 27-year-old male (weight 80kg), who has had multiple sexual partners in the past month and does not use protective measures, presents to the ED complaining of dysuria, testicular pain and itching for a few days. The patient does not have prescription coverage and lives out of state. He is agitated and stating he is going to leave soon, but his test results have not yet resulted. The provider comes to you, the pharmacist in the ED, asking for the best recommendation for treating a potential STI in this patient. What would you recommend?

A levofloxacin 500mg PO QD x 7 days & ceftriaxone IV 2g x 1

B azithromycin 1g IM x 1 & ceftriaxone 500mg IM x 1

C doxycycline 100mg PO BID x 7 days & ceftriaxone 1g IM x 1

D doxycycline 200mg PO BID x 7 days & ceftriaxone 1g IM x 1

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-534-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

AN EVALUATION OF A PHARMACIST-LED PHARMACOGENOMIC TESTING WORKFLOW IN POST-STEMI PATIENTS

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Purpose: Pharmacogenomic (Pgx) testing targets specific enzyme in drug metabolism to determine the metabolic capabilities of a patient. The results are used to determine the most appropriate pharmacotherapy to maximize efficacy and/or reduce risk for adverse effects. At Henry Ford Hospital (HFH), a pharmacy-driven Pgx pilot that focuses on CYP2C19 testing for P2Y12 inhibitor therapy was established. The purpose of this study is to characterize the clinical and financial impact of this program. Methods: This was a retrospective, observational time-study of the pharmacist-led CYP2C19 genetic testing workflow at HFH. Adult patients admitted with ST-segment elevated myocardial infarction (STEMI) who received percutaneous intervention (PCI) and were started on P2Y12 inhibitor therapy were included if they followed with a HFH Medical Group cardiologist and a pharmacist in the outpatient cardiology clinic. The primary outcome was estimated time spent by a pharmacist on each patient in the program validated by direct investigator observation. Secondary outcomes included calculated mean labor cost of pharmacist time spent per patient, percentage of eligible STEMI patients who participated in the program, and net adverse clinical events (defined as death from any cause, MI, definite stent thrombosis, stroke, or major bleed) within 30 days of the index event. Categorical data was analyzed using chi square and fishers exact test. Continuous parametric data were analyzed using the t-test, and nonparametric data were analyzed using the Mann-Whitney U test.Results and Conclusions: To be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify the correct phenotype based on pharmacogenetic testing results as it relates to a patient's CYP 2C19 genotype.

Select the appropriate P2Y12 inhibitor therapy based on a patient's CYP 2C19 genotype.

Self Assessment Questions:

A patient was discharged from the hospital on ticagrelor. A pharmacogenetic test for CYP 2C19 was performed and the results were *1/*17. What type of CYP 2C19 metabolism does this patient most likely exhibit?

A Ultra-rapid
B: Normal
C: Intermediate
D: Poor

A patient was discharged from the hospital on ticagrelor. A pharmacogenetic test for CYP 2C19 was performed and the patient was identified as a CYP2C19 rapid-metabolizer. Which of the following therapy changes should be made?

A No therapy change indicated
B Change ticagrelor to prasugrel
C Change ticagrelor to clopidogrel
D Change ticagrelor to aspirin

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-535-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

ADMISSION MEDICATION HISTORY QUALITY AT A COMMUNITY HOSPITAL

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Background: Medication histories are a staple of the admission process. Without accurate medication histories, providers do not have current information when putting together admission orders for a patient. This can lead to significant errors during and after a patients stay. A well-performed medication history should provide cohesion and be the source of truth regarding a patients home medications. Due to their extensive training and expertise regarding medications, pharmacists are perfectly positioned to produce best possible medication histories (BPMH). Medication histories Bronson Battle Creek Hospital have historically had poor levels of pharmacy involvement in medication histories - particularly prior to admission. These admission medication histories are sometimes able to be picked up by pharmacists on patient care floors during their stay, but research has shown that completing them prior to admission (i.e. in the emergency department) reduces errors. Having the medication history completed prior to admission allows for accurate representation of patients' home medications when the admitting provider writes admission medication orders. Sufficient pharmacy staffing to perform this crucial task as consistently as possible is likely necessary based on error rate decline shown in previous studies, as well as improving workflow for floor pharmacists: improving the continuum of care for each patients stay. Statement of Purpose: To evaluate the quality of medication histories performed at Bronson Battle Creek Hospital, and provide a cost justification analysis for a medication history staffing model.Preliminary Results: Preliminary results have not yet been collected, data analysis is still ongoing.Conclusions Reached: Conclusions have not yet been reached, data analysis is still ongoing. Will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the components of a Gold Standard Medication History (Best Possible Medication History).

Recognize the significance of completing medication histories prior to admission.

Self Assessment Questions:

Which of the following is not an appropriate source to utilize in performing a best possible medication history?

A Patient
B: Pill bottles/patient's medication lists
C: Community Pharmacy
D: Discharge summary from admission 24 months ago

What is the most significant advantage of an accurate admission medication history being performed prior to admission?

A Assisting patient with identifying current therapeutic duplications o
B Accurate medication list for provider to order from for admission
C Helping the patient consolidate their outpatient prescriptions to on
D Establishing an accurate, consolidated medication list for the patie

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-736-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EVALUATION OF BLOOD GLUCOSE CONTROL IN INPATIENTS RECEIVING PERITONEAL DIALYSIS

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Statement of Purpose:Currently no literature exists evaluating the management of blood glucose in patients receiving dextrose-based peritoneal dialysis solutions in the inpatient setting. Available outpatient studies observed increased postprandial blood glucose in diabetic patients and those with higher concentration dextrose-based solutions who are using continuous ambulatory peritoneal dialysis. An additional study observed lower glycated hemoglobin in patients receiving low-glucose peritoneal dialysis solution. We aim to evaluate the changes in total daily insulin requirements in inpatients receiving either continuous ambulatory or nocturnal peritoneal dialysis. Statement of Methods:This retrospective, observational, crossover study will be conducted via chart review with each patient serving as their comparator from July 1, 2018 to June 30, 2021. Inclusion criteria are diabetic inpatients 18 year of age requiring insulin use; patients must also have had a pharmacist-conducted medication history interview completed during the encounter. Exclusion criteria includes initiation of peritoneal dialysis within 30 days of admission, surgical admitting diagnosis, active diabetic ketoacidosis, euglycemic ketoacidosis, or hyperosmolar hyperglycemic state, current peritoneal dialysis infection, use of glucocorticoids, or conversion to hemodialysis. Once identified, patients will be stratified according to percent dextrose of peritoneal dialysis solution (1.5%, 2.5%, and 4.25%). For primary analysis, each patient will serve as their own comparator. The primary outcome of this study is the daily insulin requirement prior to admission compared to daily insulin requirement during hospital admission. A sample size of 74 will be required to enroll 37 patients per group to detect a 33% difference in daily insulin requirements. Secondary outcomes include hospital encounter day one average blood glucose, prevalence of hyperglycemia > 180 mg/dL, hypoglycemia < 70 mg/dL, and changes to home insulin regimens post discharge. Results and conclusion will be reported at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the impact peritoneal dialysate may have on serum blood glucose measurements

Identify one factor of peritoneal dialysis that may exert a greater effect on serum blood glucose dysregulation based on previous studies

Self Assessment Questions:

A patient is admitted from the emergency department with a past medical history of ESRD requiring peritoneal dialysis, type II diabetes mellitus, and hypertension. Name one reason you may suspect the patients blood glucose may be difficult to manage?

A Peritoneal dialysis disrupts the absorption of subcutaneous medica

B: Peritoneal dialysate contains large volumes of dextrose

C: Insulin cannot be administered while peritoneal dialysis is being ac

D: There should be no difficulties managing the patientâ€™s serum b

Previous studies found which of the following factors impacted serum blood glucose the greatest?

A Type of peritoneal dialysis (CAPD vs. nocturnal)

B Type of diabetes mellitus (type I vs. type II)

C Dextrose concentration of the peritoneal dialysate (1.5% vs. 2.5%

D Length of time the patient has been receiving peritoneal dialysis

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-536-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

RETROSPECTIVE ANALYSIS OF MEDICATION EVENTS REPORTED WITHIN RESIDENTIAL REHABILITATIVE TREATMENT PROGRAMS AT THE JESSE BROWN VA MEDICAL CENTER

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Purpose: Medication errors are defined as preventable events that may cause or lead to inappropriate medication use or patient harm. At the Jesse Brown Veterans Affairs Medical Center (JBVAMC), all medication events are evaluated and used to identify trends and opportunities to enact procedural changes to prevent recurrence. In 1995, the Veteran Health Administration (VHA) established the Residential Rehabilitative Treatment Programs (RRTP) bed level of care for patients with mental illnesses and/or substance use disorders who do not warrant acute psychiatric inpatient admission but require additional structure and support to address multiple and severe psychosocial deficits. The program focuses on creating an environment that promotes Veterans return to the community through clinical education, therapy, counseling, and treatment. The two tracks of rehabilitative treatment offered at the JBVAMC are mental health and substance abuse. Recently, a number o medication events reported within the RRTP led to further review and analysis. The purpose of this quality improvement (QI) project is to analyze the medication events reported within the RRTP units and to implement risk-reducing strategies in the form of action plans to prevent risk of error recurrence.Methods: This project is a retrospective electronic review of archived JBVAMC medication events from December 2014 through September 2021 that will be analyzed to first identify medication events involving the RRTP units. The medication events will be evaluated and classified into different groups. These include date, location, source of error, error category, safety assessmen code (SAC) score, high alert medication, controlled substance, and actual event/near miss. Once classified, trends and patterns will be identified using descriptive statistics and action plans will be created and implemented to prevent similar medication events.Results: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Define the Institute for Safe Medication Practices (ISMP) "Ten Key Elements" of the medication-use system

Describe potential strategies to reduce risk of medication error occurrence

Self Assessment Questions:

Which of the following is not defined as a key element of the medication use system?

A Communicating accurate and up-to-date drug information to all he

B: Using an independent single-check system to verify medications

C: Providing ongoing patient and staff education

D: Redesigning systems and processes to prevent errors

Which of the following are potential strategies for mitigating medication errors?

A Encouraging medication error reporting and evaluation of errors fo

B Updating current policies/procedures if applicable

C Providing education and resources for staff development

D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-821-L05-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATING THE EFFECTS OF EARLY TRANSITION TO DAPTOMYCIN OR CEFTAROLINE OVER VANCOMYCIN FOR MRSA BACTEREMIA AT A VA MEDICAL CENTER

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Purpose Methicillin-resistant Staphylcoccus aureus (MRSA) bacteremia is linked to a high rate of morbidity and mortality. The mainstay treatment for MRSA bacteremia has long been intravenous vancomycin. Vancomycin exhibits slow bactericidal activity, is associated with emergence of resistance and clinical failure, has a narrow therapeutic index that requires surrogate marker testing, and has been associated with nephrotoxicity. Given the limitations of vancomycin, other therapies have been investigated and daptomycin or ceftaroline have been shown to yield improved outcomes, including reduced 30-day mortality and duration of bacteremia. A protocol was established in coordination with infectious disease colleagues to convert antibiotic therapy to daptomycir or ceftaroline from vancomycin for confirmed MRSA bacteremia. Baseline data on MRSA bacteremia cases prior to implementation was collected for comparison to post-implementation data. Data will then be prospectively collected post-implementation as new cases of MRSA bacteremia emerge. After adequate patients have been included, post-implementation data will be compared to pre-implementation data. Methods This cohort study was a retrospective electronic chart review of patients diagnosed with MRSA bacteremia from October 1, 2017 to September 30, 2020. These patients will serve as a historical control, pre-implementation group. Patients diagnosed with MRSA bacteremia post-implementation will be prospectively reviewed using the same criteria. Data from the pre-implementation group will be utilized to compare outcomes of the post-implementation group once adequate patients have been included. The primary outcomes are 7- and 30-day mortality and duration of bacteremia. Secondary outcomes include length of hospital admission, 30-day readmission, and incidence of adverse effects. Results and ConclusionsResults and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

State limitations to vancomycin therapy in the treatment of MRSA bacteremia

Describe potential benefits of daptomycin or ceftaroline over vancomycir

Self Assessment Questions:

Which of the following is a limitation to vancomycin therapy in the treatment of MRSA bacteremia?

A Vancomycin is very expensive

B: Vancomycin demonstrates slow bactericidal activity

C: Vancomycin provides renal protection

D: Vancomycin has limited clinical data

Which of the following is a potential benefit of daptomycin over vancomycin in the treatment of MRSA bacteremia?

A Daptomycin is expensive

B Daptomycin cannot be used when pneumonia is the suspected so

C Daptomycin requires frequent monitoring of blood levels

D Daptomycin demonstrates rapid, concentration-dependent bacteric

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-537-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EVALUATION OF TREATMENT FAILURE IN PEDIATRIC PNEUMONI/ TREATED WITH CEFDINIR COMPARED TO THAT WITH AMOXICILLIN.

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Purpose: Within the US, CAP continues to be one of the leading causes of pediatric hospitalizations and contributes to approximately 2 million pediatric outpatient visits annually. The Pediatric Infectious Disease Society (PIDS) and the Infectious Disease Society of America (IDSA) published pediatric CAP guidelines listing amoxicillin as the preferred option for outpatient treatment. When patients are unable to take amoxicillin due to allergies or other factors, the next option becomes more unclear. Cefdinir historically has been a potential alternative. In comparison to amoxicillin, cefdinir has lower bioavailability and a higher degree of protein binding, raising concern for reduced treatment efficacy Data on cefdinir failure rates and studies comparing cefdinir to amoxicillin for pediatric CAP are lacking. The objective of this study is to compare the treatment failure rates of cefdinir and amoxicillin in pediatri pneumonia.Methods: A retrospective review of electronic medical records of patients 3 months to 18 years of age diagnosed with pneumonia followed at Gundersen Health System from 2014-2021. To be included, patients must have completed five days of antibiotic therapy and been transitioned to or started on cefdinir or amoxicillin during the treatment course. The primary endpoint was treatment failure in cefdinir compared to amoxicillin in pneumonia. Treatment failure was defined as any of the following within thirty days of therapy: refill of initial antibiotic, switch to a new antibiotic, urgent care visit, emergency room visit, and/o hospitalization related to pneumonia. Secondary endpoints include the number of clinic visits, urgent care visits, emergency room visits, and hospitalizations due to treatment failure.Results/Conclusions: Data collection is ongoing. Results will be presented at the 2022 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss the standard of care for pediatric CAP according to the 2011 ISDA and PIDS guidelines

Describe the pharmacokinetic difference of cefdinir, ceftriaxone, and amoxicillin

Self Assessment Questions:

According to the 2011 IDSA and PIDS guideline for pediatric CAP, what is the recommendation for the minimum days a patient should be treate for?

A 3 days

B: 5 days

C: 7 days

D: 10 days

What is the oral bioavailability of Cefdinir?

A 0 â€“ 25 %

B 26 â€“ 50%

C 51 â€“ 75 %

D 76 â€“ 100%

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-538-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

DISCONTINUATION OF NON-ESSENTIAL MEDICATIONS UPON ADMISSION (TOPICALS, EYE DROPS, VITAMINS)

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When patients are admitted to medicine or surgery floors, many of their prior to admission (PTA) medications are started but may not be medically necessary. Some of these medications are only available in bulk dosage forms that cannot be broken and if the entire dosage form is not be used, the remaining quantity is wasted. Moreover, in the setting o the COVID-19 surge and nursing shortages, holding these medications would lessen the workload and reduce COVID-19 exposure time for nurses. The purpose of this study is to examine the usage of non-essential medications on medicine and surgery floors and determine the potential cost savings of holding these medications upon admission. The project created a list of non-essential medications on the hospitals formulary that are available only in bulk packaging. A report from the electronic health record (EHR) system determined how many times each medication was ordered from the PTA medication list and administered from January 2021 to March 2021. From March 2022-May 2022, a policy will be implemented that allows pharmacists to hold non-essential medications. After May 2022, another report will determine the number of medications ordered from the PTA medication list and administered. The hospitals cost will be calculated in each phase and a potential cost savings will be calculated at the end. It is difficult to quantify the potentia nursing time and resources saved with the policy so this will be inferred during the study and not objectively measured. From January 2021 to March 2021, there were 477 medications ordered and administered from the PTA list. Of the medications, 48% were nasal formulations, 31% were topical formulations and 24% were ophthalmic formulations. Hospitalists placed 44% of the orders. The cost for these medications over the three month period is estimated to be $6,221.96.

Learning Objectives:

Identify ways in which medication waste can occur in the pharmaceutica supply chain.

Describe the types of medications that might be considered non-essential during a patient's acute care stay.

Self Assessment Questions:

Which of the following are examples of medication waste?

A Physician prescribing unnecessarily large quantities of medication

B: Limited packaging sizes available

C: A definite treatment plan which requires none or minor changes

D: Prescribing the smallest quantity for the shortest duration

Which of the following were medications that were identified as non-essential as part of this product?

A Fluticasone propionate 50 mcg/act nasal spray

B Diclofenac 1% gel

C Triamcinolone acetonide 0.1% cream

D Losartan 25 mg tablet

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-737-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

ANALYSIS OF PATIENTS BEING TREATED FOR DIABETIC KETOACIDOSIS (DKA) PRIOR TO INITIATION OF THE TWO-BAG METHOD

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Diabetic ketoacidosis (DKA) is an acute metabolic disturbance stemmin from insulin deficiency. Resultant carbohydrate starvation creates the hallmark clinical picture of ketonemia, acidosis, polyuria/polydipsia, nausea/vomiting, and weight loss, with eventual worsening to coma and death if left untreated.DKA is the result of insulin deficiency and has been widely studied in the body of literature. Most studies include patients with and without a specified treatment and compare the rate of DKA resolution between the two groups. The purpose of this retrospective comparison project is to evaluate the institutions current DKA protocol, evaluating differences among certain patient specific factors that may contribute to faster resolution of DKA. Among patients who have DKA, we will analyze various comparison groups based on vital signs, diabetes treatment modalities prior to arrival, fluids used for resuscitation, type of diabetes diagnosed, A1c on arrival, age, and gender. Patients aged 18 or older will be included if they were admitted to one of 7 Trinity Health System hospitals in Michigan from January 2020 to April 2022 with a diagnosis of DKA and diabetes mellitus. The primary outcome evaluated will be differences in the time from continuous insulin infusion initiation to closure of anion gap. Secondary outcomes will include time on insulin infusion, number of bags of IV fluids given, time to correction of bicarbonate, incidence of hypoglycemia, incidence of hypokalemia, incidence of re-opening of the anion gap, incidence of mortality, and length of ICU/hospital stay. Data i currently being collected, and results will be available at the time of the conference.

Learning Objectives:

Describe the pathophysiology of DKA

Identify the potential demographic characteristics that may increase a patient's risk of developing DKA

Self Assessment Questions:

Which of the following is the primary pathophysiological cause of diabetic ketoacidosis?

A Hyperglycemia

B: Insulin deficiency

C: Excessive urination

D: Over-hydration

Which of the following represents a demographic characteristic that may predispose a patient to developing DKA?

A Presence of Type 1 Diabetes

B Age >80

C BMI >35

D Treatment with metformin

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-539-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

THE RIGHT DRUG FOR THE RIGHT BUG: IMPACT OF AN INTERPRETED AUTOMATED MICROBIOLOGY BETA-LACTAMASE COMMENT ON ANTIBIOTIC PRESCRIBING

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Purpose: Misinterpretation of Haemophilus influenzae and Moraxella catarrhalis resistance mechanism can lead to continued use of broad-spectrum antibiotics even when de-escalation opportunities are present. A study by Musgrove, et al. found that adding purposeful, directed comments to microbiology culture results improved antibiotic prescribing practices. The objective of this study was to assess the impact of a directed microbiology comment for H. influenzae or M. catarrhalis respiratory cultures on antibiotic prescribing. Methods: This was an institutional review board (IRB) approved, single pre-test, post-test quasi experiment at four acute care hospitals in southeast Michigan. Adult hospitalized patients treated for pneumonia and a respiratory culture with dominant growth of H. influenzae or M. catarrhalis were included. Patients were excluded if they received antibiotics for concomitant infections or documented IgE-mediated beta-lactam allergy. As of 3/20/2019, an automated microbiology comment was added to H. influenzae and M. catarrhalis respiratory cultures that suggests predictable susceptible antibiotics based on a positive or negative beta-lactamase test. The beta-lactamase negative prompts This organism is predictably susceptible to ampicillin IV or amoxicillin oral; beta-lactamase positive prompt states This organism is predictably susceptible to ampicillin-sulbactam IV or amoxicillin-clavulanate oral. Before comment implementation, no automated message appeared upon result. Patients were compared before (8/20/2017 to 3/19/2019) and after (3/20/2019 to 8/20/2019) comment implementation. Primary outcome was proportion of patients who received directed antibiotic therapy as recommended by the comment. Secondary outcomes were de-escalation time, clinical success, and treatment duration. A non-equivalent dependent variable of appropriate use of deep vein thrombosis prophylaxis was evaluated due to study design and impracticality of a control group. Estimated target sample size was 200 patients, assuming an alpha of 0.05 and beta of 0.2, anticipating a 30% difference in de-escalation to narrow-spectrum agents. Results and Conclusions: Will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss the result of an interpretive comment on de-escalation of antibiotics.

Select a regimen for H. influenzae or M. catarrhalis based on organism identification and automated microbiology comments of a respiratory culture.

Self Assessment Questions:

What is the intended outcome of a beta-lactamase comment for respiratory cultures growing, H. influenzae or M. catarrhalis on de-escalation of antimicrobial therapy?

A Antimicrobial therapy should only be de-escalated in patients with
B: Consideration of other antimicrobial classes should supersede am
C: Switch to narrow-spectrum agents should be considered in patient
D: None of the above.

MV presented to the hospital with shortness of breath, a mild fever, and no known allergies. MV was started on vancomycin and cefepime. A sputum culture was collected and two days later, finalized as H. influenzae beta-lactamase negative. What is the ideal antibiotic for MV based off the automated microbiology comment?

A Cefepime
B Amoxicillin-clavulanate
C Amoxicillin
D Ampicillin-sulbactam

Q1 Answer: C Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-540-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

THE IMPACT OF TRANEXAMIC ACID USE IN NON-TRAUMATIC SUBARACHNOID AND INTRACEREBRAL HEMORRHAGES

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Purpose: There is a lack of pharmacotherapy intervention for the treatment of intracerebral and subarachnoid hemorrhages outside of aggressive blood pressure management and vasospasm prevention. Rebleeding and early hematoma expansion are associated with increased morbidity and mortality. Tranexamic acid has been shown to reduce the risk of death in bleeding trauma patients and those with a traumatic brain injury, yet studies on tranexamic acid treatment in non-traumatic subarachnoid or intracerebral hemorrhages have been limited. The objective of this study is to determine the impact of tranexamic acid in critically ill patients with non-traumatic intracerebral or subarachnoid hemorrhage.Methods: This study is a retrospective chart review including patients with non-traumatic intracerebral or subarachnoid hemorrhages who received treatment with tranexamic acid or standard care at Bronson Healthcare Group. The primary outcome is the incidence of recurrent hemorrhage or hemorrhagic expansion greater than or equal to one milliliter while hospitalized. Patients were divided into two cohorts " intracerebral hemorrhage and subarachnoid hemorrhage. Patients were enrolled and compared in a 1:2 ratio of tranexamic acid versus standard care (no tranexamic acid). Patients in the subarachnoid hemorrhage cohort were matched by age greater than or equal to 65 and age less than 65years. Patients in the intracerebral hemorrhage cohort were matched based on bleed volume (within 10 milliliters) and age greater than or equal to 65 and age less than 65 years.Results/conclusion: Data collection and analysis are currently being performed. Results and conclusions will be presented at the 2022 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the mechanism of action of tranexamic acid.

Identify the recommended dosing regimen for tranexamic acid in subarachnoid or intracerebral hemorrhages.

Self Assessment Questions:

Based on previous literature, what is the recommended dosing regimen for tranexamic acid in intracerebral or subarachnoid hemorrhages?

A 1g bolus over 10 minutes followed by 1g continuous infusion over
B: 10mg/kg continuous infusion over 24 hours
C: 2g bolus over one hour
D: 1g bolus over 10 minutes followed by a 10mg/kg continuous infusi

What is the mechanism of action of tranexamic acid?

A Provides an increase in the levels of the vitamin K-dependent coa
B Incompletely reverses the anti-factor Xa activity of LMWH
C Forms a reversible complex that displaces plasminogen from fibrir
D Binds and sequesters the factor Xa inhibitors rivaroxaban and apix

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-738-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

BUPRENORPHINE EXTENDED-RELEASE INJECTION PRESCRIBIN PATTERNS IN A LARGE ACADEMIC MEDICAL CENTER

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Background: The requirements to prescribe buprenorphine as a Medication for Opioid Use Disorder (MOUD) were recently updated so that any physician, physician assistant, nurse practitioner, clinical nurse specialist, certified registered nurse anesthetist, and certified nurse midwife, who is state licensed and registered with the DEA is able to prescribe buprenorphine for up to 30 patients by applying for a buprenorphine waiver. This update has expanded access to treatment; however, gaps remain in the uptake of MOUD, specifically for buprenorphine. This medication comes in many formulations one of which is a subcutaneous monthly injection (Sublocade). Theoretically, this dosage form may enhance compliance, continuity of care, and decreased risk of diversion. On the other hand, it can be expensive and typically requires insurance coverage to allow for affordability for patients. Therefore, institutional restrictions exist to prescribing this medication. Purpose: Evaluate patient accessibility to and prescribing compliance with Sublocade administration. Methods: This retrospective single-center review assessed prescribing patterns, overall uptake of Sublocade, and if formulary restrictions were appropriately followed. Data collection included administration data over 2 years since formulary approval. To assess patient accessibility and institutional compliance, data collection included the assessment of a successful transmucosal buprenorphine 7-day trial and insurance approval prior to subcutaneous administration.Results/Conclusion: A total of 37 Sublocade doses were administered to 10 patients. All the patient administrations followed institution restrictions. All administrations occurred in the outpatient clini setting. Eight of the 10 patients who were on this medication received their first injection within this health system. The average number of subsequent injections after the initial dose was 3 injections as documented within this health system. At the time of this review, there was 1 patient who had remained on the monthly injection consecutively for 8 months; and this was the longest duration of therapy noted.

Learning Objectives:

Discuss benefits and clinical considerations of Buprenorphine extended-release injection therapy on patient care.

Recognize which providers can prescribe therapy and the opportunity this has for patient access.

Self Assessment Questions:

Which of the following patients would be a good candidate for Sublocade therapy?

A Patient who prefers face-to-face and frequent touch base meetings
B: Patient who has been unable to remain free from illicit substance u
C: Patient who has been stable on SuboxoneÂ® for many years and
D: Patient who has been lost to follow-up several times over the past

Which of the following providers can prescribe buprenorphine therapy with a buprenorphine waiver but without a DEA-X waiver number?

A Nurse Practitioner
B Physician Assistant
C Certified Nurse Midwife
D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-541-L08-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

SOCIAL DETERMINANTS OF HEALTH KNOWLEDGE ASSESSMENT AMONG SPECIALTY PHARMACY TEAM MEMBERS

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Purpose: Specialty pharmacies have a unique opportunity to incorporate social determinants of health into patient care. While SDoH has been incorporated into pharmacy school curricula in recent years, it is imperative that proper training to recognize and address SDoH is accessible to all members of the healthcare team. The primary objective of this study is to compare knowledge assessment scores in specialty pharmacy team members before and after the completion of a training module titled, Social Determinants of Health (SDoH). The secondary objective of this study is to evaluate the effect of an online learning module on specialty pharmacy team members confidence in addressing social determinants of health topics.Methods: This is a single group pretest " posttest quasi-experimental study conducted between February " May 2022. Data will be collected from a specialty pharmacy chain based in the Midwest with multiple locations across the United States. The primary objective will be measured by comparing average scores fo the study population following completion of a pre-test and post-test knowledge assessment based on the learning objectives established in the Social Determinants of Health learning module. The secondary objective will be measured by comparing aggregate percent of participants responses following completion of a pre-test and post-test assessment on participants self-perceived confidence in identifying and applying SDoH. A demographics survey will be administered to obtain and compare participants personal and work-related demographics and assessed using descriptive analysis. Results/Conclusions: The study is in progress. Potential impacts of the study include identification of the impact of social determinants of health training and education for specialty pharmacy employees.

Learning Objectives:

Explain the impact that social determinants of health have on clinical outcomes

Describe social determinants of health as it pertains to patients experience of pharmacy practice

Self Assessment Questions:

Social determinants of health impact patients in the world of pharmacy practice in the following ways EXCEPT

A Impacting a patientâ€™s ability to adhere to medication instructior
B: Causing patients difficulties to pay for medications
C: Making it difficult for patients to have access to pharmacies based
D: Allowing a patient to speak to a translator in their preferred langua

Please fill in the blank: Health outcomes are influenced by _____ more than clinical care (visits with healthcare providers, taking medications, lifesaving medical procedures, etc.).

A Social factors
B Economic factors
C Social and economic factors
D Health literacy

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-739-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

QUALITY IMPROVEMENT ASSESSMENT: DIABETES INPATIENT INSULIN SERVICE CONSULT (DIISC) TEAM

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Nationwide Childrens Hospital has instituted a Diabetes Insulin Inpatient Service Consult (DIISC) Team to provide optimal care to off service patients, defined as patients not located on the hospitals Endocrinology service. The purpose of this quality improvement project is to assess the clinical impact and utilization of a newly formed team, comprised of advanced nurse practitioners and pharmacists, dedicated to providing and improving diabetes care on non-Endocrinology services. The aim of the DIISC Service is to reduce adverse drug events (ADEs) and provide expertise on complex technologies involved in diabetes care.

Learning Objectives:

Describe the utilization of a pharmacist and advance nurse practitioner led diabetes inpatient insulin consult service

Recognize the effect of a newly instituted diabetes inpatient insulin consult service has on the incidence of insulin related adverse drug events

Self Assessment Questions:

What is considered a severity 4 event based off Nationwide Children's Hospital Clinical Severity Scale?

A An event occurred that reached the patient but was not followed by
B: An event occurred that was followed by permanent patient harm
C: An event occurred that was followed by increased patient monitori
D: An event occurred that was followed by initial or prolonged hospita

Which of the following is included in this study's inclusion criteria?

A Patients with type-1 or type-2 diabetes
B Patients admitted to the emergency department
C Patients admitted to the intensive care unit
D Patients being followed by the Endocrinology service

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-822-L05-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

A PHARMACIST-LED INITIATIVE TO INCREASE UTILIZATION OF SGLT2 INHIBITORS AT HOSPITAL DISCHARGE

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Purpose/Background:The role of sodium-glucose contransporter-2 (SGLT2) inhibitors has recently expanded to include heart failure (HF) and atherosclerotic cardiovascular disease (ASCVD) prevention in patients with diabetes. Despite compelling evidence supporting this class of medications, some providers seem hesitant to prescribe them. Possible barriers to using SGLT2 inhibitors include lack of knowledge about drug selection and dose, potential adverse drug events, and concern for financial hardship. Transitions of Care (TOC) pharmacists are uniquely positioned to assist both prescribers and patients to overcome these barriers. This project aims to implement a standardized work flow targeted at increasing the use of SGLT2 inhibitors in appropriate patients at the time of discharge. Methods: This process improvement project utilized a Plan-Do-Study-Act (PDSA) methodology. Baseline assessment included review of TOC pharmacists interventions and prescribing practices and rates for SGLT2 inhibitors. From this data identification of potential patients and the need for standardized documentation were recognized as opportunities for improvement. An improved TOC workflow was developed and implemented on November 1, 2021. Analysis includes comparison of before and after measures to determine if utilization of SGLT2 inhibitors increased. Results and Conclusion: Results and conclusions will be presented at the 2022 Grea Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the evidence leading to expanded use of SGLT2 inhibitors for HFrEF and ASCVD prevention in patients with diabetes

Recognize the role transitions of care pharmacists play in chronic disease state optimization

Self Assessment Questions:

All of the following are evidence-supported cardiovascular benefits of SGLT2 inhibitors EXCEPT:

A Decreased risk of cardiovascular death
B: Decreased risk of atrial fibrillation
C: Decreased risk of myocardial infarction
D: Decreased risk of hospitalization

Which of the following best describes the role pharmacists play in overcoming barriers to SGLT2 inhibitor therapy

A Identifying appropriate patients for therapy
B Mitigating financial barriers to therapy
C Educating patients on benefits and adverse effects
D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-740-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

ARE WE PREPPED FOR PREP?

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Purpose: Human immunodeficiency virus (HIV) oral PrEP (Pre-Exposure Prophylaxis) therapy is the daily use of oral antiretroviral therapy with either emtricitabine/tenofovir disoproxil fumarate (FTC/TDF) or emtricitabine-tenofovir alafenamide (FTC/TAF) to reduce the risk of acquiring HIV infections in HIV negative adults. HIV PrEP is often initiated with close follow up in 3 month intervals according to Centers of Disease Control guidelines to ensure patients are receiving and using PrEP appropriately as part of a comprehensive prevention plan and completing the required lab monitoring. This study describes real-world assessment of HIV PrEP use in patients within a large, urban healthcare system.Methods: This is a retrospective, descriptive chart review study of patients >18, identified through Henry Ford Health System (HFHS) electronic medical record, who had at least one visit with an outpatient HFHS provider and have been prescribed PrEP therapy from October 1, 2019 to August 31, 2021. Patients were excluded if they had diagnosis of HIV, were using PrEP as needed, or were identified as pregnant or incarcerated individuals. The primary outcome was a dichotomous composite of HIV test, STI tests (at least one test of syphilis, gonorrhea, or chlamydia) and serum creatinine lab ordered at initial, 3 month, and 6 month follow up. The secondary endpoints look at the individual components of the composite and side effect differences between FTC/TDF and FTC/TAF.Results: To be presented at Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recognize duration between oral HIV PrEP follow up visits.

Name which two oral medications are accepted for oral HIV PrEP therapy.

Self Assessment Questions:

Which two oral medications are FDA approved for oral HIV PrEP therapy?

A emtricitabine/tenofovir alafenamide and cabotegravir

B: emtricitabine/tenofovir alafenamide and emtricitabine/tenofovir dis

C: emtricitabine/tenofovir disoproxil fumarate and cabotegravir

D: emtricitabine/tenofovir disoproxil fumarate and dolutegravir/lamivu

What is the duration between follow up visits for HIV testing for patients on oral HIV PrEP therapy as recommended by the CDC guidelines?

A 1 month

B 3 months

C 6 months

D 12 months

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-823-L02-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IMPROVING SAFETY AND EFFICIENCY OF THE DISCHARGE PROCESS WITH PHARMACIST PENDED MEDS

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PURPOSE: Medication reconciliation is the process to ensure an accurate medication list exists during transitions of care. Problems identified at transitions of care include inappropriate prescriptions, drug interactions, adherence difficulties, and inappropriate medication supply. Having a pharmacist-led discharge medication reconciliation process may reduce clinically significant medication related discrepancies and risk of readmission. This project will review a strategy to implement a pharmacist-led medication reconciliation at discharge with pending medications for provider review to help prevent delays. METHODS: Utilizing two hospitalist services, one hospitalist service will have a pharmacist perform a medication reconciliation prior to a planned discharge and pend discharge medications for the provider to review. The alternative hospitalist service will perform the medication reconciliation after the provider has reviewed the medications for discharge. Any additional changes made to the medication list from the providers medication reconciliation will be documented as clinical interventions made. Data from both hospitalist services will be compared to review the impact of pended medications on hospital discharge. Time to discharge assessed by the minute from a provider discharge order was placed to the moment the patient is discharged (order-to-discharge). The number of clinical interventions performed by the pharmacist upon medication reconciliation review will be collected and compared with discharge medication reconciliations not pended by a pharmacist. RESULTS: Baseline order-to-discharge data from 2021 reveals an average of 127.2 minutes between both hospitalist services. To track clinical interventions, an i-Vent structure available through the Epic electronic health record was modified and implemented to the pharmacist workflow. CONCLUSION: Pharmacist-led pended medications at discharge are expected to streamline the discharge medication process and reduce the number of medication related errors at transitions of care.

Learning Objectives:

Discuss the pharmacist's role in reducing medication related errors with the pended medications discharge process.

Express the importance of pharmacist involvement in the discharge process for patient safety and quality of care

Self Assessment Questions:

Upon discharge from the hospital, patients may have problems identified to their medication list. Which of the following is a common intervention pharmacist can make on discharge?

A New drug interactions identified

B: Discontinuation of medications no longer needed

C: Safe use of a new medication initiation

D: Continuation of a medication from hospitalization

Which of the following are TRUE for a well-coordinated transition of care?

A Decreased patient safety and quality of care

B Decrease burden to caregivers

C Increase cost to patients, providers, and payers

D A & C

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-741-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IDENTIFICATION OF BARRIERS TO SHIFTING MANAGEMENT OF DIABETIC FOOT INFECTIONS FROM THE HOSPITAL SETTING TO A MULTIDISCIPLINARY WOUND CLINIC

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Diabetic foot infections (DFI) are associated with significant morbidity and high financial burden. Patients with mild or moderate DFI may be admitted to the hospital for non-urgent amputation, imaging, or catheter placement. These interventions could be performed in an outpatient DFI clinic for patients without complications like sepsis, necrotizing fasciitis, or need for urgent amputation. Therefore, the study objective is to assess the potential for treating patients admitted for DFI in the outpatient setting. This study aims to evaluate differences in clinical outcomes between the two cohorts, describe discharge barriers in clinically stable patients, and identify risk factors at hospital presentation predicting high acuity hospitalization. The primary outcome is a composite of 30-day all-cause mortality, recurrence of DFI, and recurrence of hospitalization due to DFI within 30 days after antibiotic completion. Secondary outcomes include operational barriers to discharge and time to clinical stability. High acuity hospitalization cohort includes patients with critical limb ischemia, necrotizing fasciitis, sepsis, or severe DFI per Infectious Diseases Society of America (IDSA). Low acuity hospitalization cohort includes patients with mild or moderate DFI per IDSA. This retrospective cohort study will target a sample size of 30(adult patients, as identified by ICD-10 Diagnosis Codes. Exclusion criteria include outside hospital transfers, patients on DFI antibiotics, and patients within 30 days of stopping DFI antibiotics. The primary composite clinical outcome will use Fishers exact test. Operational barriers to discharge and time to clinical stability will be analyzed with Kaplan-Meier time-to-event. Multivariate regression analysis will be conducted to determine risk factors for high acuity hospitalization upon admission. Results will be presented at the meeting. This study can help quantify DFI characteristics that could lead to hospital avoidance and the establishment of a DFI clinic that coordinates multiple levels of care currently occurring inpatient.

Learning Objectives:

Classify diabetic foot infection patients as low acuity or high acuity hospitalization

Identify potential barriers to discharge in clinically stable diabetic foot infection patients

Self Assessment Questions:

High acuity hospitalization was defined as patients hospitalized with:

A Severe diabetic foot infection per Infectious Diseases Society of A

B: Sepsis

C: Bypass for critical limb ischemia

D: All of the above

Potential barriers to discharge in clinically stable diabetic foot infection patients that were studied include:

A Radiographic imaging

B Amputation

C Catheter placement

D All of the above

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-742-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

INSULIN REQUIREMENT IN HOSPITALIZED PATIENTS WITH ADVANCED KIDNEY DISEASE AND TYPE 2 DIABETES

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Purpose: Patients with advanced kidney disease are at higher risk of hypoglycemia due to decreased insulin clearance, altered glucose metabolism, and impairment in counterregulatory mechanisms to glycemic changes. While insulin is the mainstay therapy for inpatient hyperglycemia, there are no society guideline recommendations for insulin dosing for the management of diabetes in hospitalized patients with renal insufficiency. Our institutional guidelines recommend weight-based insulin dosing of 0.5 units/kg/day, with a 50% dose reduction for those with eGFR< 30 ml/min. We hypothesized that insulin requirement may be even less for those with eGFR< 15 ml/min compared to those with eGFR 15-30 ml/min. Methods: This will be a retrospective, single-center, cohort trial which will evaluate insulin requirements in patients with eGFR<15 ml/min, with or without dialysis, compared to those with eGFR 15-30 ml/min. Eligible patients will be non-pregnant, non-critically ill patients of ages 18 years or older who meet the following criteria: type 2 diabetes, eGFR 30 ml/min or less, insulin treatment involving subcutaneous basal insulin, insulin regimen determined by weight-based dosing, and length of stay of a minimum of 72 hours and maximum of 7 days. Patients admitted for diabetic ketoacidosis or hyperosmolar hyperglycemic syndrome will be excluded. The primary outcome will be the total daily dose of insulin by weight (units/kg/day). Secondary outcomes will include mean daily blood glucose (BG), percentage of BG readings within the target range of 100 to 180 mg/dL, and incidence of hypoglycemia (BG 50-70 mg/dL) or severe hypoglycemia (BG <50 mg/dL). Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the role of the kidney in insulin clearance

Recognize factors that can increase the risk of hypoglycemia in advanced kidney disease patients

Self Assessment Questions:

Approximately, how much exogenous insulin is cleared by the kidneys?

A 0%

B: 15-20%

C: 30-50%

D: 65-70%

Which factors contribute to the increased risk of hypoglycemia in advanced kidney disease patients?

A Decreased insulin half-life compared to patients with normal renal

B Decreased insulin clearance

C Increased insulin catabolism in liver and muscles due to uremia

D Effective counterregulatory mechanisms

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-542-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

HEART FAILURE WITH REDUCED EJECTION FRACTION IN RENAL TRANSPLANT RECIPIENTS: EVALUATION OF MEDICATION USE AND OUTCOMES POST TRANSPLANTATION

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Evidence suggests that renal transplantation (RT) will improve ejection fraction (EF) in patients with heart failure with reduced ejection fraction (HFrEF). Therefore, the use of medications for the management of HFrEF may no longer be indicated following transplantation. However, HFrEF exacerbation remains a significant cause of hospitalization following transplantation. Currently, HFrEF therapies such as renin-angiotensin-aldosterone system (RAAS) antagonists are underutilized in the early post-transplant period. This is due to adverse effects that include hyperkalemia, anemias, and transient increases in serum creatinine. The purpose of this study is to evaluate the use of RAAS antagonists to treat HFrEF following RT. This is a single-center, retrospective chart review evaluating adult RT recipients at an urban academic medical center from January 2015 through November 2020. Utilizing an internal transplant list, the electronic medical record was reviewed to identify patients with pre-transplant left ventricular EF of 40% or less. This study included a 12-month follow-up with data collected at time of transplant, 1-,3-,6-, and 12-months post-transplant. Data points include pre- and post-transplant EF, number of HFrEF exacerbations requiring medical care, graft failure or death. Medication use pre- and post-transplant was assessed for HFrEF therapies. Patients started on RAAS antagonist post-transplant were evaluated for development of adverse effects through the collection of post-transplant lab values. Incidence of RAAS antagonist initiation post-transplant will be analyzed and regression analysis will be utilized to predict characteristics of those patients who are likely to be restarted on RAAS antagonist following transplantation. Rate of hospitalization due to HF exacerbation, change in EF post-transplant, and incidence of cardiology follow-up will also be analyzed in this study. Data collection is ongoing. Thirty-six patients meet inclusion criteria with a median pre-transplant EI of 30-35%. Finalized results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify potential adverse effects of renin-angiotensin-aldosterone system (RAAS) antagonists following renal transplantation

Describe uses of RAAS antagonists in renal transplant recipients with heart failure

Self Assessment Questions:

What common adverse effects of RAAS antagonist is not enhanced by post-transplant immunosuppression

A Increase in serum creatinine

B: Decrease in hemoglobin

C: Cough

D: Hyperkalemia

Which of the following benefits to RAAS antagonist therapy has not been demonstrated in the renal transplant population?

A Reduced proteinuria

B Management of post-transplant erythrocytosis

C Improved blood pressure control

D Decreased heart failure mortality

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-543-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

DEVELOPMENT AND VALIDATION OF AN AMBULATORY CARE PHARMACIST-PATIENT REGISTRY

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Background: Ambulatory care chronic medication optimization pharmacists (CMOP) at Henry Ford Health System (HFHS) work alongside providers to manage patients with chronic diseases via medication titration, drug regimen optimization, and close follow-up. Current disease states managed by CMOP include hypertension, type 2 diabetes mellitus, congestive heart failure, and dyslipidemia. CMOP receives patient referrals from providers or utilizes a database to identify eligible patients. Previously, the pharmacy department has increased th number of ambulatory care pharmacists to eight by performing return on investment (ROI) studies, but these studies are time-intensive and require utilization of extra analytical resources. To address this, the pharmacy management team at HFHS developed a cloud-based pharmacist-patient care registry. The goal of this registry is to provide pharmacy management with necessary information to perform ROIs in a time sensitive manner and reduce resource utilization. Methods: The registry was developed with the assistance of the departments informatics specialist. Metrics included in the registry were predefined in collaboration with administrators and ambulatory care clinical pharmacists. The registry houses population-based outcomes for chroni disease states by using patient demographics, medications, laboratory values, and other supporting clinical information. Additional information housed by the registry includes pharmacist-specific metrics such as the number of patient encounters, number of orders sent to HFHS pharmacies, and time to achieve disease state specific goals. Data will be validated for accuracy by manually chart reviewing 10% of the patien population. Once complete, the registry will be able to generate patient volumes, patient characteristics/demographics, laboratory data, medications and patient outcomes for pharmacist managed patients, on demand. To validate the utility of the registry, a sample data set describing the patient population managed by HFHS pharmacists will be presented. Results and Conclusions: In progress.

Learning Objectives:

Explain the utility of a pharmacist-patient care registry

List appropriate metrics to develop a pharmacist-patient care registry for chronic disease states

Self Assessment Questions:

How can a pharmacist-patient care registry be useful for health-systems?

A Provide clinical pharmacists and administrators with information o

B: Provide patient demographic information based on provider and lo

C: Aid administrators in performing return on investment studies

D: All the above

Which list of metrics would be appropriate to include in a pharmacist-patient care registry of chronic disease states?

A A1c, systolic and diastolic blood pressure, weight, heart rate, and

B Patient weight, diet, and exercise regimen

C Sodium, chloride, potassium, and hemoglobin

D Patient occupation, imaging results, and home address

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-743-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EVALUATION OF KEFIR USE FOR THE PRIMARY PREVENTION OF CLOSTRIDIOIDES DIFFICILE ASSOCIATED DIARRHEA

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Purpose:Clostridioides difficile infections (CDI) are one of the most common healthcare-associated infections in the United States. Clostridioides difficile is a bacteria that favors microbiota dysbiosis in the gut and causes severe diarrhea. Many factors can cause this unbalanced microbiota environment, including, but not limited to, antibiotic therapy and tube feeds. Probiotics have shown to be a valuable tool to aid in restoring microbiota dysbiosis. The efficacy data o probiotics for the prevention of Clostridioides difficile associated diarrhea is mixed. In 2018, Bronson Healthcare Group implemented the use of kefir, a multi-strain probiotic, in patients who were considered high-risk for developing CDI as identified using an internally validated risk assessment tool. The purpose of this study is to determine the impact of using kefir to prevent C. difficile associated diarrhea. The primary outcome is a positive C. difficile test as confirmed by PCR. Secondary outcomes, including the use of a rectal tube and hospital length of stay, will be analyzed to guide the use of kefir to benefit patient care.Methods:Data was collected through a retrospective chart review from a multi-center electronic medical record database. Patients were included if they received greater than 48 hours of systemic antibiotics and greater than 48 hours of kefir. Patients were excluded if they were less than 18 years old, had recurrent Clostridioides difficile infections, were administered other probiotics, or were administered lactulose. Patients were matched 1:1 to a control group stratified by age, antibiotic risk level, hospital at which treatment was received, and duration of antibiotic therapy.Results/Conclusions:Data collection and analysis are currently being performed. Results and conclusions will be presented at the 2022 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify proposed mechanisms of probiotics in the gut.

Describe previous trial results regarding the use of probiotics in the prevention of Clostridioides difficile associated diarrhea.

Self Assessment Questions:

Which of the following is a proposed mechanism of probiotics in the gut?

A Decreased adhesion to intestinal mucosa
B: Production of antimicrobial substances
C: Non-competitive exclusion of pathogenic microorganisms
D: Deterioration of the epithelial layer

Which of the following is considered a risk factors for developing a Clostridioides difficile infection?

A Antibiotic therapy
B No recent hospital admissions
C Tube feeds
D Both A & C

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-544-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

CORRELATION OF MRSA POLYMERASE CHAIN REACTION (PCR) NASAL SWAB IN VENTILATOR-ASSOCIATED PNEUMONIA, LUNG ABSCESS, AND EMPYEMA

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Methicillin-resistant Staphylococcus aureus (MRSA) is a pathogen often empirically covered in a variety of pulmonary infections. MRSA colonizes the nares and colonization has been shown to be a predictor of future clinical infection with MRSA. There are few studies that evaluate the relationship between MRSA nasal swab tests and ventilator-associated pneumonia (VAP); however, no studies currently exist evaluating the relationship between MRSA PCR nasal swab tests and clinically diagnosed lung abscess and empyema. One hundred and sixty-one patients were included in this retrospective study which aimed to validate the clinical utility of MRSA PCR nasal swab testing in VAP, lung abscess, and empyema through sensitivity, specificity, positive predictive value (PPV), and negative predicative value (NPV) analysis. Of the one hundred and sixty one patients, twenty-two patients had a diagnosis of VAP, forty-six patients with lung abscess, and ninety-three patients with empyema. From this review, MRSA PCR nasal swab tests in patients diagnosed with VAP were found to have a sensitivity of 100% a specificity of 89%, a PPV of 67%, and a NPV of 100%. MRSA PCR nasal swab tests in patients diagnosed with lung abscess were found to have a sensitivity of 0%, a specificity of 90%, a PPV of 0%, and a NPV of 90%. Lastly, MRSA PCR nasal swab tests in patients diagnosed with empyema were found to have a sensitivity of 75%, a specificity of 84%, a PPV of 41%, and a NPV of 96%. The study results demonstrate that the MRSA PCR nasal swab test has the potential to be a vital tool in de-escalating antimicrobial therapy in VAP, lung abscess, and empyema.

Learning Objectives:

Review the clinical utility of MRSA PCR nasal swabs in de-escalation of antimicrobials

Discuss the correlation of MRSA PCR nasal swabs and culture results in VAP, lung abscess, and empyema

Self Assessment Questions:

1.Due to its high negative predictive value (NPV), which of the following diagnostic tools or labs can be used to guide early discontinuation of empiric broad-spectrum antibiotic coverage in VAP and empyema?

A Respiratory PCR
B: Procalcitonin
C: MRSA PCR nasal swab
D: White Blood Cell Count

How does the MRSA PCR nasal swab test support antimicrobial stewardship?

A Support de-escalation of antibiotics for respiratory infections
B Support discontinuation of all antibiotics respiratory infections
C Decreases unnecessary anti-MRSA antibiotic use
D Both A and C

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-545-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

RETROSPECTIVE REVIEW OF VANCOMYCIN DURATION OF THERAPY FOLLOWING IMPLEMENTATION OF A METHICILLIN RESISTANT STAPHYLOCOCCUS AUREUS (MRSA) NASAL POLYMERASE CHAIN REACTION (PCR) ASSAY

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Purpose: Guidelines for pneumonia recommend empiric therapy be de-escalated and changed based on culture results. As cultures can be delayed, MRSA nasal swabs can be used to determine if a patient is at higher risk of MRSA pneumonia. In a study, MRSA nasal swabs had a 99.2% negative predictive value and thus are reliable in determining if de escalation is warranted. The purpose of this study is to review the use of vancomycin in a rural teaching hospital before and after implementation of PCR testing for MRSA to determine if a decrease in duration of vancomycin therapy would be seen. Methods: Single-center, retrospective study reviewing the use of MRSA PCR testing and its effect on vancomycin duration of therapy. Patients 18 years of age and older were included in the study if they received a dose of vancomycin as documented in the electronic medical record from January 1, 2017 through December 31, 2017 and January 1, 2020 through December 31 2020. Exclusion criteria included: patients not admitted to the hospital and those with multiple admissions (i.e., only a patients first admission was included). Data collection included age, gender, reason for admission and use of vancomycin, dose of vancomycin, serum creatinine, incidence of acute kidney injury, culture results and duration of vancomycin therapy. Results are to be analyzed to determine if PCR testing reduced the duration of vancomycin therapy. Results/Conclusion This study remains in progress. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss the likelihood that an individual with a negative MRSA nasal swab result is not colonized with MRSA.

Describe the benefits of MRSA nasal PCR testing.

Self Assessment Questions:

3.)What is the negative predictive value of MRSA nasal swabs?

A 99.20%

B: 84%

C: 50.50%

D: 92%

4.)What is one potential benefit of utilizing MRSA PCR testing?

A MRSA PCR testing can prove that a patient has an active MRSA i

B MRSA nasal swabs are reliable to rule out clinical MRSA infection

C MRSA nasal swabs can be considered reliable to rule out clinical M

D The negative predictive value of MRSA Nasal Testing remains reli

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-744-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF PULMONARY HYPERTENSION INPATIENT REMS COMPLIANCE AFTER IMPLEMENTATION OF AN OPTIMIZED ELECTRONIC MEDICAL RECORD (EMR) ORDER SET

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Purpose: Treatments for pulmonary arterial hypertension (PAH) includes phosphodiesterase 5 inhibitors (PDE-5i), endothelin receptor antagonists (ERAs), soluble guanylate cyclase (sGC) stimulators, and prostacyclin receptor agonists. ERAs and sGC stimulators are regulated through risk evaluations and mitigation strategies (REMS) programs when dispensed by a pharmacy. Inpatient REMS certified pharmacies must agree to comply with the REMS inpatient dispensing criteria and participate in random audits. This study aims to assess compliance with REMS inpatient programs pre and post implementation of an optimized EMR order set to assist with REMS compliance.Methods: This was an IRB approved, quasi-experimental study that examined REMS compliance pre and post implementation of an optimized EMR order set in August 2019. Patients > 18 years of age with a diagnosis of pulmonary hypertension were included if they received at least one dose of ambrisentan, bosentan, macitentan, or riociguat while hospitalized from 8/1/17 to 7/30/21. The primary outcome was compliance rate with REMS between groups. Compliance for continuation of therapy was defined as confirmation of patients enrollment in REMS by pharmacist contacting REMS center and documentation of provider and patient REMS IDs in the order. In addition, new initiations required obtaining a negative pregnancy test prior to initiation in females, liver function tests (LFT) < 3 x upper limit of normal before bosentan, and therapy initiated by an approved provider. Secondary endpoints included defining the time required to determine PAH agent compliance with REMS criteria and to identify barriers/factors that were associated with non-compliance or delays in compliance with REMS criteria. Chi-Squared, Mann Whitney U and Students T test will be used to assess the primary and secondary outcomes as appropriate. A multivariable regression analysis will be used to determine independent risk factors for non-compliance or delays in compliance.Results & Conclusion: Results will be presented at the conference.

Learning Objectives:

Recognize medications used for pulmonary arterial hypertension (PAH) that have a risk evaluations and mitigation strategies (REMS) program

Identify required REMS criteria when initiating applicable PAH agents in an inpatient setting

Self Assessment Questions:

Which of the following classes of medications used in the treatment of pulmonary arterial hypertension requires patient and provider enrollment in REMS?

A Calcium-Channel Blockers

B: Prostacyclin Analogues

C: Endothelin Receptor Antagonists

D: PDE-5 Inhibitors

Which of the following agents requires LFT monitoring as part of its REMS requirements?

A Ambrisentan

B Bosentan

C Macitentan

D Riociguat

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-824-L05-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IMPLEMENTATION OF RISK MITIGATION STRATEGIES IN A COMMUNITY BASED OUTPATIENT CLINIC (CBOC) PHARMACY FOLLOWING A HEALTHCARE FAILURE MODE AND EFFECTS ANALYSIS (HFMEA) - C.LOCKARD

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Purpose:The purpose of this HFMEA focused on prospectively identifying and improving steps in the outpatient prescription process at the new Veteran Health Indiana (VHI) CBOCs to ensure safe and clinically desirable outcomes for Veterans. Of note, this CBOC opened December 20, 2021 and did not have live pharmacy automation (OptiFill). Methods: Define the Topic: The scope of this HFMEA focused on the outpatient prescription process at the new CBOC outpatient pharmacies. Team Formation: A multidisciplinary team of thirteen members, including patient safety, informatics, medication safety, pharmacy supervisors, outpatient pharmacists, and pharmacy technicians was formed. Defining the Process Flow: Team members defined steps of prescription processing and clinic medication deliveries These process steps were broken down into subprocesses. Conduct the Analysis: Each subprocess step was divided into failure modes and analyzed utilizing the failure mode analysis. For each subprocess, potential causes were identified. The severity and probability of each cause produced a hazard score. Based on the hazard score, the cause of the failure mode was evaluated utilizing a decision tree as a single point weakness or having an existing control. If no existing control measure is in place, the subprocess was evaluated on how detectable a failure would be. Identify Actions and Outcomes Measures: Team members identified risk mitigation actions based on potential causes of failure modes. Outcomes were assessed utilizing measurable metrics when possible to ensure actions were carried out appropriately. The pharmacy residents were responsible for scheduling and leading following up meetings to evaluate the completion status of actions and report on outcome measures. Results and Conclusion: In total,113 possible failure modes were identified for the subprocesses outlined in the outpatient pharmacy workflow. Further analysis and outcomes will be discussed at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Explain the purpose of a Healthcare Failure Mode and Effects Analysis (HFMEA) including what may cause an HFMEA to be completed.

List the steps required to complete a Healthcare Failure Mode and Effects Analysis (HFMEA).

Self Assessment Questions:

Which of the following events is most likely to lead to the completion of a Healthcare Failure Mode and Effects Analysis (HFMEA)?

A A patient safety event occurs that requires retrospective analysis o
B: A process is deemed inefficient and requires immediate testing of
C: A patient safety event occurs at another facility, causing your facili
D: A branch of a department is shut down for cost savings and an an

Which of the following is a step in the Healthcare Failure Mode and Effects Analysis (HFMEA) process?

A Focus on a process
B Team Formation
C Plan Creation
D Follow-up on Outcomes

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-825-L05-P

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PAIN ASSESSMENT STANDARDIZATION THROUGHOUT THE FROEDTERT ENTERPRISE

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A critical step in effective pain management is optimal pain assessment with appropriate timing of assessments and consistent use of validated tools. An effective pain assessment does not translate to improved outcomes unless it is interpreted appropriately and converted into optimal treatment. Froedtert & the Medical College of Wisconsin is a health care system in Southeastern Wisconsin with six hospital sites. Pain assessment and treatment varies throughout these sites, but many as-needed pain medications are ordered with parameters to administer for mild, moderate or severe pain without clear guidance on what outputs from pain assessment tools correlate with these. The primary objective of this project is to standardize pain assessment across our health enterprise and better align the assessment with prescribed parameters for administering pain medications. A retrospective chart review consisting of a random selection of all patients receiving as-needed pain medications at the Froedtert Enterprises three largest hospitals was conducted in order to collect pre-intervention data. The primary outcome being measured is the rate at which as-needed pain medications administered match the pain assessment score completed prior to administration. Due to the variance in hospital-specific policies within the enterprise, this analysis will be repeated using multiple different definitions of what constitutes appropriate as-needed pain medication usage based on pain assessment scores. Subsequently, this data was analyzed by the project team and is being used to generate an intervention to improve the concordance between pain assessment and appropriate treatment as well as have one standardized guidance for the entire enterprise. This intervention will be implemented and post-intervention data will be collected to evaluate if the intervention impacted the rate of concordance described above. Future directions may include further modifications to the relevant policies as well as pursuing implementation of alternative pain assessment tools as appropriate.

Learning Objectives:

Identify most common reasons for discordance between pain assessment and analgesic parameters identified in study

Discuss advantages and disadvantages of common pain assessment tools

Self Assessment Questions:

Which of the following was the most common cause of assessment/treatment discordance found in the pre-intervention data set?

A Nursing staff did not trust patient reporting of pain
B: Too many analgesics ordered for same treatment parameter
C: No pain assessment time in close proximity to analgesic administr
D: Patient refused higher intensity treatment despite reported pain sc

Which of the following is a potential advantage of a tool incorporating functional pain assessment compared to a numeric pain score?

A Time required to complete assessment
B Patient familiarity with tool
C Objective rather than subjective measurements
D Reduced interpatient variability in reporting

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-852-L08-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

ASSESSING THE IMPACT OF VANCOMYCIN INITIATIVES ON THE INCIDENCE OF ACUTE KIDNEY INJURIES IN PATIENTS ADMITTED TO A COMMUNITY HOSPITAL

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Purpose: Vancomycin is a common component of empiric, broad-spectrum antimicrobial therapy. Recent guidelines recommend monitoring vancomycin via calculated area under the curve (AUC) value instead of trough levels. Monitoring trough levels has been shown to increase the risk of acute kidney injury (AKI), especially when used concurrently with nephrotoxic medications such as piperacillin/tazobactam. The objective of this study is to evaluate the impact of implementing two vancomycin initiatives on the incidence of AKI: AUC monitoring and reducing concurrent use of vancomycin and piperacillin/tazobactam. Methods: A retrospective chart review of patients who received vancomycin from January 2019 to September 2021 was completed. Riverview Health implemented an initiative to reduce prescribing of concurrent vancomycin and piperacillin/tazobactam in March 2021. Additionally, the vancomycin therapeutic drug monitoring protocol was updated to utilize AUC values instead of trough levels. The primary outcome of this study was the incidence of AKI. Secondary outcomes included percent of therapeutic monitoring levels within goal range and the incidence of combined use o vancomycin and piperacillin/tazobactam. Results: Out of 342 patients, 143 patients met inclusion criteria for data analysis; 88 patients in the pre-intervention group and 55 patients in the post-intervention group. The incidence of AKI was 10.2% and 5.5% in the pre- and post-intervention groups respectively (p=0.371, HR 0.506, 95% CI 0.131-1.959). AKI developed in 4.9% (5/102) of patients who received vancomycin alone and 17.1% (7/41) of patients who received both vancomycin and piperacillin/tazobactam (p=0.039, HR 3.994, 95% CI 1.188-13.425). Conclusion: This study confirms the recommendation to avoid concurrent vancomycin and piperacillin/tazobactam and suggests that monitoring AUC values instead of trough levels lowers the incidence of AKI in patients treated with vancomycin. Further evaluations with a larger sample size are warranted to fully assess the impact of these vancomycin initiatives on the incidence of AKI.

Learning Objectives:

Identify strategies for reducing acute kidney injuries in patients receiving vancomycin.

Review appropriate guideline updates regarding therapeutic drug monitoring for vancomycin.

Self Assessment Questions:

Which of the following is an appropriate strategy to limit the risk of a patient developing an acute kidney injury while being treated with vancomycin?

A Monitoring using trough levels instead of AUC values

B: Targeting therapeutic monitoring levels above goal range

C: Avoiding concurrent vancomycin and piperacillin/tazobactam

D: Dosing vancomycin based on body weight without therapeutic dru

According to recent updates to the infectious disease guidelines, what is the recommended method for monitoring vancomycin?

A Monitoring using trough values

B Monitoring using AUC values

C Monitoring using peak values

D No monitoring is required

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-546-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EVALUATION OF TIMELY INITIATION OF THERAPEUTIC HEPARIN AT A COMMUNITY HOSPITAL

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Purpose: To assess the delay between the time baseline aPTT is ordered and the heparin therapy is started and identify areas of improvement in initiating heparin therapy Method: This single-center, retrospective, observational study included patients who were 18 years old and received heparin at our institution between August 1, 2021, and January 1, 2022. The primary outcome was the time spent on each step in the workflow of initiating heparin therapy, and the secondary outcomes were the time to reach therapeutic aPTT level and the numbe of patients reaching therapeutic aPTT levels within 24 hours. Safety outcomes included the incidence of bleeding events and HIT. Preliminary Results: A total of 53 patient charts were reviewed. The workflow of starting heparin therapy at our institution included placing pharmacy-to-dose consult, ordering baseline aPTT, drawing blood, reporting baseline aPTT, and administering heparin therapy; the interquartile range of the time interval between every two consecutive steps in the workflow was -14.3 to 3.0 minutes, 14.8 to 76.0 minutes, 20.0 to 36.0 minutes, 43.8 to 161.8 minutes, respectively. The secondary outcome analysis demonstrated that 27 (50.9%) patients reached the therapeutic aPTT level within 24 hours of initiating heparin therapy, and the finding was consistent among all indications studied (i.e., acute thrombosis, acute coronary syndrome, and atrial fibrillation). In addition, safety outcome analysis showed one suspected gastrointestinal bleed that was later resolved by holding heparin for 5.3 hours, and no incidences of HIT have been reported. Conclusion: The study was recently implemented, and data collection is still in progress. Preliminary data of this study demonstrated that initiating heparin therapy after reported aPTT results was the rate-limiting step in the workflow, which suggests more interprofessional collaboration may be needed to achieve quality care.

Learning Objectives:

Memorize percentage of patients achieving therapeutic aPTT within 24 hours at our institution

Identify rate-limiting steps in the workflow to achieve therapeutic aPTT

Self Assessment Questions:

What is the percentage of patients achieving therapeutic aPTT within 24 hours at our institution

A 10%

B: 30%

C: 50%

D: 70%

What is the rate-limiting steps in the workflow to achieve therapeutic aPTT at our institution

A Pharmacy-to-dose consults placed TO baseline aPTT ordered

B Baseline aPTT ordered TO blood drawn

C Baseline aPTT results reported TO heparin therapy administratior

D Blood drawn TO baseline aPTT results reported

Q1 Answer: C Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-547-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

IDENTIFYING PATIENT SPECIFIC FACTORS FOR PATIENTS PRESENTING WITH TRAUMATIC INJURY THAT WOULD BENEFIT FROM EARLY TRANEXAMIC ACID ADMINISTRATION BASED ON THROMBOELASTOGRAPHY

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Purpose:Hemorrhage is a leading cause of death in trauma patients. Hyperfibrinolysis that occurs in severely injured trauma patients compounds bleeding complications. Previous literature has shown that early administration of tranexamic acid (TXA), an agent that inhibits fibrinolysis, provides a mortality benefit but is not without risk. Thromboelastography (TEG) can be utilized to detect hyperfibrinolysis but is not available at all institutions and can have prolonged assay turnaround. The objective of this study is to identify patient specific factors associated with hyperfibrinolysis on TEG in trauma patients to enable early and targeted administration of tranexamic acid. Methods:This is a retrospective, Institution Review Board approved, prognostic risk factor analysis. Data will be collected from the time period of May 1, 2016 through May 1, 2021 for patients eighteen years of age and older who presented as a level 1 trauma activation at Indiana University Health Methodist Hospital. Characteristics of trauma patients such as admission vital signs, injury severity score, location of injury, and mechanism of injury will be collected. Patients will be separated into two groups based upon whether hyperfibrinolysis was detected on TEG, defined as a clot lysis at 30 minutes (LY30) of > 3%. A risk factor analysis will then be completed to identify patient characteristics associated with hyperfibrinolysis that can be used to target TXA therapy. The analysis will be a descriptive report with a multivariate regression based on patient characteristic and demographics. A secondary outcome of in-hospital mortality will be assessed.Results:Data collection is ongoing. Full results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe components of thromboelastography and its application to trauma patients

Discuss the potential benefit of early tranexamic acid administration in trauma patients

Self Assessment Questions:

Which of the following thromboelastography values is utilized to determine the degree of hyperfibrinolysis?

A R-time

B: Angle

C: Maximum Amplitude (MA)

D: Lysis at 30 minutes (LY30)

Which of the following trials found a 1.5% absolute reduction in mortality when tranexamic acid was administered compared to placebo?

A Clinical Randomization of an Antifibrinolytic in Significant Hemorrh

B Surgical Trial in Traumatic Intracerebral Hemorrhage (STITCH)

C Control of Major Bleeding After Trauma (COMBAT)

D Blood Conservation Using Antifibrinolytics in a Randomized Trial (

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-548-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATING NURSING CYCLE COUNT FREQUENCIES ON CONTROLLED SUBSTANCE DISCREPANCIES

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Purpose:Inventory management and timely response to discrepancies are important to prevent and detect drug diversion. Cycle counts are one method to confirm that expected inventory matches the physical inventory count. There are no regulations dictating cycle count frequency of automatic medication cabinets (AMC) and practices vary by institution. Regardless of cycle count frequency, cycle counts take time and true discrepancies are rare. At UI Health, nurses complete controlled substance (CS) cycle counts twice daily. The purpose of this study is to determine whether decreasing cycle count frequency to once a day affects identification and response to CS discrepancies. Methods:This is a single center, quasi-experimental study. AMC cycle count frequency will be reduced from twice daily (0700 and 1900) to once daily (only 0700) on three nursing units with historically high cycle count discrepancy rates (emergency department, neurosurgery intensive care unit, and adult psychiatry). The discrepancy rates will be collected over three months and then compared with historical rates over three months prior to the change at these locations, as well as overall discrepancy rates at all other AMCs over this period. The primary outcome is the difference in discrepancy rates before and after the cycle count frequency change. Secondary outcomes include number of total discrepancies, number of true discrepancies, anomalous medications involved in discrepancies, cause of discrepancy (e.g. miscount, previous transaction error), time to complete cycle counts, and time from discrepancy identification to resolution. Data will be collected from Omnicell transaction reports and workflow observations. Analysis will be conducted using Students t-test, one-way ANOVA, and descriptive statistics.Results: November 2021 data show that the discrepancy rate of identified nursing floors was 0.8% with 0 true discrepancies identified. The historical discrepancy rate was 0.4% prior to intervention. Data collection is ongoing and results will be presented at the conference.

Learning Objectives:

Explain automated medication cabinet guided cycle counts of controlled substance inventory

Identify the difference between true discrepancies and other types of discrepancies

Self Assessment Questions:

What is a guided cycle count of controlled substances?

A A witnessed blind count of all the controlled substances accessed

B: An unwitnessed blind count of all the controlled substances acces

C: A witnessed confirmational count of all the controlled substances a

D: An unwitnessed confirmational count of all the controlled substanc

Why do we conduct scheduled guided cycle counts of controlled substances?

A To identify the hospital staff that access controlled substances

B To identify frequently used controlled substances

C To identify inventory discrepancies

D To account for controlled substance waste

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-746-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

RETROSPECTIVE EVALUATION OF A FIXED DOSE FOUR-FACTOR PROTHROMBIN COMPLEX CONCENTRATE (4F-PCC) PROTOCOL FOR REVERSAL OF ORAL ANTICOAGULATION

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Purpose: Patients taking oral anticoagulation (OAC) as either a direct-acting oral anticoagulant or vitamin K antagonist (VKA) for any indicatior are at an increased risk of major bleeding. Due to the substantial cost and risk of thromboembolic events associated with 4F-PCC there is an increasing body of evidence to support the use of a flat dosing protocol for reversal of maintenance OAC. The data gathered from this study car be used to provide ongoing support for a flat-dose 4F-PCC protocol that will provide significant cost savings in addition to potentially reducing the occurrence of thrombotic events.Methods: A retrospective chart review will be undertaken of adult medical, surgical, and critical care patients who received a dose of 4F-PCC for the purpose of OAC reversal. A before and after approach will be undertaken examining a pre-existing patient cohort in which a predominantly weight-based 4F-PCC dosing strategy was utilized compared to a patient cohort after implementation of a flat-dose 4F-PCC protocol. Patients will be at least 18 years or older, admitted to Carle Foundation Hospital, and receiving maintenance OAC prior to admission. The primary outcome will be a decrease in INR to goal < 1.4 for VKA therapy. Secondary outcomes will include achievement of INR < 2 for VKA therapy, change in INR from baseline for VKA therapy, in-hospital mortality, 30-day post-discharge mortality, ir hospital thrombotic events, time from ED arrival to administration of 4F-PCC, discharge disposition to home or extended care facility, hospital length of stay, ICU length of stay, and cost savings related to 4F-PCC drug acquisition.Results: Final results will be presented at Great Lakes Pharmacy Residency Conference 2022Conclusion: Final conclusions wi be presented at Great Lakes Pharmacy Residency Conference 2022

Learning Objectives:

Recall the mechanism of action of four-factor prothrombin complex concentrate (4F-PCC) for oral anticoagulant reversal

Review current literature supporting fixed dose 4F-PCC for reversal of oral anticoagulation

Self Assessment Questions:

Which of the following factors in 4F-PCC is used to express dosage?

A Factor II

B: Factor X

C: Factor IX

D: Factor VII

Which of the following is an outcome observed in recent literature evaluating fixed dose 4F-PCC compared with weight and INR based dosing of 4F-PCC for reversal of warfarin?

A Increased rate of VTE/thrombotic events

B Slower time to 4F-PCC administration

C Increased mortality

D Similar INR reversal

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-549-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

RISK OF NEPHROTOXICITY IN PATIENTS RECEIVING VANCOMYCIN PLUS AN ANTI-PSEUDOMONAL BETA-LACTAM ANTIBIOTIC

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Empiric, broad-spectrum antimicrobial therapy often includes vancomycin plus the addition of an anti-pseudomonal agent, most commonly piperacillin-tazobactam or cefepime. Vancomycin use is associated with nephrotoxicity. Several studies have shown that adding piperacillin-tazobactam to vancomycin further increases the risk of acute kidney injury (AKI), which is associated with significant morbidity and mortality. Data is lacking regarding a suitable alternative to reduce this risk. The purpose of this study is to determine if combination antimicrobial therapy with vancomycin and piperacillin-tazobactam puts patients at increased risk of nephrotoxicity compared to those receiving combination therapy with vancomycin and cefepime. This study has been reviewed by the Institutional Review Board, and will be a retrospective chart review of patients who received combination antimicrobial therapy with vancomycin plus piperacillin-tazobactam or cefepime from July 1, 2019 to June 30, 2021. Patients receiving > 1 anti pseudomonal beta-lactam antibiotic or < 48 hours of antimicrobial therapy will be excluded from the study. Additional exclusion criteria includes patients with baseline renal dysfunction (eGFR < 29 ml/min/1.73m2) and those receiving renal replacement therapy. An estimated number of subjects to be enrolled is 200, and informed consent is not required. The following data will be collected for analysis: age, BMI, gender, COVID-19 status, illness severity, indication for antimicrobial therapy, markers of renal function, past medical history, and the use of concurrent nephrotoxic medications. Additionally, information regarding vancomycin, including loading doses, maintenanc doses, and trough values, will be collected. The primary outcome will be incidence of AKI, defined as an increase in SCr of > 0.3 mg/dL within 48 hours. Secondary outcomes include classification and onset of AKI, length of stay, readmission rates, discharge disposition, and a cost analysis. Results are currently pending data collection.

Learning Objectives:

Identify factors that increase the risk of developing an acute kidney injur (AKI) while on vancomycin therapy

Review previous literature regarding the incidence of acute kidney injury (AKI) while on vancomycin therapy

Self Assessment Questions:

Which of the following factors have been shown to increase the risk of developing an acute kidney injury (AKI) while on vancomycin therapy?

A AUC â‰¥ 650 mg Ã— h/L

B: Concomitant nephrotoxic medications

C: Liver cirrhosis

D: All of the above

After what duration of vancomycin therapy does the risk of acute kidney injury (AKI) increase regardless of outside factors?

A 4 days

B 7 days

C 14 days

D Duration of therapy does not impact the risk of developing acute k

Q1 Answer: D Q2 Answer: A

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THE EFFECTIVENESS OF INTERVENTIONAL STRATEGIES WITH A FOCUS ON JOB MEASURABILITY FOR PHARMACY TECHNICIAN EMPLOYEE ENGAGEMENT AND JOB SATISFACTION

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Purpose According to Patrick Lencionis book The Three Signs of a Miserable Job, finding fulfillment in work involves relevance, measurability, and being known. A pilot study implemented interventions based on Lencionis model. Results of the survey from this study showed that technicians struggle with identifying measurable components of their roles. The purpose of the current study is to determine what technicians define as measurable components and how implementing and tracking measurability interventions can lead to improved job satisfaction. Methods This study involves an initial employee engagement survey, interventions focused on pharmacy technicians, 2 follow-up surveys and a final survey to assess the impact of interventions on engagement. Measurable interventions (identified by the initial survey) are tracked monthly and the results are reported to technicians prior to every follow-up survey and the final survey. Data is anonymously collected using an online survey tool. We will conduct a statistical comparison of the results from the previous years survey compared to this studys final survey and evaluate the changes. Results 50 technicians were polled in the initial survey for measurable interventions. 22% of technicians (n=11) responded with specific interventions. 32% of technicians (n=16) participated in the first follow up survey. 28% of technicians (n=14) participated in the second follow up survey. On average, 70% of respondents could track their measurable goals at least 50% of the days they have worked. Conclusions Reached The results of the first and second follow-up surveys showed that tracking identified measurable metrics for pharmacy technicians had an overall beneficial effect on their feelings about progression and actual progression of measurable goals. Further intervention data and follow up survey data will be collected. A final survey, identical to the pilot studys final survey, will be compared to assess for impact in measurability for pharmacy technicians.

Learning Objectives:

Identify how tracking metrics can potentially improve job measurability for pharmacy technicians

Discuss the impact of tracking measurable goals on overall employee engagement and job satisfaction

Self Assessment Questions:

Which of the following choices are The Three Signs of a Miserable Job?

A Immeasurability, Irrelevance, Anonymity

B: Irrelevance, Poor Management, Immeasurability

C: Anonymity, Poor Management, Immeasurability

D: Poor Management, Irrelevance, Anonymity

Which sign from the Three Signs of a Miserable Job is being investigated through tracking metrics for pharmacy technicians?

A Irrelevance

B Immeasurability

C Poor Management

D Anonymity

Q1 Answer: A Q2 Answer: B

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EVALUATING IF RACIAL AND ETHNIC IMPLICIT BIASES EXIST IN PRESCRIBING SGLT2 INHIBITORS AND GLP1 RECEPTOR AGONISTS AMONG VETERANS WITH DIABETES

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Purpose: Compared to non-Hispanic white adults, racial and ethnic minorities have an increased risk of diabetes, higher disease burden, and higher rates of complications. Diabetic agents from the classes of sodium-glucose cotransporter 2 (SGLT2) inhibitors and glucagon-like peptide receptor agonists (GLP-1 RA) lower A1c and have non-glycemic benefits, such as a decreased risk of major cardiovascular events, hospitalization for heart failure, and improved kidney outcomes. These benefits were demonstrated in clinical trials that recruited mostly non-Hispanic white adults. Racial and ethnic healthcare disparities in the US have been documented, and implicit bias of the healthcare professional is one possible cause for these disparities. Implicit bias of the healthcare professional is likely to influence diagnosis, treatment decisions, and levels of care. Although there is evidence for racial and ethnic disparities in diabetes care, there are few studies evaluating whether racial and ethnic disparities exist in the prescribing of SGLT2 inhibitors and GLP-1 RAs. The purpose of this study is to assess whether racial and ethnic disparities exist in the prescribing of SGLT2 inhibitors and GLP-1 RAs at the Jesse Brown VA Medical Center.Methods: This study is a retrospective, electronic chart review of patients with type 2 diabetes who filled a prescription for both metformin and insulin in March 2021. Data will be collected from January 1st, 2016 through August 31st, 2021 The primary endpoint is the percentage of patients prescribed a SGLT2 inhibitor and/or GLP-1 RA from each self-identified racial and ethnic group. Subgroup analyses include the percentage of veterans from each self-identified racial and ethnic group who have ASCVD or CKD, average A1c, diabetic eye and/or foot exam in the last two years, specialty, and location prescribing the SGLT2 inhibitor or GLP-1 RA.Results: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review evidence of implicit bias and racial and ethnic disparities in healthcare in the United States.

Describe the non-glycemic benefits of GLP-1 RAs and SGLT2 inhibitors

Self Assessment Questions:

Which of the following is true regarding implicit bias of healthcare providers?

A It does not impact the quality of care provided to a patient belongin

B: It manifests to a lesser degree in healthcare providers than the ge

C: It is addressed in diabetes guidelines

D: It contributes to disparities in care between non-Hispanic white pat

Which of the following is a non-glycemic benefit of GLP-1 RAs?

A Kidney protection

B Lowers risk of retinopathy, independent of glycemic control

C Reduces risk for cardiovascular events

D Reduces mortality in heart failure

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-551-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

OPIOID USE IN RURAL WISCONSIN: PROVIDER PERCEPTIONS AND TRENDS FOR THE MANAGEMENT OF OSTEOARTHRITIS

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Osteoarthritis (OA) is a prevalent disease state characterized by chronic difficult to manage, and often debilitating joint pain. Its estimated to currently impact 32.5 million adults in the United States. The 2019 guidelines from The Osteoarthritis Research Society International (ORSI) and The American College of Rheumatology (ACR) recommend against the use of opioids for OA management due to an adverse effect profile and risk of abuse, as well as suboptimal patient outcomes. A 2020 study tracked opioid prescribing in newly diagnosed OA patients fo a year and found opioids continue to be used despite this recommendation. It was estimated that of 31,123 OA appointments, 27% resulted in an opioid prescription. Data suggests inappropriate and/or disproportionate opioid prescribing may be heightened in rural populations. A survey was designed to identify provider perceptions of opioid prescribing for the management of OA in a rural, ambulatory care setting. A retrospective chart review followed to evaluate if provider perceptions matched prescribing practices.

Learning Objectives:

Recognize the number of adults in the U.S. currently impacted by Osteoarthritis

Discuss reasons to avoid use of opioids for chronic OA management

Self Assessment Questions:

What is the estimated number of adults living in the U.S. who are currently impacted by Osteoarthritis?

A A)45.7 million

B: B)67.9 million

C: C)27.76 million

D: D)32.5 million

: Which of the following is an adverse outcome that may be associated with using opioids for chronic osteoarthritis management?

A A)Decreased pain related function

B B)Dysregulation of endocrine function

C C)Both A and B

D D)Neither A or B

Q1 Answer: D Q2 Answer: C

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(if ACPE number listed above)

EFFICACY AND SAFETY OF ORAL ANTIBIOTICS IN OBESE VERSUS NON-OBESE VETERANS FOR TREATMENT OF SKIN AND SOFT TISSUE INFECTION

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Purpose: Obesity is an increasingly prevalent issue affecting many patients in todays healthcare system. Obesity poses many negative consequences for patients, including increased risk of infection. Specifically, skin and soft tissue infections (SSTI) are of increased risk i obese patients with especially high rates of reoccurrence in this population as well. However, data investigating the safety and efficacy o oral antibiotics at standard doses in the obese population is limited. This study aims to evaluate the safety and efficacy of oral antibiotics for treatment of SSTI in obese patients as compared to non-obese patients. For the purposes of this study, obesity will be defined as a body mass index of 30 kg/m2 and above.Methods: This will be a single-center retrospective cohort analysis at the Robley Rex Veterans Affairs Medica Center of obese patients prescribed oral outpatient antibiotics for the treatment of SSTI as compared to non-obese patients. The computerized patient record system (CPRS) will be used to identify patients who were prescribed an oral antibiotic for treatment of SSTI between January 1, 2015 and January 1, 2022. Obese patients will be compared to non-obese patients but will matched for the following: age, recent antibiotic use, source of antibiotic prescription, number of antibiotic agents prescribed, antibiotic agent and dose prescribed, and infection severity. The primary outcome will be the rate of antibiotic treatment failure, defined as unresolved or worsening SSTI leading to ar emergency department visit, outpatient clinic visit, hospitalization, or death within 30 days of starting antibiotics. Secondary outcomes will include adverse drug events related to antibiotic therapy between obese patients and non-obese patients. Primary and secondary outcomes will be assessed using chi-squared test.Results: PendingConclusion: Pending

Learning Objectives:

Recognize common causative pathogens of skin and soft tissue infections

Identify the correct antibiotic agents used to treat skin and soft tissue infections based on common causative pathogens

Self Assessment Questions:

Skin and soft tissue infections are commonly caused by which of the following pathogens?

A Staphylococcus aureus

B: Escherichia coli

C: Clostridium difficile

D: Moraxella catarrhalis

Which of the following oral antibiotics provides coverage for methicillin resistant staphylococcus aureus?

A Amoxicillin/clavulanic acid

B Metronidazole

C Cephalexin

D Doxycycline

Q1 Answer: A Q2 Answer: D

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USE OF MIDODRINE IN PATIENTS WITH HYPOTENSION AFTER CAROTID ARTERY STENTING

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Background: Carotid artery stenting (CAS) has emerged as a less invasive alternative interventional therapy for carotid stenosis and involves passing a wire beyond the stenotic lesion and inflating a small balloon to restore the normal luminal diameter. CAS is not without risks, however, as hemodynamic depression including arterial hypotension and bradycardia occur in up to 76% of CAS procedures. Current management includes the use of intravenous hydration and small doses of intravenous vasopressors to correct post-operative hypotension and bradycardia. Recent literature suggests oral midodrine is effective for the treatment of hypotension associated with CAS. However, there is currently a gap in the literature regarding an appropriate method in liberating patients off intravenous vasopressors to oral midodrine post CAS. Thus, an effective titration schedule and time to transition from intravenous vasopressors to oral midodrine is yet to be determined.Statement of Purpose: To compare time to liberation from intravenous vasopressors in patients who underwent CAS and are initiated on oral midodrine within 12 hours post-operatively to those who are initiated on oral midodrine beyond 12 hours post-operatively.Methods: This single-center, retrospective chart review included adult patients who underwent CAS at St. Joseph Mercy Oakland between February 2020 and March 2022. The primary endpoint was the time to liberation of IV vasopressors in patients who were initiated on oral midodrine within 12 hours compared to those who were initiated on oral midodrine after 12 hours. Secondary outcome measures included resolution of post-operative hypotension, length of stay, incidence of acute kidney injury, re-occurring hypotension, and dosing regimens of oral midodrine administered. Safety outcomes included post operative stroke. Students t-test or Mann-Whitney U test was used to evaluate continuous data, and Chi-squared or Fishers Exact test was used to evaluate categorical data.Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss the mechanism and physiological consequences of undergoing carotid artery stenting.

Describe the management of post-operative hemodynamic depression a St. Joseph Mercy Oakland.

Self Assessment Questions:

What is the proposed mechanism that leads to hemodynamic depression in patients who undergo CAS?

A Manipulation of the carotid sinus baroreceptors

B: Antagonistic effects on A1 receptors

C: Agonistic effects on B2 receptors

D: Antagonistic effects on B1 receptors

What is the targeted blood pressure for the first 24 hours post carotid artery stenting?

A â‰¥ 140/90 mmHg

B â‰¥ 150/90 mmHg

C â‰¥ 160/90 mmHg

D â‰¥ 170/90 mmHg

Q1 Answer: A Q2 Answer: A

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THE IMPACT OF MEDICATION SYNCHRONIZATION ON PROPORTION OF DAYS COVERED IN THE PEDIATRIC AND ADOLESCENT POPULATION

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Background: Studies show medication synchronization results in improvement in adherence for adults in the community setting. However there is limited data for pediatrics and adults with caregivers, especially those with complex care conditions. Patients with complex care conditions commonly face challenges that require coordinated solutions to adequately meet their healthcare needs. Pharmacists can help relieve some of their burdens by decreasing the number of trips to the pharmacy with synchronized fills for all of their medications. Through this recognition, a medication synchronization service was implemented. The primary objective of this study is to evaluate proportion of days covered (PDC), a well-established adherence measurement, before and after implementation. Secondary objectives include assessing the number of visits to the pharmacy before and after, and satisfaction of patients and pharmacy staff after implementation. Methods: This is a single-center, prospective, quality improvement project for patients seen at Nationwide Childrens Hospital (NCH) Complex Care Clinic that also fill at NCH Outpatient Pharmacies. This service was offered to patients meeting the following inclusion criteria: 4 or more chronic medications, fill at NCH Blue pharmacy, and have prescription insurance coverage through Ohio Medicaid or Medicaid managed care plan. Patients were excluded if they fill with NCH Specialty Pharmacy or no fill history 3 months prior to enrollment. Patients PDC 90 days prior to enrollment will be compared to the PDC 90 days after to assess adherence. Prescription dispense dates during the study period will be used to assess the change in the number of trips to the pharmacy. Lastly, we will assess patient satisfaction at the time of the third refill and provide electronic surveys to pharmacy staff 3 months after implementation. Results: 42 patients are currently enrolled and data analysis ongoing. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss the value of medication synchronization on patient adherence

Discuss caregiver burdens in complex conditions

Self Assessment Questions:

What kind of service can an outpatient pharmacy implement to decrease trips to pharmacy?

A Immunziation

B: Medication reconciliation

C: Medication synchronization

D: Drive-thru

What PDC percentage has reasonable likelihood of achieving the most clinical benefit?

A 65%

B 70%

C 75%

D 80%

Q1 Answer: C Q2 Answer: D

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Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

HEPATITIS C TESTING AND LINKAGE TO CARE: AN URBAN HOSPITAL'S APPROACH TO ADDRESS AND MANAGE A COMMUNITY EPIDEMIC

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Many persons infected with hepatitis C virus (HCV) are unaware of their status. Eskenazi Health sought to improve the diagnosis of HCV by testing in the Emergency Department (ED) through a FOCUS grant. However, linkage to care to HCV treating providers was low after established diagnosis from the ED. To improve care coordination, the grant funded a public health medical case manager to schedule patient appointments and the health-system employed a pharmacist to help with HCV medication management through collaborative practice. The aim of this study is to determine if the efforts in improved care coordination increased the linkage to care rates of patients identified as having HCV through testing in the ED.

Learning Objectives:

Describe the diagnosis of Hepatitis C virus (HCV) infection through the Eskenazi Health Emergency Department

Discuss the current literature regarding linkage to care of patients diagnosed with HCV in the emergency department

Self Assessment Questions:

Patients with which of the following positive lab tests should have a referral for HCV treatment?

A HCV DNA test

B: HCV antibody test

C: HCV RNA test

D: HCV antigen test

Which of the following has not been described in the current literature regarding linkage to care for HCV treatment after diagnosis in the emergency department?

A Predictors of linkage to care failure

B Lack of established primary care for patients presenting to the ED

C Linkage to care coordinator roles

D Pharmacist involvement in HCV clinics

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-554-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF A PHARMACIST-LED HEALTH LITERACY WORKFLOW IN THE AMBULATORY CLINIC

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Purpose: In Healthy People 2030 health literacy has been prioritized as a means of attaining health equality and improving patient outcomes. The ambulatory cardiology clinics at Parkview Regional Medical Center implemented a quality improvement measure aimed at screening health literacy and targeting patients with lower health literacy scores for intervention. The purpose of this study was to evaluate the impact of the pharmacist led health literacy workflow on healthcare utilization and medication adherence after its implementation in four ambulatory cardiology clinics at a community hospital. Methods: As of November 2021, all adult patients being seen at a pharmacist led appointment in one of the four ambulatory cardiology clinics at Parkview Regional Medical Center were eligible for health literacy screening utilizing the validated Rapid Estimate of Adult Literacy in Medicine " Short Form (REALM-SF). Patients with a REALM-SF score of 6 or less are then given medication cards written at a second- to third-grade reading level as part of the workflow. This single center, retrospective chart review of electronic medical records assessed those patients screened between November 2021 and February 2022. Patients were excluded from analysis if their REALM-SF score was 7 (out of 7 total points), indicating adequate health literacy, and if English was not their primary language. The primary endpoint of this study assessed the change in a composite of emergency department visits and hospital admissions between 90 days pre- and post-intervention. Secondary outcomes included the difference in 90 day pre- and post-intervention of medication adherence, emergency department visits, and hospital admissions. Additionally, subgroup analyses of the primary outcome based on REALM-SF score and cardiology clinic sub-specialty were completed.
Results/Conclusion: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Define health literacy and its components

Discuss the outcomes associated with poor health literacy

Self Assessment Questions:

Which of the following are part of Health People 2030s definition of health literacy?

A Hospital health literacy and Physician health literacy

B: Personal health literacy and Organizational health literacy

C: Caregiver health literacy and Physician health literacy

D: Structural health literacy and Fluid health literacy

Which of the following is an outcome associated with poor health literacy?

A Sleeping greater than 10 hours a day

B Greater probability of having a primary care provider

C Over-utilization of emergency department services

D Having a hemoglobin A1c > 8%

Q1 Answer: B Q2 Answer: C

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Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

BEST PRACTICE MAKES PERFECT: IMPACT OF A BEST PRACTICE ALERT FOR METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS (MRSA) NARES ON PATIENT OUTCOMES AND ANTIMICROBIAL STEWARDSHIP

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Background: Due to a plethora of risk factors for MRSA, patients with community acquired pneumonia are often started on empiric antibiotics treating for MRSA. Respiratory cultures can be difficult to obtain posing challenges for antibiotic de-escalation. MRSA nares is a diagnostic screening tool which has high negative predictive value and is used to rule out MRSA pneumonia and de-escalate therapy. Previous internal studies identified underutilization of MRSA nares culture. Therefore in June 2021, a best practice alert (BPA) was implemented which alerts the pharmacist to order MRSA nares culture when a patient meets certain criteria. The purpose of this study was to evaluate use of a best practice alert for the MRSA nares culture.Methods: This was an IRB-approved quasi-experimental study that evaluated the effect of a best practice aler on MRSA nares utilization pre-BPA (April 2021) compared to post-BPA (August 2021). Patients 18 years or older with community acquired pneumonia who were empirically started on vancomycin within 48 hours of hospital admission were included. Exclusion criteria were vulnerable populations, those with multiple infection sources, nasal decolonization, hospital acquired pneumonia, or ventilator associated pneumonia. The primary endpoint was MRSA nares utilization based on tests ordered and secondary endpoints were de-escalation and clinical outcomes. Using previous literature on best practice alerts determined a 20% effect size and based on that will require a sample size of 96 in each arm. A Student t-test or Mann-Whitney U test were used for continuous variables and Chi-square test or Fishers exact test were used for categorical variables, as appropriate. Results and conclusions will be presented at Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss the utility of the MRSA nares as a de-escalation tool

Identify which patients would benefit from MRSA nares testing

Self Assessment Questions:

1. Which of the following is not true about MRSA nares cultures?

A It can be used to diagnose MRSA pneumonia

B: It is a useful tool in ruling out MRSA pneumonia

C: It has decreased efficacy in patients who have had nasal decoloni

D: It is not as useful for those with ventilator associated pneumonia

2. Which of the following patients on vancomycin would qualify for MRSA Nares?

A A. A patient who is on day 7 of vancomycin therapy for pneumonia

B A patient within 48 hours admission for new onset pneumonia

C A ventilator dependent patient who has a new onset pneumonia

D A patient within 48 hours of admission who has recently been adm

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-555-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

BIVALIRUDIN VERSUS HEPARIN FOR ANTICOAGULATION DURING EXTRACORPOREAL MEMBRANE OXYGENATION (ECMO)

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Purpose: Extracorporeal Membrane Oxygenation (ECMO) provides temporary life support for patients with circulatory and/or respiratory failure through a pump that circulates and oxygenates the blood. The ECMO circuit is in continuous contact with blood, which initiates coagulation activation and an inflammatory response. Anticoagulation is necessary to prevent thrombosis, but requires a delicate balance due to the risk of bleeding-related complications. Unfractionated heparin (UFH) is the anticoagulant of choice; however, it possesses an inherent limitation by requiring co-factor antithrombin to assert its clinical action. This predisposes the patient to fluctuations in dose responsiveness in addition to complications such as heparin-induced thrombocytopenia (HIT) and heparin resistance. For these reasons, there is increasing use of direct thrombin inhibitors, such as bivalirudin, for systemic anticoagulation. The purpose of this study is to compare the efficacy and safety of heparin versus bivalirudin for anticoagulation in ECMO. Methods: This was a retrospective, single-centered, cohort study of patients who received heparin versus bivalirudin for ECMO at Loyola University Medical Center. The primary outcome was the difference in thrombotic events throughout ECMO course between heparin and bivalirudin patients. Secondary endpoints included major and minor bleeding events, in-hospital mortality, ICU and hospital length of stay, and ECMO duration. A sub-group analysis of SARS-CoV-2 (COVID-19) patients requiring ECMO was conducted as well. Results: Results and conclusions will be presented at the 2022 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the complications associated with heparin use in ECMO

Discuss the impact that anticoagulation selection has on the presence o thrombotic events during ECMO

Self Assessment Questions:

What complications do heparin and bivalirudin have in common when using for anticoagulation in ECMO?

A Fluctuations in dose responsiveness

B: Liver dysfunction

C: Inability to reverse anticoagulant

D: Bleeding

Which of the following could impact heparin reaching therapeutic goal, but not bivalirudin?

A Factor VII deficiency

B Fibrinogen deficiency

C Antithrombin deficiency

D Vitamin K deficiency

Q1 Answer: D Q2 Answer: C

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PREVALENCE OF CHRONIC OVERLAPPING PAIN CONDITIONS (COPCS) IN ADULT CANCER PATIENTS

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Pain is experienced by more than 50% of patients with cancer.1 Despite the availability of effective treatments, nearly 1 in 2 patients with cancer related pain remain undertreated.1 Cancer related pain is associated with survival and low quality of life.1 Chronic overlapping pain conditions (COPCs) are recognized as a set of disorders that are often in varying combinations.2 While cancer pain is most effectively treated with opioids,3 chronic pain conditions are more difficult to treat, and have been shown in to not respond well to opioids.5,6 The purpose of this study is to describe the prevalence of COPCs in adult cancer patients.Patients with any new cancer diagnosis of any stage from 1/1/2020 to 11/1/2021 were included. All patients included were seen by an oncologist at Michigan Medicine and were over 18 years of age. Demographic information including date of birth and gender was collected. Date of cancer diagnosis, cancer type, cancer stage were collected. The primary outcome was a diagnosis of a COPC. COPCs based on validated ICD-10 codes7 as well as date of COPC diagnosis were collected. All data was collected through Data Direct and EMERSE and analyzed using descriptive statistics.The final analysis included 2638 patients. Most patients had stage I cancer (44.3%), while 19.6% had metastatic disease. A COPC was diagnosed in 501 patients (19%). Most patients only had one COPC (70.7%). Of patients with COPCs, 69% were diagnosed before cancer while 20% were diagnosed after cancer. Low back pain was the most common COPC (55.5%) followed by migraine (13.8%).We identified that about 19% of patients with cancer also had COPCs, the majority of whom were diagnosed before cancer. By identifying the prevalence of COPCs in patients with cancer we can develop studies evaluating if these patients have difference in quality-of-life outcomes related to pain.

Learning Objectives:

Explain why patients with cancer associated pain and chronic overlapping pain conditions (COPCs) may have worse quality of life outcomes when compared to patients without COPCs.

Identify common COPCs in patients with cancer.

Self Assessment Questions:

Which of the following COPCs was NOT identified in out patients with cancer?

A Low back pain

B: Migraine

C: Chronic fatigue

D: Primary dysmenorrhea

Which of the following is a reason why it is important to define the prevalence of COPCs in patients with cancer?

A Develop studies to assess treatment of pain to optimize quality of

B Develop studies to assess outcomes of cancer directed therapy to

C Identify patients who may need more aggressive treatment of pain

D Identify patients who may not benefit from opioids

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-853-L08-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

IMPACT OF A PHARMACIST-RUN MEDICATION THERAPY MANAGEMENT CLINIC ON KIDNEY TRANSPLANT RECIPIENTS

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A major cause of graft loss and death for kidney transplant recipients (KTR) is metabolic dysfunction. To improve metabolic outcomes, a multi modal team-based approach that provides patient education, monitoring and intervention is essential. Clinical pharmacists are highly trained professionals that are able to assess and implement individualized medication plans focusing on medication appropriateness, effectiveness safety, and adherence to improve patient outcomes. The purpose of this study is to assess the impact of a clinical pharmacist-run medication therapy management clinic (MTMC) at a large academic medical center on the metabolic outcomes of KTR. This is a retrospective, pre-post cohort study at the University of Illinois Hospital and Health Sciences System. This study will evaluate adult (>18 years of age) KTR referred t the MTMC between 9/1/2016 and 9/1/2020. Patients who are lost to follow-up before one year will be excluded. The primary outcome will assess the difference in baseline hemoglobin A1c, lipids, and blood pressure at initial MTMC visit compared to the results at one year. Secondary outcomes will include total number of medications, number o anti-hyperglycemic medications, and number of anti-hypertensive medications. Data will be analyzed and characterized using descriptive, categorical, and continuous statistics. Data collection is in progress. Results and conclusion will be presented at the 2022 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the integration of a Medication Therapy Management Clinic clinical pharmacist into the routine ambulatory care of kidney transplant recipients.

Identify the impact of a clinical pharmacist-run Medication Therapy Management clinic on the metabolic and pharmacotherapy outcomes of kidney transplant recipients.

Self Assessment Questions:

What is the role of a Medication Therapy Management clinic clinical pharmacist in the routine ambulatory care of kidney transplant recipients?

A Medication adherence

B: Management of metabolic disease states

C: Patient education

D: All of the above

Which of the following is a major cause of graft loss for kidney transplant recipients?

A Access to healthcare

B Metabolic dysfunction

C Medication adherence

D Adequate immunosuppression

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-557-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

COMPARISON OF CENTER FOR MEDICARE AND MEDICAID SERVICES (CMS) ANTIBIOTIC UTILIZATION BEFORE AND AFTER IMPLEMENTATION OF AN EMERGENCY DEPARTMENT ORDER-SET

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Purpose: Since the Surviving Sepsis Campaign (SSC) introduced their first guidelines in 2004, compliance to their three-hour bundle has been shown to decrease mortality in patients with septic shock. This has led t a push for institutions to employ strategies to improve compliance with the campaigns sepsis bundles, including the implementation of sepsis core measures by the Center for Medicare and Medicaid Services in 2015. Indiana University Health (IUH) Methodist Hospital recently implemented a sepsis order set to assist providers in following CMS sepsis core measures. The purpose of the study is to assess the percentage of CMS appropriate antibiotics given in the emergency department before and after the implementation of a sepsis order set. Methods: This is a retrospective chart review study including patients over the age of 18 presenting to the emergency department at Methodis Hospital in May of 2019 and 2021. Exclusion criteria are pregnancy, positive COVID-19 test, and patients receiving antibiotics solely for prophylaxis. The primary endpoint is to compare the percentage of patients seen in the ED receiving CMS appropriate antibiotics in May 2019 and May 2020. The secondary endpoints evaluated for all include in-hospital mortality and hospital admission rate. The secondary endpoints for patients receiving antibiotics are incidence of infection, incidence of clostridium difficile infection, and incidence of multi-drug resistant cultures within three months post-visit. Results/Conclusions: Data are being collected and analyzed and will be presented at Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recognize the differences in sepsis diagnostic criteria between CMS-based sepsis criteria and the surviving sepsis guidelines.

Discuss the importance of appropriate antibiotic administration in the emergency department.

Self Assessment Questions:

What diagnostic tool should be used to identify septic patients according to the Surviving Sepsis Campaign?

A SIRS Criteria

B: SOFA/qSOFA score

C: SARS-CoV-2 PCR

D: Urine Culture

According to the Surviving Sepsis Campaign how soon should antibiotic be administered once sepsis is identified?

A Wait until culture results come back

B Within 30 minutes

C Within 1 hour

D Within 6 hours

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-558-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

FOLLOW YOUR HEART: IMPLEMENTATION OF HEART FAILURE INITIATIVES INVOLVING AMBULATORY CARE PHARMACISTS

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Background/Purpose: The Monroe Clinic Medical Group has had a multidisciplinary Heart Failure Clinic (HFC) since 2014. In the current model a cardiologist and a pharmacist see patients collaboratively. Sinc its launch, the clinic has been largely underutilized. Preliminary data showed only 3.4% (n=116) of patients with heart failure with reduced ejection fraction (HFrEF) have been seen in the HFC. There are ample opportunities for medication optimization amongst patients with HFrEF. The new 2021 ACC HF consensus update prefers ARNIs over ACEi or ARBs and recommend using SGTL2 inhibitors in patients with HFrEF. A review of all Monroe Clinic Medical Group patients with HFrEF revealed only 10% of patients prescribed an ARNI, with 71% on an ACEi or ARB. Only 14% are prescribed an SGTL2. This project aims to implement a workflow designed to increase the proportion of patients on guideline-recommended therapy through optimization of HF services. Methodology: Monroe Clinic Medical Group patients less than 90 years with a diagnosis of HFrEF will be identified using the electronic medical record. Eligible patients will be referred to one of the two branches of the newly designed HFC based on their ACC/AHA heart failures stage. Patients at stage A, B, and asymptomatic stage C will be seen by an ambulatory care pharmacist in the HF Medication Management Clinic. Patients who are symptomatic stage C and D will be referred to Advanced Heart Failure Clinic and seen by a cardiologist and pharmacis together. The proportion of patients on guideline-recommended medication therapy in one of the two HFC services will be compared to patients not enrolled in either HFC. Results: The project is still in the implementation phase. Results will available at a later date. Conclusion TBD

Learning Objectives:

Describe the services ambulatory care pharmacists can provide for hear failure management

Review the new 2021 American College of Cardiology (ACC) consensus update for managing HR with reduced ejection fraction

Self Assessment Questions:

What medications are now the preferred guideline directed medications as part of the 2021 ACC Consensus update for treatment of HFrEF?

A SGTL2 inhibitors, ARNIs, and Beta-blockers

B: SGTL2, ACE/ARB, and Beta-blockers

C: ARNI and beta-blockers

D: Aldosterone antagonists, ARNIs, and Beta-blockers

What areas are best suited for ambulatory care pharmacists in the management of heart failure?

A Fluid management

B Medication management

C Disease state education

D B&C

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-559-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IMPROVING HEPATITIS VACCINATION RATES IN PATIENTS WITH CHRONIC LIVER DISEASE

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Patients with chronic liver disease (CLD) have an increased risk of morbidity and mortality if they acquire a viral hepatitis infection. Vaccination against hepatitis A (HepA) and hepatitis B (HepB) viruses is the best way to prevent infection. National surveys show 11.5% of adults with CLD are fully immunized against HepA and 29.1% against HepB. The low vaccination rates in this at-risk population provides an opportunity to improve healthcare education, screening, and immunization efforts. The purpose of this project is to increase HepA and HepB vaccination rates in eligible CLD patients within 3 months of hospital discharge.Patients with an ICD-10 code for CLD who were discharged from an internal medicine team were evaluated for hepatitis vaccination status prior to discharge and at 3 months after discharge. Baseline data collected between April 2021 and August 2021 revealed that only 11.4% of patients had been vaccinated against HepA on admission and 18.3% against HepB. Post-discharge vaccination data was collected in half-month intervals and plotted on a baseline behavior chart which established a baseline mean vaccination rate of 2.4%. Go-Sees were conducted on inpatient internal medicine and gastrointestinal ward rounds and outpatient liver and primary care clinics to create a high level process map and identify potential failures. Commonly identified failure modes were incomplete records, lack of a standardized process, miscommunication, insufficient education to provider and/or patients, and misunderstanding of delineation of roles. Interventions addressing these failures will be initiated on a small-scale level with the gastrointestinal ward team. Plan-Do-Study-Act cycles will be used to test and continuously improve interventions. New vaccination data will be analyzed with a run chart to identify any centerline shift and determine if the process behavior has changed from applied interventions.

Learning Objectives:

Recall the best way to protect at risk patients from viral hepatitis infections

Recognize potential barriers for receiving hepatitis vaccinations

Self Assessment Questions:

What is the best way to protect against viral hepatitis infection in patients with chronic liver disease?

A Good hand hygiene

B: Vaccination against hepatitis viruses

C: Prophylactic antivirals

D: Take precautions when getting tattoos or body piercings

Which of the following is a potential barrier to vaccination against hepatitis?

A Active hepatitis C infection

B Reported egg allergy

C Vaccinated against influenza within the last 28 days

D Lack of patient and/or provider education

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-837-L06-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

PRESCRIBING TRENDS OF PSYCHIATRIC MEDICATIONS WITHIN AN ADULT BURN CENTER

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Psychiatric conditions are common in burn patients due to the potentially traumatic circumstances of the injury, the length of recovery, and the debilitating complications post-burn. Appropriately identifying and treating psychiatric disorders in patients with burn injuries is both challenging and critical to initial and long-term recovery. The current literature describing how to best assess psychiatric disorders in adults with burn injuries is extremely limited. In addition, practice variability exists regarding inpatient management of psychiatric medications in those presenting with or without a previous psychiatric diagnosis. This retrospective case-control study aims to examine the impact of burn injury on psychiatric medication prescribing in adult patients with or without previous psychiatric histories or medications.This retrospective case-control study includes patients 18 years or older admitted to the burn unit at a safety-net hospital from 1/1/2019 to 12/31/2019. The primary outcome is the prescribing patterns of psychiatric medications a discharge in adult burn patients with or without a baseline psychiatric disorder. Secondary outcomes include the effect of a Psychiatry consult on discharge medications, length of stay, number of psychiatric medications related to specific diagnoses at discharge, supplemental medications at discharge related to psychiatric diagnoses, and the effects of other patient-specific factors on prescribing (e.g., type of burn, % total body surface area, race, preferred language, gender, and gende identity, etc.).Data collection and analysis are currently ongoing. However, this study could impact clinical practice in burn settings by helping to optimize and standardize the care of burn patients with concomitant psychiatric disorders and provide additional guidance on how to approach the various psychiatric disorders through pharmacotherapy at this specific institution. These results may potentially be extrapolated to other burn centers by creating a standard approach to psychiatric medication treatment within the burn patient population.

Learning Objectives:

Explain the gaps in literature relating to the management of psychiatric disorders within burn patients.

Identify the most significant predictor for receiving psychiatric treatment while being treated in the burn center.

Self Assessment Questions:

What is currently lacking within the literature regarding psychiatric management for burn patients?

A a.What specific medications should be used for burn patients rega

B: b.Determining if patients with pre-existing psychiatric conditions ar

C: c.Understanding the impact of TBSA on psychiatric diagnosis and t

D: All of the above

What is the most significant factor for receiving psychiatric treatment while being admitted to the burn center?

A TBSA Size

B Type of Burn

C Pre-Existing Psychiatric Condition

D Length of Stay

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-560-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IMPACT OF ADULT ALCOHOL WITHDRAWAL ADJUNCT PHARMACOTHERAPY STANDARDIZATION ON CLINICAL OUTCOMES

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Purpose: Symptom-triggered benzodiazepines are first-line therapy for alcohol withdrawal syndrome (AWS). In severe cases, a multi-modal approach is recommended to manage refractory symptoms or mitigate benzodiazepine associated adverse events. Phenobarbital, dexmedetomidine, and gabapentin have all been shown to improve outcomes in AWS. Despite this evidence, there were inconsistent practices regarding how and when to initiate these therapies within our health-system. An order set standardizing the use of these three agents was implemented to guide treatment. This study compared outcomes pre- and post-implementation of the adjunct therapy order set across multiple sites. Methods: All included patients had severe AWS defined as a Modified Minnesota Detoxification Scale (mMINDS) 20 or ICU admission. Patients in the pre-implementation group were admitted in the five month period prior to order set go live, March 31st, 2021 to August 31st, 2021. While patients were included in the post-implementation group if the Adult Alcohol Withdrawal Adjunct Therapy order set was utilized within the first 6 months post implementation. Vulnerable populations and patients who expired within 24 hours of admission were excluded. The primary objective was to compare the number of ICU days in patients admitted with alcohol withdrawal syndrome pre- and post-order set implementation. Secondary objective included: percentage of patients who required invasive mechanical ventilation, the cumulative dose of benzodiazepines that patients received (reported in lorazepam equivalents), the number of ICU admissions, hospital length of stay, duration of mechanical ventilation, cumulative use of antipsychotics, and change in alcohol withdrawal severity scores (max mMINDS score day 1, max mMINDS score day 2). Results/conclusion: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify the patients that may benefit from adjunct therapy for Alcohol Withdrawal Syndrome (AWS)

Recognize the appropriate roles of adjunct therapies in patients receiving treatment for AWS

Self Assessment Questions:

1.Which of the following patients would most likely benefit from adjunct therapy medications for AWS?

A 40 YOM with a previous history of delirium tremens (DTs) and curr

B: 65 YOM with no history of AWS who is currently intoxicated

C: 23 YOF with a current mMINDS score of 15 and receiving symptor

D: 35 YOF who states she was intoxicated the week prior, but has no

2.A new patient (PK) presents to the emergency room with symptoms of AWS. The patient is altered, combative, and has lost IV access. Which of the following therapies could be appropriate for AWS?

A PO Lorazepam

B IV Dexmedetomidine

C IM Phenobarbital

D PO Gabapentin

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-561-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

SEPSIS CARE DISPARITIES: ASSESSMENT OF ANTIBIOTIC APPROPRIATENESS AND DISPARITIES AMONG SEVERE SEPSIS PATIENTS

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Purpose: Previous literature has suggested that healthcare disparities exist in a broad array of disease states for racial minorities, females, and those with low socioeconomic status. Sepsis has been identified as a condition with disparities in management. The purpose of this study was to identify potential disparities in the appropriateness of antibiotic treatment provided to patients in the emergency department with severe sepsis per SEP-1 criteria.Methods: This was a retrospective, observational study approved by the Henry Ford Health System (HFHS) institutional review board and included adults diagnosed with severe sepsis in the emergency department within the HFHS who received antibiotics within 24 hours of severe sepsis onset and were eligible for the SEP-1 3-hour bundle. Severe sepsis was defined using the Centers for Medicare and Medicaid Services (CMS) criteria. The primary outcome was identification of independent risk factors for receipt of inappropriate empiric antibiotic therapy. Appropriate empiric antibiotic regimens were defined per HFHS internal antimicrobial treatment guidelines which are based on evidence-based guidelines. Appropriate therapy was assessed based on suspected sites of infection and risk factors for drug-resistant pathogens. Empiric antimicrobial regimens were classified as appropriate, inappropriately broad, or inappropriately narrow. Secondary outcomes included appropriate crystalloid fluid resuscitation per SEP-1 bundle, SEP-1 3-hour bundle compliance, readmission at 30 and 90 days, and healthcare resource utilization at 30 days post discharge. A stepwise backward conditional multivariable logistic regression analysis will be performed to test whether a relationship exists between antibiotic appropriateness and participant baseline characteristics such as race, sex, and socioeconomic status.Results and Conclusion: Results will be presented at 2022 GLPRC.

Learning Objectives:

Define the bundle elements of the SEP-1 Centers for Medicare and Medicaid Services (CMS) quality measure.

Describe common disease states in which healthcare disparities exist.

Self Assessment Questions:

Which of the following IS NOT an element of the SEP-1 CMS quality measure?

A Measurement of serum lactate

B: Obtain blood cultures prior to antibiotic administration

C: Administer broad-spectrum antibiotics

D: Administer 10 mL/kg IV fluids (for hypotension, lactate > 4mmol)

Which of the following disease states have literature documenting healthcare disparities exist?

A Sepsis

B Rheumatoid arthritis

C Chronic kidney disease

D All of the above

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-565-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EVALUATING THE TIME TO RESOLUTION OF DIABETIC KETOACIDOSIS THROUGH COMPARISON OF PROTOCOLS WITHIN A COMMUNITY HOSPITAL

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: Studies have shown that patients who are hospitalized and maintain higher blood glucose levels, such as those with diabetic ketoacidosis (DKA), have a higher rate of mortality and suboptimal hospital outcomes The gold standard for treating DKA includes a well-designed protocol that can be adjusted for patient specific factors. The aim of this study was to evaluate the safety and efficacy of a newly developed DKA protocol. The primary outcome of this study was to compare the time (in hours) to resolution of DKA when utilizing the original versus revised protocols.

Learning Objectives:

Recognize the typical symptoms and diagnostic criteria required to determine if a patient is presenting with diabetic ketoacidosis

Describe the basic diabetic ketoacidosis treatment algorithm

Self Assessment Questions:

Which of the following is not utilized as part of the diagnostic workup to determine if a patient is currently in diabetic ketoacidosis?

A Blood glucose levels

B: : Serum bicarbonate

C: Anion gap

D: Hemoglobin A1C

Which of the following is true regarding the basic management of DKA?

A A.Sodium bicarbonate therapy is effective and beneficial for all DK

B B.Intravenous fluids should not be given unless the patient is hemo

C C.Potassium replacement should be given before insulin in hypoka

D D.Subcutaneous insulin is preferred over intravenous insulin

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-563-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EFFECT OF CORTICOSTEROIDS AFTER INITIAL 10 DAY COURSE IN COVID-19

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Purpose: Coronavirus disease 2019 (COVID-19) is a novel virus; due to lack of clinical trials early-on treatment options have been continually evolving. There have been many hypotheses about medications that may be effective, however, the utility of corticosteroids has been proven. Based on evidence of mortality benefit, NIH, IDSA, and WHO guidelines recommend steroids in hospitalized patients requiring supplemental oxygen, oxygen delivery through high-flow device, noninvasive ventilation, invasive mechanical ventilation or ECMO. What the guidelines do not address and what was not studied in any of the curren literature, is what should be done with steroids after the first initial 10 days of steroids. This study aims to offer direction for further research into steroid dose and duration after an initial 10 days of corticosteroids in COVID-19 patients. Methods: This study is a single-system, retrospective chart review of COVID-19 patients admitted for at least 48 hours after an initial 10 days of corticosteroids. Individuals were excluded from the study if they were pregnant, minor, incarcerated or had >48 hour gap in steroid doses. The primary endpoint will compare in hospital mortality rates between patients that received 10 days of steroids and those who received greater than 10 days. Secondary endpoints will look at the effects of steroid duration and dose on oxygen requirement at day 28 or discharge, whichever is sooner and in-hospital mortality. Results/Conclusions: Final results and conclusions to be presented at the 2022 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Arrange the disease progression of COVID-19 infection.

Describe the proposed mechanism of action of corticosteroid use in COVID-19.

Self Assessment Questions:

Which of the following shows the correct order of coronavirus 2019 course?

A Early pulmonary phase, incubation, symptomatic, late pulmonary p

B: Incubation, early pulmonary phase, symptomatic, late pulmonary p

C: Incubation, symptomatic, early pulmonary phase, late pulmonary p

D: Incubation, early pulmonary phase, late pulmonary phase, sympto

Which of the following is a mechanism of action of corticosteroids in COVID-19 treatment?

A Decreases inflammation by suppression of neutrophil migration, d

B Metabolites are incorporated into replicating DNA and halt replicat

C Inhibits COX1 and COX2 enzymes which decrease formation of pr

D Inhibits inosine monophosphate dehydrogenase which inhibits T a

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-564-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EVALUATION OF PHARMACIST-DRIVEN INTERVENTION ON GUIDELINE CONCORDANT ANTIBIOTIC PRESCRIBING FOR URINARY TRACT INFECTION, SINUSITIS AND CELLULITIS IN THE OUTPATIENT SETTING

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Purpose The Centers for Disease Control and Prevention (CDC) estimates that roughly 50% of all antibiotics are prescribed inappropriately; with increasing antibiotic resistance, health systems have implemented outpatient antimicrobial stewardship programs (ASP) to help influence prescribing patterns. Antimicrobial stewardship programs are intended to measure antibiotic prescribing, improve prescribing methods, and minimize misdiagnoses. In 2021, Mercy Healt Muskegon partnered with Mercy Health Saint Marys and Ferris State University to create and utilize a dashboard to support outpatient antimicrobial stewardship. This dashboard organizes data on antibiotic prescribing including but not limited to the number of antibiotics per patient visit, antibiotics per diagnosis, and prescribing in concordance to guideline recommendations. The aim of this study was to evaluate the impact of pharmacist-led intervention on outpatient antibiotic prescribing in patients with cellulitis, sinusitis, and/or urinary tract infection (UTI).Methods The dashboard data for our family and internal medicine residency clinics was reviewed for overall guideline concordant prescribing for the conditions of cellulitis, sinusitis, and/or UTI. Prescribing was considered guideline concordant if drug choice, strength, and duration were all appropriate. To improve guideline concordance, outpatient antibiotic order panels and education were created for cellulitis, sinusitis, and UTI based on the current Mercy Health Muskegon outpatient antibiotic guidelines. These order panels were shared with the medical residents/providers at each residency clinic. Data was retrospectively analyzed using the dashboard from pre-education to two-months post implementation. The primary outcome wa to compare the appropriateness of antibiotic prescribing before and afte pharmacist-led intervention in the outpatient medical residency clinics. Secondary outcomes included appropriateness of antibiotic selection, dosing, and duration individually. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

List the four core elements of outpatient antimicrobial stewardshp programs (ASP) as outlined by the CDC

Recognize what prescribing elements make an antibiotic regimen guideline concordant

Self Assessment Questions:

According to the CDC, which is not one of the outpatient ASP core elements?

A Commitment

B: Education & Expertise

C: Pharmacist-led intervention

D: Tracking & Reporting

Which of the following elements does not affect if a regimen is guideline concordant?

A Dose

B Duration

C Drug selection

D Formulation

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-751-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EVALUATING PROVIDER KNOWLEDGE AND PERCEPTIONS REGARDING THE USE OF BUPRENORPHINE FOR CHRONIC PAIN

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Purpose: Buprenorphine is an opioid medication that comes in buccal film and transdermal patch formulations, which are approved by the Food and Drug Administration (FDA) for use in patients with moderate t severe chronic pain. It is currently identified as a treatment option for patients with moderate to severe chronic pain. Despite evidence of efficacy and safety, buprenorphine is widely underutilized. This project will assess provider attitudes towards buprenorphine for chronic pain, perceived barriers to buprenorphine prescribing, healthcare team member knowledge regarding buprenorphine for chronic pain, and the impact of pain clinics and pain pharmacists on buprenorphine prescribing.Methods: This study will be conducted as a national survey of healthcare team members involved in chronic pain management. Following appropriate approval, the survey will be conducted utilizing REDCap software and will be sent out as a link using internal VA listser groups. Weekly reminders will be sent out during the study period to maximize participation. Descriptive statistics will be used when reporting results of the survey. To compare ordinal data from the Likert scale the Mann-Whitney U test will be utilized. Any nominal data will be compared using a chi-squared test. For all objectives, < 0.05 will be considered significant.Results & Conclusions to be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Review the role of buprenorphine in chronic pain management.

Recognize provider knowledge and perceptions of buprenorphine for chronic pain management.

Self Assessment Questions:

Buprenorphine exerts its analgesic effects via which opioid receptor?

A Full mu agonism

B: Partial mu agonism

C: Full kappa antagonism

D: Partial kappa antagonism

The transdermal buprenorphine patch may not provide adequate analgesia in patients receiving morphine equivalent daily doses of:

A 30 mg

B 50 mg

C 70 mg

D 90 mg

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-854-L08-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

INCIDENCE OF REJECTION AFTER CONVERSION FROM TACROLIMUS TO CYCLOSPORINE-BASED IMMUNOSUPPRESSION IN LIVER TRANSPLANTATION WITHIN THE FIRST YEAR OF TRANSPLANT

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Purpose: Calcineurin inhibitors (CNIs) are the most widely used maintenance immunosuppressants for preventing liver transplant rejection. While both tacrolimus and cyclosporine equally reduce mortality and graft loss, clinical trials have shown tacrolimus to be superior in preventing death and re-transplantation and therefore it is drug of choice for maintenance immunosuppression therapy. Adverse effects of tacrolimus that limit its tolerability include neurotoxicity such as altered mental status, tremors, and seizures. For this reason, one approach to the management of neurologic complications is to switch from tacrolimus to cyclosporine-based immunosuppression. Currently, there is a gap in literature on the rates of allograft rejection in liver transplant recipients converted from tacrolimus to cyclosporine in the setting of neurologic toxicity. The purpose of this study is to assess the incidence of rejection within 1 year in patients converted to cyclosporine-based immunosuppression at our center. Methods: This was a retrospective, single-centered, observational cohort study of patients converted from tacrolimus to cyclosporine due to neurologic toxicity at Loyola University Medical Center. The primary outcome was incidence of rejection after conversion from tacrolimus to cyclosporine within 1 year of transplantation. Secondary endpoints included resolution of neurologic complications, incidence of conversion back to tacrolimus, time to rejection post-conversion, and patient and allograft survival. Baseline characteristics will be analyzed using the mean and standard deviation for parametric data and median for non-parametric data. Categorical data will be analyzed via fishers exact or chi-square, as appropriate. Parametric continuous data will be analyzed by the T-test and non-parametric data via Mann-Whitney U. Results: Results and conclusions will be presented at the 2022 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Review risk factors contributing to neurotoxicity following liver transplant

Explain rationale for using cyclosporine for presumed tacrolimus induced toxicity

Self Assessment Questions:

A patient is on maintenance immunosuppressive therapy post liver transplant and is experiencing altered mental status as a side effect. Which drug is most likely attributed to this?

A Belatacept
B: Tacrolimus
C: Everolimus
D: Mycophenolic Acid

Which of the following describes the mechanism of action of calcineurin inhibitors?

A Inhibits TNF-alpha
B Converts to a purine antimetabolite toxic to stimulated lymphocyte
C Interferes with activation of transcription factors involved in stimula
D Decreases prostaglandin production due to inhibition of phospholip

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-566-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

ANALYZING INPATIENT MEDICATION ADHERENCE TO ORAL RIVAROXABAN, APIXABAN, VERSUS SUBCUTANEOUS ENOXAPARIN FOR VENOUS THROMBOEMBOLISM (VTE) TREATMENT IN PATIENTS WITH SICKLE CELL DISEASE (SCD) CRISIS

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Statement of purpose: Hospitalized patients with sickle cell disease (SCD) are at an increased risk of experiencing a venous thromboembolism (VTE) event. Mortality due to a VTE event is significantly higher in this patient population. The 2016 Antithrombotic Therapy for VTE Disease: Chest Guideline and Expert Panel Report and the 2018 ASH Guidelines for Management of VTE recommend pharmacological treatment consisting of UFH, LMWH, Factor Xa inhibitors (direct or indirect), or dabigatran. However, one challenge in complying with these guidelines recommendation is patient's refusal to receive anticoagulants.Statement of methods used: A single-center, retrospective study was conducted analyzing rates of inpatient medication adherence to oral versus subcutaneous VTE pharmacological treatment in patients admitted with a SCD crisis between 2011-2021. Data was extracted from Indiana University Health (IUH) electronic medical record (EMR), Cerner. The primary outcome is to compare the number of missed doses of oral regimen of apixaban or rivaroxaban compared to subcutaneous regimens of enoxaparin for VTE treatment. Summary of results to support conclusion: The average age of our sample patient population was 32 years of age with an average weight of 79kg and creatinine clearance above 60 mL/min. Patients who received oral therapy of either apixaban or rivaroxaban had a medication adherence rate of 94.44% or 95.24% compared to 86.36% in patients who received subcutaneous enoxaparin (P= 0.3017). Of note, more patients in the enoxaparin group missed at least one dose of their regimen with one patient missing more than three doses of their regimen.Conclusions Reached: Patients who received oral VTE pharmacological treatment had similar adherence rates compared to those who received subcutaneous treatment while inpatient.

Learning Objectives:

List risk factors that lead to the development of venous thromboembolism (VTE).

Identify which medication regimens are recommended for treatment of patients with sick cell disease (SCD).

Self Assessment Questions:

Which of the following is a reason for the increased VTE risk in sickle cell patients?

A Decreased Inflammation
B: Recurrent Hospitalizations
C: Lower risk of Ischemia
D: Vasodilation

Which of the following anticoagulants is recommended for first-line treatment of an acute VTE event?

A Heparin
B Warfarin
C Apixaban
D Enoxaparin

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-567-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EFFECT OF MELATONIN ON THE USE OF ANTIPSYCHOTIC MEDICATIONS IN THE INTENSIVE CARE UNIT

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Delirium in patients in the intensive care unit (ICU) is commonly treated with antipsychotic medications, which are associated with short- and long-term risks. Guidelines for the Management of Pain, Agitation/Sedation, Delirium, Immobility and Sleep Disruption (PADIS) discuss the increased risk of delirium with poor sleep quality. Although these guidelines make no specific recommendation on the use of melatonin in the ICU, its safety and potential use in sleep improvement and delirium through circadian rhythm regulation makes it an appealing treatment option. The goal of this study was to evaluate the effect of melatonin on the use of antipsychotic medications in the ICU.

Learning Objectives:

Discuss guideline recommendations for prevention and management of delirium and sleep disruption in patients in the intensive care unit (ICU)

Identify potential benefits of utilizing melatonin for patients in the ICU

Self Assessment Questions:

Melatonin is thought to improve sleep and prevent delirium in adult ICU patients by which of the following mechanism(s)?

A Histamine H1 receptor antagonism

B: Regulation of circadian rhythm

C: Mu-opioid receptor agonist

D: GABA-A receptor agonism

Which of the following is a common adverse effect of antipsychotic medication use?

A Qtc Prolongation

B Urinary incontinence

C Shortness of breath

D Weight loss

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-568-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF THE IMPACT OF COVID-19 DIAGNOSIS ON THE NATURAL PROGRESSION OF TYPE 2 DIABETES MELLITUS

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Background: Since the beginning of 2020, SARS-CoV-2 has infected over 70 million Americans. The immediate health effects of COVID-19 infection are becoming increasingly understood, whereas the long-term effects are the subject of many ongoing studies. One theoretical long-term complication of COVID-19 infection is worsening of glycemic control in patients with type 2 diabetes mellitus. It is hypothesized that the SARS-CoV-2 virus may be directly binding to the ACE2 receptor on pancreatic beta cells, leading to an inflammation and ultimately further dysfunction of the insulin-producing pancreatic beta cells. This theory suggests that COVID-19 infection may accelerate the natural progression of type 2 diabetes mellitus.Purpose: The purpose of this study is to assess the effect that COVID-19 infection has on the natural progression of type 2 diabetes mellitus. Methods and Procedures: This study is a retrospective electronic chart review of patients at Jesse Brown VA Hospital and associated Community-Based Outpatient Clinics who had a diagnosis of type 2 diabetes mellitus and were tested for SARS-CoV-2 between March 1st, 2020 and February 28th, 2021. Patients were excluded if they were less than 18 years old, patients receiving treatment for type 2 diabetes mellitus at an outside facility, or had a baseline HbA1C > 10%. Data collection includes date of initial SARS-CoV-2 test, patient specific characteristics and co-morbidities, and information related to diabetic control at baseline, 6-month, and 12-month post-COVID-19 testing. The primary outcome of this study is the incidence of increased intensity of diabetic medications at 6- and 12-months post index date between groups. Other outcomes include mean change in HbA1C at 6- and 12-months post index date, and mean change in total daily dose of insulin at 6- and 12-months post index date.Results/Conclusion: To be presented at the Great Lakes Pharmacy Resident Conference

Learning Objectives:

Review the natural progression of type 2 diabetes mellitus

Discuss one potential mechanism by which COVID-19 infection may impact glycemic control in patients with type 2 diabetes mellitus

Self Assessment Questions:

What is a key characteristic of new onset type 2 diabetes mellitus?

A Abrupt cessation of insulin production by the pancreas

B: Patients with new onset type 2 diabetes mellitus require insulin inj

C: Decreased insulin secretion by pancreatic beta cells, accompanie

D: None of the above

What is the potential benefit(s) of identifying the long-term glycemic effects that COVID-19 infection has on type 2 diabetes mellitus (T2DM)?

A Identifying these effects will allow providers to make earlier treatm

B There is no potential benefit

C Identifying these effects will help inform patients and better prepar

D Both answers A and C

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-569-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF A HEALTH SYSTEM'S ADHERENCE TO MONITORING PARAMETERS FOR ORAL CHEMOTHERAPY AGENTS

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Purpose:The use of oral chemotherapy agents (OCAs) has increased significantly in recent years as more agents are available for the treatment of a variety of cancers. These medications require frequent monitoring and follow-up to avoid serious adverse effects, unscheduled hospital admissions, and non-adherence. While adequate monitoring can be defined by individual health-systems, package inserts offer guidance in determining monitoring parameters for OCAs. Within our health-system there is currently an inconsistent process for ordering OCAs and the associated monitoring parameters with some regimens being ordered using paper order sets while others have been adapted into the electronic medical record as electronic order sets. The purpose of this study is to determine the health-systems adherence to monitoring parameters for patients taking OCAs and to determine how monitoring affects patient outcomes. Methods:This retrospective, single-center, single-cohort study included outpatients 18 to 89 years of age initiated on axitinib, ibrutinib, imatinib, lenvatinib, neratinib, palbociclib, or trifluridine-tipiracil between July 1, 2020 and June 30, 2021. Patients were excluded if incarcerated, pregnant, enrolled in a clinical trial, received less than one complete cycle of an OCA, or transitioned from paper to electronic order sets during the study period. The primary objective was to determine the adherence rate to recommended monitoring parameters for patients on the selected OCAs. Secondary objectives included determining adherence rates to recommended monitoring parameters for patients: ordered an OCA with paper compared to electronic order sets, receiving oral and clinic administered oncology agents concomitantly compared to an OCA alone, and filling the OCA prescription at the health-system based specialty pharmacy compared to external specialty pharmacies. The effect of adherence to monitoring parameters on incidence of adverse drug events, hospitalizations, and progression free survival was also determined. Results and Conclusions:To be presented at the 2022 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify the pharmacist's role in the management of patients on oral chemotherapy agents

Recognize the impact adherence to oral chemotherapy monitoring parameters may have on patient outcomes

Self Assessment Questions:

Which of the following interventions was associated with pharmacist-led management of patients on oral chemotherapy agents?

A Increased time of prescription review

B: Increased medication errors

C: Decreased adherence

D: Increased adverse event monitoring

Adherence to appropriate monitoring parameters for oral chemotherapy agents may result in which of the following?

A Decreased adverse events

B Decreased office visits

C Shorter progression free survival

D Increased hospitalizations

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-826-L05-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

ARE AMINOPENICILLINS NON-INFERIOR IN VANCOMYCIN-RESISTANT ENTEROCOCCAL URINARY TRACT INFECTIONS?

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PurposeVancomycin-resistant enterococci (VRE), particularly E. faecium, commonly harbor resistance to aminopenicillins. However, aminopenicillins are expected to reach urine concentrations sufficient to overcome aminopenicillin resistance for lower urinary tract infections based on pharmacokinetic and limited outcomes data. The purpose of this study compared clinical outcomes of patients treated with aminopenicillins versus standard of care for lower urinary tract infections caused by VRE. Methods An IRB approved, retrospective cohort study was performed. Inclusion criteria: adult hospitalized patients with symptomatic VRE cystitis that received treatment with an aminopenicillin or standard of care antibiotics from 2013 to 2021. Exclusion criteria: Asymptomatic bacteriuria, history of VRE UTI in past year, review of systems unavailable or altered mental status, urinary instrumentation (such as nephrostomy tubes) except for stent/catheter, upper UTI or systemic infection, fever, or trauma to genitourinary tract. The primary endpoint was a composite of clinical and microbiologic success at 14 days after therapy completion. Clinical success was defined as resolution of symptoms without recurrence; microbiological success was defined as no repeat culture demonstrating growth of the index organism. Secondary outcomes included clinical and microbiologic success at 30 days, duration of definitive therapy, time to active therapy and presence of stents and catheters. Descriptive statistics and multivariable logistic regression analysis were utilized to evaluate characteristics associated with the primary composite outcome. Using one-sided alpha of 0.025 and a beta of 0.8, a sample size of 178 was estimated using a non-inferiority margin of 15%.Results:To be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe patients prescribed aminopenicillin or standard of care for lower urinary tract infections.

Explain outcomes of patients treated with aminopenicillins versus standard of care for lower UTIs caused by VRE

Self Assessment Questions:

Which of the following patient characteristics is common in patients with Enterococcal isolates in the urine?

A 1.Procedure/Instrumentation

B: 2.Younger age

C: 3.CrCl >100 mL/min

D: 4.Immunocompromised

Which of the following would be a great narrow-spectrum and oral agent to treat a symptomatic cystitis due to VRE with an ampicillin MIC >16 mcg/mL?

A Moxifloxacin

B Amoxicillin

C Daptomycin

D Minocycline

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-570-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

SCHEDULED INTERMITTENT VS CONTINUOUS INFUSION FENTANYL FOR ANALGOSEDATION IN MECHANICALLY VENTILATED ELDERLY PATIENTS

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Purpose: Fentanyl continuous infusion is widely used for analgosedation in mechanically ventilated patients. However, fentanyl exhibits a context sensitive half-time, when infused over longer periods of time, resulting ir a longer duration of effect after the infusion is discontinued. This context sensitive half-time is exacerbated in elderly patients due to increased adipose tissue and reduced overall clearance, resulting in potential accumulation. In an attempt to minimize effective opioid dosage and avoid the complications of fentanyl accumulation, some clinicians choose intermittent fentanyl in preparation for extubation. There is a paucity of data comparing the use of fentanyl continuous infusion to scheduled intermittent doses. We hypothesize that a reduced duration o action upon discontinuation of fentanyl for analgosedation may result in a reduction in time to ventilator liberation. The purpose of this study is to compare clinical outcomes between patients treated with fentanyl continuous infusion monotherapy and those treated with scheduled intermittent doses of fentanyl in an attempt to minimize opioid exposure before extubation.Methods: Inpatient medication orders for intravenous fentanyl were retrospectively reviewed to identify patients. Patients who met inclusion were 55 years of age, mechanically ventilated for 24 hours and exposed to fentanyl continuous infusion and/or scheduled intermittent doses for 12 hours. Exclusion criteria were concomitant continuous neuromuscular blocking agents, epidural block, comfort care tracheostomy, or mortality during ventilation. Patients were divided into two groups: fentanyl continuous infusion monotherapy vs. fentanyl scheduled IV push with or without prior continuous infusion. The primary outcome was duration of mechanical ventilation. Secondary outcomes included development of ICU delirium, requirement of additional sedatives prior to mechanical ventilation liberation, adjunctive agitation therapy, ICU LOS, hospital LOS, ICU mortality, hospital mortality, and rate of reintubation.Results and conclusion: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss the potential benefits and disadvantages of scheduled intermittent fentanyl dosing as compared with continuous infusion fentanyl in mechanically ventilated patients.

Identify patients that may benefit most from a transition or initiation of a scheduled intermittent fentanyl dosing regimen.

Self Assessment Questions:

Intermittent fentanyl dosing has the following potential benefits over administration of a continuous fentanyl infusion:

A Slower offset of action when regimen is discontinued

B: Ability to achieve deep sedation

C: Ease of administration

D: Decreased overall opioid exposure

Which of the following factors would make a patient a potential candidate for scheduled intermittent fentanyl dosing?

A A.Advanced age

B Increasing sedation needs

C Preexisting opioid dependence

D Continuous neuromuscular blockade

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-571-L08-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

COMPARATIVE ANALYSIS OF ONE VERSUS TWO-BAG METHODS IN THE TREATMENT OF ADULT DIABETIC KETOACIDOSIS

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Purpose: Diabetic ketoacidosis (DKA) is a significant complication of diabetes mellitus and prompt, standardized management is critical. In addition to insulin therapy, the two-bag method (2B) of fluid administration has shown clinical benefits for patients with DKA versus the one-bag method (1B) including faster correction of acidemia and decreased length of hospitalization. Methods: This retrospective study evaluated DKA patients treated with a protocol-based insulin infusion for 12 hours and 1B fluids (S1) between 2/2019-12/2020 compared to a control of 1B (C1) and 2B (C2) groups as reported in J Emerg Med.2018;54:593. Effectiveness was defined as time to pH 7.3, bicarbonate 18 mEq/L, and discontinuation of insulin infusion. Safety was evaluated by occurrences of hypokalemia and hypoglycemia. Data are reported as control (C1 or C2) versus study (S1). Results: Of 598 S1 patients screened, 238 were included with a mean age of 45.419 years and APACHE-II 156. The time to pH 7.3 tended to be shorter in C1 (10.8 v 18.1 hours; p<0.01). Additionally, the time to bicarbonate normalizatior was not different between S1 and C1, (p=0.16) but improved with C2 (13.4 v 26.3 hours; p=0.02). The mean duration of insulin infusion was shorter in both C1 (21.8 v 36.1 hours; p<0.01) and C2 (14.1 v 36.1 hours; p<0.01). Hospital length of stay was shorter in C1 (3.4 v 5.9 days p< 0.01) and C2 (3.1 v 5.9 days; p<0.01). Hypoglycemia was observed more in the S1 group compared to C1 (10% v 30%; p<0.01) and C2 (3% v 30%; p<0.01). Conclusions: Our institution utilizes a standardized insulin infusion and 1B fluid method for clinical management of patients with DKA. Compared to control groups, it was associated with increased duration of insulin infusion, risk of hypoglycemia, and prolonged hospital stay. Institution-specific DKA management protocols should be evaluated to ensure optimal treatment.

Learning Objectives:

Review the pathophysiology and treatment of diabetic ketoacidosis

Discuss the effects of "one-bag" versus "two-bag" fluid models for the treatment of adult diabetic ketoacidosis

Self Assessment Questions:

Which of the following therapies are used for the treatment of diabetic ketoacidosis?

A Intravenous insulin

B: Fluid resuscitation

C: Electrolyte replacement

D: All the above

Which of the following are potential benefits of a two-bag fluid model for the treatment of diabetic ketoacidosis?

A Decreased risk of hypoglycemia

B Decreased risk of hypokalemia

C Shortened duration of intravenous insulin infusion

D All the above

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-572-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF NOMOGRAM HEPARIN DURING THERAPEUTIC HYPOTHERMIA AT AN ACADEMIC MEDICAL CENTER

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Introduction: Several studies have suggested a need for reduced heparii requirements during therapeutic hypothermia (TH) due to an exaggerated aPTT response, however, data with anti-Xa monitoring is lacking. It is unclear if prolongation of aPTT values during TH is due to impaired heparin clearance, effects of hypothermia on clotting factors, o biological processes. The primary objective of this study is to determine the impact of TH on therapeutic heparin requirements with anti-Xa monitoring in patients following cardiac arrest without neurological recovery at an Academic Medical Center. Methods: This is a single-center retrospective study of adult patients 18 years or older who were hospitalized for cardiac arrest without neurological recovery and underwent therapeutic hypothermia between July 1st, 2013 and September 30th, 2021. Patients receiving therapeutic heparin nomogram-based dosing during TH and 24 hours after rewarming with a least one appropriately timed anti-Xa level will be included. The first anti-Xa level drawn 6 hours after initiation will be assessed for subtherapeutic, supratherapeutic, or therapeutic concentrations. Subsequent 6-hour anti-Xa levels and dosing will be assessed during TH and the first 24 hours after rewarming, regardless of initial anti-Xa levels The primary outcome studied will be mean anti-Xa achieved during therapeutic hypothermia versus the first 24 hours after rewarming is complete. Secondary outcomes studied will include mean heparin rate during TH and rewarming, incidence of minor and major bleeding, and anti-Xa levels during TH versus the first 24 hours after rewarming is complete that are subtherapeutic, supratherapeutic, and therapeutic. Patients were excluded if they received non-nomogram heparin or nomogram heparin with anti-IIa monitoring. Summary/Conclusions: Data collection and analysis is in progress. Results and conclusions will be presented at the 2022 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe changes in coagulation parameters patients may experience during therapeutic hypothermia.

Explain the challenges of therapeutic nomogram heparin dosing during the cooling and rewarming phases of therapeutic hypothermia.

Self Assessment Questions:

Which of the following physiologic changes is associated with therapeutic hypothermia?

A Decreased platelet function

B: Decreased ATIII

C: Decreased aPTT

D: Decreased INR

Which of the following best describes therapeutic nomogram heparin requirements in patients undergoing therapeutic hypothermia during the cooling phase when compared to after the rewarmed phase?

A No change to heparin requirements after the rewarming phase of t

B Decreased heparin requirements after the rewarming phase of the

C Increased heparin requirements during the cooling phase of therap

D Decreased heparin requirements during the cooling phase of thera

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-752-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IMPACT OF A TRANSITIONS OF CARE PHARMACIST ON ACUTE MYOCARDIAL INFARCTION READMISSION WITHIN 30 DAYS AT A COMMUNITY TEACHING HOSPITAL

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The purpose of this study is to evaluate the impact of a transitions of care pharmacist on acute myocardial infarction readmissions within 30 days at a community teaching hospital. The hypothesis is that direct implementation of a pharmacist in this transitions of care role will reduce readmissions. To evaluate this research question, a prospective-retrospective cohort study will be conducted. The selected patients will be those who are admitted to Med Center Health at Bowling Green with their index STEMI, NSTEMI, or unspecified acute myocardial infarction diagnosis, according to ICD-10-CM diagnostic codes retrieved from Meditech. The identified patients will be placed on a unique Meditech Surveillance Dashboard to track their progress in the study throughout their respective study period. Once enrolled, patients will receive multipl pharmacist encounters during their inpatient stay and following their discharge. This will include a thorough medication history interview at the time of admission, an admission medication order reconciliation, a discharge medication reconciliation, discharge medication counseling, and post-discharge telephone follow-up at 72 hours and day 14. This prospective cohort will be compared to a retrospective control group that will be identified using identical ICD-10-CM diagnostic codes in Meditech for patients admitted to Med Center Health at Bowling Green between 2018-2019. The primary outcome of this study is readmission to any Med Center Health hospital facility within 30 days. Secondary outcomes include the number of medication changes after the pharmacist-led medication history interview, admission and discharge order reconciliations, provider satisfaction, and number of patients discharged on guideline-directed medical therapy at appropriate doses post-myocardial infarction. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the role of a transitions of care pharmacist for acute myocardia infarction readmission

Define guideline directed medical therapy for acute myocardial infarctior patients

Self Assessment Questions:

Which of the following therapies is most appropriate for a 50-year old patient getting discharged from the hospital after an acute myocardial infarction?

A Atorvastatin 20mg

B: Pravastatin 80 mg

C: Atorvastatin 80mg

D: Rosuvastatin 10mg

Which of the following are ways that a transition of care pharmacist can help improve patient outcomes?

A Patient medication history interviews

B Admission and discharge medication reconciliations

C Outpatient follow-up to assess tolerance and accessibility of presc

D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-753-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IMPACT OF PHARMACIST INVOLVEMENT ON GUIDELINE DIRECTED MEDICAL THERAPY (GDMT) FOR HEART FAILURE (HF) TREATMENT IN AN INTERDISCIPLINARY CARDIOLOGY CLINIC

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Purpose: An estimated 6 million Americans carry a diagnosis for heart failure (HF). HF is a commonly treated medical condition, but recently has gained more attention in outpatient settings. This is driven by annua costs of $15,879 per patient for HF-specific hospitalizations. A targeted treatment regimen individualized for patients with HF, more commonly referred to as Guideline Directed Medical Therapy (GDMT), is proven to have positive impacts on morbidity and mortality for patients with Heart Failure with reduced Ejection Fraction (HFrEF). Currently, there is a lack of literature evaluating the impact of a pharmacists involvement on achieving maximally tolerated GDMT in a safety-net patient population. The purpose of this study was to evaluate the impact of clinical pharmacist involvement on patient achievement of GDMT for HF.Methods: A single-center, retrospective, observational, cohort study was conducted for all patients at Eskenazi Health, a safety-net health system, who completed a clinic visit with a clinical pharmacist for HFrEF between January 2017 and December 2021. Patients were excluded if they were less than 18 years of age, incarcerated, pregnant, or had an ejection fraction (EF) greater than 40 percent during the study period. The primary outcome was the percentage of patients that reached maximally tolerated doses of ACE Inhibitors (ACEi), Angiotensin II Receptor Blockers (ARB), or Angiotensin II Receptor Blocker/Neprilysin Inhibitors (ARNI) who were seen by a primary care provider only versus patients seen by a cardiologist and clinical pharmacist. Secondary outcomes were percentage of patients who achieved maximally tolerated doses of other medications with FDA labeled indications for HF, intensity of GDMT, average time to maximally tolerated GDMT, and medication adherence.Results: Data collection is ongoing.Conclusions: Final results will be presented at the 2022 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

List the pillars of GDMT and target doses for each medication.

Identify the impact of pharmacist involvement in achieving maximally tolerated GDMT.

Self Assessment Questions:

According to current literature, which of the following medications is included as a pillar of GDMT for HFrEF?

A Digoxin 0.125 mcg PO daily

B: Furosemide 10 mg PO BID

C: Losartan 150 mg PO daily

D: Vericiguat 2.5 mg PO daily

Which of the following is considered an additional service a pharmacist can provide for patients with HFrEF during a clinic visit?

A Closer follow-up for medication monitoring and titration

B In-depth medication adherence review

C Prospectively identifying preferred agents based on patients insura

D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-574-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

VANCOMYCIN DOSING IN OBESITY-CORRELATION BETWEEN EXPECTED VERSUS ACTUAL CLEARANCE IN A REAL-WORLD APPLICATION OF A PHARMACOKINETIC MODEL

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Purpose: Vancomycin monitoring guidelines for the treatment of serious methicillin-resistant Staphylococcus aureus (MRSA) infections were updated in 2020. Vancomycin dosing in obesity remains ill-defined, and these guidelines endorse the use of pharmacokinetic modeling studies to estimate vancomycin clearance in this patient population. These models, including one described in a study by Crass et al, can be used to estimate an empiric maintenance dose expected to achieve a target vancomycin area under the curve (AUC). The model predicts high probability of target attainment with low probability of toxicity within 48 " 72 hours of vancomycin initiation. This study will evaluate the real-world application of this pharmacokinetic equation in a large academic medical center to determine how predicted clearance correlates with actual clearance seen in patients at this institution. External validation of this model may support a more widespread utilization of the equation for dosing vancomycin in a complex patient population. Methods: This is a single-center, retrospective chart review of obese patients who were treated with vancomycin where the Crass equation was utilized for AUC calculations. Pregnant women, patients under 18 years of age, prisoners, patients on renal dialysis, incomplete calculations, and BMI < 30 kg/m2 were not eligible for inclusion. The primary objective is to determine how clearance predicted by the Crass equation correlates to actual clearance observed in patients at our institution. Secondary objectives include assessing the correlation between expected and actual elimination rate constant, volume of distribution and AUC. Results/Conclusion: Final results and conclusions will be presented at Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review the current guideline recommendations regarding dosing vancomycin in the obese population.

Describe the effectiveness of a pharmacokinetic modeling equation when applied at a large academic medical center.

Self Assessment Questions:

The Crass equation is a pharmacokinetic modeling study that predicts what pharmacokinetic outcome?

A Elimination Rate Constant

B: Volume of Distribution

C: Clearance

D: Metabolism

The 2020 guideline for the treatment of MRSA infections recommends a maximum loading dose of vancomycin in the obese population is not to exceed what value?

A 2,500 mg

B 3,000 mg

C 3,500 mg

D 4,500 mg

Q1 Answer: C Q2 Answer: B

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Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EVALUATION OF TRIFLURIDINE AND TIPIRACIL WITH OR WITHOUT BEVACIZUMAB IN PATIENTS WITH PREVIOUSLY-TREATED METASTATIC COLORECTAL CANCER

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Colorectal cancer is the third leading cause of cancer-related death within the United States. After exhausting fluorouracil-based chemotherapy options, no approved therapy has data demonstrating improved survival beyond three months. Trifluridine and tipiracil (TAS-102) in combination with bevacizumab (BEV) showed improvement in progression free survival (PFS) and overall survival (OS) in both Japanese and Danish patient populations. Patients in the United States may have exposure to alternative prior lines of therapy or have different pharmacogenetic variant frequencies, which may alter outcomes in different populations.This was a single center retrospective cohort review comparing TAS-102 with or without BEV in patients with previously treated metastatic colorectal cancer. Data was collected from patients who initiated treatment with the regimen of interest between July 1, 2018 and August 1, 2021. Patients were included if they had histologically confirmed and previously treated metastatic colorectal cancer and had active treatment with TAS-102. The primary outcome is PFS, and the secondary outcome is OS. Exploratory endpoints will include PFS and OS stratified by prior lines of BEV-containing therapy, prior regorafenib use, and RAS and RAF mutation status. A safety analysis also reviewed rates of febrile neutropenia, grade 3 or 4 neutropenia, grade 3 or 4 thrombocytopenia, grade 3 or 4 anemia, major bleeding, clinically relevant non-major bleeding, hypertension, proteinuria, venous thromboembolism, and dose delays and modifications.71 patients were screened with 43 patients enrolled. The mean age was 60 years (range: 35-78), and 25 (58%) patients were male. The mean number of previous lines of therapy was 4.47 (range: 1-8), and 40 (93%) patients had prior exposure to bevacizumab. Data collection is ongoing and full results will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Review treatment options beyond florouracil-based chemotherapy options for patients with metastatic colorectal cancer

Discuss published data regarding trifluridine and tipiracil in combination with bevacizumab for metastatic colorectal cancer

Self Assessment Questions:

After exhausting fluorouracil-based chemotherapy options, no approved therapy has data demonstrating improved survival beyond:

A 2 months
B: 3 months
C: 6 months
D: 12 months

Based on results from the C-TASK FORCE and the Pfeiffer et al. trial (Denmark trial), the combination of trifluridine and tipiracil (TAS-102) and bevacizumab showed treatment was:

A Safe but not effective
B Not safe but effective
C Safe and effective
D Not safe or effective

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-575-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF RIVAROXABAN FOR VENOUS THROMBOEMBOLISM (VTE) PROPHYLAXIS IN ACUTE MEDICALLY ILL

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Purpose: Venous thromboembolism (VTE) is one of the most common cardiovascular conditions and affects as many as 600,000 Americans each year. Approximately half of all VTE events occur in patients currently or recently admitted to a hospital for surgery or acute medical illness. Risk factors for developing a hospital acquired VTE include acute medical illness, immobility, surgery, trauma, older age, and obesity. The risk for a VTE continues for weeks to months after discharge from the hospital. It is recommended by the 2018 American Society of Hematology guidelines that acutely ill medical patients receive pharmacological VTE prophylaxis with unfractionated heparin, low molecular weight heparin (enoxaparin), or fondaparinux. In October 2019, rivaroxaban was the first oral agent to be approved for this indication. The primary goal of our study is to evaluate the efficacy of rivaroxaban to enoxaparin in preventing VTE during hospitalization and for 30 days after discharge.Methods: This will be a retrospective cohort study evaluating the efficacy and safety of rivaroxaban for VTE prophylaxis compared to the use of enoxaparin. We will evaluate patients at Indiana University Health Methodist Hospital and University Hospital. Data will be collected starting from 1/1/2021 through 12/31/2021. Patients will be included if they received enoxaparin or rivaroxaban for VTE prophylaxis with correct dosing based on renal function and BMI. Patients will be excluded if they are less than 18-years old, have cancer, received dual antiplatelet therapy prior to admission, have a history of a bleed within the previous 3 months, have a history of bronchiectasis, received therapeutic or prophylactic anticoagulation prior to admission, were pregnant, had a creatinine clearance less than 30 ml/min, were COVID-19 positive, or had an orthopedic surgery.Data is currently being collected, and results will be presented at the conference

Learning Objectives:

Define the risk of VTE in medical and surgical patients.

Review guideline recommendations for medications to prevent VTE.

Self Assessment Questions:

1.Which of the following is not a risk factor for VTE?

A Immobility
B: Younger age
C: Obesity
D: Surgery

2.Which medication was the first oral option approved for VTE prophylaxis?

A Enoxaparin
B Fondaparinux
C Rivaroxaban
D Apixaban

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-577-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF EARLY SCHEDULED DIAZEPAM VERSUS LATE SCHEDULED DIAZEPAM IN CRITICALLY ILL PATIENTS BEING TREATED FOR ALCOHOL WITHDRAWAL SYNDROME (AWS)

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Statement of purposeUp to one-third of critically ill patients have an alcohol use disorder and are at risk of developing alcohol withdrawal syndrome (AWS). Benzodiazepines are the mainstay of AWS treatment with robust data supporting effectiveness in minimizing withdrawal symptoms and preventing progression to serious neurological effects. Symptom-triggered dosing, directed by the Clinical Institute Withdrawal Assessment Alcohol Scale Revised (CIWA-Ar), has demonstrated reductions in duration of treatment and total amount of benzodiazepines used without decreased efficacy compared to fixed-dosing; however, CIWA-Ar relies on patient responses and is not validated in critically ill patients. The Richmond Agitation Sedation Scale (RASS) is validated to monitor sedation in the critically ill and has been employed in AWS, with benzodiazepines demonstrating decreased ICU length of stay (LOS) when targeting appropriate sedation goals. Optimal timing of initiation of scheduled benzodiazepines in critically ill patients with AWS is currently unknown. Statement of methods usedThis retrospective cohort study enrolled critically ill adult patients with a diagnosis of AWS at an academic medical center. The primary aim of this study is to assess if a difference exists in the percent-time in goal RASS range between patients with AWS receiving early scheduled diazepam (ESD) compared to late scheduled diazepam (LSD) from admission to the ED up to the first of the following: discharge from the ICU, discontinuation of diazepam, or hospital day 5. Patients receiving scheduled diazepam within 24 hours of admission to the ED were considered the ESD group, while patients receiving scheduled diazepam after 24 hours of admission to the ED will be considered the LSD group. Summary of (preliminary) results to support conclusionData collection and analysis are ongoing. Results will be announced during the presentation in April.Conclusions ReachedThe results of this study can help guide initiation of scheduled diazepam in critically ill patients with AWS.

Learning Objectives:

Discuss treatment options and assessment tools for patients treated for AWS

Describe different benzodiazepine dosing strategies in AWS

Self Assessment Questions:

Which of the following is true about benzodiazepines?

A Benzodiazepines allosterically bind to the GABA-A receptor to incr
B: Diazepam and chlordiazepoxide produce inactive metabolites, whi
C: Benzodiazepines originally demonstrated effectiveness in AWS by
D: Studies have consistently shown that diazepam is superior to othe

Fixed dosing offers what benefit over symptom-triggered dosing?

A Fixed dosing does not require the addition of as needed benzodiaz
B Fixed dosing has demonstrated lower cumulative doses of benzod
C Fixed dosing overestimates the total dose of benzodiazepines nee
D Fixed dosing can be used with patients for whom it would be difficu

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-576-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

SAFETY OF APIXABAN AND RIVAROXABAN COMPARED TO WARFARIN AFTER CARDIAC SURGERY

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Purpose/Background: Direct oral anticoagulants (DOACs) are frequently used for indications of stroke prophylaxis in patients with atrial fibrillation and treatment of venous thromboembolism (VTE) due to their convenience and favorable safety outcomes compared to warfarin. Conversely, there has been hesitation to adopt these medications into standard of practice in patients who have undergone cardiac surgery because of limited data in this patient population. Previous studies have been limited by including only coronary artery bypass graft surgery, low use of apixaban and rivaroxaban as the DOAC, or the low enrollment of patients initiated on DOACs early after cardiac surgery. Objective: To retrospectively evaluate the safety and efficacy of apixaban and rivaroxaban compared to warfarin in patients post cardiac surgery.Methods: In this retrospective cohort study, patients were separated into an apixaban and rivaroxaban cohort if they received one of these DOACs post cardiac surgery. Those who received warfarin were placed into a warfarin cohort. Patients were included if they were 18 years of age and administered or were discharged on either rivaroxaban apixaban, or warfarin within 7 days after cardiac surgery with the intention of treatment with oral anticoagulation for at least 30 days. Patients in the DOAC and warfarin cohorts were matched based on anticoagulation indication, type of cardiac surgery, concomitant antiplatelet medications, and on vs. off pump surgery. The primary outcome for the study was the rate of International Society on Thrombosis and Haemostasis (ISTH) major bleeding during hospitalization and for 30 days following discharge or until first follow up appointment. Multivariable logistic regression was used to compare the primary outcome between treatment groups, while adjusting for confounding. Results: Retrospective analysis from 01/2013 " 09/2021. Results are in process with an anticipated completion date of 02/28/22.

Learning Objectives:

Discuss previously published literature on the use of direct oral anticoagulants (DOACs) after cardiac surgery.

Describe the retrospective data reported from the Ohio State Wexner Medical Center for the safety of DOACs in patients post cardiac surgery

Self Assessment Questions:

Previously reported studies of DOACs used in patients post cardiac surgery are limited by?

A Single type of indication studied
B: Small number of patients
C: Primary use of edoxaban as the anticoagulant
D: All of the above

The most common documented indication for anticoagulation in post-cardiac surgery patients is?

A Pulmonary Embolism
B Deep Vein Thrombosis
C Atrial Fibrillation
D Prosthetic heart valves

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-578-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EXPANSION OF INTRAVENOUS ROBOTICS AND ROADMAPPING TO AN EXTENSIVELY AUTONOMOUS STERILE COMPOUNDING FRAMEWORK

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Intravenous (IV) automation technologies, including IV robotics, provide safeguards to reduce medication errors and improve operational efficiency within the sterile compounding process. Robotic sterile compounding technology provides enhanced operational functionality and integration with other pharmacy technology. Froedtert Health envisions being the premier institution that paves the way for an autonomous pharmacy framework with the strategic plan to fully automate IV compounding by the year 2025.Efforts to integrate IV robotics began in 2020 with the implementation of APOTECAchemo, an automated robotic system that prepares compounded sterile preparations within a closed system at Froedtert Hospital. As the Froedtert Health footprint continues to grow, efforts to expand IV robotics within the health system include additions of three APOTECAchemo across our cancer service line and APOTECAsyringe at our consolidated service center by July 2022. The primary objective of the project is to develop a strategic roadmap that provides guidance for future capital expenditure needs, IT infrastructure, and governance needs to support an extensively autonomous sterile compounding framework. The secondary objective is to implement APOTECAsyringe at the consolidated service center to enhance the efficiency of batch compounding operations. APOTECAsyringe is a robotic system that fills syringes of non-hazardous sterile injectable drugs from bulk pool bags. It can produce syringe sizes of 5ml and 10ml that are appropriately labeled, capped, and tamper-evident with 90% autonomy at a rate of approximately 250 preparations/hour. Currently, the Froedtert consolidated service center can manually batch produce 175 sterile product syringes per hour. Efficiency will be measured by comparing the average number of preparations per hour per full-time equivalent staff both pre and post-implementation.

Learning Objectives:

Discuss the need for IV automation technologies in sterile compounding operations

Recognize the role of IV robotic technology to achieve enhanced operational efficiency

Self Assessment Questions:

Which of the following is true regarding the utilization of IV robotics in sterile compounding operations:

A Recommended by Institute of Safe Medication Practices (ISMP) to
B: Can provide additional safeguards to reduce medication errors thro
C: Provides the benefit of eliminating pharmacist verification
D: Both a & b

Which of the following describes the advantages for implementing APOTECAsyringe robot:

A Reduce number of compounding technician FTE needed for the co
B Increase the operational efficiency of syringe batch preparation
C Expand services and batched products provided from the consolid
D Both b & c

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-754-L07-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EFFICACY OF N-ACETYLCYSTEINE IN NON-ACETAMINOPHEN INDUCED ACUTE LIVER FAILURE

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The clinical benefit of n-acetylcysteine (NAC) usage in patients with non acetaminophen induced acute liver failure (ALF) remains unclear. Previous published studies have shown mixed results regarding overall survival and other clinical outcomes. The American Gastroenterological Association (AGA) and American Association for the Study of Liver Diseases (AASLD) have conflicting stances on appropriateness of NAC usage for this indication. Additionally, neither organization provides guidance for optimal dosing strategies in this setting. The purpose of this study is to evaluate the impact of NAC in non-acetaminophen induced ALF on survival to discharge and analyze the effect of different NAC dosing regimens

Learning Objectives:

Discuss the current literature and guidance for the use of N-acetylcysteine in non-acetaminophen induced acute liver failure.

Identify potential patient populations which may receive benefit from N-acetylcysteine use based on current published literature.

Self Assessment Questions:

N-acetylcysteine is thought to be effective for general hepatotoxicity via which mechanism(s)?

A Cellular glutathione repletion
B: Enhanced sulfate conjugation
C: Free radical neutralization
D: All of the above

Which patient population may receive some benefit from N-acetylcysteine usage based on current published literature?

A Cirrhosis
B Hepatitis C
C Drug induced liver injury
D Shock liver

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-579-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EVALUATING CO-PRESCRIPTION OF OPIOIDS WITH BENZODIAZEPINES OR BARBITURATES AT A COMPREHENSIVE CANCER CENTER

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Purpose: The objective of this medication use evaluation is to retrospectively examine opioid co-prescription with benzodiazepines or barbiturates and determine if any instances resulted in patient harm. Methods: The incidence of opioid orders totaling >50 oral morphine equivalents (OME) per day co-prescribed with benzodiazepines or barbiturates was gathered for patients admitted to a large Comprehensive Cancer Center in Columbus, Ohio. A background best practice alert (BPA) collected data for 30 days from 3/19/2021 to 4/18/2021 and identified 508 alerts for co-prescribing in 138 patients. Medical records were then examined retrospectively for a 15-day period within this data to determine if any instances of co-prescribing resulted i potential or actual harm. Investigators determined potential harm based on prior use of the medications, dose/frequency ordered, and prescriptions issued at discharge. Actual harm was determined through an evaluation of recorded adverse effects including administration of flumazenil or naloxone, an emergency code, or death within 24 hours of co-administration that is determined to be related to co-administration.Results: Of the 74 patients reviewed in this medication use evaluation, all were co-prescribed opioids with benzodiazepines; none were prescribed barbiturates. Thirty-eight of the 74 patients (52%) were administered both the opioid and benzodiazepine within 24 hours of each other, termed a co-administration. Co-administration was determined to cause actual harm in one benzodiazepine-nave patient following an emergency response code. Four instances of potential harn were identified based on patient history and prescribed dosing. Conclusions: One instance of actual harm and four instances of potentia harm were identified in a small sample of patients who were co-prescribed opioids with benzodiazepines at a Comprehensive Cancer Center. A larger sample size and more generalized patient population could provide more robust data to determine additional trends and future directions.

Learning Objectives:

Recognize the potential harm associated with co-administration of opioids with benzodiazepines or barbiturates

Identify risk factors that put patients at risk for adverse effects following the co-administration of opioids and benzodiazepines.

Self Assessment Questions:

Which of the following medications, co-administered with an opioid, may potentially result in significant adverse effects including profound respiratory depression, coma, and death ?

A Lisinopril

B: Diazepam

C: Atorvastatin

D: Sertraline

Which of the following patients are at an elevated risk of adverse effects from the co-administration of an opioid with a benzodiazepine?

A A 75 year old patient

B A patient naÃ¯ve to one or both medications

C A patient with a history of untreated obstructive sleep apnea

D All of the above patients are at an elevated risk

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-827-L05-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

RETROSPECTIVE INSTITUTIONAL EVALUATION OF ADHERENCE TO GUIDELINE DIRECTED MEDICAL THERAPY FOR PULMONARY EMBOLISM

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Purpose: Pulmonary embolisms represent a significant risk for morbidity and mortality. Although newer treatments and guidelines exist, many patients with high-risk or massive pulmonary embolisms continue to have poor outcomes. Some institutions have overcome this challenge by implementing pulmonary embolism response teams (PERTs), a multidisciplinary team that quickly engages to determine the most appropriate course of treatment for high-risk patients. The purpose of this study is to evaluate adherence to guideline directed medical therapy for patients diagnosed with pulmonary embolisms during hospitalization with the end goal of assessing the possible need for starting a PERT.

Learning Objectives:

Discuss guideline directed medical therapy for management of pulmonary embolisms.

Identify the classification of pulmonary embolism severity to create an appropriate treatment plan.

Self Assessment Questions:

All the below clinical manifestations at presentation would be indicative of a massive or high-risk pulmonary embolism except?

A A.Persistent hypotension

B: B.Cardiac arrest

C: C.Obstructive shock

D: D.Sepsis

Thrombolytics are recommended for treatment in which patient diagnosed with a PE?

A A.A patient with a sPESI of 4 and has a history of heparin-induced

B B.A patient, who has elevated troponin levels

C C.A patient, who presented hemodynamically stable, but now requi

D D.A patient with Right Ventricular dysfunction

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-580-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

ELIMINATING VIAL WASTE WITH ADULT CYTOTOXIC AND BIOLOGIC MEDICATION AUTOMATIC DOSE ROUNDING AT A MULTI-INSTITUTIONAL HEALTH SYSTEM

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Purpose: Infusion drugs are regarded as one of the high-cost health care expenditures. One approach to decrease drug expenditures is implementation of an automated dose-rounding process to reduce vial waste. Benefits to an automated dose rounding process may include reduction in transcription error in the re-ordering process, increased transparency, and reduced pharmacists workload during the verification process. The American Society of Clinical Oncology (ASCO) and Hematology/Oncology Pharmacist Association (HOPA) endorse dose rounding as a safe and effective cost reduction method. The purpose of this study is to determine the impact of an automated dose-rounding implementation at a multi-institutional health system.Methods: The automated dose-rounding process was implemented into the computerized physician order entry system on November 29, 2021. Thirty-six cytotoxic medications were configured to round up or down to the nearest vial size, not to exceed 5%. Twenty-three biologic medications were configured to round up or down to the nearest vial size, not to exceed 10%. During the ordering process, prescribers will review and sign rounded dose or manually enter non-rounded dose. A retrospective analysis will be conducted on the prescribing, dispensing, and charge data between October 1, 2021 to February 1, 2022 to compare two months pre-implementation versus two months post-implementation of the automated dose rounding of cytotoxic and biologic medications. The primary outcome is waste reduction based on number of vials saved. Secondary outcomes will consist of cost savings based on average wholesale price and mark-up cost, number of orders rounded up, number of orders rounded down, number of manual non-rounded orders, and transparency based on change in volume of weight-based dosing orders. Results/Conclusion: Data collection is currently ongoing, and results/conclusions will be presented at the conference.

Learning Objectives:

Describe the process of implementing the automated dose-rounding process.

Discuss the reduction in drug expenditures associated with the automated dose-rounding process.

Self Assessment Questions:

If using Epic, what will need to be adjusted for the implementation of the automated dose-rounding?

A Rx Dispense Round Factor

B: Rx Admin Round Factor

C: Suggested Doses

D: Rx Standardized Dosing Table

Which of the following is true?

A Cytotoxic medications were rounded up or down to the nearest via

B Biologics were rounded up or down to the nearest vial size, not to

C Nurses would not be able to see the original weight-based dosing.

D Prescribers have no method to prescribe an unrounded dose.

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-755-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

DEVELOPMENT AND EVALUATION OF A PEDIATRIC CYSTIC FIBROSIS (CF) CLINICAL PHARMACY CARE MODEL AND CF PHARMACIST MEDICATION COMPLEXITY SCORING (CF-PMCS) TOOL

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Background: Cystic fibrosis (CF) is an autosomal recessive genetic disorder that affects multiple organ systems and requires chronic disease management by an interprofessional care team. Medication burden and challenges of self-management in CF can begin in childhood and continue into adulthood. The role of pharmacists at CF centers has increased over the years, however, there is no guidance for pharmacist visits. The establishment of a practical and effective CF-specific medication complexity scoring tool to guide prioritization of patient visits may help address the possible challenge of unbalanced pharmacist-to-patient ratio as there is an increasing number of CF centers developing across the U.S. We have developed a pilot CF medication complexity scoring tool as part of a quality improvement initiative in the development of PharmD services in a pediatric CF center to support consistency and time efficiency in clinical pharmacy services. Objective: We will describe a hybrid clinical pharmacy care model including the development and use of a pilot medication complexity scoring tool as part of pediatric CF care. Methods: This project is a single-centered, retrospective review of patients, diagnosed with CF, cared for by the C.S. Mott Childrens Pediatric CF center between October 1, 2019 to October 31, 2021. Data collection will include demographics, treatment regimen, types of clinical pharmacist visits, types and outcomes of pharmacist interventions, as well as clinical outcomes during the observation period such as number of exacerbations requiring antibiotics and changes in lung function. We will compare our drafted CF-Pharmacist Medication Complexity Score (CF-PMCS) with two existing tools, the Medications Regimen Complexity Index (MRCI) and Treatmen Complexity Score (TCS). Data is currently being collected and results will be presented at the conference.

Learning Objectives:

Describe a hybrid, asynchronous clinical pharmacy practice model (CPPM) in pediatric CF care.

Identify possible item revisions to the pilot CF-PMCS tool.

Self Assessment Questions:

On average, how many medications do patients with cystic fibrosis take every day?

A 10-Aug

B: 4-Feb

C: 7-May

D: 14-Dec

How often is it recommended for patients with cystic fibrosis to have a pharmacist visit?

A Every 3 months

B Every 6 months

C Every 12 months

D There is no guidance for pharmacist visits

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-581-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

ANTICOAGULATION STRATEGIES IN CRITICALLY ILL ADULT PATIENTS ON VENOARTERIAL & VENOVENOUS EXTRACORPOREAL MEMBRANE OXYGENATION (ECMO): A CHART REVIEW

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PurposeECMO is indicated for respiratory or cardiac failure refractory to conventional therapy. The 2014Extracorporeal Life Support Organizatior (ELSO) anticoagulation guideline recommendssystemic anticoagulation for ECMO patients without a specific agent selection. Unfractionatedheparin has been the standard of care for decades. Bivalirudin, a direct thrombin inhibitor, offersan alternative in patients with confirmed HIT or antithrombin-III deficiency. Lastly, recent yearshave observed a trend of anticoagulation-sparing in ECMO patients with active bleeding, severetraumatic injury, or high bleeding risk. This study evaluates the efficacy and safety of differentstrategies: UFH versus bivalirudin in venoarterial (VA) ECMO, and systemic anticoagulationversus anticoagulation-sparing in venovenous (VV) ECMO.MethodsThis is a single-center, retrospective observational study of patients on VA and VV ECMO.Adults greater than 18 years old that tolerated either VA or VV ECMO for more than 24 hoursbetween 1/2019 and 8/2021 were included. Data points were collected from the electronichealth records. The primary outcome was the number of system clotting events and bleedingevents observed in different study groups. A thrombotic event was defined as clinicallydocumented venous or arterial thromboembolism within the ECMO circuit. Bleeding events werecategorized into major bleeding and minor bleeding. Major bleeding is any bleeding eventassociated with a drop in hemoglobin of at least 3 mg/dl within the prior 24 hours. Minorbleeding is a less than 3 mg/dl drop in hemoglobin during the prior 24 hours. The number ofblood products received were also collected.Results/Conclusion: To be presented at the Great Lakes Pharmacy Resident Conference

Learning Objectives:

Review the 2014 ELSO anticoagulation guidelines

Identify the risks and benefits of different anticoagulation strategies for each ECMO modality

Self Assessment Questions:

Per the 2014 ELSO anticoagulation guidelines, the requirement for greater red blood cell transfusion volumes is associated with____.

A Decreased mortality in both cardiac and non-cardiac extracorpore
B: Decreased mortality in cardiac extracorporeal life support only
C: Increased mortality in cardiac and non-cardiac extracorporeal life s
D: No mortality outcome in cardiac and non-cardiac extracorporeal su

What is a characteristic of bivalirudin?

A Bivalirudin and argatroban are in different drug classes.
B Bivalirudin may cause more bleeding than unfractionated heparin.
C Bivalirudin binds thrombin directly, independent of antithrombin ac
D Protamine can be used as a reversal agent for bivalirudin.

Q1 Answer: C Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-582-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF COMPLIANCE AND EFFICACY WITH CLINICAL PHARMACOGENETICS IMPLEMENTATION CONSORTIUM (CPIC) GUIDELINES FOR TACROLIMUS IN KIDNEY TRANSPLANT RECIPIENTS

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Tacrolimus is a calcineurin inhibitor that is used as immunosuppressive therapy to prevent rejection after solid organ transplant. Therapeutic drug monitoring (TDM) demonstrates a wide interindividual variability in tacrolimus pharmacokinetics, specifically the dose needed to achieve target trough blood concentrations (C0). Various factors have been studied for their potential impact on tacrolimus pharmacokinetics, including cytochrome P450 [CYP] isoenzymes 3A4 and 3A5 polymorphisms. The Clinical Pharmacogenetic Implementation Consortium (CPIC) publishes guidelines for interpretation of pharmacogenetic results when available for many drug-gene pairs. Specific guidelines provide recommendations for CYP3A5 genotype-based dosing of tacrolimus but if results are available, but CPIC does not recommend who or when to genotype. At Indiana University Health, pharmacogenomic testing was implemented in all kidney transplant donors and recipients. Although pharmacogenomic testing for CYP3A5 is available, clinicians are hesitant to deviate from a long-standing protocol. The purpose of this study is to evaluate compliance and efficacy of CPIC Guidelines for CYP3A5 genotype guided tacrolimus dosing. Methods: This single-center, retrospective, IRB approved study included kidney transplant recipients transplanted between July 1st, 2019 through December 31st, 2021. Patients were excluded if they did not receive a kidney transplant or if they did not receive pharmacogenomic testing. Tacrolimus dosing was institution protocol based at a standard dose 2 mg orally twice daily to achieve a goal trough concentration (7-9 ng/mL). Primary endpoint was time to therapeutic tacrolimus trough concentration (days). Secondary endpoints included: starting tacrolimus dose and appropriateness for genotype, tacrolimus dose at time of therapeutic trough (mg), supratherapeutic troughs (ng/mL) within 14 days of initiation, incidence of rejection and all cause mortality up to 1 year post transplant, and estimated glomerular filtration rate (eGFR) using abbreviated Modification of Diet in Renal Disease Study (MDRD) calculated at day 1, 3, and 6 post-transplant. Results and Conclusions: Pending ongoing data collection and analysis.

Learning Objectives:

Describe the role of pharmacogenomics in tacrolimus metabolism

Report the clinical importance of genetic variation in tacrolimus dosing

Self Assessment Questions:

Tacrolimus is primarily metabolized by which two enzymes?

A CYP3A4 and CYP2D6
B: CYP3A4 and CYP3A5
C: CYP3A5 and CYP2D6
D: CYP3A5 and CYP2C9

According to CPIC guidelines a patient that is a CYP3A5 normal metabolizer (*1/*1), what is the most appropriate starting dose of tacrolimus?

A Initiate standard starting dose
B Do not use tacrolimus in this patient
C Initiate at 1.5-2 times the standard starting dose
D Initiate at 0.4 mg/kg/day

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-583-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

CLINICAL OUTCOMES OF INITIATING PALIVIZUMAB AT 35-WEEKS CORRECTED GESTATIONAL AGE

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Purpose: Respiratory syncytial virus (RSV) is a seasonal disease that causes a range of pulmonary manifestations and is the leading cause of hospitalization in infants worldwide. Premature infants and children with underlying respiratory compromise remain at the greatest risk for severe disease. Currently, palivizumab is the only agent for RSV chemoprophylaxis. Current guidance by the American Academy of Pediatrics (AAP) recommends the first dose be administered 48-72 hours prior to hospital discharge; however, there is evidence to suggest that therapeutic concentrations are not reached after the first dose. During the 2016-2017 season, Gundersen Health System began administering palivizumab at 35 weeks corrected gestational age (CGA) allowing subsequent doses to be administered sooner after discharge. The purpose of the investigation is to evaluate palivizumab efficacy when administered at 35 weeks GGA.Methods: This study was approved by the Gundersen Lutheran Institutional Review Board. This study is a retrospective, electronic chart review of patients that received palivizumab during neonatal intensive care unit (NICU) admission at Gundersen Lutheran Medical Center for RSV prophylaxis from November 1, 2012 to May 1, 2020. The primary outcome is hospitalization due to RSV infection. Secondary outcomes include incidence of RSV infection not requiring hospitalization, RSV diagnosis during initial NICU admission, and adverse reactions to palivizumab. Results and Conclusions: Data analysis is ongoing. Results and conclusions will be presented at the 2022 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify patient populations who are higher risk for severe respiratory syncytial virus (RSV) disease.

Review current recommendations for RSV chemoprophylaxis among neonatal and high-risk pediatric populations.

Self Assessment Questions:

Which of the following conditions are associated with higher severity of RSV infection?

A Gestational age < 29 0/7 weeks

B: Chronic lung disease (CLD) of prematurity

C: Congenital heart disease (CHD)

D: All of the above

According to the guidance on palivizumab prophylaxis published by the AAP, when should the first dose of palivizumab be administered?

A At time of NICU discharge

B 1 week after hospital discharge

C 48-72 hours prior to NICU discharge

D 1 week after birth

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-584-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

COST AVOIDANCE ASSOCIATED WITH A RESIDENCY PROGRAM IN THE EMERGENCY DEPARTMENT: PHARM-RES STUDY

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Purpose: Pharmacists play a pivotal role in the interdisciplinary team. In the Emergency Department (ED) at Loyola University Medical Center (LUMC), post-graduate year 1 (PGY1) pharmacy residents and PGY2 critical care pharmacy residents staff independently as part of the on-cal program. During this experience, residents perform several interventions, including code blue and code stroke event response, dose recommendations, antibiotic initiation/stewardship, among many others. These interventions are associated with cost savings, and pharmacists interventions provide significant value to the interdisciplinary team. The purpose of this study is to quantify the type and quantity of interventions and associated cost avoidance that pharmacy residents provide during ED on-call shifts. Methods: This was a prospective, single-centered, observational study including interventions made by 11 pharmacy residents at LUMC. The primary outcome was the total cost avoidance generated from PGY1 and PGY2 critical care pharmacy residents from accepted interventions during their ED on-call shifts as well as the quantity of interventions they made during their shifts. The secondary outcomes were the types of interventions, cost avoidance per resident/shift, and benefit to salary ratio of providing clinical pharmacy services in the ED. The data was collected using REDCap and analyzed using descriptive statistics. Results: Results and conclusions will be presented at the 2022 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify the types of interventions pharmacists can recommend within the interdisciplinary team

Discuss the cost avoidance, based on previous literature, generated from interventions made by pharmacy residents

Self Assessment Questions:

Which of the following is/are types of interventions?

A Medication reconciliation

B: Patient counseling

C: Responding to code blues

D: All of the above

Which of the following are a part of the workflow during a residents ED on-call shift?

A Verify orders

B Provide interventions and recommendations to the team

C A & B

D None of the above

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-756-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

THE USE OF IV KETAMINE FOR VASO OCCLUSIVE CRISIS IN SICKLE CELL ANEMIA

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Background: Vaso occlusive crisis (VOC) is one of the major complications of sickle cell anemia. The blockage caused by the sickled cells leads to pain and multiple hospital admissions. Traditional treatment involves a multimodal approach with the use of NSAIDs and opioids but overtime, the extensive opioid use increases risk for opioid induced hyperalgesia. Most recently, ketamine has been added as a possible agent due to its ability inhibiting the nociceptive transmission and pain processing associated with NMDA receptors. Unfortunately, the current literature lacks clear data regarding ketamines use in this population, therefore many practitioners are hesitant to use ketamine. The purpose of this study is to add to current evidence by assessing ketamines possible role in shortening the length of stay in patients hospitalized with VOC.Methods: This study is a retrospective chart review of individuals admitted for ICD-10 code D57, sickle-cell disorders, at an IUH facility and received IV ketamine. Patients were excluded if they were less than 16 years old, received ketamine in the operating room as part of analgesia, or received IV bolus ketamine in the emergency department but was not admitted. The primary endpoint is the index admission length of stay, in which patient received ketamine, compared to the patients median length of stay of past 3 admissions. Secondary endpoints include difference in mean daily oral morphine equivalence (OME) provided up from start of admission, until the time of ketamine initiation compared to mean daily OME provided 48 hours after ketamine infusion, difference in average daily OME requirements between previous admissions and admission with ketamine administration, and incidence of adverse events. Categorical data will be compared using the chi-square test, while continuous data will be compared using the paired t-test or Wilcoxon-signed rank test. Results/Conclusions: Will be presented at the Great Lakes Pharmacy Resident Conference

Learning Objectives:

Discuss the mechanism of how ketamine can be used to aid in the treatment of vaso occlusive pain crisis

Discuss how ketamine can reduce the risks associated with long term opioid use for pain

Self Assessment Questions:

Which of the statements below is true regarding the mechanism of ketamine?

A Produce a cataleptic state by direct action on the cortex and limbic

B: Binds to opioid receptors in the CNS, causing inhibition of ascendi

C: non-competitive NMDA receptor blocker, inhibiting the nociceptive

D: Inhibit production of prostaglandins

What are patients who use opioids long term at risk for?

A Addiction

B Opioid induce hyperalgesia

C Opioid tolerance

D All the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-855-L08-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EFFICACY OF COVID-19 VACCINATION IN SOLID ORGAN TRANSPLANT RECIPIENTS

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Purpose COVID-19 vaccines are safe and effective in preventing COVID 19 infection or severe illness. Solid organ transplant recipients (SOTR) were excluded from COVID-19 vaccine clinical trials, and the safety and efficacy of the vaccines in this population are unknown. Recent studies have shown a suboptimal antibody response in SOTR after receiving 2 doses of the COVID-19 mRNA vaccines but a third dose significantly improved antibody titers in some patients. With the observed suboptima immune response and a higher risk of developing severe COVID-19 infection, the efficacy of COVID-19 vaccines in SOTR needs to be further established. The purpose of this study is to examine the effectiveness of the COVID-19 vaccines in preventing COVID-19 infection or severe illness in SOTR. MethodsThis was a single-center, retrospective observational chart review. Patients transplanted on or after January 1st 2018 were included if they were age 18 years and received at least one dose of either the Moderna, Pfizer-BioNTech or Janssen COVID-19 vaccine between January 1st, 2021 and November 20th, 2021. Patients were excluded if they received the COVID-19 vaccine prior to transplant. The primary objective was to assess the incidence of breakthrough COVID-19 infection in SOTR who have received a COVID-19 vaccine. The secondary objectives were to assess the severity, hospitalization rate, and mortality associated with COVID-19 infection in vaccinated SOTR. Preliminary ResultsTwo hundred vaccinated SOTR were included and 10% (20/200) were diagnosed with COVID-19 infection during the study period. Of the 20 patients with COVID-19, 65% were hospitalized, 50% developed severe illness and 10% died. Patients who received at least 2 doses of a COVID-19 vaccine accounted for 75% of the cases while 25% of the cases were fully vaccinated.Preliminary ConclusionPreliminary findings show that severe COVID-19 infection and mortality can occur in COVID-19 vaccinated SOTR.

Learning Objectives:

Discuss the impact of COVID-19 infection in solid organ transplant recipients

Review prevention of COVID-19 infection and COVID-19 vaccine response in solid organ transplant recipients

Self Assessment Questions:

Which of the following is true regarding COVID-19 infection and vaccination in SOTR?

A More likely to get severely ill from COVID-19 infection

B: More likely to have breakthrough COVID-19 infection

C: Lower antibody titres to SARS-CoV-2 compared to immunocompe

D: All of the above

The following are characteristics of severe COVID-19 illness except?

A respiratory rate >30 breaths/min

B oxygen saturation (SpO2) â‰¥94% on room air

C lung infiltrates >50%

D None of the above

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-838-L06-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF POST-CRANIOTOMY HEADACHE MANAGEMENT

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Background: Post-craniotomy headache etiology is multifactorial and consensus treatment recommendations do not exist. Although there is supporting literature, clinicians are often hesitant to prescribe analgesics such as opioids and nonsteroidal anti-inflammatory drugs, due to concern for increased somnolence and risk of bleeding, respectively. Current practices include codeine and Fioricet (acetaminophen-butalbita caffeine) first line for post-craniotomy headache, however concerns exis regarding their efficacy. This study was conducted to describe the efficacy of current pain management practices in reducing headache pain for patients undergoing elective craniotomy. Methods: This retrospective cohort study of electronic health record data was approved by the Institutional Review Board. The study cohort included patients aged 18 to 85 years with a documented ICD-10-PCS code for an index elective craniotomy between 10/1/2018 and 5/31/2021 with a minimum 48-hour hospital admission. Patients were excluded for craniotomy secondary to trauma or re-operation within 24 hours. Data collected included patient demographics, comorbidities, home medications, discharge medications, length of stay, and pertinent data related to the surgery, including anesthesia and analgesia. The primary outcomes of this study were maximum and median daily pain scores and daily cumulative analgesic doses. Results: A total of 124 patients were included in the final analysis. Mean age was 53 years (SD 15.3), 54% were female, and 94% were Caucasian. Neoplasm (60.5%) and epilepsy (20.2%) were the most common indications for craniotomy. A high proportion of patients had a history of hypertension (44.4%), while few had a history of chronic pain (8.1%) or migraines/headaches (5.6%). Forty-four percent were prescribed analgesics prior to admission and 18% were prescribed opioids. Mean hospital length of stay (LOS) was 3.3 days. Thirty-two patients were admitted to the intensive care unit (ICU), with a mean ICU LOS of 1.5 days. Final results in process. Conclusion: Final conclusions pending data analysis.

Learning Objectives:

Describe the current treatment of post-craniotomy headaches at a large, academic medical center.

Identify opportunities to improve current pain management practices.

Self Assessment Questions:

Which of the following is/are traditional analgesics used in the treatment of post-craniotomy headaches?

A Fioricet (acetaminophen-butalbital-caffeine)

B: Codeine

C: Oxycodone

D: Both a. and b.

What is the concern for use of opioids other than codeine following craniotomy?

A There is no concern for opioid use post-craniotomy

B Increased risk of bleeding

C Increased risk of somnolence

D Decreased efficacy for headache post-craniotomy

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-856-L08-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

ASPIRIN DEPRESCRIBING IN PATIENTS ON ORAL ANTICOAGULATION FOR ATRIAL FIBRILLATION OR VENOUS THROMBOEMBOLISM: A NATIONAL SURVEY OF CLINICIAN PRACTICES

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Introduction: Benefits of concomitant oral anticoagulation (OAC) and antiplatelet therapy have been well-established in patients with post-acute coronary syndrome and concomitant atrial fibrillation (AF) or venous thromboembolism (VTE). However, there are weaker recommendations supporting the use of aspirin for either primary prevention of atherosclerotic cardiovascular disease (ASCVD) or stable coronary artery disease (CAD) in patients already on OAC. Although a growing body of literature suggests that concomitant use of OAC and aspirin compared to OAC monotherapy increases the risk for bleeding without any apparent decrease in thromboembolic events, there is limited data on aspirin deprescribing practices in these scenarios.Purpose: The purposes of this study are to: (1) evaluate clinician practices regarding antithrombotic therapy across patient cases with different comorbidities; (2) identify variations in practice among professions and specialties; and (3) identify factors that contribute to the decision making of aspirin deprescribing in these patients.Methods: This is a cross-sectional, national survey study. The Qualtrics survey was distributed over a one-month period to physicians, nurse practitioners, physician assistants, and pharmacists via email and social media. The primary outcome was the composite of rates of discontinuation of aspirin in patients on OAC for AF or VTE without a clear indication for aspirin across various case scenarios. Key secondary outcomes included clinician comfort level with deprescribing aspirin, and the perceived importance of clinical risk factors considered in aspirin deprescribing. Logistic regression analysis was used to determine if patient characteristics are associated with decisions regarding aspirin use in clinical case scenarios. Survey response frequencies used descriptive statistics. Fishers exact and Mann-Whitney U tests were used to evaluate categorical and continuous data, respectively, with statistical significance defined as p-value <0.05.Results: To be determined and presented at the Conference.Conclusions: To be determined and presented at the Conference.

Learning Objectives:

Explain current guideline recommendations regarding antithrombotic therapy in patients on oral anticoagulation for atrial fibrillation or venous thromboembolism and concomitant aspirin therapy without a clear indication.

Describe current clinician practices regarding antithrombotic therapy in this patient population according to the results of a recent multicenter survey.

Self Assessment Questions:

Which of the following statements best describes the 2020 ASH VTE Guidelines recommendation for the management of antithrombotic therapy in patients who were previously taking aspirin for stable CAD and initiating anticoagulation for VTE?

A Continuing aspirin is suggested over suspending it for the duration

B: Continuing aspirin is strongly recommended over suspending it for

C: Suspending aspirin is suggested over continuing it for the duration

D: Suspending aspirin is strongly recommended over continuing it for

A previous survey of cardiologists investigated their use of aspirin in combination with OAC in patients with AF. Which of the following statements is a major finding of the study?

A The majority of cardiologists favored the use of aspirin in patients

B The majority of cardiologists favored the use of aspirin for primary

C The time from stent placement and type of CAD presentation (stab

D PPI use is frequently utilized in scenarios where multiple antithrom

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-585-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

OPIOID STEWARDSHIP NEEDS ASSESSMENT WITHIN MERCY HEALTH MUSKEGON PRIMARY CARE OFFICES

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Purpose: The US is facing an increasing drug epidemic that has only worsened during the pandemic. The CDC estimated overdose deaths from opioids increased from 56,064 in 2019 to 75,673 in 2020. To combat this growing epidemic, many health systems have implemented opioid stewardship programs. Opioid stewardship programs are intended to promote appropriate use of opioid medications, improve patient outcomes, and reduce misuse of opioids. The aim of this study was to perform a needs assessment at Mercy Health Muskegon (MHM) primary care offices to identify gaps in opioid stewardship. Methods: A retrospective chart review was performed to identify patients on chronic opioid therapy (>60 days) prescribed by a primary care provider between July 1, 2021 and September 30, 2021. Patients were excluded if <18 years old, pregnant, active cancer diagnosis or receiving palliative care during review period. A random number generator was utilized to identify 10% of patients from each office for chart review. A total of 163 patients were analyzed from 20 different primary care offices. The primary outcome assessed was number of patients prescribed >90 morphine milligram equivalents (MME). The secondary outcomes included utilization of multimodal therapies, concomitant benzodiazepine therapy, active naloxone prescription, and ambulatory pharmacist involvement in pain management or taper plan in the last year.Results: Results and conclusions will be presented at the Great Lakes Pharmacy Residents Conference.

Learning Objectives:

List the ASHP Opioid Task Force five key areas of focus for pharmacists.

Identify the most significant opioid stewardship care gaps that may be addressed by ambulatory pharmacists within primary care offices.

Self Assessment Questions:

According to the ASHP Opioid Task Force, what is NOT one of the key areas of focus for pharmacists?

A Identify roles that pharmacists may play in opioid stewardship

B: Educate providers on the safe prescribing of opioids

C: Encourage prescribing of higher dosage controlled-release opioids

D: Identify the best medications for pain management optimizing non

What opioid stewardship services could be provided by ambulatory pharmacists in the primary care setting?

A Naloxone education for patients and providers

B Provide assistance in opioid taper plan

C Recommend patient specific multimodal therapies to optimize pair

D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-857-L08-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

REVIEW OF ORAL FOSFOMYCIN PRESCRIPTIONS FROM THE EMERGENCY DEPARTMENT FOR COMPLICATED URINARY TRACT INFECTIONS AND 30-DAY ADMISSION AND REVISIT RATES

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Purpose: Complicated urinary tract infections (cUTI) caused by multidru resistant organisms are on the rise in the United States. Due to its unique broad spectrum of activity, fosfomycin may be ideal oral option to treat cUTIs by decreasing healthcare costs and avoiding hospitalization for intravenous antibiotic treatment. Providers in the emergency department (ED) may prescribe fosfomycin off-label for cUTIs to prevent hospital admission. Therefore, the aim of the study is to describe the use of fosfomycin in patients with cUTI, and to assess the rate of 30-day inpatient hospitalization and ED revisits associated with fosfomycin use at a tertiary medical center.Methods: This study has been approved by the Institutional Review Board. This retrospective chart review study will identify patients who received a dose of fosfomycin in the ED prior to ED discharge or were discharged from the ED with an outpatient prescription for fosfomycin. The population of interest will be composed of adults aged 18 years or older who presented to the ED for cUTI. Exclusion criteria includes acute uncomplicated cystitis, asymptomatic treatment, and asymptomatic UTI prophylaxis. The primary endpoints are 30-day hospital admission and ED revisit rates. Patient demographic and baseline characteristics to be collected include fosfomycin dosing regimen, co-morbidities, renal function, urinary symptoms and signs, and urine cultures. Descriptive statistics will be used to assess the baseline demographics and the primary endpoints. Results: Research in progress Conclusions: Research in progress

Learning Objectives:

Recall the FDA-approved indication of fosfomycin.

Discuss potential benefits of utilizing fosfomycin for the treatment of a complicated urinary tract infection.

Self Assessment Questions:

What infection is fosfomycin FDA-approved to treat?

A Complicated urinary tract infection

B: Uncomplicated acute cystitis in women

C: Pyelonephritis

D: Uncomplicated acute cystitis in men

What is a potential benefit(s) of utilizing fosfomycin for a complicated urinary tract infection?

A May prevent hospital admission for intravenous antibiotics

B Possesses a unique broad spectrum of activity against many path

C Treatment failure never occurs

D A and B

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-586-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

IMPLEMENTING PHARMACIST VERIFICATION OF ORAL ANTINEOPLASTIC ORDERS PRIOR TO SENDING E-PRESCRIPTION TO ENSURE SAFE AND CLINICALLY APPROPRIATE PRESCRIBING PATTERNS

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PurposeBackgroundWith the growing use of oral antineoplastic agents, new challenges in ensuring best patient care have emerged within healthcare systems. Each oral oncolytic has unique administration and monitoring processes " requiring a multidisciplinary approach to medication management. The 2018 HOPA Best Practices for the Management of Oral Oncolytic Therapy: Pharmacy Practice Standards provide guidance on optimizing the pharmacist role. These standards promote pharmacist involvement in ensuring safe prescribing patterns and monitoring for adverse events. The purpose of this process improvement project is to assess implementation of pharmacist verification of oral oncolytic therapy orders prior to e-prescription to ensure clinically appropriate medication use and promote patient safety.MethodsThis process improvement project utilizes a Define, Measure, Analyze, Improve, and Control (DMAIC) study design. The define phase identified the need to implement best practices as outlined in the 2018 HOPA pharmacy practice standards. Key areas of focus included pharmacist review at the time of prescription order, developing quality and safety standards consistent with intravenous (IV) therapy standards, and pharmacist involvement in an oral oncolytic program. Th measure phase recognized the lack of pharmacy involvement within the health systems oral oncolytic program prior to e-prescribing. Standard practice was for providers to send prescriptions to pharmacies without formal pharmacist review within the ambulatory clinic. Lack of electronic order sets for antineoplastic therapy and nurse-clinician driven oral oncolytic program highlighted the fact that current processes differ from the quality and safety standards implemented for IV therapies. In Augus 2021, a new workflow was piloted at one ambulatory clinic within ta mult site cancer institute to align processes with the HOPA pharmacy practic standards. Analysis, improvement, and control strategies will be developed through completion of the project.Results/ConclusionsThe results and conclusion of this project will be presented at the 2022 Grea Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss the growing prevalence of oral antineoplastic agents for the management of hematologic and oncologic malignancies.

Recognize the importance of pharmacy involvement in oral oncolytic programs to ensure patient safety.

Self Assessment Questions:

Which of the following is true regarding oral antineoplastic therapy?

A These agents are rarely used for the management of hematologic
B: Each oral oncolytic therapy has a unique set of monitoring parame
C: Oral oncolytic regimens are safer than IV-based regimens
D: Significant drug interactions are not common with oral oncolytic ag

Which of the following roles could a clinical pharmacist perform if involved in an oral oncolytic program?

A Ensure appropriate dosing of oral oncolytic based on renal/hepatic
B Perform medication review and drug interaction analysis
C Assess a patientâ€™s side effects, routine lab work, and medicati
D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-828-L05-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EFFICACY & SAFETY OF STANDARD 7+3 COMPARED TO LIPOSOMAL DAUNORUBICIN/CYTARABINE THERAPY IN PATIENTS WITH SECONDARY ACUTE MYELOID LEUKEMIA

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Purpose: Acute myeloid leukemia (AML) is a hematologic cancer characterized by clonal expansion of blast cells in the blood and bone marrow. Secondary AML can be treatment-related or occur from myelodysplastic syndrome. This disease is associated with poor outcomes, including lower remission rates, higher relapse, and increased early mortality in adults > 60 years old compared to patients diagnosed with de novo AML. Liposomal daunorubicin/cytarabine (VYXEOS) is a U.S Food and Drug Administration (FDA) approved ager in patients with newly diagnosed secondary AML. In a study by Lancet JE et al, liposomal daunorubicin/cytarabine showed a complete response rate of 37.3% compared to 25.6% of patients on standard 7+3 (p=0.04). Additionally, a complete response plus response with incomplete hematologic recovery rate among patients who received one induction cycle was 47.7% and 33.3%, respectively (p=0.016). Treatment with liposomal daunorubicin/cytarabine was also associated with longer durations of neutropenia and thrombocytopenia. Median time to neutrophil and platelet recovery after treatment was longer in patients who received liposomal daunorubicin/cytarabine compared to standard 7+3 (35 vs 29 days, respectively). The objective of this study is to identify efficacy and safety outcomes of standard 7+3 compared to liposomal daunorubicin/cytarabine at a tertiary academic medical center.Methods: This was a retrospective chart review of adult patients who received standard 7+3 or liposomal daunorubicin/cytarabine from July 2, 2010 through October 31, 2021. The primary endpoint, therapeutic efficacy, was evaluated based on patients complete response assessed according to National Comprehensive Cancer Network (NCCN) guidelines. Secondary endpoints included treatment-related toxicities and duration of neutropenia and thrombocytopenia. Descriptive and other appropriate statistical analysis, such as Fishers exact test and Mann-Whitney U-test, were used to analyze outcomes data.Results/Conclusions: Data collection and analysis is ongoing. Complete results and conclusions will be presented at Great Lakes Pharmacy Residents Conference.

Learning Objectives:

Describe FDA-approved indications for liposomal daunorubicin/cytarabine therapy

Define complete response as an assessment of therapeutic efficacy pos induction therapy

Self Assessment Questions:

Which of the following is the appropriate FDA approved indication for liposomal daunorubicin/cytarabine?

A CD33 positive, newly-diagnosed AML
B: Newly-diagnosed treatment-related AML or AML with myelodyspla
C: De novo AML
D: Refractory chronic myeloid leukemia

Which of the following criteria defines a patient with a complete response post induction therapy?

A Blasts < 5% in bone marrow, absolute neutrophil count > 1,000/m
B Blasts > 5% in bone marrow, absolute neutrophil count > 500/mcL
C Blasts > 5% in bone marrow, absolute neutrophil count < 1,000/m
D Blasts < 5% in bone marrow, absolute neutrophil count > 500/mcL

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-587-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF OUTPATIENT ANTIBIOTIC PRESCRIBING IN AMBULATORY MEDICINE CLINICS

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Purpose: The majority of antibiotic use occurs in the outpatient setting, although antimicrobial stewardship initiatives in ambulatory care remain nascent. To address this, this quality assurance project aims to facilitate benchmarking of outpatient antibiotic use at the University of Illinois Hospital & Health Sciences System outpatient clinics and set a foundation for future stewardship efforts. The objective is to validate the accuracy of the indication fields for outpatient antibiotic prescriptions. If reasonably valid, this novel data source will add essential details for accurate characterization of antimicrobial prescribing patterns, enabling improvements in antimicrobial stewardship.Methods: This is a retrospective quality assurance project. The project will include patients aged 18 years or older, who were prescribed antibiotics at the University of Illinois Hospital & Health Sciences System Internal and Family Medicine Ambulatory Care Clinics between July 1st, 2021 and October 22nd, 2021. The primary outcome is to determine the proportion of indication fields that are accurate based on chart documentation. Secondary endpoints include assessing the proportion of appropriately prescribed antibiotics stratified by indication, antibiotic doses and duration of antibiotic courses. Patient demographics, frequency of chosen indications, frequency of antibiotic classes and specific antibiotics prescribed for treatment will be characterized using descriptive statistics.Results & Conclusions: The initial objective was met and the indication function was validated via chart review of 353 outpatient antibiotic prescriptions. The indication field for 320 (90.6%) antibiotic prescriptions complemented the presumed infection in chart documentation, with a large number of inaccurate indications being othe when there was a more appropriate option available. Collection of data to characterize outpatient antibiotic use patterns is ongoing. Results and conclusions will be presented at the 2022 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe antibiotic prescribing patterns in the ambulatory care setting at an urban, academic medical center

Recognize the prevalence of inappropriate outpatient antibiotic prescriptions

Self Assessment Questions:

What is the estimated prevalence of inappropriate outpatient antibiotic prescribing?

A 5%

B: 90%

C: 30%

D: 15%

What component(s) of antibiotic prescribing can contribute to inappropriate outpatient prescribing practices?

A Drug choice

B Dose

C Duration

D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-588-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

PHARMACIST IMPACT ON ADHERENCE TO LABORATORY MONITORING AND PROVIDER FOLLOW-UP FOR HIV PREP PATIENTS ENROLLED IN A HEALTH-SYSTEM SPECIALTY PHARMACY PROGRAM

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Approximately 1.2 million individuals are currently living with HIV in the US. Although HIV diagnosis decreased by 9% from 2015 to 2019, there were still 36,801 HIV diagnoses. Antiretroviral therapy used for HIV treatment can be used for prevention, a strategy called Pre-Exposure Prophylaxis (PrEP). PrEP can lower the risk of acquiring HIV by 99% from sexual transmission and by 74% from injection drug use when taken as directed. Pharmacists at Froedterts Home Delivery and Specialty Pharmacy (HDSP) comprehensively review patients medical records on a monthly basis as part of a medication management program. Patients are contacted to set up monthly refills, assess barriers to adherence and provide reminders to complete labs and schedule/attend follow up appointments. This project will evaluate the impact this program has on ensuring patients adhere to recommended laboratory monitoring and provider follow-up while taking PrEP.A retrospective analysis will be performed to evaluate the difference in adherence rates to required laboratory monitoring and provider follow-up appointments amongst patients who take PrEP and are enrolled in the HDSP medication management program versus those that are not. Patients will be identified between January 1, 2017 and December 31, 2017 and data will be collected for two years from first data point collected (i.e., last data point December 31st, 2019 +/- 30 days). The primary outcome will evaluate patient adherence to 3-month HIV screening, and 6-month provider follow-up appointments. The secondary outcomes will evaluate rate of HIV positive tests; prescription days covered; STI testing at baseline and follow-up appointments; and rate of positive STIs at follow-up appointments.Initial screening results showed 152 patients met inclusion criteria. Nineteen of these patients were enrolled in the medication management program and 133 were not. Data collection continues with results and conclusions to be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify which available antiretroviral drug combinations are indicated for HIV pre-exposure prophylaxis

Recognize the key differences between emtricitabine/tenofovir disoproxil fumarate and emtricitabine/tenofovir alafenamide

Self Assessment Questions:

Which of the following formulations are indicated for HIV pre-exposure prophylaxis?

A Tenofovir disoproxil furamate and bictegravir/emtricitabine/tenofov

B: Emtricitabine/tenofovir alafenamide and tenofovir alafenamide

C: Emtricitabine tenofovir disoproxil fumarate and emtricitabine/tenof

D: Elvitegravir/cobicistat/emtricitabine/tenofovir alafenamide

What is a key difference between emtricitabine/tenofovir disoproxil fumarate (FTC/TDF) and emtricitabine/tenofovir alafenamide (FTC/TAF)

A FTC/TDF has been shown to be effective only for gay and bisexua

B FTC/TDF is more nephrotoxic and FTC/TAF may cause metabolic

C FTC/TAF was shown to be more effective in preventing HIV infecti

D FTC/TDF can be taken daily and FTC/TAF can be taken daily and

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-589-L02-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EFFICACY AND TOLERABILITY OF HEDGEHOG PATHWAY INHIBITORS FOR LOCALLY ADVANCED AND METASTATIC BASAL CELL CARCINOMA: A SINGLE CENTER RETROSPECTIVE REVIEW

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Basal cell carcinoma (BCC) is the most common skin cancer. The National Comprehensive Cancer Network (NCCN) guidelines recommend surgical resection or radiation therapy (RT) to treat localized disease. Systemic therapy with either a hedgehog pathway inhibitor (HHI) or cemiplimab is reserved for patients with locally advanced (laBCC) or metastatic (mBCC) that is unable to be cured with surgery or RT. Vismodegib and sonidegib are the two HHIs currently approved for the treatment of BCC. Both agents were approved based on phase II clinical trial results. Therefore, data is limited. Furthermore, the prescribing information for both medications provides minimal guidance regarding dose adjustments in the setting of toxicity. This was an IRB-approved, retrospective chart review. Patients with a diagnosis of laBCC or mBCC who were initiated on a HHI between January 30, 2012, and June 30, 2021, were included. Data was collected through December 31 2021. The primary outcome was progression-free survival, and secondary outcomes included overall survival, safety and tolerability, response rate, rate of treatment failure, and accessibility of HHI.Seventy one patients were screened for inclusion, and 10 patients were excluded due to not meeting the inclusion criteria. Thirty-seven (60.7%) patients received vismodegib, and 24 (39.3%) patients received sonidegib. Twenty-four (72.7%) patients required a dose adjustment with the most common toxicities being muscle spasms (67%), dysgeusia (38%), and fatigue (29%). Due to intolerance, 4 patients (57.1%) were switched from one HHI to another HHI. Seventeen patients were started on a subsequent line of therapy after a HHI. Data analysis is ongoing and will be presented at the Great Lakes Pharmacy Residency Conference. The results of this study will provide further insight and data into the efficacy, safety, and toxicity management strategies of HHI therapy in patients with laBCC and mBCC.

Learning Objectives:

Discuss the current guideline recommendations and literature on systemic treatment options for basal cell carcinoma

Describe the efficacy and safety of hedgehog pathway inhibitors for locally advanced and metastatic basal cell carcinoma

Self Assessment Questions:

According to the National Comprehensive Cancer Network (NCCN) guidelines, which of the following systemic therapy is recommended as a first line therapy for patients with mBCC?

A Vismodegib
B: Pembrolizumab
C: Glasdegib
D: Encorafenib/binimetinib

Based on the results, which was the most common side effect experienced by patients with vismodegib or sonidegib initial treatment regimen?

A Dysgeusia
B Fatigue
C Muscle spasms
D Weight loss

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-593-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

INCIDENCE OF HYPERSENSITIVITY REACTIONS BASED ON PRIMING STATUS WITH AGENT VERSUS DILUENT

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The use of biologic drugs is costly and increasing in frequency, accounting for 28% of global drug expenditures. Monoclonal antibodies in particular are associated with hypersensitivity reactions (HSR) which can be detrimental to patients and preclude them from receiving subsequent infusions of an effective drug. This can have a significant consequence in outcomes for patients with limited treatment options. A pilot study at Memorial Sloan Kettering showed a reduction in rituximab HSRs when lines were primed with drug rather than diluent, prompting a change in our institutional policy for line priming with five drugs: rituximab, daratumumab, obinutuzumab, ofatumumab and elotuzumab

Learning Objectives:

Identify medications with a high risk for infusion-related hypersensitivity reactions

Classify an infusion related reaction based on patient symptoms

Self Assessment Questions:

Which of the following is likely to be associated with an infusion-related reaction?

A Methotrexate
B: Rituximab
C: Acetaminophen
D: Doxorubicin

How would the following reaction be classified: throat swelling, shortness of breath requiring administration of rescue medications?

A CTCAE Grade 1
B CTCAE Grade 2
C CTCAE Grade 3
D CTCAE Grade 4

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-757-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

RETROSPECTIVE REVIEW OF PREVALENCE AND IDENTIFYING RISK FACTORS ASSOCIATED WITH MULTI-DRUG RESISTANT ORGANISMS CAUSING COMMUNITY ACQUIRED PNEUMONIA WITHIN A COMMUNITY HEALTH SYSTEM

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Background: The 2019 Infectious Disease Society of America (IDSA) community acquired pneumonia (CAP) guideline suggest the only consistently strong risk factors for MDRO, i.e. MRSA and Psuedomonas aeruginosa, CAP are prior infection with MDRO, and hospitalization and parenteral antibiotics exposure within the previous 90 days. Though, the guidelines recognize these risk factors vary regionally and propose local validation of risk factors for MDRO CAP. Our study will add to the growing body of literature outlining locally validated risk factors identified by the 2019 IDSA guidelines as a clinically important task all health systems should conduct.Methods: This will be a retrospective, cohort, single health system study. All patients with respiratory culture (sputum or bronchoalveolar lavage) positive for non-MDRO, MRSA, or P. aeruginosa from January 01, 2019 to September 30, 2021 will be screened for eligibility. Patients who are 18 years of age, had microbiological culture collected within 48 hours of admission consistent with CAP diagnosis, and received antibiotic for CAP treatment will be included. Patients who are prisoners, pregnant, had microbiological culture yielding no growth or normal flora, or had cultures ordered > 48 hours post admission consistent with hospital acquired or ventilatory associated pneumonia will be excluded. The primary outcome is risk factors associated with MDRO CAP. Our secondary outcomes include percentage of patients with CAP caused by MDRO, empiric antibiotic selection, hospital length of stay, 30-day mortality, 30-day respiratory bacterial infection related readmission, and 30-day all cause readmissions. Results and conclusion will be reported at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Recall the 2019 IDSA guideline suggested risk factors associated with community acquired pneumonia caused by MRSA and/or Pseudomonasa aeruginosa

Describe the importance of local risk validation in identifying risk factors associated with community acquired pneumonia caused by multi-drug resistant organisms and its prevalence

Self Assessment Questions:

Which of the following risk factors are associated with an increased risk of community acquired pneumonia caused by MRSA and/or Pseudomonas aeruginosa?

A History of parenteral antibiotics administration in previous 90 days

B: COPD

C: Substance Use Disorder

D: Chronic immunosuppressant medications

What is the process of obtaining site- or region-specific data to identify risk factors associated with community acquired pneumonia caused by multi-drug resistant organisms?

A Risk surveillance

B Local validation of risk factors

C National validation of risk factors

D CDC Core Elements of Antibiotic Stewardship

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-591-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

VIROLOGIC AND IMMUNOLOGIC OUTCOMES IN PEOPLE LIVING WITH HIV (PLWH) IN A CORRECTIONAL SETTING DURING THE COVID-19 PANDEMIC

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Purpose: Clinical HIV outcomes are unknown in the prison population as well as the HIV population during the COVID-19 pandemic. Telemedicine is available, but there is very little data on the adequate continuity of care and sustainability of telehealth throughout the pandemic. This provides an opportunity to determine if PLWH were affected during the COVID-19 pandemic and if telemedicine models are sustainable within our Illinois Department of Corrections (IDOC) population. The goal of the project is to assess the rate of virologic suppression pre and post COVID-19 pandemic for PLWH in a correctional setting.Methods: This study is a retrospective chart review. Patients living with HIV who received antiretroviral therapy (ART) within the Illinois Department of Corrections (IDOC) between 03/01/2019 and 03/01/2021 will be included. Patients who were released from IDOC at any point or were reincarcerated at any point during the study period will be excluded. Our primary outcome is the rate of viral suppression pre and post COVID-19 pandemic. Secondary outcomes include rate of immunologic function pre and post COVID-19 pandemic, incidence of SARS-CoV-2 infection, number of hospitalizations due to SARS-Cov-2 infection, development of virologic failure, and any ART changes pre or post COVID-19 pandemic. Statistical analyses of study endpoints will be assessed using descriptive and quantitative statistics.Results: Preliminary results and conclusions will be presented at the 2022 Great Lakes Pharmacy Residency Conference

Learning Objectives:

Identify advantages and disadvantages of utilizing telemedicine in correctional medicine during the COVID-19 pandemic

Describe risk factors that may influence interruptions to care during the COVID-19 pandemic

Self Assessment Questions:

What is a known disadvantage of telemedicine?

A Limits risk and exposure to infection

B: Limits physical assessment

C: Inconvenient for patients

D: Increases waiting times

What is considered a risk factor for potential interruptions in HIV care for an incarcerated patient during COVID-19?

A Hospitalization

B Lack of labs

C Cancelled visits

D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-590-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IMPROVING PRESCRIBER USE OF THERAPEUTIC INTERCHANGES

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Drug costs are continuously on the rise, disrupting patient care and straining hospital budgets. To combat costs, many hospitals utilize a formulary, which is a list of available medications chosen based on patient outcomes, safety, and cost-effectiveness. Though formularies promote evidence-based medicine, they can create a gap in therapy when patients are admitted to an institution that does not have one of their currently prescribed medications on formulary. To solve this, therapeutic interchanges (TI) were designed. At the Froedtert Health System, when prescribers place a non-formulary (NF) order in the electronic health record (EHR), an alert fires containing the information for the appropriate TI. This alert provides the prescribers with the alternative agent and dose, gives the option for a pharmacist to select the appropriate alternative on his or her behalf, or allows them to continue with the NF medication. A recent survey sent to pharmacists across the system showed there is inconsistency in how TIs are being implemented, and that the tools within the EHR intended to support prescriber selection of the appropriate formulary alternative are not being fully utilized. The aim of this study is to improve prescriber use of approved TIs by modifying the TI alerts. A pre-implementation survey was distributed to inpatient medicine and surgery pharmacists at Froedtert Hospital to assess prescriber action on TI alerts for two medication classes. The intervention will include the following modifications to the alerts: removal of the option for a pharmacist to select the appropriate alternative and require prescribers to fill out a NF request form to continue with the NF medication on admission. A post-implementation survey will be distributed once the intervention is executed. Data collection and analysis are ongoing, and results will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Explain the benefits of integrating therapeutic interchanges into the electronic health record.

Outline the workflow changes for ordering prior to admission medications in order to optimize therapeutic interchanges.

Self Assessment Questions:

Which of the following are benefits seen with therapeutic interchanges integrated into the electronic health record?

A Prescriber assistance with appropriate dose selection

B: Increase in non-formulary medication usage

C: Prescriber assistance with appropriate non-formulary alternative m

D: Both A&C

Which of the following are goals for changing the prior to admission medication ordering workflow?

A Increase patient safety

B Increase prescriber workload

C Increase the number of pages sent to the prescribers

D Decrease formulary adherence

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-758-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

INITIATION OF ENTERAL GUANFACINE TO WEAN DEXMEDETOMIDINE IN CRITICALLY ILL PATIENTS

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Agitation in critically ill patients is associated with adverse clinical outcomes such as increased duration of mechanical ventilation, hospital and intensive care unit (ICU) length of stay. Dexmedetomidine is an intravenous alpha-2a agonist with sedative, analgesic, and anxiolytic properties which lend to its use for pain, agitation, and delirium in critically ill patients. Guanfacine is an enteral alpha-2a agonist that may be considered as an agent to transition patients from dexmedetomidine for sedation management. The purpose of this study is to assess the efficacy and safety of enteral guanfacine as an intervention to facilitate the discontinuation of dexmedetomidine in medical intensive care unit patients. This was a retrospective review of patients admitted to University of Kentucky HealthCare Medical Intensive Care Unit between January 2016 and April 2021. Patients were divided into 2 cohorts: cohort 1 consisted of patients who received dexmedetomidine alone and cohort 2 consisted of patients who received both dexmedetomidine and guanfacine. Patients in both cohorts must have received a continuous dexmedetomidine infusion for at least 24 hours. The primary outcome was time to cessation of dexmedetomidine. Secondary outcomes included frequency in which dexmedetomidine was restarted, duration of mechanical ventilation, ICU and hospital length of stay, and the amount of dexmedetomidine administered following the first dose of guanfacine. There were no differences in demographic endpoints between the two cohorts. Cohort 1 had a significantly shorter duration of dexmedetomidine hours than cohort 2 (72.6 days vs 158.5 days, $p<0.001$). Patients in cohort 1 were found to have a significantly shorter hospital length of stay and shorter duration of mechanical ventilation ($p<0.001$). In conclusion, patients in cohort 1 had a shorter duration of dexmedetomidine, mechanical ventilation, and hospital length of stay.

Learning Objectives:

Discuss the use of alpha-2a agonists for agitation and delirium in critically ill patients.

Review the effectiveness of transitioning medical intensive care unit patients from dexmedetomidine to guanfacine.

Self Assessment Questions:

What properties does dexmedetomidine possess that facilitates its utility in the critically ill?

A Sedative

B: Analgesic

C: Anxiolytic

D: All of the above

Dexmedetomidine and guanfacine are agonists of which receptor?

A Beta-2

B Alpha-2a

C Beta-1

D Alpha-1a

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-592-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF LITHIUM PRESCRIBING AND MONITORING ON NON-PSYCHIATRIC INPATIENT UNITS

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Lithium, a mood stabilizing agent used for treating bipolar disorder, is associated with multiple clinically significant drug-drug, and drug-disease interactions. These interactions, coupled with its narrow therapeutic index, increase the risk for toxicity in patients taking lithium. Monitoring lithium is necessary to ensure safe use. The purpose of this medication use evaluation (MUE) is to identify areas of improvement for lithium prescribing and monitoring at The Ohio State Wexner Medical Center (OSUWMC) to ensure patient safety. Single-center, retrospective chart review was conducted to assess the appropriateness of lithium prescribing and monitoring at OSUWMC on non-psychiatric units. Adult patients admitted to Rhodes or Doan Hall in University Hospital who received lithium during their admission, between 07/01/2020 to 06/30/2021, were included. Data collected included lithium strength and frequency, medication reconciliation note, date and time of lithium levels and kidney function. Presence of Angiotensin-converting enzyme (ACE) inhibitor/Angiotensin II receptor blocker (ARB), loop and thiazide diuretic or non-steroidal anti-inflammatory drugs (NSAID) was collected to assess for any drug-drug interactions. Pregnancy, dehydration, and chronic kidney disease (CKD) diagnosis was collected to assess for drug disease interactions. 381 patients received at least one dose of lithium during their admission. A total of 50 patients were included in this MUE. Only 25 patients (50%) had a lithium level collected during admission. Drug interactions identified included: ACE inhibitors or ARB (14%), thiazide or loop diuretic (16%), and NSAIDs (4%). Conditions that increase the risk of adverse effects included: pregnancy (4%) and CKD (10%). Psychiatry was consulted on 19 (38%) patients.The results of this MUE identified areas in which increased lithium monitoring is necessary supporting the need for a formalized inpatient monitoring process. Based on the results of this MUE, the next steps include discussion to implement a lithium order panel and optimize the newly implemented lithium monitoring guidance.

Learning Objectives:

Review the importance of lithium monitoring in the inpatient setting

Identify common drug and disease state interactions that require increased lithium monitoring.

Self Assessment Questions:

Which of the following hypertension medications are mostly likely to interact with lithium?

A Lisinopril

B: Hydralazine

C: Carvedilol

D: Clonidine

Which of the following regarding lithium monitoring is NOT true?

A Lithium is monitored because of its narrow therapeutic index

B Diabetes is a disease state that would prompt lithium monitoring

C Pregnancy should prompt lithium monitoring

D An acute kidney injury should prompt lithium monitoring

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-829-L05-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

COMPARISON OF CEPHALEXIN AND CIPROFLOXACIN PROPHYLAXIS FOR URINARY TRACT INFECTION IN KIDNEY TRANSPLANT RECIPIENTS

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Purpose: Compare outcomes of patients that received alternative agents as prophylaxis for urinary tract infection (UTI) after kidney transplant (KT) as there is limited data available in those intolerant to the first-line agent sulfamethoxazole-trimethoprim (S/T).Methods: This single-center, retrospective analysis evaluated patients who received cephalexin 500mg (CLX) or ciprofloxacin 500mg (CIP) daily for UTI prophylaxis. Requirement for inclusion was > 30 consecutive days of therapy within 6 months post-KT in patients intolerant or allergic to S/T. The primary efficacy endpoint was prophylaxis failure defined as development of UTI Secondary efficacy outcomes were UTI characteristics and graft function. Safety outcomes included adverse effects (ADE) & discontinuations.Results: 78 patients were included, 39 per group. Total days of therapy were 150 + 40 and 155 + 49 for CLX and CIP (p=0.315). There were no differences in baseline characteristics except younger age (p=0.046) in the CLX group. Baseline creatinine clearances (CrCl; Cockcroft-Gault) were 59.7 [45.3-74.3] & 49.5 mL/min [38.3-64.0] (CLX vs CIP; p=0.05).Patients in the CLX group developed more UTIs (14 (36%) vs 7 (18%); p=0.085), although not statistically significant. CLX patients had more cystitis and treated bacteriuria but had significantly more post-operative complications (p=0.044). No difference was seen in CrCl from baseline to day 180 (p=0.924). One patient in the CIP group had rejection. No patients had graft loss during the 6-month period. No significant difference was seen in the total occurrence of ADEs (p=0.817), but more patients discontinued CIP therapy (15% vs 5%; p=0.125). Conclusions: Both CLX and CIP were effective as UTI prophylaxis post-KT. Patients receiving CLX had higher incidence of UTIs, potentially due to more post-operative complications observed. Although CIP was discontinued more frequently, both agents were overall well tolerated while maintaining similar outcomes in renal and graft function.

Learning Objectives:

Describe the need for urinary tract infection prophylaxis post-kidney transplant.

Review alternative options for prophylaxis and their impact on patient efficacy and safety outcomes.

Self Assessment Questions:

Considering outcomes in post-transplant UTI management, which of the following has been linked to negative outcomes and even graft loss?

A Pyelonephritis

B: Asymptomatic bacteriuria

C: Hospital length of stay

D: Antibiotic utilized for UTI prophylaxis

Which of the following outcomes occurred more frequently among the ciprofloxacin cohort?

A Serum creatinine and creatinine clearance at day 180.

B Cases of cystitis and treated bacteriuria.

C Rejection and graft loss.

D Adverse effects and discontinuations.

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-594-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IMPACT OF A MEDICATION RECONCILIATION PHARMACIST PROGRAM ON APPROPRIATENESS OF COMMUNITY-ACQUIRED PNEUMONIA TREATMENT DURATIONS AT HOSPITAL DISCHARGE

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Purpose: The increasing public health burden of multi-drug resistance and antibiotic-associated adverse events has underscored the importance of curbing the misuse of antibiotics. Although stewardship efforts have largely focused on antibiotic use in the hospital, the majority of antibiotic courses is completed after hospital discharge. Extended antimicrobial durations may lead to increased risks of side effects and a risk for developing resistance. Exploring an association with use of a medication reconciliation pharmacist at discharge with the rate of appropriate community-acquired pneumonia treatment duration could shed light on an actionable way to improve hospital outcome and patient care. The aim of this study is to determine if education to medication reconciliation pharmacists has an impact on unnecessary antibiotic treatment of community-acquired pneumonia at a community hospital.Methods: This research project was conducted as a retrospective, observational, single-centered study. The study included patients 18 years old with a diagnosis of community-acquired pneumonia between the dates 9/1/20 " 11/30/20 (pre-period) or 9/1/21 " 11/30/21 (post-period). Two groups were studied; one including patients in the pre period and one in the post-period. Data was collected utilizing a chart review process of the electronic medical record of patients consulted for vancomycin dosing. Data collection included: age, gender, weight, height, body-mass index, date of antibiotic initiation, agent used (inpatient and at discharge), total days of antibiotic therapy (inpatient, at discharge, and total days), infectious disease physician consultation, and COVID-19 positivity. Nominal Data was evaluated utilizing the chi-squared test. Continuous Data was evaluated utilizing the T-test and odds ratios. An a priori alpha of 0.05 was set for significance. Data analysis was performed using Microsoft Excel and SAS statistical software. Results: Final results and conclusions are in progress and will be presented at the 2021 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Explain the importance of antimicrobial stewardship programs.

Review current literature on medication reconciliation pharmacist programs on appropriateness of antimicrobial treatment durations.

Self Assessment Questions:

Which of the following is not a goal of antimicrobial stewardship programs?

A Prevent and reduce the spread of antibiotic resistance

B: Decrease hospital costs and lengths of stay

C: Increase the use of empiric broad-spectrum antibiotics

D: Increase infection cure rates

Based on current literature, how many total antibiotic therapy days can we suspect a medication reconciliation pharmacist program to decrease for treating community-acquired pneumonia?

A Half a day

B One day

C Two days

D No change

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-595-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IMPACT OF EMBEDDING A PHARMACIST IN A DERMATOLOGY CLINIC ON OUTCOMES IN A SPECIALTY PHARMACY

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Specialty pharmacists in an academic medical center are well positioned to overcome medication access issues, financial constraints, and communication barriers for patients and decrease clinic burden for providers. The integration of specialty pharmacists into provider offices have shown an increase in patient satisfaction and medication adherence, as well as decreased time to medication approval and initiation. While there is some promising data on specialty pharmacist impact on patient outcomes, there is limited clinical and financial data on a specialty pharmacist embedded within a dermatology clinic. The University of Louisville (UofL) Health- UofL Hospital postgraduate year two ambulatory care resident began a new service in the outpatient dermatology clinic within UofL Physicians in October 2020. This was a comprehensive clinical service where the pharmacist was involved in medication selection, initiation, access, counseling, and monitoring. The purpose of this research project was to evaluate the clinical and financial success of UofL Health Specialty Pharmacy from the addition of a specialty pharmacist in the outpatient dermatology clinic.

Learning Objectives:

Identify potential barriers that may impact adherence to biologic specialty medications

Describe the impact of embedding a pharmacist in the outpatient dermatology clinic at University of Louisville (UofL) Health

Self Assessment Questions:

Which of the following is a potential barrier that may impact adherence to specialty biologic medications?

A a)Adequate social support

B: b)Access to healthcare, resources, and medications

C: c)High medical and pharmacy costs

D: d)Efficient communication between healthcare providers

Which of the following was not a component of the comprehensive clinical service provided by the UofL Health PGY2 ambulatory care pharmacy resident in the outpatient dermatology clinic?

A a.Medication selection

B b.Delivery of medication

C c.Medication education

D d.Monitoring

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-759-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

ASSESSING COMMUNITY PHARMACIST COMPETENCY IN SELECTED KENTUCKY BOARD AUTHORIZED PROTOCOLS

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Purpose: In the state of Kentucky, pharmacists can initiate and dispense non-controlled pharmacological therapies under Kentucky Board of Pharmacy authorized protocols without a prescription from a prescriber. Protocol driven care allows pharmacists to become more integrated in the clinical outpatient setting. Limited studies have analyzed the pharmacist impact and competency in these protocols. The objective of this study is to determine the current competency level of community pharmacists in selected Kentucky Board of Pharmacy protocols. Methods: This is quasi-non-randomized study of community pharmacist competency level in selected Kentucky Board of Pharmacy protocols. Specific to the study institution, the board approved protocols are divided amongst the outpatient pharmacists with each protocol having one lead pharmacist. However, all pharmacists are expected to be qualified to implement all protocols. Eligible outpatient pharmacists were assessed based on competency on all selected protocols. Competency was evaluated using pre-test and post-test examinations on each selected protocol. Current registered outpatient pharmacists were included in this study. Pharmacy residents and as needed pharmacists were excluded. The primary endpoint is pharmacist's competency level in each approved protocol determined by pharmacist change in pre-test and post-test scores. Key secondary endpoints include difference in competency level from pharmacists assigned protocol and other included protocols and total number of protocols implemented per pharmacist since 2019. Results/Conclusion: Data collection is ongoing. Results and conclusions will be presented at 2022 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss ways pharmacists can initiate pharmacotherapy without prescriptions from prescribers

Recall the approved protocols for pharmacist implementation in the state of Kentucky

Self Assessment Questions:

How can pharmacists initiate pharmacotherapy to patients without prescriptions?

A Federal Board of Pharmacy Protocols

B: Collaborative Care Agreements between pharmacists and physicia

C: State specific Board of Pharmacy Board-Authorized Protocols

D: Both B and C

Which of the following protocols were assessed in this study?

A Tobacco cessation protocol

B Alcohol Use Disorder protocol

C Travel health therapies protocol

D Acute influenza infection antiviral therapy protocol

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-760-L03-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EVALUATION OF NEAR-PEER INSTRUCTION AND ASSESSMENT WITHIN PROFESSIONAL PHARMACY SKILLS LABORATORIES

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Purpose: Near-peer instruction or assessment is defined as a junior learner instructed or assessed by a senior learner at least one year above the junior learner in training (e.g. a P1 student instructed by a P2 student, a P2 student assessed by a PGY-1 resident, etc.). This method of teaching has been used by other disciplines in the medical field, however there is a lack of data on its use in pharmacy skills labs. The primary objective of this project is to explore how near-peer instruction and assessment is used in skills labs in pharmacy schools across the country. Additional secondary objectives include exploring the interest in the use of near-peers and assessing the perceived benefits and limitations of near-peers in pharmacy skills labs.Methods: Qualtrics will be used to administer a 45-item survey including sections on (1) Demographics and (2) Near-Peer Assistant Use, (3) Near-Peer Instruction, (4) Near-Peer Assessment, and (5) Benefits/Limitations of Near-Peer Assistant Use in Professional Pharmacy Skills Labs. One laboratory instructor from each pharmacy school in the United States will be contacted for participation using a list obtained from the American Association of Colleges of Pharmacy. Survey completion reminder emails will be sent out at two and four weeks after the initial email is sent. Data will be analyzed using descriptive statistics.Results/Conclusion: Data collection and analysis is currently ongoing. Results will be presented at the Great Lakes Pharmacy Resident Conference. The results of the survey may provide insight into how near-peers are used in pharmacy skills labs and may help develop and improve the use of near-peers in pharmacy skills labs across the country.

Learning Objectives:

Describe near-peer instruction or assessment in a pharmacy skills lab setting

Review the benefits and limitations of using near-peer assistants in a pharmacy skills lab setting

Self Assessment Questions:

Which of the following is NOT an example of near-peer instruction?

A A PGY-2 pharmacy resident teaching a P3 student how to comple

B: A P1 student volunteering to serve as a patient in a counseling act

C: A P2 student demonstrating how to perform a BP assessment for

D: An APPE student leading a small group discussion for P2 students

What are potential benefits of using near-peer assistants in pharmacy skills labs?

A Junior learners feel more comfortable with near-peer assistants tha

B Enhanced professional development for near-peer assistants

C Reduced amount of time spent preparing for lab by faculty membe

D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-761-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

IMPLEMENTATION OF ADHERENCE PACKAGING TECHNOLOGY WITHIN A HOME DELIVERY & SPECIALTY PHARMACY

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Purpose: Medication non-adherence is a widespread concern that can lead to an increased risk in morbidity, mortality and chronic disease stat progression. Adherence packaging actively supports compliance by providing organization and streamlining of complex medication regimens. Studies show adherence packaging provides greatest benefit to those patients who take greater than eight routine medications daily. The primary goal of implementing adherence packaging is to provide a patient service that is currently unavailable at Froedtert Health while increasing patient comfort with complex medication regimens and improving disease state management.Methods: The primary objective o this study is to evaluate medication adherence rates and patient satisfaction before and after implementation of adherence packaging technology. Evaluation of medication adherence will be completed by tracking the number of missed doses in a 30, 60 and 90-day period. Patient satisfaction will be assessed with a pre and post survey using a five point Likert scale. The patient population for the initial enrollment period includes up to 15 patients who have a designated Froedtert primary care physician, were seen at least once in the last 12 months at a Froedtert primary care clinic and have greater than eight routine medications, including over-the-counter medications.Conclusion: Our goal of implementing this new technology is to demonstrate that patient compliance with complex medication regimens improves with adherence packaging and patients feel comfortable managing their medications using the new organized and streamlined method. Next steps after the completion of the initial enrollment period will be further expansion of adherence packing to additional patients and continued quality assurance of patients understanding and comfort with the new service.

Learning Objectives:

State the goals with implementing a medication adherence packaging technology.

Identify which patients would benefit the most from medication adherence packaging.

Self Assessment Questions:

What are the goals with implementing a medication adherence packaging solution?

A Increase patient adherence

B: Increase patient satisfaction

C: Increase patient outcomes

D: All of the above

Which patients have been shown to benefit the most from medication adherence packaging?

A Patients with only 1-2 routine medications

B Patients with 5 routine medications

C Patients with 8 or more routine medications

D All patients would benefit

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-762-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IMPACT OF TACROLIMUS CONCENTRATION TO DAILY DOSE (C/D) RATIO ON RENAL FUNCTION IN HEART TRANSPLANT RECIPIENTS

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Background: Tacrolimus has become the cornerstone of immunosuppression therapy in heart transplant recipients (HTRs) as proven effective in its ability to prevent acute rejection. However, it is associated with various side-effects, most notably nephrotoxicity. The concentration to daily dose (C/D) ratio helps understand the metabolism of tacrolimus. A high C/D ratio is indicative of slow metabolism and a lov C/D ratio of a fast metabolism. Studies evaluating other solid organ transplant recipients have identified an association between low C/D ratio and poor renal outcomes. Data on the association between tacrolimus C/D ratio and renal function in HTRs is limited. Statement of Purpose: The goal of this study is to assess the association between C/D ratio and renal function in HTRs. Statement of Methods: This retrospective cohort study will include adult HTRs at Michigan Medicine Hospital (2014-2018) who were discharged on immediate-release tacrolimus capsules. HTRs who meet the inclusion criteria will be categorized into low or high C/D ratio groups based on the median C/D ratio at post-transplant month (PTM) 12 of the study cohort. Estimated glomerular filtration rate (eGFR) will be calculated using the CKD-EPI equation. The primary outcome will be changes in eGFR between PTM 1 and 36. A linear mixed model will be conducted to assess if C/D ratio is a predictor of eGFR decline over 36 months following transplant while controlling for confounding variables. Secondary outcomes will be biopsy proven rejection and death within PTM 36. Continuous data will be analyzed with either a paired t-test or Wilcoxon signed-rank test as appropriate. Nominal data will be analyzed with either a chi-square test or Fishers exact test as appropriate. Results/Conclusions: Results and conclusions will be presented at the conference.

Learning Objectives:

Describe transplant outcomes correlated with low vs high C/D ratios

Identify the association between renal function and low vs high C/D ratio in HTRs.

Self Assessment Questions:

What is the C/D ratio used to assess in solid organ transplant recipients

A Tacrolimus blood concentration

B: Tacrolimus absorption

C: Tacrolimus metabolism rate

D: Tacrolimus volume of distribution

Which of these are known side effects of tacrolimus?

A Nephrotoxicity

B Hypertension

C Hyperglycemia

D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-596-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF ANTIMICROBIAL USE IN PATIENTS WITH PENICILLIN ALLERGIES IN A COMMUNITY HOSPITAL

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Purpose: In patients with documented penicillin allergies, providers often prescribe alternative antimicrobials to avoid risk of inducing an allergic response. These alternatives may provide unnecessary broad-spectrum coverage that lead to increased antimicrobial resistance. Patients receiving broad-spectrum antibiotics may be at a higher risk of developing Clostridioides difficile, methicillin-resistant Staphylococcus aureus, and vancomycin-resistant enterococci. The objective of this study is to evaluate the use of aztreonam, carbapenems, and fluoroquinolones in patients with a documented penicillin allergy. Methods: This study was a single-system, retrospective chart review examining antimicrobial prescribing patterns in adult patients with a penicillin allergy at UW Health SwedishAmerican Hospital. Electronic health records were used to identify hospitalized patients between January 1st, 2021 to December 31st, 2021. The data collected included: age, gender, allergy status, height, weight, white blood cell count, serum creatinine, vital signs, microbiology results, antimicrobial treatment during length of hospital stay, previous antimicrobial regimens, Clostridioides difficile infection post antimicrobial use, and -lactam desensitization information. Results of this study were utilized to identify areas for improvement in broad-spectrum antimicrobial prescribing. Results: Data results and conclusion will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify Identify patients with listed penicillin allergies that may be at lower risk of developing an allergic reaction

Discuss cross reactivity rates between different beta-lactam antibiotics

Self Assessment Questions:

Which of the following patients would be at lower risk of developing an allergic reaction with beta-lactam antibiotics?

A 55-year-old male who reports a rash after receiving amoxicillin

B: 34-year-old female who reports blistering skin after receiving a per

C: 67-year-old male with anaphylaxis after receiving a dose of pipera

D: 25-year-old female reporting angioedema after receiving ampicillin

Approximately what percent of patients with reported penicillin allergies have a true IgE mediated allergic reaction?

A 75%

B 50%

C 25%

D 5%

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-597-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

HOSPITAL AT HOME REVOLUTION: IMPLEMENTATION OF AN INSOURCED PHARMACY MODEL LEVERAGING HOME INFUSION SERVICES FOR AT HOME ACUTE CARE

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Purpose: Without inpatient bed capacity expansion, UW Health has been unable to accommodate the growing need for care.From 1/2020"8/2021, an average of 45 patients/month were denied admission due to lack of bed availability.Lack of access is counter to the organizations vision of providing Remarkable Care while lowering total costs of care. Implementation of a Hospital at Home(HaH) program will both decrease total cost of care and improve patient access to care by increasing number of available inpatient beds. The medication distribution models for HaH differ significantly nationwide. The role of home infusion companies in HaH is not uniformly defined. An insourced pharmacy model provides the opportunity for more efficient medication oversight from order to administration. This project aims to implement and demonstrate outcomes of an insourced pharmacy model leveraging home infusion services within an academic medical center HaH program. Methods: Retrospective analysis of patients with qualifying diagnoses for HaH determined baseline measurements including high-use medications, costs of care, readmission rates, time to discharge, patient satisfaction, and revenue. The drug distribution and pharmacy clinical service model for the HaH program will be implemented in July 2022. Following implementation, patient and health-system outcomes will be evaluated including cost-comparison of an insourced versus outsourced distribution model. Impact on pharmacy workload and drug-delivery will be used to create recommendations for workflow optimization. Post-implementation data will evaluate patient outcomes and cost-avoidance compared to the traditional hospital-based care model. Results: Retrospective review of discharges between 1/1/2019"9/15/2021 identified 922 patients who met HaH inclusion criteria. Oral medications(61%) account for a majority of medication administrations, followed by intravenous(15%), and subcutaneous(10%) Ninety-nine percent of patients received oral medications during admission, and ninety-two percent received intravenous medications. Collaboration between the pharmacy department and home-health agency will provide comprehensive pharmacy services for the HaH Program. Conclusion:To be presented

Learning Objectives:

Recognize benefits of leveraging a partner home infusion agency in implementation of a hospital at home program.

Describe expected Hospital at Home patient demographics, diagnoses, and commonly used medications.

Self Assessment Questions:

2.Which of the following are important factors to consider when including a home infusion agency in a hospital at home model?

A IV pump capabilities

B: Medication formulary of the home infusion agency

C: Home infusion agency electronic medical record capabilities

D: All the above

What are the most commonly ordered medications for patients who qualify for Hospital at Home care?

A oral, subcutaneous

B oral, intravenous

C oral, inhalation

D intravenous, subcutaneous

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-763-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

A RETROSPECTIVE ANALYSIS OF CEPHALOSPORIN ADMINISTRATION TO PATIENTS WITH PENICILLIN ALLERGIES

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Penicillins, a type of beta-lactam antibiotic, are among the most commonly documented drug allergies. Patients with penicillin allergies often receive alternative antibiotics that may be suboptimal. Recent literature has shown that use of broad-spectrum alternatives in such patients is associated with higher healthcare costs, increased risk for antibiotic resistance, and increased rates of infections due to resistant organisms. Cephalosporins, another type of beta-lactam antibiotic, are often avoided in these patients due to similarity in structure despite low rates of cross-reactivity. The purpose of this study was to describe the incidence of cross-reaction to cephalosporins among patients with reported penicillin allergies.

Learning Objectives:

List disadvantages to avoiding cephalosporins in favor of alternative antibiotics in patients with penicillin allergies

Describe the specific structural similarity between penicillins and cephalosporins that is associated with higher rates of cross-reactivity among penicillin allergic patients

Self Assessment Questions:

Which of the following negative outcomes has been demonstrated in available literature to be associated with avoidance of cephalosporins among penicillin-allergic patients?

A Increased cost

B: Increased development of resistance

C: Increased infections caused by resistant organisms

D: All of the above

Which structural similarity has been shown to correlate most closely with cross-reactivity between penicillins and cephalosporins among penicillin-allergic patients?

A Beta-lactam ring

B R1 side chain

C Charged functional groups

D Presence of sulfur atom

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-598-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

STRESS DOSE STEROIDS IN CRITICALLY ILL SURGICAL PATIENTS WITH QUICKLY RESOLVING SEPTIC SHOCK

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Purpose: Current guidelines for management of hypotension in patients with septic shock who do not meet blood pressure goals with fluid resuscitation and vasoactive agents recommend treatment with hydrocortisone 200 mg per day. Most trials administered steroids for 7 days or until ICU discharge, irrespective of duration of shock. However, corticosteroids are associated with potential risk. Side effects including hyperglycemia, hypertension, secondary infection, agitation, muscle weakness, and delirium may lead to worse patient outcomes. This study will look to determine if a shorter course of corticosteroids can be used in patients with quickly resolving shock.Methods and Outcomes: This study is a single-center, retrospective chart review of patients in a surgical intensive care unit who received corticosteroids for adjunctive treatment of hypotension in the setting of septic shock. This study specifically looks at the duration of treatment with corticosteroids and time to resolution of septic shock Patients will be included in this study if they were admitted to the surgical ICU with a diagnosis of septic shock, received hydrocortisone 200 mg per day, and had quickly resolving septic shock (defined as shock requiring less than or equal to 48 hours of vasopressor support). Exclusion criteria for this study include patients with a diagnosis of acute respiratory distress syndrome (ARDS), patients receiving chronic steroid therapy prior to admission, and patients with known adrenal insufficiency. Patients receiving a standard 7-day duration of hydrocortisone will be compared to patients receiving a shorter duration of therapy. The primary outcome of this study is ICU length of stay. Secondary outcomes of this study include inpatient mortality, incidence of rebound shock (defined as patients with new need for vasopressor support within 72 hours of initial vasopressor discontinuation), days of leukocytosis, days of insulin infusion use, number of days of hyperglycemia, incidence of delirium, and duration mechanical ventilation.

Learning Objectives:

Describe sepsis, septic shock and current recommendations regarding management including the role of corticosteroids

Explain potential consequences of current corticosteroid dosing strategies

Self Assessment Questions:

Current recommendations regarding the use of corticosteroids in septic shock support a hydrocortisone dose of:

A 50 mg daily

B: 100 mg daily

C: 200 mg daily

D: 400 mg daily

Potential adverse events related to corticosteroid use include all of the following except

A Hypertension

B Hypoglycemia

C Leukocytosis

D Agitation

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-599-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EPIDEMIOLOGY OF TOXIN-INDUCED SEIZURES IN THE UNITES STATES

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PurposeSeizures are a rare but serious consequence of toxicologic exposures. There are few studies discussing the most common xenobiotics associated with seizures, especially within the last 10 years. This study was designed to characterize the most common causes of single-agent toxin-induced seizures and describe the change in seizure-related exposures over time. MethodsThis was a cross sectional study o data from the National Poison Data System (NPDS) from January 2000 to December 2019 for human single agent toxicologic exposures with seizures. Confirmed non-exposures, indirect deaths, cases where seizures were coded as unrelated, or exposure reason was food poisoning were excluded. Xenobiotics were grouped into categories according to mechanism or therapeutic class. Standard NPDS definitions were used for exposure reasons, seizure classification, and outcomes. Data was divided into 5-year time periods starting from January 2000. The primary endpoint was the number of cases for each xenobiotic. Baseline characteristics and endpoints were analyzed using descriptive statistics. ResultsA total of 84,502 met inclusion criteria. The most common xenobiotics reported were antidepressants (13.0%), antihistamines (10.7%), anticonvulsants (8.7 %), other agents (14.2%), and unknown (11.8%). Single seizures (65.9%) were most prevalent, followed by multiple (28.0%) and then status epilepticus (6.1%). Death occurred in 2.25% of cases. The total count of toxin-related seizures increased throughout the study period from 14,811 cases from 2000 to 2004 to 28,242 cases from 2015 to 2019. In the 2015-to-2019 time frame (n=28,242), the most common xenobiotics included bupropion (13.8%), antihistamines (13.0%), and unknown substances (12.7%). ConclusionThe most common xenobiotics reported in toxicologic exposures with seizures include antidepressants, antihistamines, and anticonvulsants. The incidence of seizures rose throughout the 20-year study period.

Learning Objectives:

Identify the most common xenobiotics associated with seizures

Discuss the trends in toxin-induced seizures and associated xenobiotics over time

Self Assessment Questions:

According to existing literature, which of the following is a common cause of toxin-induced seizures?

A Antidepressants

B: Antihypertensives

C: Barbiturates

D: Benzodiazepines

In this study, what is the trend in number of toxin-induced seizure cases over time?

A Cases are decreasing over time

B Cases are increasing over time

C Cases did not change over time

D This study did not report trends in toxin-induced seizures over time

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-600-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EVALUATING REDUCTIONS IN MEDICAL COSTS AND SAVINGS ASSOCIATED WITH PHARMACIST PRESENCE IN THE EMERGENCY DEPARTMENT USING A NOVEL COST AVOIDANCE FRAMEWORK

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Purpose: To evaluate cost avoidance (CA) associated with emergency medicine (EM)pharmacistspresence in theemergency department (ED)using a novelcomprehensivecost avoidance framework.Methods: This is a single-center, retrospective observational study that will assess interventions from EM pharmacists at the Ohio State Wexner Medical Center between November 1, 2021 and March 31, 2022. Interventions will be categorized into twenty-five unique CA categories, within four large domains including resource utilization, individualization of patient care, adverse drug event prevention, and hands-on care. The following data associated with each intervention will be collected: age, emergency severity index score, disposition, ED length of stay (LOS), boarder status, day of week, time of intervention, and whether the patient had been flagged by any of our automated scoring tools. The primary outcome of this study is total CA associated with EM pharmacists activities in the ED. Secondary endpoints include CA from interventions that resulted from ED-specific scoring flagging patients for pharmacist review, total CA extrapolated to an annual estimate based on total full time equivalents, CA associated with pharmacist intervention per 8 hour shift, and interventions performed with associated cost savings based on patients ESI score, disposition, age, ED LOS, and boarder status. Continuous data will be analyzed using paired Student t-test and Wilcoxon signed rank test. Categorical data will be analyzed using 2 test or Fisher exact test.Results/conclusion: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recognize limitations of cost avoidance studies

Identify steps that can be taken to improve quality of future cost avoidance study

Self Assessment Questions:

Which of the following probability variables is representative of the likelihood a change in the level of care would be made prior to reaching the patient regardless of pharmacist intervention.

A Probability of consequence

B: Probability of trajectory change

C: Direct cost savings

D: Probability of intervention

Cost avoidance values should be expressed as ranges when assumptions with a high degree of uncertainty are being made.

A TRUE

B FALSE

C N/A

D N/A

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-764-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

DOSING STRATEGY EFFECTIVENESS OF DILTIAZEM IN ATRIAL FIBRILLATION WITH RAPID VENTRICULAR RESPONSE (DOSED-AF

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To evaluate the dose-dependent comparative safety and effectiveness between weight-based (WB) and knee-jerk (KJ) dosing strategies for diltiazem in atrial fibrillation with rapid ventricular response (AF-RVR).

Learning Objectives:

Describe the recommended agents for rate control among patients with atrial fibrillation with rapid ventricular response according to the American Heart Association (AHA), American College of Cardiology (ACC), and Heart Rhythm Society's (HRS) guidelines.

Explain the potential risks and benefits for using alternative doses of diltiazem for rate control when managing atrial fibrillation with rapid ventricular response

Self Assessment Questions:

Which of following is not a recommended medication for acute rate control in atrial fibrillation according to guidelines by the American Heart Association (AHA), American College of Cardiology (ACC), and Heart Rhythm Societys (HRS)?

A Diltiazem 0.25 mg/kg IV, maximum 25 mg.

B: Metoprolol 5 mg IV, repeat up to 3 doses

C: Amiodarone 300 mg IV over 1 hour, then 10-50 mg/hour over 24 h

D: Propafenone 450 mg PO x1 dose.

As observed in the retrospective study by Posen and colleagues, what is a potential consequence of using low knee-jerk doses (5-10 mg) of diltiazem for rate control, relative to the standard weight-based dose (0.25 mg/kg)

A Decreased rate control (HR<100 bpm) at 30 minutes

B Decreased need for rescue rate control therapy within 30 minutes

C Prolonged hospital length of stay

D Greater magnitude reduction of systolic blood pressure

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-601-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

OUTCOMES ASSOCIATED WITH SPECIALTY PHARMACY SERVICES IN ONCOLOGY PATIENTS WITH NEUROENDOCRINE TUMORS

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Purpose: Given that specialty pharmacy interventions may improve adherence, this project looks to provide a further translation to value for patients by investigating the relationship between adherence rates and health outcomes. Methods: This is a retrospective chart review of patients who were greater than 18 years old, diagnosed with a malignan neuroendocrine tumor, seen by a UK provider, and fill at UK Specialty Pharmacy (UKSP) from January 1, 2018 to December 31, 2020. This study collected the following information: patient medical record number gender, race/ethnicity, date of birth, age, ICD10, pharmacy referral date, medication therapy, emergency department visits, hospital admissions, prescription fill data and financial assistance documentation. If an emergency department visit or hospitalization occurred, the data reviewer reviewed the EMR to determine the cause of admission. Proportion of days covered ratio (PDC) greater than or equal to 80% will be used as the explanatory variable, and categorical variables will be assessed using Chi-square analysis and Fishers exact test. Results: A total of forty-nine patients will be included for analysis. Investigators will evaluate specialty medication PDC, rate of ED visits and hospitalizations, and patient out of pocket costs to better understand the influence of specialty pharmacy on patients with neuroendocrine tumors. Conclusions: This project aims to explore variations in health outcomes by investigating whether the rates of ED visits and hospital admissions is mediated by adherence rates.

Learning Objectives:

Describe the impact of specialty pharmacy care on outcomes related to medication management in oncology patients with neuroendocrine tumors.

Discuss the relationship between medication adherence rates and patient financial responsibility, rates of emergency department visits, an rates of hospitalizations.

Self Assessment Questions:

Which of the following outcomes were assessed during this study?

A Quality of Life

B: Adherence rates

C: Hospitalizations

D: Both B & C

How did investigators calculate medication adherence?

A Medication Possession Ratio

B Proportion of Days Covered

C Patient Self Reports

D Pill Counts

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-765-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

OPIOID PRESCRIBING TOOLKIT FOR HIGH-RISK PATIENTS AND PRESCRIBERS WITH OUTLYING OPIOID PRESCRIBING PATTERNS

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The US has been in the midst of an opioid crisis since the 1990s. Between the years of 2015 and 2016, there was a 27% increase in deatl rate from opioid overdoses. One factor related to this increase is the prescription of opioid medications beyond the amount that most patients require for adequate pain management. During internal quality improvement assessments, the Pain Stewardship Committee at Froedtert Health identified that some patients receive opioid doses that are higher than the Centers for Disease Controls (CDC) suggested cutoffs of 50 morphine milligram equivalents (MME) per day. Froedtert Health has identified atypical prescribing patterns as an area of opportunity to focus efforts. To affect change at the level of prescribers, this project intends to create an applicable and easily accessible electronic toolkit for use across a wide variety of settings. The goal is to reduce MMEs prescribed by the highest prescribing provider within each specialty. The primary outcome of this quasi-experimental evaluation is to compare the average MMEs prescribed for the top prescriber in each specialty pre- and 2 months post-implementation. Secondary outcomes include comparison of the number of patients with multimodal pain regimens, number of patients with naloxone co-prescriptions, number of patient hospitalizations associated with opioid adverse events, frequency of toolkit access, and prescriber feedback assessing toolkit utility. The toolkit will include opioid tapering schedules, weaning talking points, and promote opioid-sparing multimodal regimens. Those that utilize the toolkit can expect to improve their comfort with opioid prescribing over the course of six months and meaningful change in prescriber behavior is expected to be seen in the months to years after toolkit implementation. As a result, provider practice will be more aligned with CDC recommendations and patients will be at lower risk for complications that accompany opioid therapy.

Learning Objectives:

Recall multimodal pain therapy options.

Identify patients at high risk for opioid overdose.

Self Assessment Questions:

Tricyclic antidepressants like amitriptyline have demonstrated effective pain management in what type of pain

A Musculoskeletal

B: Fibromyalgia

C: Neuropathic

D: Mixed

What is a risk factor for opioid overdose?

A MME<40

B Concomitant opioid and benzodiazepine prescriptions

C Diabetes

D Signed patient agreements

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-858-L08-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

RETROSPECTIVE REVIEW OF INPATIENT CORTICOSTEROIDS IN PEDIATRIC INFLAMMATORY BOWEL DISEASE

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Purpose: The pediatric population lacks data in efficacy and safety of initial inpatient intravenous corticosteroid dosing in inflammatory bowel disease (IBD). The aim of this study is to identify if dose and frequency of intravenous corticosteroids make a difference in safety, symptom improvement, and induction of remission in pediatric IBD. Methods: This study was approved by the Indiana University Institutional Review Board The retrospective chart review included patients aged 2 to 18 years old with Crohns disease (CD), ulcerative colitis (UC) and indeterminate colitis who received inpatient intravenous corticosteroids for at least three days. Patients were excluded if they were admitted to the intensive care unit, had a bowel perforation or small bowel resection or were on corticosteroids for >2 weeks from admission. Patients were stratified into two groups: prednisone or equivalent 40mg or >40mg in total daily dose. The primary outcome assesses efficacy by mean change in Pediatric Crohns Disease Activity Index (PCDAI) or Pediatric Ulcerative Colitis Activity Index (PUCAI) from admission to discharge. The secondary outcome is to determine if dosing and frequency impact rates of adverse drug events. Continuous data will be analyzed with independent t-test or Mann-Whitney U Test. Categorical data will be analyzed with a Chi-square test or Fishers Exact test. Preliminary results: To date, 24 patients were included for analysis with nine patients in the 40mg group and fifteen in the >40mg group. The mean age was 13.3 3.3 years with 11, 10 and 3 patients with CD, UC and indeterminate colitis respectively. There was no difference in mean change of PUCAI and PCDAI scores between the two groups. Safety outcomes were similar between the two groups. Conclusion: Final results will be presented at the 2022 Great Lakes Pharmacy Resident

Learning Objectives:

Describe the current treatment guidelines for pediatric inflammatory bowel disorders and the literature behind the recommendations.

Identify appropriate corticosteroid dosing for pediatric patients with inflammatory bowel disease.

Self Assessment Questions:

Which of the following describes the current dosing strategies for corticosteroid dosing in pediatric inflammatory bowel disorders?

A The frequency of dosing should be every 8 hours to decrease side

B: A maximum of 2mg/kg/day of prednisone or equivalent is recomm

C: Corticosteroids should be given before bedtime to decrease nightt

D: Corticosteroids do not have to be tapered and can stop be stoppe

What is an appropriate initial dose of a corticosteriod for a 5-year old patient who weighs 15 kg with Crohns disease?

A Prednisone 30mg daily

B Prednisolone 10mg daily

C Prednisolone 40mg daily

D Prednisone 5mg twice daily

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-602-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

IMPACTS OF ELEXACAFTOR/TEZACAFTOR/IVACAFTOR ON DAYS OF ANTIBIOTIC TREATMENT IN PEOPLE LIVING WITH CYSTIC FIBROSIS

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Purpose: People living with Cystic Fibrosis (PwCF) have pulmonary exacerbations that require antibiotics for treatment, and as a result often receive courses of inpatient, home intravenous, and home oral antibiotics. Elexacaftor/tezacaftor/ivacaftor (ELX/TEZ/IVA) is a highly effective cystic fibrosis transmembrane conductance regulator (CFTR) modulator for PwCF. The purpose of this study is to evaluate the effect of ELX/TEZ/IVA on overall antibiotic use in PwCF, and in the subgroup of people with advanced lung disease (ppFEV1<40%). Methods: This was a retrospective cohort study of PwCF at the Indiana University Health adult clinic. The primary endpoint was the average number of days of antibiotic therapy " inpatient, home intravenous, and oral antibiotics - one year before starting ELX/TEZ/IVA versus one year after starting ELX/TEZ/IVA. The key secondary endpoint was the primary endpoint in patients with advanced lung disease (ppFEV1<40%). Other secondary endpoints included Cystic Fibrosis Questionnaire-Revised (CFQ-R) respiratory, digestive, and physical domain scores, number of hospitalizations for all causes, days hospitalized for causes other than pulmonary exacerbations, days hospitalized for pulmonary exacerbations, days of home intravenous antibiotics, days of oral antibiotics, ppFEV1, and weight before and after starting ELX/TEZ/IVA. Inclusion criteria for this study were PwCF who have been seen at the Indiana University Health adult CF clinic and received ELX/TEZ/IVA for at least 12 months consecutively. Exclusion criteria were having less than a years worth of records before and after beginning ELX/TEZ/IVA, having received a lung transplant, participation in the ELX/TEZ/IVA clinical trials, or being treated for a nontuberculous mycobacterium (NTM) infection during the study period. Endpoints were analyzed using either a paired t-test, Mann-Whitney U test, or Wilcoxon signed-rank test depending on distribution of data. Results: 172 patients were included in this analysis. Data collection is ongoing. Conclusions: Will be presented at the 2022 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe how elexacaftor/tezacaftor/ivacaftor treats cystic fibrosis and how this could lead to a reduction in pulmonary exacerbations and antibiotic use among people living with cystic fibrosis

Explain the significance of antibiotic reduction in a person living with cystic fibrosis, and the importance of understanding the effects of CFTR modulators in patient subgroups based on baseline FEV1 status.

Self Assessment Questions:

Which of the following benefits are predicted from treatment with elexacaftor/tezacaftor/ivacaftor?

A Narrower-spectrum antibiotic use for pulmonary exacerbation treat
B: Reduction in total number of pulmonary exacerbations
C: Reduction in non-pulmonary exacerbation hospitalizations
D: Reduction in ppFEV1

Which of the following cystic fibrosis patient subgroups was unstudied in the phase 3 elexacaftor/tezacaftor/ivacaftor clinical trials?

A F508del heterozygous mutations
B Baseline ppFEV1 status < 40%
C Age < 18
D Previous CFTR modulator use

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-603-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

ORAL DOSE OPTIMIZED BETA-LACTAMS AS STEP DOWN THERAPY IN UNCOMPLICATED GRAM-NEGATIVE ROD (GNR) BACTEREMIA

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Purpose: Current literature supports antimicrobial oral stepdown therapy in patients with uncomplicated GNR bacteremia with highly bioavailable agents such as quinolones or sulfamethoxazole/trimethoprim but there is conflicting literature on utilizing beta-lactams. A recent meta-analysis reported an increase in recurrent infections in the beta-lactam group compared to fluoroquinolones and sulfamethoxazole-trimethoprim. However, a weakness of the studies included in the meta-analysis was that dosing was not assessed. The purpose of this study is to compare dose optimized beta-lactams against sulfamethoxazole/trimethoprim and quinolones as oral stepdown therapy in uncomplicated GNR bacteremia.Methods: This is a single-center, retrospective study of adult patients admitted with GNR bacteremia at IU Health Bloomington Hospital from January 2016 through September 1st 2021. Patients were identified via ICD-10 codes and included if diagnosed with GNR bacteremia, received parental antimicrobial therapy for 1-5 days, were over 18 years old, and transitioned to oral therapy. Patients will be divided into two separate cohorts: Those who received a beta-lactam and those who received a quinolone or sulfamethoxazole-trimethoprim. Pertinent exclusion factors included non-dose optimized beta-lactams, complicated GNR bacteremia, or prolonged length of stay. Cephalosporins were considered dose optimized if the expected time over the MIC was >60% during the dosing interval, and >50% for penicillins. Primary outcomes included recurrent infection within 30 days and all-cause mortality within 30 days. Secondary endpoints included reported side effects to medications within 30 days or C difficile occurrence within 30 days. Results: Data collection is ongoing, but preliminary results show no significant difference between dose optimized beta-lactams against quinolones and sulfamethoxazole/trimethoprim in 30 day mortality or 30 day re-infection rates.Conclusion: Conclusion to be shared at the 2022 Great Lakes Pharmacy Resident Conference upon completion of data collection.

Learning Objectives:

Recognize the treatment recommendations for GNR bacteremia based on current literature

Describe what makes a beta-lactam dose optimized and why this is important in GNR bacteremia

Self Assessment Questions:

A cephalosporin is considered dose optimized if the time over MIC value is greater than _

A 30%
B: 45%
C: 60%
D: 75%

Recent literature has shown this total duration of IV and highly bioavailable antibiotics may be sufficient for GNR bacteremia?

A 1 day
B 3 days
C 5 days
D 7 days

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-766-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATING A DIVERSITY, EQUITY AND INCLUSION (DEI) RESIDENT RECRUITMENT STRATEGY

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Purpose: The purpose of this study is to evaluate the impact of a DEI-focused recruitment strategy on diversity of applicants to the post-graduate year 1 (PGY-1) Pharmacy program at the University of Michigan Health System (UMHS).Methods: This is a process and outcome-based evaluation study. The process evaluation will be conducted using an observational study design, incorporating plan, do, check, act (PDCA) techniques. Data collected included time spent on DEI recruitment efforts and number of attendees at UMHS recruitment events from pharmacy schools with high underrepresented minority enrollment. The outcome evaluation will be assessed using a two-group, quasi-experimental study design. The primary outcome is the percentage of applicants from pharmacy schools with high underrepresented minority enrollment and secondary outcomes are the percentage of applicants who were interviewed and matched at UMHS from those schools. Demographic and educational data will be used from PhORCAS (Pharmacy Online Residency Centralized Application Service). All applicants to the University of Michigan Health System (UMHS) PGY-1 pharmacy program in 2020-2021 and 2021-2022 will be included. Applicants to other programs such as combined PGY1/2 programs, PGY-1 community and managed care programs and PGY-2 programs will be excluded. Applicant demographics will be analyzed using descriptive statistics and primary and secondary outcomes will be analyzed using a chi-square or Fishers exact test. To detect a 10% increase in applicant diversity, the study will require 250 applications per group for an 80% power. Statistical significance is set at a p-value of 0.05. The study has been approved by the local Institutional Review Board (IRB). Results/Conclusions: At present, data is being collected and analyzed. Full results and conclusions will be presented at the Grea Lakes Pharmacy Resident Conference.

Learning Objectives:

Define ASHP's position on workforce diversity and the value of DEI-focused PGY-1 resident recruitment

Outline methods and results of a UMHS evaluation of DEI-focused resident recruitment

Self Assessment Questions:

In 2020, approximately what percentage of ASHP-accredited residency programs incorporated DEI principles into resident recruitment?

A 5%

B: 15%

C: 25%

D: 40%

Which of the following strategies were utilized to increase diversity of applicants to the PGY-1 pharmacy program at UMHS in 2021-2022?

A Creation of a DEI residency advisory subcommittee

B Review and revision of applicant scoring tools

C Targeted outreach to high underrepresented minority enrollment s

D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-767-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

THE ROLE OF A PHARMACIST IN EDUCATING PATIENTS WITH A NEW DIAGNOSIS OF ATRIAL FIBRILLATION

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Purpose: Atrial fibrillation (AF) is the most commonly diagnosed heart arrhythmia and is associated with numerous long-term complications including heart failure and stroke. Prompt treatment of AF and adherence to therapy is critical for reducing morbidity and mortality and improving prognosis. Clinical practice guidelines recommend anticoagulation with direct oral anticoagulants (DOACs) or warfarin to prevent occurrence of embolic stroke and rate/rhythm control therapy to manage symptoms in patients with newly diagnosed AF. Pharmacists are uniquely skilled in disease state medication management and patier education and have demonstrated impact on clinical outcomes including reducing hospitalizations and improving medication adherence. Currently, there is no published literature evaluating the pharmacists role in educating patients with a new diagnosis of AF. The objective of this study is to describe the effect of pharmacist-driven disease state education and medication counseling on medication adherence in patients with newly diagnosed AF in an outpatient cardiology clinic.Methods: A single center, prospective, case-control study was conducted in patients with a new diagnosis of AF and participated in disease state and medication counseling by a pharmacist at the time of diagnosis between October 2021 and March 2022. Patients were excluded if they were less than 18 years old and/or did not utilize the institutions outpatient pharmacies. The primary outcome is the proportion of days covered (PDC) over 90 days for AF specific medications. Secondary outcomes are time to first fill, number of hospitalizations and emergency department visits due to AF, CHADS2VASc score calculation comparison between physicians and pharmacists, and number of cardiovascular events. These outcomes were compared to a control group of patients that received a new diagnosis of AF without pharmacist intervention.Results: To date, 0 patients are eligible for education and data collectionConclusions: Final results will be presented at the 2022 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Explain the differences between proportion of days covered (PDC) and medication possession ratio (MPR)

Identify the gaps in literature surrounding pharmacist's impact on medication adherence

Self Assessment Questions:

What is an advantage of utilizing PDC over MPR to measure medicatior adherence?

A PDC overestimates adherence

B: MPR does not factor in multiple therapies

C: PDC accounts for early refills

D: MPR is utilized by the Pharmacy Quality Alliance (PQA)

According to current literature, which of the following describes a gap in published studies?

A Medication review identifying drug-related problems

B Disease state education at the time of diagnosis

C Follow up within 6 months of pharmacist intervention

D Impact on clinical outcomes

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-768-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EFFECT OF LONG ACTING INJECTABLE ANTIPSYCHOTIC MEDICATIONS ON PSYCHIATRIC HOSPITAL READMISSIONS

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Purpose: Long acting injectable antipsychotic medications are a mainstay in the treatment of psychiatric disorders. They are administered to increase adherence by reducing the daily oral antipsychotic regimen in a population that has an estimated noncompliance rate of less than 60%. Patients who are noncompliant carry the risk of frequent adjustments to their treatment regimens, relapse into their mental health condition, rehospitalization, and self-harm, therefore, lowering their quality of life. The goal is to determine if there is a decrease in psychiatric hospital readmissions once an injectable antipsychotic has been initiated.Methods: A retrospective chai review at Baptist Health Corbin. Inclusion criteria includes patients 18 years and older on a long acting injectable antipsychotic medication initiated within the past ten years through September 2021. 71 patient charts were selected by running reports that include patients who regularly receive their injection, patients who fill their injection with the outpatient hospital pharmacy, and all inpatient injection administrations. The information accessed and collected include patient age, sex, psychiatric diagnosis, medication name and dose, canceled or missed injection appointments, psychiatric hospital readmissions, and the reason for switching to the injectable. The primary outcome is comparing the total number of psychiatric hospital readmissions from before starting the long acting injectable and comparing it to the number of hospitalizations after starting the medication. The secondary outcome includes the average number of cancelled or missed injection appointments, per patient, to assess compliance.Preliminary results: Data has been collected on 19 patients. 11 of these patients were switched due to compliance issues with their oral regimen. The total number of hospital admissions before starting the injection is 51. The total number of hospital admissions after starting the injection is 6. Conclusion: Long acting injectable antipsychotic medications can help to decrease hospital readmissions and increase compliance.

Learning Objectives:

Discuss the benefits of long acting injectable antipsychotic medications

Define if long acting injectable antipsychotic medications decrease hospital readmissions

Self Assessment Questions:

What is the non-compliance rate in this specific population?

A > 25%

B: < 60%

C: > 75%

D: < 15%

Patients who are non compliant carry the risk of all of the following, EXCEPT:

A Lowering their quality of life

B Relapse into mental health condition

C Decreased health care cost

D Rehospitalization

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-604-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EVALUATION OF INDICATION BASED HEPARIN DOSING REGIMENS ON TIME TO THERAPEUTIC ACTIVATED PARTIAL THROMBOPLASTIN TIME

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Purpose: Heparin is used for anticoagulation in various disease states and circumstances. Several dosing regimens have been studied, many of which are based on indication. Our study site currently uses an indication-based approach for heparin initiation derived from the CHEST guidelines, and a hospital-specific protocol based upon activated partial thromboplastin time (aPTT) for titration. Indications include acute coronary syndrome, deep vein thrombosis/pulmonary embolism, atrial fibrillation, bridge therapy and stroke. The purpose of this study is to evaluate the time to therapeutic aPTT between regimens with a goal of streamlining to a single weight-based initiation protocol.Methods: This is a single-center, retrospective, cohort study conducted at a 433-Bed tertiary care facility in central Kentucky. Data will be collected utilizing the electronic health record for patients admitted from July 1, 2020 to June 30, 2021. Patients will be included if they were at least 18 years old, started on a heparin drip per the indication-based protocol, and if the infusion was continued for at least 24 hours. Exclusion criteria will include patients who died or transferred to Hospice within 24 hours of admission, patients only on intra-procedural heparin drips, physician-modified initial regimens, and vulnerable populations such as pregnant women or prison inmates. Patients will be divided into cohorts based upon dosing indication chosen. The primary outcome is time to therapeutic aPTT. Secondary outcomes include incidence of subtherapeutic/supratherapeutic first aPTT, average first aPTT, number of aPTT checks prior to therapeutic value, need for holding therapy or additional boluses in first 24 hours, and incidence of bleeding in the first 72 hours per the Thrombosis in Myocardial Infarction (TIMI) bleeding criteria. Data will be tested for normality of distribution and will be analyzed using appropriate statistical methods. All tests will use 95% confidence intervals and a p-value of 0.05 to determine significance.

Learning Objectives:

Identify appropriate indications for initiating an intravenous heparin infusion.

Describe potential benefits of using a single weight-based dosing strategy when initiating intravenous heparin therapy.

Self Assessment Questions:

Which of the following initial dosing regimens matches the correct indication for initiating intravenous heparin as referenced by the current CHEST guidelines?

A Stroke: 70 units/kg bolus, 15 units/kg/hr initial rate

B: Bridging therapy: 80 units/kg bolus, 18 units/kg/hr initial rate

C: Acute Coronary Syndrome: No bolus, 15 units/kg/hr initial rate

D: Atrial fibrillation: 70 units/kg bolus, 15 units/kg/hr initial rate

Which is the most common laboratory test for monitoring and titrating intravenous heparin infusions?

A INR

B D-dimer

C Anti-Xa

D aPTT

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-605-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

LIDOCAINE DOSE REQUIREMENTS FOR VENTRICULAR TACHYCARDIA (VT) STORM

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Lidocaine is a commonly used antiarrhythmic in the setting of ventricular arrhythmias and in advanced cardiac life support situations in patients with shock-refractory ventricular fibrillation. Therapeutic drug monitoring is of vital importance as small changes in lidocaine serum concentrations can lead to significant changes in toxicity. Current guidelines recommend a continuous infusion of 1-4mg/min. There is a lack of published studies that evaluate patient specific risk factors that put one at risk of experiencing supratherapeutic levels of lidocaine when used in this setting, nor are there studies that address the infusion rate subsequent role that play on reported levels. The primary objective of this study is to determine the incidence of supratherapeutic lidocaine levels, defined as those reported as >5mcg/ml utilizing any level of a consistent lidocaine dose drawn at least 8 hours after initiation up to 48 hours.

Learning Objectives:

Discuss lidocaine's place in therapy, standard dosing schemes, and therapeutic drug monitoring

Recognize the role of dose administered and potential risk factors on supratherapeutic drug levels.

Self Assessment Questions:

Which of the following is the typical starting dose of lidocaine based on guideline recommendations?

A 1-5mcg/kg/min

B: 2-6mg/min

C: 1-4mg/min

D: 1-4mcg/min

Which of the following best describes lidocaines metabolism and subsequent excretion?

A Lidocaine bypasses metabolism completely

B Lidocaine is primarily metabolized by the liver via CYP3A4 and CY

C Lidocaine is minimally metabolized by the liver via CYP2D6 produ

D Lidocaine undergoes glucuronidation via Phase II metabolism proc

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-606-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

A PROSPECTIVE PHARMACOKINETIC ANALYSIS OF INTRAVENOUS VANCOMYCIN IN CRITICALLY ILL TRAUMA PATIENTS WITH AUGMENTED RENAL CLEARANCE

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Augmented renal clearance (ARC) leads to supraphysiologic drug clearance and reduced exposure to renally eliminated medications such as intravenous vancomycin. This study aims to describe vancomycin pharmacokinetics in ARC and assess pharmacodynamic outcomes. A secondary aim is to compare creatinine clearance (CrCl) estimates to measured CrCl calculations with a 24-hour urine collection.This prospective, single center, clinical pharmacokinetic study will include ter critically ill trauma patients with ARC admitted to a level-1 trauma, academic medical center. Institutional Review Board approval and departmental funding have been obtained. Adult patients admitted to the surgical or neuroscience intensive care unit with a Cockcroft-Gault CrCl >120 mL/min and vancomycin administration within 10 days of injury wi be screened for enrollment. Patients will be excluded for >75 years of age, urine output <0.5 mL/kg/hr, pregnancy, or incarceration. Five serum samples will be collected within 72 hours after the second consecutive vancomycin dose at 1, 2, 3, and 4 hours after infusion initiation with a final sample prior to the next sequential dose or at hour 8, whichever is earlier. A 24-hour urine sample will be obtained within 48 hours of enrollment. Monte Carlo simulations will be performed for pharmacodynamic analysis.Three patients have been enrolled to date. All three patients are Caucasian males aged 52, 33, and 20 with measured CrCl of 130.3, 221.4, and 248.1 mL/min and calculated CrCl of 128.8, 217.6, and 163.9 mL/min. Serum samples were collected following the 8th, 4th, and 2nd consecutive doses of vancomycin. Individual vancomycin half-lives were 4.1, 3.4, and 3.6 hours. Further enrollment is ongoing. This study will provide guidance on vancomycin dosing through pharmacokinetic and pharmacodynamic modeling and o the therapeutic efficacy of more intensive dosing for critically ill trauma patients with ARC. Results will be presented at the 2022 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the physiological mechanism of augmented renal clearance and patient populations identified to be most at risk of having augmente renal clearance.

Identify the implications of augmented renal clearance on vancomycin pharmacokinetics and pharmacodynamics.

Self Assessment Questions:

Based on available evidence, which of the following best describes the relationship between measured creatinine clearance and predicted/calculated creatinine clearance in patients with augmented renal clearance?

A The measured creatinine clearance is greater than what is predicte

B: The measured creatinine clearance is less than what is predicted/

C: There is no difference between measured and predicted/calculate

D: There is no available clinical method to measure creatinine clearar

Which of the following represents the recommended pharmacodynamic target to optimize the bactericidal activity of vancomycin?

A Time/Minimum Inhibitory Concentration (MIC)

B Peak concentration/Minimum Inhibitory Concentration (MIC)

C Area under the curve (AUC)

D Area under the curve (AUC)/Minimum inhibitory concentration (MI

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-607-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

RETROSPECTIVE ANALYSIS OF INITIAL VANCOMYCIN DOSING TROUGHS AND RISK OF ACUTE KIDNEY INJURY (AKI) IN NEONATES

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Purpose: Vancomycin is one of the nephrotoxic agents that may be utilized in treating gram-positive infections like methicillin-resistant Staphylococcus aureus (MRSA) or coagulase-negative staphylococcus aureus (CONS). Vancomycin dosing in neonatal population can be difficult due to the changing renal function in the first several weeks of life. In 2020, Infectious Diseases Society of America (IDSA) recommended dosing vancomycin based on area under the curve (AUC to Minimum Inhibitory Concentration (MIC) for adult and pediatric patients, including neonates. Currently at OSF Healthcare Childrens Hospital of Illinois (CHOI), AUC/MIC has not been established in neonates and trough goals are used. This study will determine the effectiveness of initial dosing protocols at obtaining goal troughs and the incidence of AKI in our neonatal population. Methods: Retrospective review of neonatal patients at Children's Hospital of Illinois who received vancomycin between January 1, 2018 to July 31, 2021. Inclusion criteria include admitted neonatal patients 28 days of age with at least 1 vancomycin dose and at least 1 vancomycin level. Patients must be admitted to NICU or NIC. To be evaluated for AKI, the patient need to have a serum creatinine from before and after vancomycin therapy. Exclusion criteria includes any patient > 28 days, and neonates admitted outside of the NICU or NIC. Neonates will have received at least one dose of vancomycin and have at least one trough drawn.Results: This study will report descriptive statistics (e.g., mean, standard deviation) and/or the proportion or percentage of trough level(s), nephrotoxic agents, goal trough met, and AKI. Conclusions: This study will evaluate if troughs are providing safe as well as effective care in the neonatal population.

Learning Objectives:

Recognize area under the curve (AUC) to minimum inhibitory concentration (MIC) dosing of vancomycin compared to trough dosing

Discuss the incidence of achieving goal troughs and avoiding AKIs in the neonatal population

Self Assessment Questions:

What is the recommended AUC/MIC dosing range for MRSA infections in neonates?

A 400-600 mcg x hr/L

B: 200-400 mcg x hr/L

C: 300-500 mcg x hr/L

D: 600-1000 mcg x hr/L

How does KDIGO classify neonatal acute kidney injury (AKI)?

A SCr change

B Urine output change

C Fluid intake change

D A and B

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-608-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IMPACT OF PHARMACY-DRIVEN RESPIRATORY POLYMERASE CHAIN REACTION (PCR) PANEL EDUCATION ON THE DE-ESCALATION OF ANTIBIOTICS IN A COMMUNITY HOSPITAL

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Purpose: Respiratory infections are often viral, but they are frequently treated with antibiotics. Respiratory PCR (RVP) testing provides a significant opportunity for antibiotic de-escalation in patients who do not meet the criteria of a bacterial infection. The purpose of this study is to determine if providing targeted provider education and utilizing clinical pharmacist interventions will increase the de-escalation of empiric antibiotic therapy for patients who present with a respiratory infection and have a positive viral pathogen on RVP testing. Methods: This IRB-approved, single-center, retrospective chart review involved patients admitted to the hospitalist service at Baptist Health Lexington (BHL) who had a positive viral pathogen on respiratory PCR testing and were started on empiric antimicrobial therapy. Patient charts were reviewed and data was collected before (October 1, 2020 to March 31, 2021) and after (October 1, 2021 to March 31, 2022) pharmacist-driven education was presented to hospitalist providers. Information provided involved appropriate utilization of current BHL procalcitonin and RVP protocols. The primary endpoint is defined as median total days of antibiotic therapy (DOT) between pre- and post-education cohorts. Results (preliminary): A total of 148 patients were evaluated for preliminary data in the pre-education cohort. Of the 148 patients included in the preliminary data, COVID-19 was the pathogen detected on RVP in 124 patients. The remaining patients were positive for Rhinovirus. Median total DOT was 4 days with average IV DOT 2.74 and PO DOT 2.03. An initial PCT level was ordered in 137 of the 148 patients. Median initial PCT level was 0.12 ng/mL, with only 17 of 148 patients having any measured PCT >0.25 ng/mL. Repeat PCT levels were ordered in only 4 of the 148 patients. Median time to antibiotic de-escalation was 1.5 days with a median hospital stay of 5 days. Data collection is ongoing.

Learning Objectives:

Discuss the utility of respiratory PCR testing for de-escalation of antibiotic therapy

Describe the differences in antibiotic prescribing pre- and post-pharmacist-driven respiratory virus panel (RVP) education

Self Assessment Questions:

According to the CDC and IDSA, what is the rate of bacterial coinfection for COVID-19?

A <10%

B: 15%

C: 30%

D: 50%

What is the cutoff procalcitonin level that is considered possibly indicative of a bacterial infection?

A 0.05 ng/mL

B 0.10 ng/mL

C 0.25 ng/mL

D 0.50 ng/mL

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-769-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

ASSESSMENT OF RATES OF SEXUAL DYSFUNCTION DUE TO ANTIDEPRESSANTS THROUGH PHARMACIST-LED OUTREACH

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Treatment-emergent sexual dysfunction (TESD) is a commonly reported side effect in antidepressant therapy with variable incidences among different medications. Incidence reported by patients is 15-20% while incidence increases to 14-73% once patients are specifically asked about sexual side effects. Validated questionnaires assessing sexual dysfunction are available to help providers identify this side effect. The ambulatory psychiatry pharmacy services at this institution have referral based over-the-phone follow-up between prescriber visits focusing on tolerability and efficacy of medication. Prior to July 2021, there was no standardized way of addressing TESD caused by antidepressants. The purpose of this study is to assess the rates of identified sexual dysfunction due to antidepressants pre- and post-sexual dysfunction questionnaire administered by pharmacists.This is an IRB-approved retrospective, observational cohort study. Patients were included if they were at least 18 years of age following with ambulatory psychiatry pharmacy. Patients will be excluded if they are not on antidepressants. Patients in the post-questionnaire group were excluded if the Arizona Sexual Experiences Scale (ASEX) was not completed. Patients were identified through chart review of pharmacy follow-up encounters using key terms that may identify TESD such as sexual dysfunction, erectile dysfunction, libido, or orgasm. Patients in the post-questionnaire group will be identified by completion of ASEX scale. The primary objective is to determine the rate of sexual dysfunction identified through patient questionnaire administered by pharmacists before and after addition of the ASEX scale. Secondary objectives are to describe medication recommendations due to adverse effects accepted by physicians and describe antidepressants patients are on when reporting sexual dysfunction. All data collected is be coded and stored in a REDCap database. The primary outcome will be analyzed using a Chi-squared test and secondary outcomes will be analyzed using descriptive statistics.Results and conclusions will be presented at the conference.

Learning Objectives:

Discuss definition, incidence, and management of treatment-emergent sexual dysfunction caused by antidepressants.

Describe pharmacist role and possible impact in identifying treatment-emergent sexual dysfunction in an ambulatory psychiatry clinic setting.

Self Assessment Questions:

All of the following medications are commonly associated with a high risk for treatment-emergent sexual dysfunction except:

A Citalopram

B: Venlafaxine

C: Bupropion

D: Sertraline

Which of the following statements is true:

A Validated questionnaires assessing sexual dysfunction are availab

B Incidence of sexual dysfunction are the same amongst antidepress

C Clear guideline recommendations exist to treat sexual dysfunction

D All of the above are true.

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-830-L05-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

CHARACTERIZATION OF PHENOBARBITAL PRESCRIBING PRACTICES FOR THE TREATMENT OF SEVERE ALCOHOL WITHDRAWAL AND DELIRIUM TREMENS IN A MEDICAL INTENSIVI CARE UNIT

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Purpose: Alcohol withdrawal is a serious and potentially life-threatening condition. Management of alcohol withdrawal involves the administration of benzodiazepines; however, high doses of benzodiazepines can cause major adverse effects including confusion, oversedation, and respiratory depression. Healthcare providers commonly add phenobarbital as an adjunctive agent to decrease the total amount of benzodiazepines used for alcohol withdrawal; however, standardized dosing regimens and administration times do not exist. This study will evaluate various phenobarbital dosing regimens for adjunctive alcohol withdrawal treatment in critically ill patients. Methods: This study is a single center, retrospective chart review of adult patients who were admitted to the medical intensive care unit and received at least one dose of phenobarbital and a benzodiazepine for the treatment or prevention of severe alcohol withdrawal and/or delirium tremens between January 1, 2016 and September 30, 2021. Exclusion criteria include patients that required mechanical ventilation, left against medical advice or expired within 24 hours of admission, had a barbiturate listed as a home medication, listed as an allergy, or detected in the urine drug screen, transferred from an outside hospital, or were pregnant. Patients will be grouped based on whether they were prescribed a low (195 mg/day) or high (> 195 mg/day) dose of phenobarbital and if the phenobarbital was prescribed early (24 hours) or late (> 24 hours) into the hospital admission. The primary outcome of this study is intensive care unit length of stay. Secondary outcomes include hospital length of stay, total phenobarbital and benzodiazepine doses, use of other adjunctive agents to control alcohol withdrawal symptoms, alcohol withdrawal-related complications, and treatment-related adverse effects. Results/conclusion: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review current literature evaluating the use of phenobarbital as adjunctive therapy for the treatment of alcohol withdrawal

Discuss the potential benefits of phenobarbital when used as an adjunctive agent to benzodiazepines for the treatment of alcohol withdrawal

Self Assessment Questions:

Data surrounding use of phenobarbital for the treatment of alcohol withdrawal is limited by which of the following?

A Heterogenous study designs

B: Unstandardized dosing regimens

C: Unmeasured confounding variables

D: All of the above

Which of the following is a reported outcome associated with the use of phenobarbital for the treatment of alcohol withdrawal?

A Increased rates of mechanical ventilation

B Decreased cumulative doses of benzodiazepines

C Decreased potential for drug interactions

D Increased need for other adjunctive therapies

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-609-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

OPTIMAL CALCIUM REPLETION DOSING IN TRAUMA AND SURGICAL PATIENTS REQUIRING ACTIVATION OF MASSIVE TRANSFUSION PROTOCOL (MTP)

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Purpose: Massive transfusion protocol (MTP) is the life-saving replacement of blood and blood factors in patients experiencing hemorrhagic shock. MTP is defined as the administration of 10 units of packed red blood cells (PRBCs) in 24 hours or 4 units of PRBCs in one hour to treat a hemorrhage. Hypocalcemia is a frequent complication of MTP as the citrate added to PRBCs, fresh frozen plasma (FFP), and platelets binds to calcium. In normal circumstances, the liver clears citrate quickly; however, in critical illness and in the administration of multiple blood products, the clearance is slowed. Chelation of calcium by citrate and resultant ionized calcium (iCa) levels <0.9 mg/dL has been associated with increased mortality in critically ill patients. To date there is no standardized calcium replacement strategy when MTP is initiated; however, replacement of an average of 4 grams of CaCl2 has been studied as an insufficient replacement in MTP. The objective of this study is to determine the optimal ratio of grams (g) of citrate to calcium milliequivalents (mEq) to achieve an ionized calcium level of 1.12 within 24 hours.Methods: This is a retrospective, single-centered, cohort study of trauma and surgical patients receiving MTP activation from January 1 2010 - July 31, 2021. The primary endpoint is to determine the optimal ratio of grams of citrate to calcium milliequivalents (MEq) to reduce mortality in MTP. Secondary endpoints include ICU and hospital lengths of stay, mortality at 24 hours and 30 days, blood products used in MTP, and type of Calcium used.Results and Conclusions: Results and conclusions will be presented at the 2022 Great Lakes Pharmacy Residency Conference

Learning Objectives:

Review the pathophysiology of calcium within the coagulation cascade, and how it relates to MTP.

Discuss the literature surrounding hypocalcemia's harm in surgery/trauma patients and calcium repletion in massive transfusion.

Self Assessment Questions:

Which blood product contains the most citrate?

A Packed Red Blood Cells

B: Fresh Frozen Plasma

C: Platelets

D: Cryoprecipitate

A patient presents with a GSW to the abdomen. In the OR the patient receives 10 units of PRBCs and 10 units of fresh frozen plasma. How many MEq of Calcium should we give this patient?

A 1

B 4

C 5

D 10

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-610-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

IMPACT OF A SKILLS-BASED LABORATORY ON FIRST AND THIRD YEAR PROFESSIONAL STUDENTS' COMFORT LEVEL AND ABILITY TO COUNSEL ON MEN'S AND WOMEN'S HEALTH PRODUCTS

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To compare first and third professional year students comfort level and ability to counsel patients after completing a skills-based laboratory on sex, gender, and reproductive healthMethods: First (N=133) and third (N=147) year pharmacy students participated in a skills-based laboratory on sex, gender, and reproductive health products. The laboratory included two small group discussions focused on a variety of sexual health products for men and women and a 10-minute counseling session with a mock patient on a specific product. Students completed pre and post surveys to assess their perceived comfort level and ability to counsel on products. The 45-item survey was based on the theory of planned behavior (attitudes, subjective norm, perceived behavioral control and intention). Items examined students perceived comfort level and ability to counsel: 1) cis- or transgender patients and (2) on 11 health product types. Their intent to counsel patients and prescribe products in the future were also assessed. A 7-point Likert scale (strongly disagree to strongly agree) was utilized. Descriptive statistics will be performed. T-tests will be utilized for comparisons between first and third professional year students.Results/Conclusion: Final results and conclusions will be presented at the 2022 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the current literature involving pharmacy students' and/or pharmacists' comfort, confidence, and attitudes in relation to sexual health topics.

Recognize strategies that can be used to increase pharmacy students' confidence and perceived ability to counsel on sexual health products.

Self Assessment Questions:

Current literature involving pharmacy students and/or pharmacist comfort with sexual health topics is mostly focused on:

A Prescribing hormonal contraceptives

B: Counseling on any sexual health product use

C: Prescribing emergency contraceptives

D: Counseling on emergency contraceptive use

Based on the results presented from this research, which activity improved pharmacy students perceived ability to counsel on sexual health products?

A Post-laboratory reflection

B In-laboratory small group discussion

C Counseling a student peer

D Watching counseling video examples

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-770-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

INVESTIGATION OF TRANSITIONS OF CARE ISSUES RELATED TO THE USE OF INDUSTRY-SUPPLIED MEDICATION STARTER KITS

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Current practice at TriHealth Good Samaritan Hospital includes providing direct oral anticoagulant (DOAC) starter kits free of charge to eligible patients for initial VTE treatment by way of manufacturer coupon This process provides the first month of therapy, but practitioners are observing a trend in readmission rates from lack of access to care beyond the first month of treatment. The goal of this study is to better understand barriers patients face when discharged from the hospital tha results in interruption of therapy, and to use this information to identify solutions and implement process changes to improve transitions of care The Joint Commission reports anticoagulants as high-risk medications due to complex dosing, insufficient monitoring, and inconsistent patient compliance. Currently, no formal studies have been found which investigate the clinical impact of anticoagulant medication vouchers on transitions of care. Previous studies for different agents have shown that copayment reduction and pharmacist involvement in transitions of care improves adherence, improves rates of outpatient follow-up, and lowers the risk of therapy discontinuation.This investigation is a prospective, single-arm, observational study following patients through six months post-discharge with a DOAC starter kit (apixaban or rivaroxaban) for treatment of acute VTE. This study will include patients 18 years and older with English-speaking fluency and a diagnosis of acute VTE, who provided informed consent and were given a DOAC starter kit during their inpatient admission. A follow-up phone call 31-40 days post-discharge will be the primary outreach to assess study outcomes and data points. A standardized questionnaire will be used, and the study investigators will also track refill history through six months of therapy. Study investigators hypothesize variables that may impact access to care include the DOAC prescribed and types of insurance coverage.Results and conclusion will be reported at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss the importance of pharmacist involvement in anticoagulation transitions of care

Relate safety recommendations regarding anticoagulation transitions of care to the current DOAC starter kit discharge program at TriHealth Good Samaritan Hospital

Self Assessment Questions:

A recent investigation conducted by Karaoui et al. studied the impact of anticoagulation patient education provided by pharmacists via a post-discharge phone call. Which outcome was found to be significantly impacted by this intervention?

A Improvement in bleeding rates

B: Improvement in hospital readmissions

C: Improved rate of contacting outpatient provider for follow-up appoi

D: Improvement in knowledge of drug-drug interactions

Which anticoagulation counseling point addressed in the Joint Commissions R3 Report National Patient Safety Goal (NPSG) for Anticoagulant Therapy is the most relevant when considering access to DOAC therapy post-discharge from TriHealth Good Samaritan Hospital?

A Adherence to medication dose and schedule

B Importance of follow-up appointments and laboratory testing (if ap

C Potential drug-drug and drug-food interactions

D The potential for adverse drug reactions

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-831-L05-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

IMPLEMENTATION OF A STANDARD WORKFLOW FOR MATERNAL FETAL MEDICINE PHARMACISTS (MFMP)

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Purpose: Pharmacist participation in high acuity areas is linked to improved patient outcomes, decreased adverse drug events, and cost savings. However, data supporting the benefits of pharmacists for the care of patients in the perinatal period is lacking. Clinical pharmacy involvement may help to maximize outcomes for the maternal-fetal dyad due to the high acuity and frequent patient-specific interventions seen in this practice setting. In 2020, Mercy Health Muskegon (MHM) began providing dedicated decentralized pharmacist clinical services for the obstetrics unit. The purpose of this quality improvement project is to develop standardized workflow and training for the maternal-fetal medicine pharmacist to provide the best patient care for this unique patient population.Methods: In December 2020, ASHP published recommendations for establishing clinical pharmacy practices for obstetric patients. A gap analysis was completed in November 2021 to identify opportunities for improvement to meet best practice standards. Key measures included determination of the optimal timing of MFMP shift, creation of pharmacist competencies and training materials, integration of the MFMP into the provider care team, and the evaluation of high-risk patients for clinical pharmacist interventions. To help complete these gaps, surveys were developed and distributed to nearby hospital sites as well as obstetric providers. A standardized process utilizing the Maternal-Fetal Triage Index (MFTI) and associated documentation by clinical pharmacists was piloted in January 2022. Primary outcome was the number gaps closures completed by April 2022. Secondary outcome included the number of completed patient interventions utilizing the triage tool.Results and Conclusions:Results and conclusions will be presented at the GLPRC.

Learning Objectives:

List best practice ASHP recommendations for pharmacy clinical service for the obstetric patient

Explain the components of the MFTI score

Self Assessment Questions:

ASHP recommendations include all of the following except:

A Timing the shift of the pharmacist based on needs of the birthing c

B: Having the pharmacist provide services from central pharmacy

C: Having a process for identifying higher risk obstetrical patients req

D: Having the pharmacist participate in board rounds or clinical meeti

The MFTI triage tool utilizes all of the following except:

A Infections such as HIV status, HSV, or strep B

B Ethnicity of the mother

C Maternal vital signs

D High risk medication use

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-771-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

CLINICAL IMPACT OF MULTIPLEX PCR (POLYMERASE CHAIN REACTION) TESTING PAIRED WITH PHARMACIST NOTIFICATION FOR BLOODSTREAM INFECTIONS

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Purpose: Bloodstream infections are associated with significant morbidity and mortality, and timely initiation of appropriate antimicrobial therapy is crucial for treatment success. Current literature suggests when rapid diagnostic testing is combined with real-time pharmacist intervention for bloodstream infections, there is a decrease in time to optimal antimicrobial therapy, shorter hospital length of stay, and decreased health-system costs. Most of the available data comes from large academic medical centers or institutions where clinical pharmacy specialists in infectious diseases are the main pharmacist representatio in the intervention process. The objective of this study is to evaluate the clinical impact of multiplex PCR paired with a decentralized clinical pharmacist-driven notification process for the management of bloodstream infections at a community teaching hospital.Methods: This single-center, pre-post, quasi-experimental study was approved by the Institutional Review Board and conducted at Ascension Genesys Hospital. A retrospective chart review evaluated patients who had a positive blood culture during the pre- and post-intervention time periods. Eligible patients were at least 18 years of age and had a positive blood culture during admission to an inpatient or observation unit. Patients were excluded if they were pregnant, had a known positive blood culture on admission, discharged or died prior to culture result, were receiving hospice or palliative care, or had a polymicrobial blood culture. The primary outcome was time to effective antimicrobial therapy, which was defined as initiation of an antimicrobial agent to which the organism ultimately tested susceptible. Secondary outcomes included time to optimal antimicrobial therapy, incidence of patients switched to effective and optimal therapy, hospital length of stay, and in-hospital mortality. Statistical analysis included Mann-Whitney U, Chi-square, and Students t-tests, when appropriate.Results/Conclusions: Results and conclusions will be presented at the 2022 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss the available literature surrounding rapid diagnostic testing for the treatment of bloodstream infections.

Describe the impact that rapid diagnostic testing combined with pharmacist intervention may have on outcomes for patients with bloodstream infections.

Self Assessment Questions:

For positive blood cultures, traditional organism identification methods provide results in approximately _____ hour(s) compared to approximately _____ hour(s) when using multiplex PCR rapid diagnostic testing.

A 24, 1

B: 12, 4

C: 24, 5

D: 48, 1

Which of the following is an advantage of rapid diagnostic testing when used in the treatment of bloodstream infections?

A It can decrease time to effective antimicrobial therapy

B It can decrease mortality in conjunction with an antimicrobial stew

C It can decrease hospital length of stay

D All of the above are advantages of rapid diagnostic testing

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-772-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

QTC PROLONGATION RISK AMONG PATIENTS RECEIVING ORAL CHEMOTHERAPY

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Prolongation of the QTc interval is significant due to increased risk of Torsades de pointes. Risk for QTc prolongation is multifactorial, including nonmodifiable factors such as advanced age, female gender, and cardiac comorbidities, as well as metabolic abnormalities, or as a result of decreased elimination. Drug-drug interactions may also contribute. Multiple risk scores exist to better describe the risk of QTc prolongation to individual patients, but none are specific to cancer patients. Oral chemotherapy offers significant patient convenience, but not without adverse effects. A total of 25 oral oncology medications have recommended EKG monitoring in the package insert. The aim of this study is to identify risk factors for and describe QTc prolongation among oral chemotherapy patients as well as explore the utility of available risk scores modified to the outpatient setting.

Learning Objectives:

Describe risk factors for prolonged QTc interval

Identify QTc-prolonging medications

Self Assessment Questions:

Which of the following may be risk factors for prolonged QTc interval?

A Obesity

B: Low baseline QTc

C: Hypokalemia

D: Male gender

Which of the following medications may cause QTc prolongation?

A Citalopram

B Lisinopril

C Prochlorperazine

D Doxycycline

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-773-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

COMMUNITY-BASED SPECIALTY PHARMACIST CONSULTATION TO INCREASE PRE-EXPOSURE PROPHYLAXIS AWARENESS AND ACCESS IN AT-RISK PATIENTS PRESCRIBED SEXUALLY TRANSMITTED INFECTION TREATMENT

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Objectives: Patients with a sexually transmitted infection (STI) such as gonorrhea or chlamydia are at an increased risk of acquiring and transmitting HIV. Pre-exposure prophylaxis (PrEP) is indicated in patients with a recent bacterial STI and is a key component in preventing HIV transmission. The objective of this study is to increase PrEP awareness and access in those prescribed STI treatment, assess patients potential willingness to obtain PrEP from a community pharmacist, and determine patients preferred method of obtaining PrEP.Methods: This is an IRB-approved, prospective, interventional study. A community specialty pharmacist will identify antibiotic prescriptions for STI treatment as a means to conduct an HIV prevention consultation. The specialty pharmacists will target single one (1) gram doses of azithromycin to prompt a telephonic patient consultation. With the patients consent, the specialty pharmacist will conduct a telephonic consultation to discuss HIV risk and HIV prevention methods, including PrEP. The specialty pharmacist will ask pre-set questions during the consultation to gauge the patients knowledge about, previous experience with, and interest in obtaining PrEP. Patients will be asked about any previous HIV testing and if they would like more information about local testing resources. Willingness to obtain PrEP from a pharmacist in a local community pharmacy setting will be assessed. Patients will be asked about their preferred method of obtaining PrEP. The pharmacist will provide the contact information of local PrEP providers to enable linkage into care if patient is interested. The consultation consists of fourteen yes/no and multiple-choice questions. Data collected from consultation response will be reported using descriptive statistics.Results: Results and conclusions will be presented the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify the bacterial sexually transmitted infections which correlate strongly with HIV acquisition

Recognize the indications for initiating pre-exposure prophylaxis

Self Assessment Questions:

What bacterial sexually transmitted infections are associated with an increased risk for HIV?

A Gonorrhea

B: Chlamydia

C: Syphilis

D: A and C

Which of the following are indications for initiating pre-exposure prophylaxis?

A Injection drug use with sharing of needles/equipment

B A recent bacterial sexually transmitted infection

C HIV-positive sex partner

D All of the above

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-774-L02-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EFFICACY OF INTRAVENOUS VERSUS ORAL STEP-DOWN ANTIBIOTIC THERAPY FOR PERFORATED DIVERTICULITIS

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Purpose: Acute diverticular disease results in approximately 130,000 hospitalizations annually, with a subset of these patients experiencing perforated diverticulitis. Management of diverticular perforation includes a variety of surgical interventions and/or medical management with antibiotics. There is a growing body of literature surrounding the use of oral step-down therapy for complex infections such as endocarditis and bone/joint infections, but there is limited data pertaining to oral step-down therapy in complicated intra-abdominal infections. Our objective is to compare clinical outcomes of patients diagnosed with perforated diverticulitis treated with intravenous antibiotics versus oral step-down regimens.Methods: This study will be a retrospective, single-center, cohort study comparing outcomes in hospitalized patients from 01/2015 12/2020. All adult inpatients diagnosed with perforated diverticulitis confirmed via CT imaging and requiring management with antimicrobial therapy were considered for inclusion. Exclusion criteria included bacteriological evidence of resistance to appropriate oral step-down therapy options, NPO status as time of discharge, ongoing intravenous antibiotics for active intra-abdominal infection, transfer from outside hospital, and deceased within 48 hours of treatment initiation. The primary outcome was a composite endpoint at 30-days from the time antibiotics were stopped including re-initiation of antibiotics, all-cause mortality, and hospital readmission. Key secondary endpoints included individual components of the primary outcome, escalation of therapy during treatment, and length of hospital admission. Comparisons of categorical data were performed via 2 or Fishers exact test as appropriate while continuous data were evaluated via the Students t or Mann-Whitney U test as appropriate. Multivariable logistic regression was utilized to identify predictors of treatment failure, and a time to even analysis via Kaplan-Meier curve was performed for the endpoints of all-cause mortality and hospital readmission. Results: Preliminary results will be presented at the 2021 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Review the available literature pertaining to the use of oral step-down antibiotics for intra-abdominal infections and current IDSA guidance on the practice.

Identify what antibiotic regimens can be utilized as oral step-down therapy.

Self Assessment Questions:

Per 2010 IDSA guidelines, what criteria should be met for patients to be considered for oral step-down antibiotics?

A Convalescing from infection

B: Tolerating oral diet

C: Organisms identified in culture susceptible to oral antibiotics

D: All of the above

In the absence of cultures to guide therapy, what oral regimens are considered acceptable for oral step-down therapy?

A Levofloxacin

B Amoxicillin

C Amoxicillin-clavulanate

D Metronidazole

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-611-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

IMPROVEMENT OF ORAL ANTICANCER AGENT TOLERABILITY BY IMPLEMENTING PHARMACIST INTERVENTIONS WITHIN A HEALTH SYSTEM-BASED SPECIALTY PHARMACY

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Purpose: The University of Illinois Hospital and Health Sciences System Specialty Pharmacy Services (UI-SPS) is a dual accredited Specialty Pharmacy that offers comprehensive clinical management for patients with complex diseases. UI-SPS serves a large population of patients receiving care from the UI Health Cancer Center (UICC) who are prescribed oral anti-cancer agents (OAAs). UI-SPS provides patients with medication counseling prior to treatment initiation and ongoing monitoring via scheduled monthly clinical assessment (MCA) telephone calls. Pharmacists conduct interventions if a medication issue is discovered while the patient is on treatment. Interventions are events that may arise secondary to scheduled activities such as MCAs or from spontaneous patient or provider reports in which a medication related problem is identified that requires further action, documentation or escalation to the specialty clinic. The purpose of this study is to describe and analyze pharmacist interventions related to improving medication tolerability in patients taking OAAs. The knowledge gained from this study could provide insight on implementation of a targeted interventions program in response to patient reported tolerability issues in a health-system specialty pharmacy.Methods: This study consists of three phases. Phase one is a literature review to highlight the beneficial impact that health-system pharmacists have. Phase two is a retrospective chart review of clinical interventions that were completed by UI-SPS oncology pharmacists from January 1st, 2018 to January 31st, 2022. During this phase, all interventions conducted on patients taking OAAs will be reviewed, categorized, and analyzed. Phase three will be the optimization of workflow to improve pharmacist intervention documentation. Preliminary Results: Research still in progress. Conclusions: This study will provide an opportunity to improve medication tolerability issues through optimizing pharmacist interventions in oncology patients. In addition, this study could provide a standardized method for documenting and tracking pharmacist interventions within a health system-based specialty pharmacy.

Learning Objectives:

Recognize the benefits of implementing a targeted intervention program for patients taking oral anti-cancer agents.

Describe an efficient way for health system-based specialty pharmacists to conduct and document meaningful interventions throughout the patient care process.

Self Assessment Questions:

Which of the following is not a potential benefit of a targeted intervention program for patients taking oral anti-cancer agents?

A Improved medication adherence

B: Improved medication tolerability

C: Cost avoidance

D: Payor reimbursement

Which of the following are necessary components of the documentation of pharmacist interventions (Select ALL that apply):

A Date of service

B Patient assessment

C Summary of medication related issue

D Need for coordination

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-612-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

REDUCING UNNECESSARY TREATMENT OF ASYMPTOMATIC HYPERTENSION IN HOSPITALIZED PATIENTS

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PurposeUp to 50-70% of inpatients have elevated blood pressure (BP), but not all have true, symptomatic hypertension. Hypertensive emergency only occurs in 1% of adults and necessitates use of intravenous antihypertensives. Hypertensive urgency, or asymptomatic hypertension, is 2-3 times as common as hypertensive emergency and is defined as asymptomatic systolic blood pressure (SBP) of at least 180 mmHg and/or diastolic blood pressure (DBP) of at least 120 mmHg. Treatment of asymptomatic hypertension is oral antihypertensives. This project aims to reduce unnecessary as needed (PRN) antihypertensive use in inpatients with asymptomatic hypertension.MethodsInterventions included removal of PRN antihypertensives from admission order sets, increasing default BP notification parameters, and interdisciplinary education on management of inpatients with hypertension. Pre-intervention (July 2021 through September 2021) and post-intervention (November 2021 through January 2022) data is being collected to analyze safety and efficacy of the interventions. The population included was adults admitted to medical service with at least one elevated BP reading, excluding patients with hypertensive emergency.Preliminary ResultsPre-intervention, 1,091 encounters were identified with an elevated BP reading with 15% having orders for PRN antihypertensives and 6% having PRN medications administered. The most common SBPs treated with PRN antihypertensives were less than 160 mmHg and 180-199 mmHg (30.4% each) followed by 160-179 mmHg (28.1%). Both SBP and DBP had the most frequently percentage drop of 0-9.9% after treatment with PRN antihypertensives. In descending order, the most administered PRN antihypertensives were intravenous labetalol, intravenous hydralazine, oral clonidine, and oral hydralazine, with intravenous labetalol causing the largest drops in SBP and DBP.ConclusionsThere may be lack of knowledge regarding management of inpatient hypertension causing unnecessary use of PRN antihypertensives, which multimodal interventions may decrease.

Learning Objectives:

Identify potential harms of unnecessary treatment of asymptomatic hypertension with as needed antihypertensive medications

Describe situations where treating hypertension with as needed antihypertensive medications is appropriate

Self Assessment Questions:

Which of the following is a potential risk of inappropriate use of as needed antihypertensive medications?

A Myocardial infarction

B: Stroke

C: Hypotension

D: All of the above

Which patient has a true indication to receive an intravenous as needed antihypertensive medication?

A 85-year-old female presenting with shortness of breath and a bloo

B 65-year-old male with chronic kidney disease who presents with a

C 40-year-old male presenting with altered mental status of unknown

D 70-year-old female who is post-op day 1 after surgery to repair a h

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-775-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

DIFFERENCE IN WEIGHT CHANGE AMONGST INTEGRASE STRANI TRANSFER INHIBITORS

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Weight gain is a recognized adverse effect across INSTIs. This was identified through post-marketing data in both treatment-nave and treatment-experienced people living with HIV (PLWH) who initiated INSTI-based therapy. Few studies have evaluated weight change when switching between a first-generation INSTI or a second-generation INSTI, but no studies have evaluated a highly controlled patient population with minimal interruptions to antiretroviral (ARV) therapy, such as those within a correctional facility. The goal of this study is to evaluate weight change due to this therapy switch.A medical chart review will evaluate PLWH who are incarcerated within the Illinois Department of Corrections. Patients included in this analysis are adults >18 years of age who have established HIV care through telemedicine a UI Health and are virologically suppressed on a first-generation INSTI-based regimen for at least 12 consecutive months, then switched to a second-generation INSTI-based regimen. Exclusion criteria in this population are those not incarcerated for the entirety of their study period, lack required documented outcome data during their study period, are pregnant, ARV-nave. Average weights and body mass indices (BMI, kg/m2) will be collected for the 12 months prior to regimen switch as well as 12 months post-regimen switch. Additional data to be collected includes age, race, gender, height, ARV regimens, CD4 count, HIV viral load, concurrent medications, and comorbid conditions. The primary outcome will assess weight change (kg). Secondary outcomes will evaluate change in BMI, change in BMI categorization, the timepoint when these changes occurred, and the development of metabolic diagnoses, such as diabetes, hyperlipidemia, or hypertension. Statistical analysis will include descriptive statistics along with the paired students test to compare pre- and post- weight change and BMI.Summary of results to support conclusion reached will be available at the time of presentation at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify if a change from baseline weight is observed in patients established on a first-generation integrase strand transfer inhibitor (INSTI)-based regimen and subsequently switched to a second-generation INSTI-based regimen

Recognize any metabolic changes observed in patients established on a first-generation INSTI-based regimen and subsequently switched to a second-generation INSTI-based regimen

Self Assessment Questions:

1.What patient would be eligible for inclusion of this study, based on our primary objective to evaluate weight change in patients who switch from a first-generation INSTI to a second-generation INSTI?

A Delstrigo to Dovato

B: Genvoya to Biktarvy

C: Descovy + Isentress to Truvada + Isentress

D: Juluca to Biktarvy

What objective parameters would be useful in assessing metabolic changes related to an adjustment in medication?

A BP

B Lipid panel

C HgbA1C

D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-680-L02-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

MIDODRINE SAFETY AND EFFICACY ON INTRAVENOUS VASOPRESSOR LENGTH OF THERAPY

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Purpose: Approximately 27% of intensive care unit (ICU) patients require use of intravenous (IV) vasopressors to maintain hemodynamic support. Some patients may develop persistent vasodilation as a result, causing them to depend on IV vasopressors to meet mean arterial pressure (MAP) goals despite evidence of organ hypoperfusion. Midodrine is an oral alpha-1 agonist which increases blood pressure through vasoconstriction. It is often used off-label in the ICU to facilitate weaning patients off low doses of IV vasopressors. This practice has been challenged most recently by the results of the MIDAS trial, which showed midodrine did not decrease time to vasopressor discontinuation or length of stay in the ICU or hospital. The purpose of this study is to further evaluate if there is a difference in duration of IV vasopressors after the addition of midodrine compared to single vasopressor without midodrine in patients admitted to a critical care level of care at a single institution. Methods: This is a retrospective, single-center chart review of patient receiving midodrine in addition to an IV vasopressor at Jewish Hospital during the period of October 1, 2018 to November 30, 2021. A patient list was generated from the institutions electronic medical record and includes patients that received at least 3 doses of midodrine in addition to a single IV vasopressor for 24 hours or longer for the study group. The control group consists of patients who only received a single IV vasopressor. The primary endpoint was duration of IV vasopressor after addition of midodrine compared to when midodrine was not added. Results/Conclusion: Data collection is ongoing. Results and conclusion will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss current literature regarding the effects of midodrine when used concurrently with intravenous vasopressors.

Identify the advantages and disadvantages of midodrine use to reduce intravenous vasopressor dose requirements in the ICU.

Self Assessment Questions:

What is an adverse event experienced by patients receiving midodrine in the MIDAS trial?

A Bradycardia

B: Edema

C: Anemia

D: Insomnia

Which of the following is an adverse effect of prolonged use of intravenous vasopressors? Answer C

A Pulmonary edema

B Hepatotoxicity

C Limb ischemia

D Delirium

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-613-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

DEVELOPING AN ONCOLOGY SPECIALTY PHARMACY PERFORMANCE METRICS DASHBOARD: DOES HEALTH-SYSTEM PHARMACIST MANAGEMENT OF ORAL CHEMOTHERAPY IMPACT ADHERENCE?

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Optimization of medication use metrics, such as adherence, is increasingly important in oncology given increased use of oral anticance medications in the outpatient setting. It is estimated that 30% to 50% of chronic medications are not taken as prescribed and non-adherence to oral anticancer agents specifically is associated with increased mortality Studies have demonstrated that medication use metrics are significantly improved when patients fill within a health-system specialty pharmacy (HSSP) as compared to an external specialty pharmacy. While optimization of medication use metrics is important for patient outcomes it is also vital to demonstrate these metrics to support patient access to HSSPs. The purpose of this study is to highlight the clinical benefits of filling oral anticancer medications within HSSPs. Using EHR software and a business analytics platform, a dashboard will be designed to report metrics related to optimal oral anticancer medication use for patients filling within a specific HSSP. The dashboard will report mean possession ratio (MPR), proportion of days covered (PDC), and length o time on therapy. These metrics will then be compared to available metrics of external specialty pharmacies, including literature-reported, to support the perceived benefits of filling oral anticancer medications within HSSPs. These results will also be used to recommend workflow changes to further optimize medication use metrics. A subgroup of oral anticancer medications for a specific oncologic disease will then be selected for a disease outcomes analysis. A retrospective chart review for this subgroup will be conducted that will calculate progression free survival (PFS) for patients filling within an HSSP. Using dashboard-reported metrics for an HSSP and literature-reported metrics for externa specialty pharmacies, this study aims to demonstrate to internal and external stakeholders the advantages of patients filling within HSSPs.

Learning Objectives:

Describe pharmacy performance metrics that may be used to assess pharmacist impact on optimizing oral anticancer medication use.

Identify barriers to optimal medication use that health-system specialty pharmacies may be positioned to overcome more easily compared to external specialty pharmacies.

Self Assessment Questions:

Which of the following pharmacy performance metrics is the most accurate assessment of a patients medication adherence?

A Length of time on therapy

B: Medication possession ratio (MPR)

C: Proportion of days covered (PDC)

D: Time to first fill

Which of the following aspects of optimal medication use are health-system specialty pharmacies thought to be best positioned to address a compared to external specialty pharmacies?

A Patient education

B Laboratory monitoring

C Compliance packaging

D Medication delivery

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-776-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF A PHARMACIST-TO-DOSE VORICONAZOLE PROTOCOL ON ADVERSE DRUG REACTIONS

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Purpose: Therapeutic drug monitoring of voriconazole has been shown to increase clinical effectiveness and decrease rates of drug discontinuations due to adverse effects. Although there are established serum trough concentration targets to minimize toxicity and maximize effectiveness, there is not a standardized dose adjustment recommendation to guide therapeutic level attainment. The use of a voriconazole dosing protocol may assist in guiding dose adjustments to more reliably reach optimal serum concentrations for treatment efficacy and patient safety. The purpose of this study was to evaluate the impact of a pharmacist-to-dose voriconazole protocol. Methods: This is a single center, quasiexperimental study of patients who received voriconazole for prevention or treatment of invasive fungal disease. This study is approved by the local Institutional Review Board. The primary outcome is the incidence of treatment-emergent adverse effects attributed to voriconazole in the pre-intervention group (January 1, 2014 to Decembe 31, 2018) compared to the post-intervention group (January 1, 2020 to December 31, 2021). Patients will be included if they are at least 18 years old, were admitted to Beaumont Hospital, Royal Oak, and receive voriconazole. Patients will be excluded if they received only one dose of voriconazole or required additional antifungal medication to treat a separate infection. Primary outcome data collected includes changes in liver function, renal function, and QTc interval, report of encephalopathy, and any other treatment-emergent adverse effect. Secondary outcomes include clinical outcome, length-of-stay, readmission rate, all-cause mortality, drug discontinuation rate, and protocol effectiveness. Secondary outcome data collected includes changes in symptoms and/or radiographic findings of proven, probable, or possible invasive fungal disease, length of hospital and intensive care unit stay, all-cause mortality at day 42 and 84, and evaluation of protocol adherence and trough level sampling. Results/conclusions: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recognize the need for voriconazole serum concentration monitoring due to wide interpatient variability and narrow therapeutic index.

Identify the potential benefits of voriconazole therapeutic drug monitorin on patient safety and clinical outcomes.

Self Assessment Questions:

The dosing complexity of voriconazole can be greatest explained by pharmacokinetic variability due to:

A Genetic polymorphisms of CYP3A4

B: Poor enteral bioavailability

C: Saturable metabolism by the CYP2C19 enzyme

D: High urinary excretion

Which of the following are potential toxicities of voriconazole therapy?

A Visual hallucinations

B Periostitis

C Transaminitis

D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-614-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

FACTORS INFLUENCING TIME TO ANTIBIOTIC ADMINISTRATION II PATIENTS WITH AN OPEN FRACTURE: REGRESSION ANALYSIS

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Background: Administration of prophylactic antibiotics has been shown to reduce infection rate in open fractures. The Gustilo-Anderson injury classification system is utilized to assess risk of injury site infections, with Type III injuries having highest risk (9%-50%) compared to Type II and Type I. The 2011 Eastern Association for the Surgery of Trauma guidelines recommend preoperative antibiotics as soon as possible after the injury has been sustained. A multivariate logistic regression in Type III open tibia fractures found that infections increased significantly when antibiotics were administered > 66 minutes after injury (7.0% vs. 25.0%, p = 0.016). The goal time of administration of open fracture antibiotics is 60 minutes from presentation to the Emergency Department (ED); however, many trauma centers have difficulty consistently achieving this benchmark. The purpose of this study is to determine what factors are associated with delayed prophylactic antibiotic administration > 60 minutes after presentation to the ED for patients with an open fracture.Methods: This single-center, retrospective study was IRB approved. Patients who presented to the ED with a diagnosis of an open fracture were included in this study. Patients were excluded if no antibiotic prophylaxis was administered or if antibiotics were given by outside hospital or emergency medical services (EMS) prior to arrival. Patient groups were dichotomized by administration time < or > 60 minutes from presentation. Data collected for patients includes trauma activation type, blunt or penetrating injury, injury diagnoses, injury severity score (ISS), times of administration, order, and order verification; dosage and administration routes per institutional protocol, ordering team member, as well as patient baseline characteristics and demographics. A multiple logistic regression analysis will be conducted to identify significant differences in characteristics between the two groups.Results/Conclusions: Pending ongoing data collection and analysis.

Learning Objectives:

Identify appropriate prophylactic antibiotic regimens for patients with open fractures based on recommendations and primary literature.

Discuss optimal timing of perioperative prophylactic antibiotics for open fractures and the potential barriers to achieving administration timing goals.

Self Assessment Questions:

Based on the Gustilo-Anderson injury classification system, what type of open fractures carry the highest risk of injury site infections with nosocomial associated pathogens (e.g. Pseudomonas sp.)?

A Type II radial injury, motor vehicle crash; limited environmental exp
B: Type II radial injury, scooter crash; found in muddy ditch
C: Type III tibia injury, gunshot wound; limited environmental exposur
D: Type III tibia injury, farmyard injury; found trapped under equipmer

Based on current literature, which of the following is true regarding administration goals of antibiotics for open fractures in the emergency department?

A Administration within 60 minutes of arrival
B Administration within 3 hours of arrival
C Administration starting post-operatively
D Continuation for at least 5 days following arrival

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-615-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

AN EVALUATION OF THE ANALGOSEDATION REQUIREMENTS IN COVID-19 EXTRACORPOREAL MEMBRANE OXYGENATION (ECMO PATIENTS

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Background: Severe infection with the novel coronavirus, SARS-CoV-2 (COVID-19), can lead to the development of COVID-19-associated acute respiratory distress syndrome (ARDS). Severe ARDS refractory to conventional therapies has necessitated the use of extracorporeal membrane oxygenation (ECMO) to support patients with impaired respiratory function. There is limited data surrounding the use of ECMO in COVID-19 patients, and reports of increased analgosedation requirements in COVID-19-associated ARDS patients receiving ECMO make it difficult to standardize treatment protocols.Purpose: The goal of this study is to quantify and categorize the analgosedation requirements of COVID-19 patients receiving ECMO compared to non-COVID-19 patients, as well as to correlate dosing patterns with the clinical assessment of pain and sedation.Methods: This is a retrospective cohort study of patients undergoing ECMO therapy for respiratory indications at Froedtert Hospital between June 2017 and December 2021. Patients who are admitted to the CVICU with ARDS requiring either venovenous (VV) or venopulmonary artery (VPa) ECMO will be included, and patients will be excluded if they are receiving ECMO for non-respiratory indications (VA-ECMO), or if they are placed on hospice within seven days of ECMO cannulation.The primary objective of this study is to evaluate the analgosedation requirements for VV and VPa ECMO in COVID-19 and non-COVID-19 patients. Secondary objectives include quantifying the impact of enteral analgesic and sedative medications on IV dosing requirements, measuring the level of analgesia and sedation in COVID-19 and non-COVID-19 ECMO patients using CPOT and RASS scores, respectively, and assessing changes in analgosedation requirements in COVID-19 patients transitioned from endotracheal intubation to tracheostomy during the period of ECMO cannulation. Total daily dosing requirements of parenteral and oral analgesic and sedative medications will be recorded over a period of 28 days.Results/Conclusions: Final results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the pathophysiology of acute respiratory distress syndrome (ARDS).

Explain the differences between venovenous (VV) and venopulmonary artery (Vpa) ECMO cannulation configurations.

Self Assessment Questions:

ARDS is characterized by which of the following?

A Progressive hypoxemia in the setting of acute lung insult or injury
B: Alveolar damage and tissue proliferation
C: Fibrotic scarring
D: All of the above

VV ECMO cannulation involves which of the following?

A Removal of blood from an artery and return through a vein
B Removal of blood from a vein and return through an artery
C Removal of blood from a vein and return through a vein
D Removal of blood from a vein and return through the pulmonary ar

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-616-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF CEFTRIAXONE UTILIZATION WHEN TREATING ENTERIC GRAM-NEGATIVE BACTERIA COMMONLY ASSOCIATED WITH AMPC RESISTANCE

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Purpose: Ceftriaxone is commonly used for the empiric management of several gram-negative infections. However, efficacy of ceftriaxone may be limited when treating AmpC producing organisms. When an AmpC producing organism is isolated, cefoxitin resistance may be a surrogate indicator of AmpC production. The purpose of this study is to evaluate the incidence of treatment failure when ceftriaxone is used to treat members of the AmpC-producing ESCPM (Enterobacter spp., Serratia spp., Citrobacter spp., Providencia spp., and Morganella spp.) group of bacteria. Additionally, we aim to evaluate empiric antibiotic prescribing habits when an ESCPM bacteria is a suspected AmpC producer. Methods: This study is a retrospective review of the medical records of all patients 18 years of age or older who were prescribed ceftriaxone and had a culture result with an ESCPM bacteria resistant to cefoxitin at Gundersen Health System from 2016 to 2021. Cefoxitin resistance is used as an indicator of potential AmpC presence. The primary outcome to be assessed is treatment failure defined as recurrent infection of the same pathogen within 30 days, escalation of antibiotic coverage due to lack of improvement or worsening clinical condition, or a repeat culture identifying the same ESCPM bacteria. The secondary analysis will examine prescribing habits after discovery of an ESCPM bacteria with cefoxitin resistance on culture. This will be done by collecting and assessing antibiotic orders that occurred within 5 days of the final culture result. Approximately 150 patients are expected to be reviewed.Results/Conclusions: Results and conclusions will be presented at the 2022 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify gram-negative pathogens that commonly harbor the AmpC resistance gene.

Describe how AmpC presence impacts bacterial susceptibility reporting.

Self Assessment Questions:

Which of the following bacteria is not commonly associated with AmpC resistance?

A Serratia spp.

B: Citrobacter spp.

C: Enterobacter spp.

D: Pseudomonas spp.

Resistance to which of the following antibiotics may indicate inducible AmpC resistance?

A Methicillin

B Cefoxitin

C Ceftriaxone

D Amoxicillin/clavulanate

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-617-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

FIRST-LINE TREATMENT OF HEPATOCELLULAR CARCINOMA WITH NIVOLUMAB

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BackgroundHepatocellular carcinoma (HCC) incidence and mortality has continued to increase through the decades even as therapy has improved. The NCCN guidelines currently recommend atezolizumab plus bevacizumab as preferred first-line systemic therapy and sorafenib or lenvatinib as other recommendations. Nivolumab is an option in patients not eligible for anti-angiogenic therapies. With limited data in real world cohorts, it is challenging for providers to determine the risk versus benefit of treating patients with nivolumab who are not candidates for standard of care, first-line, systemic therapy. MethodsA retrospective cohort study, approved by The Ohio State University investigational review board, included patients treated with nivolumab or atezolizumab plus bevacizumab in the first line setting for hepatocellular carcinoma from January 2017 to July 2021.ResultsThe primary objective of the study is to evaluate the safety and efficacy of nivolumab in the first-line setting of a real world cohort. A secondary objective will be to assess the difference in safety and efficacy of patients treated with atezolizumab plus bevacizumab who had at least the first dose of bevacizumab held compared to nivolumab. We hypothesize that patients in the real world will have lower OS and PFS with substantially higher rates of adverse effects than were seen in clinical trials. The trial will evaluate median OS, PFS, and time to treatment failure along with rates of immune related adverse effects. Difference in the safety and efficacy outcomes will be compared within the nivolumab group between differences in performance status, Child-Pugh class, and alfa-fetoprotein as well as between the nivolumab group and the atezolizumab plus bevacizumab group. The results from the trial will add to the scarce data of first-line nivolumab use for HCC. All outcomes will be presented during the conference.

Learning Objectives:

Describe when nivolumab is an appropriate treatment option in the first line setting of hepatocellular carcinoma.

Identify the trends of patient outcomes on first line nivolumab for hepatocellular carcinoma based on ECOG PS, Child-Pugh class, and other patient specific factors.

Self Assessment Questions:

In which of the following situations is nivolumab an appropriate first line therapy choice to treat hepatocellular carcinoma?

A PD-L1 greater than 1%

B: PD-L1 of 0%

C: Child Pugh Class A with T2DM

D: Patient is not eligible for anti-angiogenic therapy

Which of the following subsets of patients treated with nivolumab in the first line setting had the worst median overall survival?

A Child Pugh Class C

B AFP < 400

C Child Pugh Class B

D ECOG PS 0-1

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-618-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

CLARIFYING THE CONTINUOUS GLUCOSE MONITOR (CGM) CONUNDRUM

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Purpose: Continuous glucose monitors (CGM) have transformed blood glucose management for patients with diabetes by reducing the need for painful finger sticks while giving a broader understanding of how their diet, exercise routines, and medications may be impacting their blood sugars. With a growing number of patients with type 2 diabetes, as well as increased data supporting CGM use in this population, CGM prescribing has become more common in primary care. While CGMs can be extremely beneficial for patients with diabetes, obtaining them can be challenging. Insurance coverage varies for each payor and may require unique patient eligibility criteria or plan-specific documents. This introduces confusion for primary care providers and clinic staff trying to keep track of paperwork and application status for each patient. The purpose of this project is to create standardized workflows that can be implemented across approximately 30 primary care clinics within one health system to reduce the challenges of obtaining CGMs for patients.Methods: Medical assistants (MA), certified diabetes educators (CDE), pharmacists, primary care physicians, registered nurses, and prior authorization (PA) team members were all identified as key stakeholders in the CGM acquisition process given their varying roles within the CGM workflow. These key stakeholders were interviewed to identify current acquisition processes for CGMs across the health system and to help determine current inefficiencies. Overall, 18 staff members were interviewed in total. Main themes from the interviews were brought forward to a smaller interdisciplinary team to propose potential solutions. Support tools were created to aid and educate primary care staff members to help obtain CGMs for qualifying patients. These new workflow processes were then reviewed to determine staff satisfaction.Results/Conclusion: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify current barriers for effectively obtaining CGMs within the primary care setting

Discuss support tools and education developed for staff to aid patients in obtaining CGMs more efficiently

Self Assessment Questions:

What are the benefits of CGMs?

A CGMs help patients understand how diet, exercise, and medicatio

B: CGMs can help prevent hypoglycemia by continuously monitoring

C: CGMs reduce the need for patients to prick their fingers to check t

D: All the above

How are CGMs billed?

A Under the patientâ€™s medical insurance

B Under the patientâ€™s pharmacy insurance

C Under either the patientâ€™s medical or pharmacy insurance (or s

D CGMs are never covered by patientâ€™s insurance

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-619-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

COMPARISON OF PATIENT OUTCOMES WITH NEOSTIGMINE PLUS GLYCOPYRROLATE VERSUS SUGAMMADEX ON PERIOPERATIVE NEUROMUSCULAR BLOCKADE

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Purpose: Neostigmine with glycopyrrolate has been the mainstay of therapy for reversal of neuromuscular blockade in surgical procedures for many years. Since the approval of sugammadex in recent years, many anesthesia providers have transitioned from administration of neostigmine/glycopyrrolate to sugammadex. While sugammadex has shown beneficial outcomes over neostigmine/glycopyrrolate in neuromuscular blockade reversal such as reduced risk of post-operative pulmonary complications and decreased time to neuromuscular blockade reversal, the drug acquisition cost associated with sugammadex greatly exceeds that of neostigmine/glycopyrrolate. Further research is needed to investigate what patient subgroups may show a similar safety and/or efficacy profile between neostigmine/glycopyrrolate and sugammadex whereby the former might be utilized with equivalent outcomes to leverage resource savings. The purpose of this study is to evaluate the safety and efficacy associated with the use of neostigmine and glycopyrrolate versus sugammadex at our institution to direct appropriate use and optimize resource utilization.Methods: This will be a retrospective cohort study of patients at Carle Foundation Hospital who received neostigmine and glycopyrrolate or sugammadex for perioperative neuromuscular blockade reversal during the timeframes of January"December 2015 and January"December 2019. The primary endpoint will evaluate postoperative complications, including bradycardia, hypotension, nausea and vomiting, residual neuromuscular blockade, pneumonia, and respiratory failure. Secondary endpoints will include time from reversal to leaving the operating room, time to alertness, and need for redosing of neuromuscular blockade reversal. Potential risk factors for post-operative complications such as comorbidities, procedure type, age, and maintenance anticholinergic therapy will also be examined.Results: To be presented at Great Lakes Pharmacy Residents ConferenceConclusion: To be presented at Great Lakes Pharmacy

Learning Objectives:

Explain the key differences between sugammadex and neostigmine.

Recall a situation where it may be preferred to use neostigmine/glycopyrrolate over sugammadex.

Self Assessment Questions:

Which of the following statements is true about neostigmine (versus sugammadex)?

A It has a shorter onset time to neuromuscular blockade reversal

B: It has been utilized more in recent years than in the past

C: It is nearly always administered with glycopyrrolate, an anticholine

D: It has shown a reduced risk of post-operative pulmonary complicat

When would it be appropriate to give neostigmine in place of sugammadex?

A When a patient has an allergy to sugammadex

B When a rapid time to neuromuscular blockade reversal is needed

C When the patient is in a subgroup where there is no worse outcom

D A and C

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-620-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

COMPARISON OF ANTIBIOTIC STRATEGIES FOR THE PREVENTION OF CARDIOVASCULAR IMPLANTABLE ELECTRONIC DEVICE (CIED) INFECTION

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Purpose: Cardiovascular implantable electronic device (CIED) infections are a common complication of device implantation procedures. Clinical guidelines recommend providing prophylactic antimicrobial therapy with a single pre-procedure dose of a parenteral antibiotic with activity against staphylococci. This is commonly achieved via a single dose of cefazolin administered one hour before incision. Guidelines recommend against the use of post-procedure prophylactic antibiotics. Limited evidence exists to support routine use of antimicrobials following CIED implantation. Despite this, antibiotic regimens among physicians performing CIED procedures are inconsistent. This study compares prophylactic antibiotic strategies in prevention of CIED infections.Methods: This retrospective cohort study evaluates patients following placement of a permanent pacemaker, implantable cardioverter-defibrillator, or cardiac resynchronization therapy who received antibiotic prophylaxis within a large integrated health system between January 2015 and June 2021. This study is approved by the Institutional Review Board. Patients were excluded if they underwent any surgery or were treated for a prior infection within 30 days prior to CIED placement, or were receiving concomitant antimicrobials for a different indication at the time of the procedure. The primary objective of the study is to compare the number of CIED infections when receiving both pre- and post-procedure antibiotics versus a single pre-procedure dose. This is accomplished by measuring the number of patients with documented device-related infection within six months of any CIED placement. CIED infection is defined using the criteria from the Heart and Rhythm Society Guidelines. Secondary objectives include antimicrobial agent(s) used periprocedurally, type of CIED, and classification of device infection. Additionally, secondary analysis evaluates the incidence of CIED infection in those with select comorbidities present prior to CIED implantation compared to those without the same comorbidities. Results: Data collection is in progress and results will be analyzed upon completion.Conclusion: Conclusion is pending data analysis.

Learning Objectives:

Describe current clinical guideline recommendations for the use of prophylactic antimicrobial therapy in CIED placement procedures.

Identify risk factors that may increase a patient's risk for developing a CIED infection.

Self Assessment Questions:

Which of the following antibiotics is the best option for prophylaxis prior to a CIED placement procedure?

A Cephalexin
B: Cefazolin
C: Ampicillin
D: Ciprofloxacin

In CIED infections, this causative organism is associated with higher virulence and mortality.

A Streptococcus pneumonia
B Viridans group streptococci
C Enterococcus species
D Staphylococcus aureus

Q1 Answer: B Q2 Answer: D

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Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF THE SAFETY OF APIXABAN IN PATIENTS WITH ATRIAL FIBRILLATION AND SEVERE CHRONIC KIDNEY DISEASE

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Purpose: The aim of this study is to evaluate the efficacy and safety of apixaban versus warfarin in patients with NVAF and severe chronic kidney disease (CKD) including hemodialysis. The primary endpoint is incidence of major bleeding as defined by the International Society on Thrombosis and Haemostasis. The secondary endpoints included incidence of thromboembolic events and non-major bleeding. Methods: This study is a retrospective chart review at Veteran Health Indiana. It includes veterans 18 years or older with NVAF on apixaban or warfarin between 1/1/19 through 3/31/21, veterans with a creatinine clearance less than 25 ml/min, and ICD-10 codes for CKD stage 4 or 5 and laboratory evidence of severe renal disease. Veterans were excluded if they were anticoagulated with a medication other than apixaban or warfarin, if evidence of acute kidney injury without severe CKD, if anticoagulated for an indication other than NVAF, and if they received CRRT. A subgroup analysis was performed to compare apixaban 2.5 mg twice daily and 5 mg twice daily. Summary of Results: Of the 128 charts reviewed, 25 veterans on warfarin and 15 veterans on apixaban were included in the analysis. Seven of the 25 (28%) warfarin veterans met the primary endpoint compared to 1 out of 15 (6.67%) in the apixaban group. However, the results were not statistically significant (p>0.05). The incidence of thromboembolic events did not differ significantly between apixaban (13.33%) and warfarin (12%). The incidence of non-major bleeding was 26.67% in the apixaban group and 56% in the warfarin group, but also did not meet statistical significance. The subgroup analysis revealed no statistical significance and had significant differences in patient demographics between groups. Conclusions Reached: Though the results were not statistically significant, clinical significance may be interpreted from the data. Further results and conclusions will be presented at the GLPRC.

Learning Objectives:

Discuss the risks and benefits of using apixaban in patients with end-stage renal disease (ESRD).

Explain anticoagulation options for patients with stage 4 or 5 kidney disease or ESRD on hemodialysis.

Self Assessment Questions:

Which of the following are considered when dosing apixaban for NVAF?

A Age < 60
B: Weight over 80 kg
C: NYHA class II or greater heart failure
D: Serum creatinine > 1.5 mg/dL

Apixaban is FDA-approved for:

A secondary prevention of stroke
B postoperative VTE prophylaxis following hip/knee surgery
C heparin-induced thrombocytopenia
D reduction in the risk of myocardial infarction recurrence

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-622-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

ASSESSMENT OF P2Y12 LEVELS IN PATIENTS ON CANGRELOR DURING AND AFTER NEUROINTERVENTIONAL PROCEDURES

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Thrombosis development is a risk during neurointerventional procedures and the previous standard of care to treat this complication is the use of glycoprotein IIb/IIIa receptor antagonists. Cangrelor use has been increasing for neurointerventional procedures for both prevention and treatment of thromboembolic complications in emergent and elective procedures, as well as a bridging agent for patients who require emergent stent placements. The three to six minute half-life of cangrelor allows for a rapid onset of its antiplatelet effects as well as rapid reversa in case of hemorrhage. Currently, there are no guidelines or dosing recommendations to help guide the use of cangrelor in the setting of neurointerventional procedures and dosing has been variable among providers. This is a retrospective analysis of P2Y12 levels and corresponding cangrelor infusion rates to characterize the current use of cangrelor in patients undergoing neurointerventional procedures at an academic medical center. Between January 2019 to December 2021, ar estimated 36 patients were administered cangrelor during a neurointerventional procedure will be included. The primary outcome is the average rate of cangrelor infusions in patients with P2Y12 levels during neurointerventional procedures. Patients will be stratified based on subtherapetuic, therapeutic and supratherapetuic P2Y12 levels, and the median rate of cangrelor infusion as well as percent of patients in each category who received a bolus dose will be reported. Secondary outcomes include percent of patients with a therapeutic P2Y12 level, average bolus dose and rate of cangrelor in patients who did not receive a P2Y12 level, average time on a cangrelor infusion, percent of patients transitioned to an oral P2Y12 inhibitor and incidence of intracranial hemorrhage, stent thrombosis and ischemic stroke. The results of this analysis will be used to summarize the use of cangrelor during neurointerventional procedures for the validation of possible guideline development and cost savings in the future.

Learning Objectives:

Explain the pharmacokinetics of cangrelor that makes it favorable for use in neurointerventional procedures.

Describe specific scenarios in neurointerventional procedures where cangrelor would be indicated.

Self Assessment Questions:

On average, how long will it take for normal platelet restoration following the discontinuation of cangrelor?

A 30 minutes

B: 1 hour

C: 6 hours

D: 24 hours

For which of the following procedures would cangrelor be indicated?

A Stenting of the internal carotid artery in a patient with acute ischen

B Supratherapeutic P2Y12 evel

C Thrombus visualization during aneurysm coiling

D A and C

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-623-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

IMPLEMENTATION OF MODIFIED POST-ANESTHESIA CARE UNITY (PACU) ORDER SET AND COGNITIVE SCREENING TO REDUCE PERIOPERATIVE NEUROCOGNITIVE DISORDER (PND) IN THE GERIATRIC SURGICAL POPULATION

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Purpose: Perioperative neurocognitive disorder (PND) is a common complication for patients 65 years and older undergoing surgery that results in prolonged hospitalization, discharge disposition complexities, and reduced quality of life and independence. Evidence suggests that pre-existing cognitive impairment and receipt of deliriogenic medications in the immediate postoperative period increase the risk of developing PND. Baseline evaluation of patients aged 65 years and older who underwent inpatient or outpatient surgery at a 448-bed Midwest community hospital revealed an incident delirium rate of 7.6%. PND is preventable through the implementation of multimodal interventions in the perioperative setting. The purpose of this project is to reduce the incidence of PND in geriatric surgical patients through the implementation of preoperative cognitive screening and removal or dose reduction of deliriogenic medications in the Post-Anesthesia Care Unit (PACU) order set.Methods: Surgical nursing staff was provided education on administration and documentation of the cognitive screenings. A multidisciplinary team of nurses, pharmacists, and anesthesiologists developed changes to the PACU order set based on evidence-based guidelines. Between March and May 2022, patients aged 65 years and older undergoing inpatient or outpatient surgery with planned inpatient admissions will undergo preoperative cognitive screening and receive medications per the revised PACU order set. The primary outcome is the incidence of PND in the geriatric surgical population exposed to the revised PACU order set compared to the population exposed to the unmodified order set. Secondary outcomes include completion of the preoperative cognitive screening and documentation in the Epic system, number of occurrences of one-time orders of deliriogenic medications that were removed from the order set, length of stay, and medication interventions required for behavioral changes related to PND after surgery.Results and Conclusion: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review best practices for evidence-based cognitive screenings in the perioperative period.

Describe optimal use of multimodal pharmacological and nonpharmacological interventions to reduce PND incidence and recover time.

Self Assessment Questions:

According to new nomenclature recommendations, PND may occur up to _____following a surgical intervention:

A 5 days

B: 30 days

C: 90 days

D: 12 months

According to the 2015 Postoperative Delirium in Older Adults: Best Practice Statement from the American Geriatrics Society, which of the following medications used preoperatively may increase the risk of PND

A Prednisone

B Gabapentin

C Sertraline

D Cariprazine

Q1 Answer: D Q2 Answer: A

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Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

IMPACT OF TACROLIMUS CONCENTRATION TO DAILY DOSE (C/D) RATIO ON RENAL FUNCTION AFTER CONVERSION FROM IR-TACROLIMUS TO LCP-TACROLIMUS IN LIVER TRANSPLANT RECIPIENTS

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Purpose:Tacrolimus trough concentration to dose ratio (C/D), a marker of tacrolimus metabolism has been studied to estimate tacrolimus exposure. A high C/D ratio indicates slow metabolism whereas a low C/D ratio indicates fast metabolism. It has been found that LTRs with a low C/D had significantly worse renal function than those with a high C/D while taking immediate-release tacrolimus (IR-Tacrolimus). Recent studies have found improved renal function in LTRs after IR-Tacrolimus was converted to LCP-Tacrolimus (LCPT; Envarsus XR), an extended-release formulation. The objective of this study is to evaluate the impact of tacrolimus formulation change from IR-Tacrolimus to LCPT on renal function between LTRs with low versus high C/D ratio.Methods:This single-center retrospective study will include adult LTRs at least 6 months post-transplant who were converted from IR-Tacrolimus to LCPT between 7/1/2019 and 3/31/2021. Exclusion criteria include multi-organ transplant, failed transplant, rejection treatment within six months before conversion, non-tacrolimus-based immunosuppression or use of tacrolimus XL (Astagraf), those with an addition/change in medications that interact with tacrolimus, or on chronic renal replacement therapy or waitlisted for kidney transplantation. Eligible patients will be categorized to low versus high C/D ratio groups based on the median C/D ratio of the study cohort at the time of conversion.The primary outcome will be the change in eGFR (MDRD-4) from baseline to 12 months post-conversion. Secondary outcomes include major transplant outcomes post-conversion: biopsy proven rejection, graft loss, and adverse events. For statistical analyses, Chi-squared will be used for categorical variables and Student t-test for continuous variables.Anticipated results:It is hypothesized that renal improvement following conversion from IR-Tacrolimus to LCPT will be bigger in LTRs with a pre-conversion low C/D compared to that with high C/D. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Indicate a tacrolimus metabolism state based on tacrolimus trough concentration to dose ratio.

Discuss how baseline eGFR and time from transplant may impact the renal protective effects seen with LCPT.

Self Assessment Questions:

A liver transplant recipient has been on a stable dose of IR-Tacrolimus 1 mg q12h, and their most recent tacrolimus trough is 7 ng/ml (goal 4-8 ng/ml). What is the correct interpretation of this patients tacrolimus trough concentration to dose ratio (C/D) based on our studys median cut point of 1.667?

A Slow metabolizer

B: Fast metabolizer

C: C/D cannot be calculated for this patient

D: C/D does not correlate with tacrolimus metabolism rate

A liver transplant recipient, who is > 10 years out from transplant has a diagnosis of CKD stage III (eGFR = 41 ml/min/1.73 m2). The transplant providers ask if switching him from IR-Tacrolimus to LCPT would be beneficial to maintain his current renal function. Which of the following would be the best recommendation based on our study?

A Switching would improve his current eGFR by > 20 ml/min/1.73 m2

B LCPT and IR-Tacrolimus would both improve renal function.

C Switching to LCPT would not provide a clinically significant improv

D IR-Tacrolimus therapy should be stopped for this patient.

Q1 Answer: A Q2 Answer: C

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(if ACPE number listed above)

LOW DOSE KETAMINE INFUSIONS FOR POST-OPERATIVE PAIN MANAGEMENT IN PATIENTS UNDERGOING CARDIOTHORACIC SURGERY

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Purpose: Ketamine is a noncompetitive N-methyl D-aspartate (NMDA) receptor antagonist that historically has been used in the inpatient setting as primarily an anesthetic agent. Recent published literature suggests that ketamine at low doses can help to reduce both chronic and acute post-operative pain. Within our health system, a new protocol for utilization of low-dose ketamine infusions has been implemented to improve the management of post-operative pain in the cardiothoracic surgery patient population. This study aims to assess the effectiveness of this protocol in managing post-operative pain and reducing total opioid requirements. Methods: The institutional review board approved this single center, retrospective, observational cohort study including all adult patients who underwent cardiothoracic surgery within the institution. The study cohorts will be distinguished based on the administration of a low dose ketamine infusion in addition to standard of care compared to those who received only standard of care for pain management in the post-operative period. Patients in each cohort will be matched based on type of procedure, age, and sex. The primary outcome measure is the total opioid consumption expressed as morphine milligram equivalents (MME) during hospital stay. Secondary outcomes include total opioid consumption within the first seventy-two hours and seven days after surgery, total time to hospital discharge, and incidence of post-operative atrial fibrillation. All data will be evaluated utilizing the appropriate statistical tests for each data type. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe ketamine's role in post-operative multimodal analgesia, the mechanism of action of ketamine, and its current place in therapy.

Review current published literature for the use of low-dose ketamine infusion for acute pain management following surgical procedures.

Self Assessment Questions:

Which of the following is NOT an appropriate use of ketamine in the hospital setting?

A Procedural sedation

B: Post-operative pain management

C: Local anesthetic

D: Rapid sequence intubation

Which of the following is a proposed benefit of ketamine use for pain management?

A Pain relief beyond discontinuation of therapy

B Reduction in opioid consumption

C Minimal side effect profile

D All the above

Q1 Answer: C Q2 Answer: D

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Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

AUTOMATIC ANTI-XA LEVEL MONITORING PROTOCOL IN PATIENTS RECEIVING ENOXAPARIN

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Purpose: Enoxaparin is a low molecular weight heparin (LMWH) that is commonly used in the prevention and treatment of venous thromboembolism. Anti-Xa levels can be used to monitor enoxaparin activity in special populations including renal impairment and obesity. Enoxaparins standard treatment dose is 1mg/kg daily or twice daily depending on creatinine clearance (CrCl) with an anti-Xa therapeutic range of 0.5-1 units/mL. The objective of this study is to evaluate the efficacy of a newly implemented anti-Xa level monitoring protocol for patients receiving treatment dose enoxaparin. Methods: This single-center, retrospective study will analyze patients 18 years and older who receive treatment dose enoxaparin requiring monitoring of anti-Xa levels 3 months after pharmacist-driven anti-Xa protocol implementation. Patients included in the study will be divided into two categories, patients with CrCl of 10 to 30 mL/min and patients with BMI greater than or equa to 40 kg/m2. Dose adjustment recommendations will be outlined in the protocol provided. Data will be collected from the electronic medical record (EMR) including enoxaparin dosing history, patients BMI, renal function, anti-Xa levels, and impact of pharmacist-adjusted enoxaparin dosing. The primary endpoint is the difference in patients therapeutic dose from the initial 1mg/kg dose and anti-Xa level-adjusted dose. Secondary objectives include percent of patients who require a dose adjustment based upon anti-Xa levels with initial dosing regimen, mg/kg dosing required to achieve therapeutic anti-Xa, and time to therapeutic anti-Xa level. Results: Baseline characteristics, enoxaparin weight-based doses, and anti-Xa levels will be evaluated using appropriate statistical tests.Conclusion: Results of this study will determine the impact of a pharmacist-driven anti-Xa protocol, and the need for future anti-Xa monitoring and enoxaparin dose adjustments.

Learning Objectives:

Outline the importance and steps to monitor anti-Xa levels when using treatment dose enoxaparin in specific patient populations.

Discuss the impact and results of creating a pharmacy automatic Anti-Xa Level monitoring protocol for patients receiving enoxaparin in a community hospital.

Self Assessment Questions:

Which patient populations would benefit most from monitoring anti-Xa levels when on Enoxaparin therapy?

A BMI greater than or equal to 40 kg/m2

B: Patients receiving prophylactic lovenox

C: CrCl of 10 to 30 mL/min

D: Both A and C

What is the anti-Xa therapeutic range for patients receiving treatment Enoxaparin?

A 0.5 - 1.0 units/mL

B 0.8 - 1.5 units/mL

C 0.3 - 1.6 units/mL

D 1.5 - 2.0 units/mL

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-778-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IMPLEMENTATION OF ELECTRONIC-HEALTH-RECORD PHARMACIST PRODUCT VERIFICATION WITH CAMERA TECHNOLOGY FOR COMPOUNDED STERILE PRODUCTS AT AN INPATIENT SATELLITE PHARMACY

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The Institute for Safe Medication Practices (ISMP) Targeted Medication Safety Best Practices for Hospitals recommends to avoid using retrospective methods, such as syringe pull-back method, when preparing compounded sterile products (CSPs) and to use technology to augment the manual processes during verification. This best practice was first introduced in 2016 but, despite their recommendation, an ISMP survey from 2020 showed only 47% of respondents capture images while preparing CSPs and only 32% of respondents use image sharing or remote video supervision of the compounding process. Utilizing camera during CSP preparation can enhance safety by allowing pharmacists to perform product verification with captured images to catch any compounding errors. Moreover, the technology allows documentation to be stored within the Electronic Health Record (EHR). The EHR utilized by the institution has a feature that allows technicians to capture images during preparation and pharmacists can perform product verification utilizing those captured images. The purpose of this study is to evaluate the safety and efficiency of EHR pharmacist product verification with camera during CSP preparation.The primary safety endpoint is the number of rejected CSPs due to a preparation error. Different types of preparation errors include wrong ingredient, wrong volume, expired ingredient, and other. The secondary endpoint is the average time from CSP preparation to product verification. Prior to the go-live, the technicians will be trained on how to use the camera to capture images during product preparation and the pharmacists will be trained on how to utilize the EHR-integrated product verification feature using the captured images. There will be two weeks of washout period. All CSPs prepared from the satellite pharmacy will be included. Pre-pilot data will be collected for one-month prior to the training and post-pilot data will be collected for one months after the training.

Learning Objectives:

Describe the Institute for Safe Medication Practices Targeted Medication Safety Best Practices for Hospitals: Best Practice 11

Review the findings from the previous studies that looked at the integration of technology for the preparation of compounded sterile products

Self Assessment Questions:

Which of the following statement is true about the best practice 11 from ISMP Targeted Medication Safety Best Practices for Hospitals?

A When compounding sterile preparations, it is safe to use proxy me

B: Technology has been found to interfere with the verification workfl

C: It is recommended to eliminate the use of proxy methods of verific

D: Proxy methods of verification (e.g., the Ã¢â‚¬Å“syringe pull-back n

Eckel et al. and Higgins et al. have found that:

A Integration of technology for preparation of CSP increases safety a

B Integration of technology for preparation of CSP decreases safety

C Integration of technology for preparation of CSP increases safety b

D Integration of technology for preparation of CSP decreases safety

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-841-L07-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IMPACT OF PHARMACIST-LED CLARIFICATIONS OF UNKNOWN PENICILLIN ALLERGIES ON INPATIENT ANTIBIOTIC SELECTION AND STEWARDSHIP

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Purpose: More than 95% of patients with reported penicillin allergies do not have a true IgE or T-lymphocyte-mediated penicillin allergic reaction Inadequate and inaccurate allergy documentation for patients with reported penicillin allergies is associated with increased use of broad-spectrum antibiotics. The unnecessary use of broad-spectrum antibiotics correlates with increased rates of methicillin-resistant Staphylococcus aureus and Clostridioides difficile. The goal of this study is to assess the impact of pharmacist-led clarifications of penicillin allergies on inpatient antibiotic selection and antimicrobial stewardship. Methods: Inpatients admitted to the surgical, medical, intensive care, and rehabilitation units between April 2021 and September 2021 were identified for study eligibility. A pharmacist performed a chart review for eligible patients. Inclusion criteria included presence of an unknown penicillin allergy without clarifying documentation upon patient chart review and administration of an antibiotic while hospitalized. The intervention studied was a pharmacist-driven interview with a standardized questionnaire to clarify patient allergy histories. Questionnaires were subsequently transcribed as a progress note in the hospitals electronic medical record (EMR). The primary outcome of this study was overall antibiotic usage rates of various antibiotic classes pre- and post-intervention (i.e., penicillins, cephalosporins, carbapenems, etc.). Results: Of 66 patients initially screened, 38 patients met inclusion criteria for intervention and therapy evaluation. The most common reactions clarified from patient interviews were hives (27.3%) and rash (23.4%). Following the intervention, penicillin and cephalosporin use increased by 2.3% and 2.5%, respectively. Carbapenem and vancomycin use decreased by 9.3% and 5.9%, respectively. Conclusion Pharmacist-led penicillin allergy interviews and clarifying documentation coincided with reduced use of vancomycin/carbapenems, and increased penicillin/cephalosporin use. Pharmacists are in a unique position to optimize antibiotic use by advocating for antimicrobial stewardship, promoting guideline/culture-directed antibiotic selection, and providing patient education to ascertain detailed allergy histories

Learning Objectives:

Identify antimicrobial organisms that are associated with resistance due to broad-spectrum antibiotic use.

Discuss risk factors that are more likely to be linked to a true allergic penicillin reaction.

Self Assessment Questions:

Broad-spectrum antibiotic use is associated with increased risk of microbial resistance from which of the following organisms?

A Streptococcus pneumonia

B: Clostridiodes difficile

C: Stenotrephonomonas maltophilia

D: Klebsiella oxytoca

Which of the following is a high risk factor for a true penicillin allergy?

A Family history of allergies only

B Isolated nausea/vomiting reaction

C Positive penicillin skin-test

D Isolated pruritic rash

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-779-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

HEMATOMA EXPANSION FOLLOWING INTRACRANIAL HEMORRHAGE: EVALUATION OF LOW-DOSE 4-FACTOR PROTHROMBIN COMPLEX CONCENTRATE (4F-PCC) FOR THE REVERSAL OF ORAL FACTOR XA INHIBITORS.

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Purpose: Intracranial hemorrhage (ICH) is a serious complication of oral factor Xa inhibitor treatment which requires prompt and effective anticoagulant reversal. Studies have shown that low-dose 4F-PCC (25 units/kg) has similar efficacy and safety to high-dose 4F-PCC (50 units/kg) for the reversal of oral factor Xa inhibitor related ICH. The goal of this study was to evaluate if low-dose 4F-PCC correlated to good or excellent hemostatic efficacy, defined by the Sarode criteria, in patients with oral factor Xa inhibitor related ICH. Methods: We conducted a single-center, single-arm, retrospective cohort study of ICH patients at UofL Health-UofL Hospital who received low-dose 4F-PCC (25 units/kg) for reversal of an oral factor Xa inhibitor. Patients were included if they were 18 years of age or older, had ICH on baseline neuroimaging, received 4F-PCC for the reversal of an oral factor Xa inhibitor and were admitted from November 1, 2018, to August 31, 2021. Patients were excluded if they received anticoagulant reversal for any reason other than ICH, or anticoagulants other than oral factor Xa inhibitors, were transferred from an outside hospital without access to baseline neuroimaging, received 4F-PCC before transfer to our institution, had hematoma evacuation prior to repeat neuroimaging, or were pregnant. The transfusion medicine database, electronic medical record, pharmac records, and the UofL Health-UofL Hospital stroke database were used to obtain patient data. The primary outcome was the rate of good or excellent hemostatic efficacy on neuroimaging at 24 hours based on the Sarode criteria. Secondary outcomes included rate of hematoma expansion at 48 hours, rate of thromboembolic events within 14 days after 4F-PCC administration, in-hospital mortality, hospital length of stay and intensive care unit length of stay. Results and conclusions: Data collection is ongoing. Results will be presented at Great Lakes Pharmacy Residency Conference

Learning Objectives:

Discuss guideline recommendations for oral factor Xa inhibitor reversal.

Review current literature regarding low-dose 4F-PCC use in factor Xa inhibitor associated intracranial hemorrhage.

Self Assessment Questions:

What 4-factor prothrombin complex concentrate dosing strategy do the 2020 American College of Cardiology/American Heart Association anticoagulation reversal guidelines recommend for the reversal of oral factor Xa inhibitors?

A 50 units/kg

B: 25 units/kg

C: 75 units/kg

D: 35 units/kg

Excellent hemostatic efficacy is defined as _____, based on the Sarode criteria.

A >30% decrease in hematoma volume from baseline on repeat neu

B >35% increase in hematoma volume from baseline on repeat neur

C â‰¤20% increase in hematoma volume from baseline on repeat r

D >20% but â‰¤35% increase in hematoma volume from baseline c

Q1 Answer: A Q2 Answer: C

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Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

RISK STRATIFICATION FOR SUPRATHERAPEUTIC PEAK ANTI-XA LEVELS IN ADULT PATIENTS ON TREATMENT DOSE ENOXAPARIN

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Purpose: Low molecular weight heparins (LMWH) such as enoxaparin have a low volume of distribution and are predominately cleared renally. When these pharmacokinetic properties are altered, the traditional weight-based, therapeutic dosing of enoxaparin may result in elevated plasma concentrations and an increased risk of bleeding. Peak anti-Xa monitoring is the preferred method for assessing LMWH efficacy and safety. The 2012 CHEST guidelines state that peak anti-Xa monitoring should be considered in patients with obesity, renal dysfunction, and/or pregnancy. There is a lack of data assessing peak anti-Xa levels in patients other than those recommended in the guidelines. The purpose of this study is to determine risk factors associated with supratherapeuti peak anti-Xa levels.Methods: This is a retrospective, single-center, cohort study performed at an academic tertiary care center. The primary objective is to establish risk factors associated with supratherapeutic peak anti-Xa levels. Secondary outcomes include major and minor bleeding and venous thromboembolic events during enoxaparin therapy and up to 24 hours after discontinuation. Patients 18-89 years of age receiving 1mg/kg twice daily dosing of enoxaparin and peak anti-Xa monitoring were eligible for inclusion. Exclusion criteria included pregnancy, incarceration, acute and chronic liver disease, peak anti-Xa levels drawn outside of recommended parameters, and patients admitted with acute kidney injury without a recent baseline serum creatinine. Data collected included past medical history, demographic data, severity of illness scores, concurrent medications, and labs associated with bleeding and renal function. Descriptive statistics will be used to evaluate baseline characteristics. Univariate log binomial regression models will be constructed to identify potential risk factors, and a multivariate analysis will be performed to isolate risk factors associated with supratherapeutic peak anti-Xa levels.Results and conclusions will be presented at the 2022 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe pharmacokinetic properties that can result in elevated enoxaparin plasma concentrations.

List patient populations currently recommended for peak anti-Xa monitoring in the CHEST guidelines.

Self Assessment Questions:

What is the main reason that initiation of enoxaparin in a patient on dialysis could increase their risk for bleeding?

A Patients on dialysis have reduced renal function, leading to a decr
B: Patients on dialysis are often anemic and predisposed to bleeding
C: The patientâ€™s bleed risk will not be increased. A patient on dial
D: The recommended starting dose for patients on dialysis is higher t

The CHEST guidelines state that peak anti-Xa monitoring should be considered in which patient population taking enoxaparin?

A Cirrhotic patients
B Patients <50kg
C Patients with renal dysfunction
D Patients taking aspirin

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-628-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

PROLONGED VERSUS GUIDELINE-RECOMMENDED DURATION OF DEXAMETHASONE THERAPY IN SEVERE COVID-19 INFECTION

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The purpose of this retrospective chart review is to investigate the effectiveness of 10 day versus longer duration dexamethasone therapy in time to recovery in patients with severe COVID-19 infection. Background: COVID-19 has rapidly grown to become a global pandemic Glucocorticoid steroids have emerged as an effective treatment for patients with severe or critical COVID-19 illness including those requiring mechanical ventilation, extracorporeal membrane oxygenation (ECMO), those with sepsis/septic shock or acute respiratory distress syndrome (ARDS), and those with SpO2 94% on room air or supplemental oxygen. Several trials have demonstrated a mortality benefit in patients with severe COVID-19 infection using a 10 day dexamethasone regimen Although dexamethasone has become a standard of care treatment for COVID-19 infection, its long-term use is linked to immunosuppression, hyperglycemia, and the potential development of a thromboembolic event. There is no robust evidence supporting a benefit of dexamethasone use for greater than ten days. Prolonged use may lead to glucocorticoid related adverse events.

Learning Objectives:

Describe the standard dexamethasone duration of therapy for severe COVID-19 infection

Recognize common glucocorticoid related adverse events

Self Assessment Questions:

What duration of dexamethasone therapy has shown efficacy in treating patients with severe COVID-19 infection?

A 5 days
B: 10 days
C: 15 days
D: 20 days

Which of the following adverse events is commonly associated with dexamethasone use?

A Vision loss
B Hyperglycemia
C Rash
D Angioedema

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-780-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

MULTICENTER EVALUATION OF THE ADDITION OF ELTROMBOPAG TO IMMUNOSUPPRESSIVE THERAPY FOR MANAGEMENT OF ADULTS WITH SEVERE OR VERY SEVERE APLASTIC ANEMIA

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Background and Purpose. Adults with aplastic anemia who are unable to tolerate stem cell transplant have historically been managed with immunosuppressive therapy alone. While this treatment demonstrates initial overall responses in two-thirds of patients, subsequent relapse is frequent and complete responses are rare. The addition of eltrombopag to immunosuppression has become more common based on a prospective phase I/II trial finding improved complete and overall response rates with combination therapy. Other literature had been limited to single-center or underpowered studies, but the recently published randomized phase 3 RACE study showed improved rate, depth, and time to hematologic response with eltrombopag addition. The purpose of this study is to examine efficacy and safety outcomes of standard immunosuppressive therapy with or without eltrombopag in a multicenter, real-world cohort of adult patients with severe and very severe aplastic anemia. Methods. This multicenter retrospective study includes patients 18 years or older with severe or very severe aplastic anemia receiving first-line therapy with horse anti-thymocyte globulin and cyclosporine with or without eltrombopag. Patients are excluded for congenital aplastic or Fanconi anemias or concomitant treatment for paroxysmal nocturnal hemoglobinuria. Participating sites include University of Michigan Health System, University of North Carolina at Chapel Hill, Memorial Sloan Kettering Cancer Center, Huntsman Cancer Institute, University of Kentucky, and Virginia Commonweath University. The primary outcome is overall response rate at 6 months, as defined by resolution in hematologic counts, and select secondary outcomes include complete response rate, overall survival, disease-free survival, and rates of hepatotoxicity and infusion reactions. Compiled data will be analyzed through descriptive and inferential statistics, including time-to-event and multivariate analyses. Results and Conclusion. Results and conclusion are forthcoming upon completion of data collection and analysis and will be available for the 2022 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe standard front-line immunosuppressive therapy for adults with severe aplastic anemia.

Identify outcomes that have been shown to be improved by the addition of eltrombopag to immunosuppressive therapy in severe aplastic anemia.

Self Assessment Questions:

What is standard front-line immunosuppressive therapy for managemen of transplant-ineligible adults with severe aplastic anemia?

A Alemtuzumab

B: Cyclophosphamide

C: Horse antithymocyte globulin + cyclosporine

D: Rabbit antithymocyte globulin + cyclosporine

In the RACE study, which of the following outcomes has eltrombopag been shown to improve when added to standard immunosuppressive therapy for severe aplastic anemia?

A Complete response rate

B Incidence of clonal evolution

C Overall survival

D Relapse rate

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-629-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF DOSE LIMITING TOXICITIES AND SUBSEQUENT DOSE REDUCTION OR THERAPY DISCONTINUATION IN OBESE PATIENTS RECEIVING PACLITAXEL DOSED ON BODY SURFACE AREA

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Paclitaxel based regimens have become part of the standard of care for breast cancer treatment and are also widely used for other indications. Specifically for breast cancer, paclitaxel has several recommended doses, all calculated using body surface area (BSA), including either the dose-dense paclitaxel 175 mg/m2 every 2 weeks or paclitaxel 80 mg/m2 weekly. Dose-dependent adverse events can include thrombocytopenia, lymphocytopenia, neutropenia, anemia, and peripheral neuropathy. Some of the factors identified that put patients at higher risk of experiencing chemotherapy related toxicity include being older in age, receiving three-drug regimens and importantly, being overweight. A clinical practice guideline outlining appropriate chemotherapy dosing in obese patients with cancer strongly recommends using actual body weight to calculate chemotherapy doses. Although, the recommendations were made with very little supporting evidence for BSA dosing in morbidly obese patients and concede that planned studies analyzing both toxicity and efficacy in special populations such as the obese are warranted.This study is a retrospective, multi-center, observational study to evaluate the incidence of dose-dependent toxicities and subsequent dose reduction or therapy discontinuation in obese patients being treated with paclitaxel in comparison to non-obese patients. Data will be collected utilizing a chart review of the electronic medical record of patients with an order for paclitaxel. The primary outcome is incidence of grade 3/4 neuropathy or bone marrow suppression and subsequent dose reduction or discontinuation of therapy at each cycle. Secondary endpoints include incidence of grade 1/2 peripheral neuropathy or bone marrow suppression, total dosage in milligrams received, and difference in relative dose intensity at each cycle. Data will be evaluated utilizing the chi-squared test, Wilcoxon rank sum test, and independent samples t-test as appropriate. An a priori alpha of 0.05 will be set for significance.Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review the dose-dependent adverse events associated with paclitaxel use and the current literature outlining the incidence of these adverse events in obese patients

Classify overweight and obesity utilizing body mass index as defined by the Centers for Disease Control and Prevention

Self Assessment Questions:

Which of the following is a dose-dependent adverse effect of conventional paclitaxel therapy?

A Hypersensitivity

B: Bone marrow suppression

C: Hypotension

D: Skin discoloration and tenderness at the injection site

Choose the correct matched pair of body mass index and associated weight category according to CDC classifications for a patient who is 5 feet, 4 inches tall and weighs 236 pounds.

A 40.5; Class I Obesity

B 32.5; Class I Obesity

C 29; Overweight

D 40.5; Class III Obesity

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-832-L05-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

COMPARISON OF BAYESIAN SOFTWARE VS. ESTIMATED POPULATION KINETIC EQUATIONS TO ACHIEVE AN INITIAL THERAPEUTIC AREA-UNDER-THE-CURVE AFTER VANCOMYCIN INITIATION IN AN OBESE POPULATION

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Purpose: In 2009, the Infectious Disease Society of America (IDSA) and the American Society of Health System Pharmacists (ASHP) guidelines recommended using vancomycin trough monitoring as a surrogate for area-under-the-curve (AUC) monitoring. In 2020, IDSA and ASHP published an updated guideline recommending AUC monitoring in most populations, including obese patients. There are currently two primary methods for estimating AUC: Bayesian software and first-order pharmacokinetic (PK) equations. Bayesian software is the preferred method in the guidelines, but there is a lack of literature directly comparing these methods, especially in the obese population. Obesity may be associated with an increased risk of vancomycin-induced nephrotoxicity, in part due to supratherapeutic exposure from maintenance doses calculated using actual body weight. Ephraim McDowell Regional Medical Center (EMRMC) transitioned from using first-order PK equations for vancomycin dosing to Bayesian software in August 2020. The purpose of this study was to compare Bayesian software with historical control of first-order PK equations in their ability to achieve a therapeutic AUC by first peak and trough monitoring in an obese population in a rural, community acute care hospital.Methods: This retrospective chart review evaluated historical data comparing Bayesian software and first-order PK equations as dosing strategies for vancomycin and their ability to achieve a therapeutic AUC in an obese population. The first-order PK equation group included patients that met inclusion criteria from September 1, 2019 to March 31, 2020. The Bayesian software group included patients that met inclusion criteria from September 1, 2020 " March 31, 2021. The primary outcome is the percentage of patients who reach therapeutic AUC (400-600) on first peak and trough levels drawn. Secondary outcomes included rate of acute kidney injury and rate of supratherapeutic and subtherapeutic AUC on first peak and trough. Results and Conclusions: Will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Recognize obesity as a risk factor for vancomycin-induced nephrotoxicit

Describe the advantages associated with Bayesian software over traditional first-order pharmacokinetics for vancomycin dosing.

Self Assessment Questions:

Which comorbid disease places patients at increased risk for vancomycin-induced nephrotoxicity?

A Heart Failure
B: Obesity
C: Cirrhosis
D: Hypertension

Which of the following is correct?

A Bayesian software allows for evaluation of dosing regimens prior t
B Bayesian software requires precise timing of vancomycin peak an
C Traditional first-order PK equations provide the full picture of how a
D Traditional first-order kinetics are able to account for changes in re

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-630-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

ASSESSMENT OF ORAL NALTREXONE CHALLENGE DOSING IN THE INITIATION OF EXTENDED-RELEASE NALTREXONE THERAPY IN PATIENTS DIAGNOSED WITH OPIOID USE DISORDER

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Current literature demonstrates challenge dosing with an opioid antagonist prior to initiation of extended-release naltrexone (XR-NTX) therapy is warranted performed to assess for physical opioid dependence and avoid precipitated opioid withdrawal (POW) in treatment of opioid use disorder (OUD). However, commonly proposed methods prior to XR-NTX initiation do not include utilizing oral naltrexone but rather intramuscular or intravenous naloxone. This limits the use of XR-NTX in ambulatory settings. This study is designed to determine whether oral naltrexone challenge dosing is a safe and effective method to initiate intramuscular XR-NTX in patients being treated for OUD. This is a retrospective cohort study conducted at an ambulatory care clinic functioning as a federally qualified health center. This clinic offers an ora naltrexone challenge dosing procedure within its well-established medication-assisted treatment (MAT) program to initiate intramuscular XR-NTX in treatment of OUD. Patient selection will first occur by diagnosis of OUD, identified by ICD-10 codes. Adult patients enrolled in the MAT programbetween May 1, 2015 - May 30, 2021receiving at least one dose of XR-NTX for treatment of OUD will be included. Basic patien demographics will be obtained. Urine drug screen and Clinical Opiate Withdrawal Scale (COWS) assessments will be recorded for each patient receiving oral naltrexone prior to administration of XR-NTX. Data collection will occur via a password-protected data software, REDCap, which will be secured and only accessible by investigators. Data analysis will be performed utilizing IBM SPSS Statistics in collaboration witha biostatistician. The primary outcome is to determine the proportion of patients accurately identified to receive or not receive XR-NTX therapy by means of the oral naltrexone challenge dosing procedure. The secondary outcome is to determine the occurrence of serious adverse events and other adverse events reported during or following the oral naltrexone challenge dosing process.

Learning Objectives:

Define medication-assisted treatment (MAT)

Recognize the importance of increasing patient access to MAT services in the ambulatory care and primary care settings

Self Assessment Questions:

What is an intramuscular injection used for treatment of opioid use disorder?

A Olanzapine (Zyprexa)
B: Ziprasidone (Geodon)
C: Extended-Release Naltrexone (Vivitrol)
D: Ketorolac (Toradol)

Which of the following assessments can be used to evaluate a persons physical dependence to opioids following administration of an opioid antagonist?

A Current Opioid Misuse Measure (COMM)
B Clinical Opioid Withdrawal Scale (COWS)
C Opioid Risk Tool (ORT)
D Screener and Opioid Assessment for Patients with Pain (SOAPP)

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-859-L08-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

CARBOPLATIN AND ETOPOSIDE DOSE ATTENUATION IN SMALL CELL LUNG CANCER

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Statement of PurposeSmall cell lung cancer (SCLC) is an aggressive malignancy associated with poor prognosis. SCLC is initially highly sensitive to chemotherapy, with carboplatin plus etoposide being the cytotoxic agents of choice in patients with extensive stage disease. The National Comprehensive Cancer Network (NCCN) guidelines suggest initial doses of etoposide 100mg/m2 and carboplatin dosed to an area under the curve (AUC) of 5. Due to the significant toxicity associated with these agents, doses are sometimes empirically reduced, despite a lack of recommendation from NCCN. This study will examine the impact of attenuation of one or both drugs on mortality at 30 days.Statement of Methods UsedAfter undergoing IRB review and approval, a retrospective chart review was performed on patients ages 18 and older who were admitted to Bethesda North or Good Samaritan Hospital between January 1, 2016 and January 31, 2021. Patients with a diagnosis of extensive stage SCLC and who received their first cycle of carboplatin and etoposide while inpatient were included. Patients who did not have a SCLC diagnosis or who did not receive both carboplatin and etoposide inpatient are excluded. Data collected includes patient demographics, carboplatin and etoposide doses administered, vital status of patients at 30 days, Eastern Cooperative Oncology Group (ECOG) performance status, complete metabolic panel, and complete blood count with differential. The primary outcome of this study is to determine if dose attenuation of carboplatin, etoposide, or both impacts mortality at 30 days. Secondary endpoints examine treatment-related toxicities such as grade 3 neutropenia, nephrotoxicity, and incidence of treatment related infection. The primary outcome will be assessed with a Chi-squared test Secondary outcomes will be assessed with ANOVA or the Kruskal-Wallis test, depending on data distribution. Results/ConclusionData collection is ongoing and will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe current standards of care in Extensive Stage Small Cell Lung Cancer Treatment, based on NCCN guidelines.

Discuss the risks and toxicities of carboplatin and etoposide therapy.

Self Assessment Questions:

What is an appropriate carboplatin and etoposide dose for initial treatment in a patient with Extensive Stage Small Cell Lung Cancer?

A Etoposide 100mg/M2 and carboplatin AUC of 5

B: Carboplatin 100mg/M2 and etoposide AUC of 5

C: Etoposide 50mg/M2 and carboplatin AUC of 2

D: Carboplatin 50mg/M2 and etoposide AUC of 2

What is a common dose-limiting toxicity associated with carboplatin?

A Cardiotoxicity

B Cutaneous reactions

C Hepatotoxicity

D Nephrotoxicity

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-631-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

DEVELOPMENT OF INPATIENT PHARMACIST-DRIVEN SERVICE FOR GUIDELINE-DIRECTED MEDICATION OPTIMIZATION IN HEART FAILURE WITH REDUCED EJECTION FRACTION

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Purpose: Guideline-directed medical therapy (GDMT) outlines distinct medication classes and target doses for patients with heart failure with reduced ejection fraction (HFrEF). Despite benefits of adherence to GDMT, including reduced mortality, hospitalization, and readmission rates, gaps exist for GDMT medication initiation and titration to target dosing. Pharmacists are aptly positioned to improve prescriptive adherence by providing collaborative recommendations for GDMT optimization. The purpose of this process improvement project is to develop and investigate the potential impact of a comprehensive pharmacist-led service for inpatient GDMT medication optimization for HFrEF patients. Methods: This process improvement project implements Plan-Do-Study-Act methodology. Plan phase includes development of a new standard pharmacy service for assessment and optimization of GDMT during inpatient admission. Do phase applies the developed service retrospectively through chart review of a cohort of up to 100 patient admissions between 8/1/2021 and 10/31/2021 at a four-hospital healthcare system. The investigator evaluates service-based pharmacis GDMT optimization opportunities and records GDMT optimizations occurring in current state without a standard pharmacist service. To predict the potential impact of the service, the number of patients with potential GDMT optimization opportunities identified by the service is compared to patients optimized within current state. In the Study phase, results are analyzed to quantify and characterize pharmacy opportunities for GDMT medication optimization including a multivariate analysis to characterize the patient population with greatest benefit for service inclusion. Based on these results, revisions to the service are completed in the Act phase to narrow applicability to patients with greatest benefit, prior to piloting the service.Results/Conclusions: Results and conclusions will be presented at the 2022 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recognize patient outcome benefits of guideline-directed medical therapy in heart failure with reduced ejection fraction.

Select medications that comprise guideline-directed medical therapy for patients with heart failure with reduced ejection fraction.

Self Assessment Questions:

What are the expected patient outcome benefits of GDMT in HFrEF?

A Reduced supplemental oxygen requirements

B: Reduced symptomatic hypotension

C: Reduced atrial fibrillation incidence

D: Reduced mortality

A patient with hypertension and diabetes on losartan 100mg daily and dapagliflozin 10mg daily is newly diagnosed with HFrEF. In order to optimize GDMT, which of the following should be initiated?

A Amlodipine 5mg daily

B Carvedilol 6.25mg twice daily

C Atorvastatin 40mg daily

D Propranolol 20mg twice daily

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-632-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IMPLEMENTATION AND EVALUATION OF AN ELECTRONIC PATIENT SELF-REPORTING TOOL: PATIENT CONFIDENCE AND SATISFACTION TO SELF-MANAGE ORAL CHEMOTHERAPY - A QUALITY IMPROVEMENT INITIATIVE

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Purpose: Oral chemotherapy is a growing treatment strategy that allows patients to self-manage their cancer at home. A barrier to using oral oncolytics is ensuring patients are being monitored for side effects and adherence. Too often, side effect and adherence monitoring may not occur or not be documented. Therefore, an electronic self-reporting questionnaire accessed via the MyChart phone app was developed to give patients an easily accessible, user-friendly way to report side effect and adherence. The purpose of this quality improvement project is to determine if the MyChart questionnaire is useful as an electronic self-reporting tool for patients taking oral chemotherapy. Methods: This quality improvement initiative is conducted via prospective evaluation and analysis of patient responses to a confidence and satisfaction survey that assesses (1) patient confidence to manage their treatment a home and (2) satisfaction with the electronic self-reporting questionnaire. Patientsare included if they areat least 18 years old, prescribed an oral oncolytic, received comprehensive oral oncolytic education,able to read and write in English, and agree to participate in communicating via the MyChart app. Patients are excluded if they are receiving an oral oncolytic as part of a clinical trial. The primary outcome is to assess how patient confidence to manage their oral chemotherapy at home changes while using the electronic self-reporting questionnaire. The key secondary outcome is to assess patient satisfaction with the electronic self-reporting questionnaire. Results: In process.

Learning Objectives:

Discuss the benefits and limitations of using oral oncolytics for the treatment of patients with cancer.

Identify effective methods of monitoring patients who are taking oral oncolytics.

Self Assessment Questions:

Which of the following is an important limitation of treating patients with oral oncolytics instead of parenteral chemotherapy?

A Higher frequency of side effects
B: Difficulty monitoring therapy
C: Questionable efficacy
D: Most patients prefer parenteral chemotherapy

How frequently should health care providers monitor side effects and adherence for patients starting oral chemotherapy?

A After 1 week, 2 weeks, 4 weeks, and monthly thereafter
B After 1 week, 2 weeks, 4 weeks, and yearly thereafter
C Once every 2 weeks indefinitely
D Once every 4 weeks indefinitely

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-633-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

IMPACT OF A MEDICATION ORDER REVIEW DURING A CRITICAL PERIOD IN THE PHARMACOGENOMICS CARE PROCESS

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: Incorporation of pharmacogenomics (PGx) information into patient care includes integrating test results into the electronic health record (EHR) and developing clinical decision support (CDS) to help guide healthcare providers. When PGx testing is ordered pre-emptively, several timeframes exist involving order entry which require further clinical support. Standard posttest CDS will cover new prescriptions or refill orders after the PGx results are incorporated into the EHR. However, active medication orders placed or renewed prior to the availability of PGx results represent a critical gap period that standard posttest CDS does not cover. The purpose of this study was to examine medication orders made during this critical time to prevent medication errors and/or wastage by preemptively optimizing therapy for patients using PGx.

Learning Objectives:

List the main steps of the pharmacogenomics implementation process

Recognize common gene-drug interactions that are clinically actionable

Self Assessment Questions:

A patient just got their PGx test results, and the report shows they are a CYP2C19 poor metabolizer. They have recently been started on clopidogrel following a PCI. What intervention, if any, should be made?

A Clopidogrel dose should be increased by 50% of the starting dose
B: No intervention should be made
C: Clopidogrel dose should be decreased by 50% of the starting dose
D: Clopidogrel should be discontinued and patient switched to a diffe

Which of the following steps would be missed by a CDS system using only posttest interruptive alerts?

A Step 1: Prior to ordering testing, when deciding if a patient would b
B Step 2: After a patient has been tested but prior to their results bei
C Step 3a: After results have been incorporated into the EHR at the
D Step 3b: When a CDS alert is activated following renewal of a pres

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-634-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

OPTIMIZING EMERGENCY DEPARTMENT EVALUATION AND TREATMENT OF AGITATION

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Purpose:The purpose of this study was to determine if there is a difference in treatment of acute agitation based on patient age. This will be used to assess if there is a need for education on optimization of treatment of acute agitation.The emergency department (ED) is one of the most common hospital environments for acutely agitated patients to show violent behaviors or aggression. Having an evidence-based approach to agitation with focus on verbal de-escalation as a first-line treatment, treating underlying conditions before psychiatric intervention, choosing appropriate pharmacotherapy according to the etiology of the agitation, and limiting physical restraint/seclusion will improve overall management of agitation. In terms of medication therapy, the study sigh has largely utilized ziprasidone or a combination of diphenhydramine, haloperidol, and lorazepam to manage agitation in the ED. Aultman Emergency Department has now focused on optimizing medication therapy through further education on the treatment of acute agitation.Methods:This study was conducted as a single-center retrospective chart review. The study included agitated patients who presented to Aultman Hospital ED that met BARS (5,6,7) criteria. Only those who were 18 years or older were included. Lastly, patients who received at least one dose of benzodiazepine or an antipsychotic for the treatment of agitation were included. Any patients who were not agitated have not received benzodiazepines or antipsychotics, or who were previously enrolled were excluded. The primary outcome was to determine if there is a difference in initial medication given in various ag groups including patients of 18-35, 36-64, and 65 years or older in treating agitated patients at Aultman Hospital ED. Additionally, the use of oral versus intramuscular/intravenous antipsychotics was assessed before and after education in treating agitation in the ED.Results/Conclusions: Will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review the dangers of utilizing benzodiazepines in agitation for the purpose of sedation.

Discuss the appropriate treatment of agitation based on the BARS scale and etiology of agitation.

Self Assessment Questions:

Which of the following is likely to result from utilizing benzodiazepines in a delirious elderly patient who is agitated?

A Provide adequate sedation
B: Worsen psychosis/agitation
C: Cause insomnia
D: Relive confusion

Which of the atypical antipsychotics is the most appropriate for patient who is agitated due to delirium with BARS scale of 6?

A Pimavanserin
B Quetiapine
C Olanzapine
D Ziprasidone

Q1 Answer: B Q2 Answer: D

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Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

MAXIMIZING UTILIZATION OF UNIT DOSE ROBOTIC DISPENSING SYSTEM TECHNOLOGY

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Purpose: Finding ways to reduce medication dispensing and verification errors is a constant focus of dispensing pharmacies. Processes such as tall mall lettering, barcode scanning, and visual double checks improve dispensing accuracy, but have an inverse effect on efficiency. Utilization of pharmacy automation can relieve pharmacists from non-clinical roles and reduce dispensing errors, without sacrificing medication dispensing efficiency. UW Health is an academic medical center implementing a replacement unit dose (UD) robotic dispensing system (RDS). The objective of this project is to maximize utilization of our new RDS while maintaining appropriate inventory on hand, staffing resources, and medication dispensing turnaround times. Methods: A workgroup was formed to evaluate the current UD dispensing model and discuss proposed inventory and workflow adjustments to maximize RDS dispensing, while having a net neutral impact or improvement on baseline measures. Inventory standards and technician processes for first dose and cart fill UD orders were adjusted to optimize dispensing and restocking workflows. The transition of STAT UD orders to RDS wa implemented. Batch cabinet UD orders were evaluated for feasibility of utilizing RDS. After implementation of identified workflows, baseline measures will be reevaluated, and final adjustments will be made based on the results.Results: Over 24 medications have been added or removed and 80 inventory standards have been optimized to avoid medication stock outs prior to implementing the medication optimization tool. Workflow turnaround time was improved to 100% completion on time rates for cart fill dispenses by reallocating the workload between th RDSs. Additionally, one third of UD STAT orders have transition from med carousel to RDS. Cabinet fill orders were assessed and present an opportunity to transition an additional 250 orders per day to RDS.Conclusion: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify frequently used techniques used by dispensing pharmacies to mitigate medication dispensing errors.

Review important factors to consider when implementing and optimizing pharmacy automation.

Self Assessment Questions:

Which of the following options is a technique used to reduce medication dispensing errors?

A Barcode scanning
B: Pharmacy automation
C: Visual double checks
D: All of the above

Which of the following are important factors to consider when optimizing use of an RDS system?

A Maximize doses dispensed
B Ensuring adequate restock time
C Impact on personnel demands
D All the above

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-781-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

ESTABLISHING AN APIXABAN THERAPEUTIC REFERENCE RANGE AT A VETERANS AFFAIRS MEDICAL CENTER

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Purpose: Apixaban has risen in popularity due to its efficacy, safety, and limited monitoring requirements. While a lower monitoring burden is appealing, the inability to assess the degree of anticoagulation for patients presents difficulty when managing those who present with breakthrough clotting, bleeding, or stroke. The FDA recently approved an anti-Xa assay which is specifically calibrated for use with apixaban. Due to the novelty of the assay, no validated reference range currently exists to guide practitioner interpretation of these results. The objective of this study is to establish a therapeutic range of anti-Xa levels in a Veteran population anticoagulated with apixaban.Methods: This study aimed to prospectively identify and enroll 150 patients hospitalized at a Veterans Affairs hospital who were receiving apixaban for anticoagulation. Patients were excluded if they were receiving dialysis or continuous renal replacement therapy, had clinically significant liver dysfunction, were receiving an anticoagulant besides apixaban, had missed a dose of apixaban in the past 72 hours, or were receiving concomitant medications that could significantly alter apixaban serum concentrations. Two blood samples were drawn from participating patients, a trough level immediately prior to receiving a dose of apixaban and a peak level four hours following a dose. Blood samples were analyzed using a novel liquid anti-Xa chromogenic assay that has been specifically approved for use with apixaban. The primary analysis will evaluate the distribution and variance observed for peak and trough anti-Xa levels across the study population. Further subgroup analysis will examine the impact of extremes of body weight and renal function on peak and trough anti-Xa levels.Results/Conclusions: Results and conclusions will be presented at the Great Lakes Pharmacy Resident

Learning Objectives:

Describe patient characteristics that may affect anti-Xa levels amongst patients receiving apixaban

Identify potential therapeutic applications for anti-Xa monitoring for patients receiving apixaban

Self Assessment Questions:

Which of the following may impact the anti-Xa levels seen in a patient on apixaban?

A Patient age

B: Renal impairment

C: Concomitant NSAID use

D: Dose administration with food

Use of apixaban within the past how many hours would exclude an ischemic stroke patient from receiving tPA therapy?

A 48

B 72

C 96

D 120

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-636-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

USING A PROTOCOL TO STANDARDIZE A TRANSITIONS OF CARE PHARMACIST WORKFLOW TO IMPROVE TOBACCO CESSATION RATES AT HOSPITAL DISCHARGE

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Purpose: Tobacco use is a leading cause of many serious health conditions including respiratory disease, cardiovascular disease, and cancer. Additionally, tobacco use has both direct and indirect financial implications to businesses and health systems alike. While smoking rates across the country have declined over the last 15 years, nearly 14% of adults in the United States still report smoking cigarettes. These rates are much higher in Kentucky at 23.6%, with the second highest rate in the country after West Virginia at 25.2%. Due to the negative consequences and the high rates in Kentucky, efforts to increase tobacco cessation are vital. Hospital admissions and subsequent discharges provide an opportunity to target tobacco cessation efforts. Specifically, pharmacists have been shown to play an important role in facilitating tobacco cessation surrounding hospital discharge. The purpose of this project is to improve tobacco cessation rates using a protocol to standardize the workflow for transitions of care (TOC) pharmacists.Methods: This process improvement project utilized a Plan-Do-Study-Act methodology. Baseline assessment included review of TOC pharmacist tobacco cessation interventions from three months prior to project implementation. A new TOC pharmacist workflow was created to identify patients at hospital discharge who use tobacco, to assess for readiness to quit, to determine protocol eligibility and to plan for post-discharge follow up. The workflow was implemented for a three month pilot period. Analysis of data collected during the pilot period includes patient engagement, utilization of the protocol compared to baseline, rates of tobacco cessation, and total time spent by the pharmacist. Results/Conclusions: Results and conclusions will be presented at the 2022 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the negative consequences of tobacco use.

Identify the pharmacist's role with tobacco cessation efforts at hospital discharge.

Self Assessment Questions:

Which of the following is a potential consequence of tobacco use?

A Increased cost to healthcare system

B: Cancer

C: Loss of workplace productivity

D: All of the above

In the study conducted by Li and colleagues, which pharmacist interventions were performed that resulted in an increase in smoking cessation rates?

A Patient counseling alone

B Patient counseling and referral to free telephone quit line

C Pharmacotherapy recommendations, patient counseling, and post

D Pharmacotherapy recommendations and referral to free telephone

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-637-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

INITIATION OF PHARMACIST-LED MANAGEMENT OF HEPATITIS C VIRUS INFECTIONS VIA COLLABORATIVE PRACTICE AGREEMENT

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PurposeIt has been over 30 years since the approval of interferon alpha the first treatment for hepatitis C virus (HCV). Now, with the development of second-generation direct-acting antivirals and further community education, cure can be achieved in over 90% of all cases. The estimated prevalence of chronic HCV infection was 2.4 million people between 2013 and 2016 according to the CDC. Proper patient education, management, and monitoring are the first steps to giving all patients a chance of achieving cure. Pharmacists can help optimize disease state management and improve patient outcomes. Pharmacist-let HCV treatment programs can improve patient care on many fronts including cure rate, medication access, drug costs, patient satisfaction, and complication mitigation. The purpose of this project is to create a collaborative practice agreement (CPA) to allow patients with HCV infections to be referred to and managed by clinical pharmacists that work within the Union Hospital Specialty Pharmacy. The CPA outlines the scope, abilities, and processes of a pharmacist in the management of HCV patients.MethodsThis is a prospective analysis of a pharmacist-led HCV management program established via introduction of a CPA. After receiving a referral from a physician, a pharmacist will assume management of HCV. As patients are enrolled and complete treatment, rate of obtaining sustained virologic response 12 weeks post-treatment (SVR12) will be measured. Other factors such as rate of treatment completion and need for patient assistance to obtain medication will be analyzed. Results will be compared to national benchmarks as applicable.Results and Conclusion Data collection and analysis is currently ongoing, and results will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Outline the scope of a pharmacist per the collaborative practice agreement in terms of what labs can be drawn and which medications can be adjusted.

Describe how a pharmacist-led hepatitis C virus management program can improve patient outcomes.

Self Assessment Questions:

What does SVR12 measure?

A Systemic vascular resistance between 12 vessels

B: Sustained virologic response at 12 weeks post-treatment

C: Static ventricular rate on 12-lead EKG

D: Suspected viral relapse at 12 years post-treatment

Which is a pertinent counseling point that would be important for a pharmacist to communicate to a patient regarding HCV medications?

A All medications work best when taken on an empty stomach.

B If multiple doses are missed, take all omitted doses at once to cat

C All medications should be taken with an acidic drink such as orang

D Take all medications on time and on a consistent basis. If a dose i

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-638-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF ANTIBACTERIAL PROPHYLAXIS IN ADULTS WITH ACUTE LYMPHOBLASTIC LEUKEMIA UNDERGOING INDUCTION CHEMOTHERAPY

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Background: Consideration of antimicrobial prophylaxis for acute leukemia is recommended in the NCCN and ASCO guidelines. However majority of the studies supporting this recommendation included primarily AML diagnoses and patients who received a HSCT. The literature supporting the use in adult patients with ALL is limited. While fluoroquinolone prophylaxis has been documented to significantly lower the rates of febrile events and microbiologically documented infections i acute leukemia patients, its use carries risks such as antimicrobial resistance. In 2018, Michigan Medicine changed the antibacterial prophylaxis protocol for patients with ALL. Prior to this time, patients did not regularly receive fluoroquinolone prophylaxis following chemotherapy. After the new protocol was implemented, patients with ALL received levofloxacin when their ANC reached 500 cells/L or less and continued prophylactic treatment throughout the duration of neutropenia. With the new implementation of an antibacterial prophylaxis protocol at Michigan Medicine, the clinical impact of levofloxacin has yet to be determined.Objective: The aim of this study is to evaluate the efficacy and safety outcomes in adult patients with ALL who did and did not receive antibacterial prophylaxis.Methods: This study is a retrospective, single-center, cohort study that will evaluate the clinical impact of levofloxacin prophylaxis in adult patients with newly diagnosed or relapsed/refractory (R/R) ALL at Michigan Medicine. Patients will be screened from July 2014 through June 2021 and divided into two cohorts based on whether they received antibacterial prophylaxis. The primary endpoint will be the incidence of bacteremia based on microbiologically documented infections within the electronic medical record. Secondary endpoints include all-cause mortality and mortality from any documented infection, time to bacteremia, organisms isolated from microbiologically documented infections, rate of quinolone resistance, rate of multidrug resistance, incidence of neutropenic fever, and time to neutropenic fever.Results/Conclusions: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss current recommendations for antibacterial prophylaxis in patients with acute lymphoblastic leukemia.

Recognize the appropriate timing of prophylactic antibiotic initiation in patients with acute lymphoblastic leukemia.

Self Assessment Questions:

Which class of antibiotics is recommended for antibacterial prophylaxis in both the NCCN and ASCO guidelines?

A Macrolides

B: Tetracyclines

C: Fluoroquinolones

D: Cephalosporins

When is the recommended time to initiate antibacterial prophylaxis in patients with acute leukemia?

A Before chemotherapy

B During the period of neutropenia following chemotherapy

C During chemotherapy

D Never

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-639-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

SUSTAINING THE IMPACT OF A PHARMACIST/NURSE COLLABORATIVE PROGRAM ON BLOOD PRESSURE CONTROL IN YOUNG AFRICAN AMERICAN MALES

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Statement of Purpose: Hypertension affects nearly half of the US adult population, including more than 116 million people, and is a significant cause of stroke, heart failure, and mortality. These outcomes are notoriously worse in the young African American male (AA) population due to lack of access to care, non-adherence, complex regimens, and socioeconomic status. Patients at high-risk work with a Henry Ford Health System pharmacist/nurse in a collaborative effort to achieve controlled blood pressure, categorized as 140/90 mmHg. The purpose o this study is to evaluate whether a patients BP control is sustained following completion of the pharmacists/nurse program in young AA males compared to those who follow with usual care.Methods: This IRB-approved retrospective cohort study comprises patients seen from August 2020 and October 2021. The study includes AA males between the ages of 35 and 64 with a diagnosis of hypertension. Patients must have at least one controlled BP following a visit with the nurse or pharmacist in the intervention group or with the physician in the controlled group. Additionally, patients must have at least one BP taken six months following their controlled BP. Patients are excluded if they have end-stage renal disease, receive dialysis, follow in the nephrology clinic, or see the clinical pharmacist through a different collaboration (control group exclusion). The primary endpoint is change in systolic blood pressure six months after completion of the pharmacist/nurse collaborative compared to usual care. Secondary outcomes include the change in diastolic BP, the proportion of patients who maintain goal BP, and differences in patients given a home BP monitor. Analysis of continuous and categorical variables will include the appropriate statistical tests; a planned sensitivity analysis to determine whether overall results are similar in these subgroups.Data collection is ongoing.

Learning Objectives:

Identify factors could that lead to lack of controlled blood pressure

Describe the importance of sustained controlled blood pressure and the impact a pharmacist/nurse can have on blood pressure control.

Self Assessment Questions:

Which of the following would not be prevented by maintaining controlled blood pressure?

A Stroke

B: Autoimmune disease

C: Heart Failure

D: Myocardial infarction

Which clinical impact would be LEAST expected from engaging patients in self-measured blood pressure monitoring?

A Increased adherence

B Ease of virtual visits

C Reduced patient engagement

D Improved blood pressure control

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-640-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

INFUSION MEDICATION SITE OF CARE ASSESSMENT AND STRATEGY

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The medical needs of patients have begun to shift from within the hospital, to external sites of care. Infusion services is one area utilizing alternative sites of care that has seen rapid growth. Infusion operations pose key challenges including patient complexity, diverse payer mix, high operating costs, challenges with revenue cycle, and staffing difficulties. Health plans have established control over provider-administered drugs from what drug to choose to where drugs are administered. With pharmacy sourcing and infusion site of care requirements, infusions are moving away from traditional buy-and-bill processes. Health systems must address where infusions are administered to meet demands of patients and payers. Froedtert Health currently offers hospital-based and home infusion services with 89,794 visits in fiscal year 2021 with 168 available infusion chairs. Utilizing alternative infusion sites of care will prevent patients from leaving the health system, shorten length of stay through improved transitions to home, reduce hospital expenses from length of stay, and lower pharmacy spend. With the changing payer landscape related to site of care and reimbursement for infusion medication services, strategies must be put in place to meet quality, safety, and financial patient needs. The primary objective is to develop a current state assessment of ambulatory infusion services across Froedtert Health. The secondary objective is to develop a medication infusion site of care strategy to mee the needs of both patient and payers currently and in future state. Primary outcomes are to identify Froedtert Healths current ambulatory infusion services, assess the infusion medication site of care landscape, and determine areas of opportunity and gaps in care. Secondary outcomes are to develop a multi-year capital investment strategy to mitigate site of care pressures and payer changes and design an enterprise-wide approach to standardization and alignment of medicatio infusion services across the organization.

Learning Objectives:

Identify the key challenges infusion operations pose.

Outline why infusion medication site of care strategies must be put in place.

Self Assessment Questions:

What key challenges do infusion operations pose?

A Patient complexity

B: Diverse payer mix

C: Challenges with revenue cycle

D: All of the above

Infusion medication site of care strategies must be put in place to meet all of the following patient needs except _____.

A Quality

B Educational

C Safety

D Financial

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-782-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

BASELINE ENVIRONMENTAL ASSESSMENT OF EQUITY, DIVERSITY, AND INCLUSION (EDI) EFFORTS AT A PRIVATE HEALTH SCIENCES UNIVERSITY

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Background: The summer of 2020 served as an inflection point in American social justice and racial equity movements while the COVID-19 pandemic highlighted racial and ethnic health disparities. In response, many organizations and institutions, including colleges of pharmacy, have placed greater focus on equity, diversity, and inclusion (EDI) initiatives. Previous studies have identified a clear need for more extensive programmatic assessment, implementation, and evaluation in areas of faculty education, enrollment initiatives, curricular aspects, and strategic planning. However, the literature lacks comprehensive guidelines for evaluating EDI initiatives.Purpose: The purpose of this evaluability assessment is to describe the process of performing a baseline environmental analysis of EDI within a private college of pharmacy and health sciences.Methods: Data will be collected from surveys, individual interviews, and small focus groups with college stakeholders including faculty, administrators, staff, and students. To eliminate institutional bias, an outside agency is contracted to collect the data and perform the environmental assessment. Each step is recorded throughout this data collection phase, including barriers faced, successful strategies implemented, and areas for improvement for future phases of the project.Results: Results from this study will be used to help shape policy, procedure, and strategic planning for the home institution and individual departments. In addition, the deliberate recording of all aspects for this process will allow for clear guidelines to assist other colleges and programs in their approaches to EDI initiatives This project is the first in a series and is considered the assessment phase. The research team will initiate an implementation phase and evaluation phase upon completion of the assessment phase. Each of these phases will help guide future EDI efforts and initiatives.Conclusion Final results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss potential barriers to successfully evaluating and implementing EDI initiatives at an institution

Outline the process from the initial stages of moving a college of pharmacy and health sciences through the process of becoming a more inclusive, diverse, and equitable environment

Self Assessment Questions:

Which of the following has been a common barrier to successfully implementing EDI efforts in organizations and institutions?

A Clear structure or model to guide efforts

B: Organization-wide involvement and participation

C: Sufficient funding allocated to EDI efforts

D: All of the above

What does DiSC stand for when referring to the DiSC assessment completed by the EDI research team?

A Dominance, Introspectiveness, Selflessness, Confidence

B Dominance, Influence, Steadiness, Consciousness

C Dominance, Intuitiveness, Steadiness, Confidence

D Dominance, Intuitiveness, Selflessness, Consciousness

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-783-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IMPACT OF IMPLEMENTING A PHARMACIST-DRIVEN PROTOCOL TO REDUCE INAPPROPRIATE STRESS ULCER PROPHYLAXIS

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Objective: Stress ulcer prophylaxis is routinely prescribed in the intensiv care unit to reduce the incidence of gastrointestinal bleeding, morbidity, and mortality associated with stress-related mucosal disease. Oftentimes, these agents are initiated while receiving inpatient medical care and are inappropriately continued throughout a patients hospital stay and even prescribed at discharge. Continuing these therapies for longer than necessary increases healthcare costs, medication interactions, and adverse events. Long-term use of acid suppression therapies can lead to an increased risk of bone fractures, Clostridium difficile infection, malabsorption, hypomagnesemia, and pneumonia. Therefore, unnecessary use of these medications should be minimized whenever possible. The goal of this study is to assess the impact of a pharmacist-driven protocol to reduce inappropriate stress ulcer prophylaxis. Methods: Inpatients admitted to all critical care units between January 2021 and March 2021 were identified for study eligibility. Inclusion criteria included all patients who received three or more doses of oral or intravenous famotidine or pantoprazole while hospitalized. Patients were excluded from analysis if proton pump inhibitors were prescribed for active gastrointestinal bleeding and in patients who underwent coronary artery bypass graft surgery. In the retrospective study arm, patients meeting study criteria were evaluated for appropriate use of stress ulcer prophylaxis, as defined by a previously published policy written by health system leadership. In the prospective arm of the study, a pharmacist-driven protocol to reduce inappropriate stress ulcer prophylaxis will be implemented. Data collected will compare the number of patient-days of inappropriate stress ulcer prophylaxis in the retrospective group in comparison to the prospective group. Results and Conclusion: Data collection and analysis are currently in progress. Final results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the impact that pharmacists can have on reducing the incidence of inappropriate stress ulcer prophylaxis use.

Discuss risks associated with long-term use of stress ulcer prophylaxis.

Self Assessment Questions:

Long-term use of stress ulcer prophylaxis is associated with which of the following consequences?

A Cardiac abnormalities

B: Clostridium difficile infections

C: Hypermagnesemia

D: Gastrointestinal bleeding

Which of the following medications are used for stress ulcer prophylaxis?

A Pantoprazole

B Subcutaneous heparin

C Aspirin

D Naproxen

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-641-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

CREATION OF A PHARMACIST STAFF POSITION IN THE EMERGENCY DEPARTMENT AT A COMMUNITY HOSPITAL

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Purpose: Currently, St. Agnes Hospitals 25 bed Emergency Department (ED) does not have a dedicated full-time pharmacist position. Literature has shown the positive impact that a pharmacist positioned in the ED can have for patient and organizational outcomes. With direct pharmacist care, patients have been shown to have an increased quality of care through optimization of therapy, timely medication administration improved medication safety, and costs of care. Organizations have benefitted with enhanced antimicrobial stewardship, costs savings initiatives, increased emergency department throughput, and reduced physician burden. An ED pharmacist is uniquely positioned to improve medication therapy, transitions of care, assist with critical care medicine reduce hospital costs, and improved patient and medical staff satisfaction. The goal of this project is to create a pharmacist position in the ED at a community hospital. Methods: Pharmacy personnel met with medical staff leadership from the ED to discuss potential areas of impact with the addition of a pharmacist. A comprehensive list was generated to determine potential roles and responsibilities for the ED Pharmacist. Literature on the specific pharmacist roles and responsibilities were reviewed and presented in order to pre-determine the areas of significant impact. During the residents critical care rotation she will establish positive working relationships with the medical staff to guide the creation of the pharmacists clinical duties and workflows in the ED. A proforma will be created and presented to leadership for a full-time equivalent proposal. Results/Conclusion: A draft proforma was created and is pending approval that provides insight for the projected net reduction for a 1.2 full-time equivalent position, and delineated roles and responsibilities. The final proforma and created workflows will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss the process for developing and creating an emergency medicine pharmacist position proforma.

Outline the current literature that supports emergency medicine pharmacists and identify key areas for pharmacist intervention in the emergency department setting.

Self Assessment Questions:

Which of the following healthcare organizations have recognized the value of emergency medicine pharmacists?

A American College of Emergency Physicians

B: Infectious Diseases Society of America

C: American Society of Health System

D: Both A and C

Which of the following benefits have emergency medicine pharmacists demonstrated based on supportive literature?

A Increase compliance with advanced cardiac life support (ACLS) gu

B Decrease time to first antibiotic dose for sepsis

C Increased time to receive thrombolysis agents for ischemic stroke

D Both A and B

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-784-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF THE IMPACT OF THE TIMING OF BEVACIZUMAB ADMINISTRATION POST-PORT PLACEMENT ON WOUND HEALING COMPLICATIONS

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Purpose: To evaluate the impact of the timing of administration of bevacizumab post-port placement on incidence of port-site wound healing complications.Background: Bevacizumab is an anti-VEGF monoclonal antibody used for treatment of various malignancies. An adverse effect associated with anti-VEGF therapy is wound healing complications due to anti-angiogenic effects. Recommendations exist to hold bevacizumab 28 days surrounding surgical procedures because of the risk of wound healing complications. Many patients with cancer have port-a-caths (ports) surgically placed to allow for frequent central venous access and chemotherapy is often administered shortly after port placement. It is unclear whether port placement meets the criteria of a surgical procedure to recommend withholding bevacizumab therapy surrounding port placement. The drug mechanism and existing literature suggests there may be an increased risk of wound healing complications when bevacizumab is administered shortly after port placement. There is currently no guidance on timing of administration of bevacizumab surrounding port placementMethods: This retrospective, single-health system, cohort study was conducted within the UC Health system. This study included patients with ports placed at UC Health with subsequent administration of bevacizumab for glioblastoma, colorectal or ovarian cancer from 2013 to 2021. Patients were stratified into two cohorts based on timing of administration of bevacizumab post-port placement. The primary outcome is incidence of wound healing complications when bevacizumab is administered at 14 days after port placement, compared to > 14 days after port placement. This will be analyzed via Chi-squared test and hazard ratios for between group differences. Secondary analyses include multivariable logistic regression of patient specific risk factors for wound healing complications, and comparison in incidence of wound healing complications between ports placed by surgical oncology and interventional radiology.Results/Conclusion: Data analysis currently ongoing. Final results to be presented at the 2022 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Explain bevacizumab's mechanism of action and its relationship to the medication's adverse effects

Discuss current recommendations for holding bevacizumab therapy surrounding surgical procedures

Self Assessment Questions:

What adverse effect of bevacizumab can be attributed to its anti-angiogenic effects?

A Hypertension

B: Wound Healing Complications

C: Proteinuria

D: GI Perforation

How long is it recommended to hold bevacizumab prior to and post-surgical procedures?

A 7 days

B 14 days

C 28 days

D No recommendation for holding

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-642-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

A RETROSPECTIVE REVIEW OF RE-CHALLENGING IMMEDIATE-RELEASE (IR) METFORMIN IN PATIENTS WITH TYPE 2 DIABETES AT A VETERANS AFFAIRS MEDICAL CENTER

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Purpose: Metformin is an oral antihyperglycemic agent and the preferred first-line pharmacologic monotherapy for the treatment of type 2 diabetes mellitus (T2DM) per the American Diabetes Association (ADA). Common adverse drug reactions (ADRs) associated with metformin include gastrointestinal (GI) intolerance (e.g. diarrhea, nausea, abdominal discomfort). These GI intolerances are more frequently experienced with the immediate release (IR) formulation compared to the extended release (ER) formulation. In May 2020 the FDA published a press-release that certain ER metformin products contained higher than acceptable levels of a known carcinogen, N-Nitrosodimethylamine (NDMA). Given the challenges of the recall and uncertainty regarding the supply of unaffected ER metformin, alternative treatment options were addressed for patients by providers and clinical pharmacists. The purpose of this study is to investigate if patients who previously were unable to tolerate IR metformin can tolerate a lower or similar dose upon re-challenge. Methods: This study is a retrospective, electronic chart review of patients with T2DM who were re-trialed on IR metformin after the recall of ER metformin. Data will be collected from January 1st 2019 through September 30th 2021. It will include patients 18 years of age and older with at least one fill of ER metformin after January 1st 2020, diagnosis of T2DM, documented ADR to IR metformin, and an estimated glomerular filtration rate (eGFR) >30 mL/min. The primary endpoints are percentage of patients able to tolerate IR metformin who were previously prescribed 1g/day ER metformin or 1g/day ER metformin. Secondary endpoints include change in A1c after the therapeutic interchange and an assessment of alternative antihyperglycemic agents tried in patients who failed the metformin IR re-challenge. Results: Results and conclusions will be presented at the Great Lakes Pharmacy Residents Conference.

Learning Objectives:

Discuss the side effect profiles and dosing differences between IR metformin and extended release (ER) metformin.

Review the evidence of gastrointestinal tolerability of ER metformin compared to IR metformin.

Self Assessment Questions:

Per package insert data, which of the following dosing regimens would be appropriate for a new start of IR metformin?

A 500mg four times daily

B: 2000mg once daily

C: 500mg twice daily

D: 850mg three times daily

A 65 year old male patient with well controlled T2DM presents to clinic with complaints of diarrhea after starting IR metformin 1000mg once daily. Which of the following changes would be appropriate?

A Take on an empty stomach

B Change IR metformin dose to 500mg BID and take with meals

C Change IR metformin to ER metformin (if available)

D B and C

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-643-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

COST AVOIDANCE WITH PREEMPTIVE CYP2C19 GENOTYPE TESTING PRIOR TO CLOPIDOGREL INITIATION POST PERCUTANEOUS CORONARY INTERVENTION AT SAINT JOSEPH HEALTH SYSTEM IN MISHAWAKA, INDIANA

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Clopidogrel and CYP2C19 is a drug-gene pair that has prescribing recommendations to maximize safety and efficacy. Clopidogrel is commonly prescribed in those that have experienced an acute coronary syndrome (ACS) or for those with a recent myocardial infarction (MI), stroke or established peripheral artery disease (PAD). There is abundant research documenting the relationship between clopidogrel and CYP2C19, however its benefits of incorporation into workflow have yet to be determined. The purpose of this study is to evaluate potential cost avoidance of incorporating CYP2C19 genotype testing prior to the initiation of clopidogrel at Saint Joseph Health System (SJHS).This is a retrospective, observational, case-series study, that will first evaluate the prevalence of major adverse cardiovascular events (MACE) and bleeding events post clopidogrel initiation at SJHS. Adults greater than 18 years old, given clopidogrel, post-PCI will be included in this study. Data records will be obtained to determine which patients were given clopidogrel. Of those patients, it will then be evaluated which of them were readmitted due to an adverse event of MACE or a bleeding event. After the data collection, the diagnosis-related group (DRG) code, correlating to each type of adverse event, will be given an associated dollar amount. This amount will then be compared to the cost of preemptive testing for CYP2C19 genotypes in all patients evaluated. Population prevalence of the different CYP2C19 variances will be applied to the overall MACE and bleeding adverse events. Finally, the cost of the genotype testing versus the cost of the adverse events will be compared, and a conclusion will be made as to whether the incorporation of preemptive testing would be financially attainable at SJHS. Results and conclusions of this retrospective, observational study are currently underway.

Learning Objectives:

Explain the impact that the CYP2C19 genotype can have on clopidogrel effectiveness.

Discuss the benefits and drawbacks of preemptive CYP2C19 genotype testing in the hospital workflow setting.

Self Assessment Questions:

Clopidogrel has an FDA-approved indication for which of the following:

A Stable ischemic heart disease

B: ST-elevation myocardial infarction

C: Coronary artery bypass graft surgery

D: Percutaneous coronary intervention for stable ischemic heart disea

Which of the following genotypes would result in a poor metabolizer phenotype?

A *1/*17

B *1/*2

C *2/*2

D *1/*1

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-644-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF OUTPATIENT ANTIBIOTIC PRESCRIBING PRACTICES AFTER IMPLEMENTATION OF DEFAULT DURATIONS FOR FREQUENTLY PRESCRIBED ANTIBIOTICS

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Guideline statements by the Infectious Disease Society of America (IDSA) and American Thoracic Society (ATS) were recently updated to reflect a preference for short courses of antibiotics (defined as 6 days) versus prolonged courses (duration 7 days). Increased antibiotic exposure has been associated with higher rates of Clostridioides difficile infection, increased emergency department utilization due to antibiotic associated adverse events, and the development of antibiotic resistant bacteria. Antimicrobial stewardship programs often place significant focus on antibiotic duration in the inpatient setting, however the majority of antibiotic use occurs in the outpatient setting. The objective of this study was to leverage default durations within a shared electronic health record (EHR) to promote shorter, guideline-based durations of commonly prescribed antibiotics.

Learning Objectives:

Review published recommendations for the treatment of urinary tract infection, upper respiratory tract infection, community acquired pneumonia, and skin and soft tissue infection.

Describe the impact of implementing tools within the electronic medical record to guide physician prescribing.

Self Assessment Questions:

What percentage of antibiotic use occurs in the outpatient setting?

A 80%

B: 74%

C: 54%

D: 25%

The duration of therapy for uncomplicated community acquired pneumonia in the outpatient setting recommended by the American Thoracic Society and Infectious Disease Society of America is

A 7 Days

B 14 Days

C 5 Days

D 10 Days

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-645-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

INTRAVENOUS IRON IN PATIENTS WITH A CONTINUOUS FLOW LEFT VENTRICULAR ASSIST DEVICE

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Recent data have demonstrated the impact of intravenous (IV) iron administration on reduction of heart failure (HF) hospitalizations and improved functional status in patients hospitalized for acute HF. While the benefits of IV iron in the HF population are well-described, data evaluating IV iron in HF patients requiring a left ventricular assist device (LVAD) are limited. Small retrospective studies suggest IV iron infusions are well-tolerated in those with LVADs, but further studies are required t determine the clinical impact. This retrospective cohort study included patients with continuous flow LVADs implanted between July 1, 2016 and June 30, 2021 and iron studies demonstrating iron deficiency during an inpatient admission. Iron deficiency was defined as ferritin < 100 ng/mL or 100 to 300 ng/mL if transferrin saturation was < 20%. Patients were grouped based on the receipt of IV iron therapy. The primary endpoint was mean change in hemoglobin 12 weeks after hospital discharge. Additional study outcomes included time to all-cause rehospitalization, time to HF readmission, and safety associated with IV iron therapy. The primary outcome will be assessed using repeated measures mixed-modeling. Of the 234 patients screened, 50 patients met inclusion criteria. IV iron recipients comprised 68% of those included. The majority of the study population were implanted with the HeartMate III LVAD device (78%) and the median (interquartile [IQR]) time from implant to study inclusion was 299 (118.3-508.0) days. The median (IQR) baseline hemoglobin was 10.8 (8.5-12.0) g/dL and 12 (10.6-12.6) g/dL for IV iron and non-IV iron recipients, respectively. The median (IQR) dose of IV iron repletion was 1050 (1000-1400) mg. Remaining results are anticipated February 2022. Results may help guide optimal therapy for patients with LVAD and iron deficiency during hospital admission.

Learning Objectives:

Recognize criteria in which intravenous iron is recommended in heart failure

Discuss the efficacy and safety data of intravenous iron administration ir heart failure

Self Assessment Questions:

Which is the most accepted definition of iron deficiency in heart failure?

A Ferritin 100-300, TSAT > 20%

B: Ferritin 100-300, TSAT < 20%

C: Ferritin < 100

D: Both B&C

IV iron repletion in heart failure has been shown to improve which of the following endpoints:

A Ejection fraction

B Heart transplantation

C Heart failure hospitalizations

D All-cause morality

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-646-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

IMPACT OF AN INTERDISCIPLINARY POST-DISCHARGE HEART FAILURE CLINIC ON 30-DAY HOSPITAL READMISSIONS

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Purpose: Heart failure is associated with an enormous health care burden. Thirty-day heart failure hospital readmission rates are included in the Hospital Readmission Reduction Program (HRRP), which penalizes hospitals financially for excess readmissions. The purpose of this study is to assess the effect of an interdisciplinary post-discharge heart failure clinic on 30-day hospital readmission rates. Methods: This quasi-experimental study will compare patients who were seen in the post-discharge heart failure clinic within the time frame of February 2, 2021 to December 31, 2021 to a random sample of patients admitted to Memorial Hospital of South Bend (MHSB) with primary diagnosis of heart failure in the calendar year 2020. Approximately 100 patients will be analyzed from each group for a total of 200 patients to evaluate the clinical impact of intervention. Data will be collected through manual chart review and clinical reports generated from MHSBs electronic health record. The primary endpoint of the study is 30-day hospital readmission rate. Secondary endpoints include: 30-day mortality rate, percent of patients prescribed appropriate guideline-directed medical therapy (GDMT) for heart failure, number of patients with GDMT at goal dosing, heart failure clinic attendance rate, and pharmacist interventions within the clinic. These secondary endpoints will be evaluated at hospita discharge and reevaluated following their appointment with the heart failure clinic.Preliminary Results/Conclusion : There were 489 heart failure admissions at MHSB in 2020 with a 30-day readmission rate of 12.88%. As of November 2021, there were 110 heart failure clinic referrals at MHSB and six 30-day readmissions among these patients (5.45% readmission rate). There will be 104 patients evaluated in each arm of the study for a total of 208 patients. Data collection and analysis are ongoing and further results/conclusions will follow.

Learning Objectives:

Review guideline directed medical therapy for heart failure with reduced ejection fraction.

Identify clinical impacts of an interdisciplinary post-discharge heart failure clinic at a community hospital in Indiana.

Self Assessment Questions:

Which of the following medications is at target dose for heart failure with reduced ejection fraction?

A Lisinopril 20 mg PO daily

B: Metoprolol succinate ER 200 mg PO daily

C: Empagliflozin 25 mg PO daily

D: All of the above

What interventions can pharmacists provide in an interdisciplinary heart failure clinic?

A Adding guideline recommended medications to patients' treatment

B Educating patients on healthy lifestyle/diet choices in heart failure

C Titrating medications to target doses

D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-647-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

PREDICTORS OF ENOXAPARIN PROPHYLAXIS FAILURE

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Purpose: Venous thromboembolism (VTE) is a significant cause of morbidity and mortality in hospitalized patients. The American Society of Hematology recommends that acutely ill medical patients with acceptable bleeding risk receive pharmacologic VTE prophylaxis. Enoxaparin pharmacokinetics differ based on age, gender, renal function, and body weight. The primary objective of this study was to determine patient-specific factors independently associated with failure of enoxaparin prophylaxis to prevent VTE. The secondary objective was to determine cut off values for continuous variables independently associated with a significant increase in VTE prophylaxis failure.Methods: This was a single-center retrospective study of patients with documented inpatient VTE matched to a control cohort based on SOFA score and hospital admission within two years. Adult patients admitted to UK HealthCare from September 2014 to May 2021 who received enoxaparin 40 mg daily for >72 hours were included. Patients were excluded if they had creatinine clearance (CrCl) <30mL/min or no documented weight, received subcutaneous heparin, were admitted for trauma or GI bleed, were COVID-19 positive, or if enoxaparin was ordered >72 hours after admission. Demographics, admitting service, laboratory parameters, enoxaparin administration details, inpatient diagnosis of VTE, and use of blood products data were collected.Results: Two hundred sixty-eight patients were included. In the primary analysis, missed enoxaparin doses, hospital and ICU length of stay, and administration of FFP were associated with failure of VTE prophylaxis (p<.05). Missed enoxaparin doses and hospital length of sta cutoffs were 0.9 and 12.4, respectively. In the multivariate analysis, a missed enoxaparin dose (OR 3.10; 95% CI 1.38-6.98, p=.006) and hospital length of stay > 12.4 days (OR 9.14; 95% CI 4.07-20.58, p<.001) were independently associated with failure of VTE prophylaxis. Conclusions: Missed enoxaparin doses and hospital length of stay are independent risk factors for failure of enoxaparin prophylaxis to prevent VTE.

Learning Objectives:

Identify independent risk factors for failure of enoxaparin prophylaxis in venous thromboembolism (VTE).

Recognize appropriate candidates for enoxaparin prophylaxis.

Self Assessment Questions:

Approximately what percent of VTE events are associated with hospitalization?

A 25%

B: 30%

C: 50%

D: 65%

What risk stratification tool is available to identify acute medically ill patients at risk of VTE?

A Simplified Geneva RAM

B Lille Model

C ABCD2 Score

D NIH Stroke Scale

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-648-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

COMMUNITY PHARMACISTS' KNOWLEDGE, EXPERIENCE, AND ATTITUDES IN PROVIDING CARE TO LACTATING WOMEN

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Purpose:This study aims to characterize community pharmacists knowledge, experience,andattitudesregardingmedication use during lactation. Breastfed infants have been shown to have a lower incidence of common childhood infections and sudden infant death syndrome. Likewise, breastfeeding mothers experience lower rates of post-partum mood disorders. Breastfeeding is initiated by 84% of new mothers in the United States, but the majority stop earlier than they desire and most stop prior toreaching the six-month recommendation set by the American Academy of Pediatrics. Concern about medication use during lactation is a common reason given by women for discontinuing breastfeeding early. As the most accessible healthcare professionals and themedicationexperts, it is critical that community pharmacists are prepared to appropriately counsel lactating patients on theeffectsmedications can have on their efforts to breastfeed. Methods:The study protocol was approved by the Purdue University Institutional Review Board. A 52-item survey was developed using the Social Cognitive Theory as a conceptual framework with questions formatted as 5-point Likert scales (i.e., 1=strongly disagree, 5=strongly agree), fill-in the blank, and multiple-choice. Respondents consisted of community pharmacy preceptors associated with a school or college of pharmacy in the Big Ten conference. An anonymous electronic survey link was sent out to prospective respondents by each universitys experiential learning coordinator (or similar) with a reminder request sen three weeks after the first attempt (as permitted by each institution). Descriptive statistics were usedto characterize respondents attitudes and experiences in addition to knowledge assessment questions. The sum of correct answers in the knowledge assessment portion of the survey was calculated and pairwise regression wasperformed to determine if certain factors such as gender, years in practice, type of community pharmacy setting, etc. significantly impacted respondent knowledge scores. Results/Conclusion: To be presented at the Great Lakes Pharmacy Residency Conference

Learning Objectives:

Identify reliable resources for information on medications' safety for use during breastfeeding

Recognize medications that will negatively impact a breastfeeding person's milk supply

Self Assessment Questions:

What is the name of the free online database through the National Library of Medicine that provides information on drugs and other chemicals a breastfeeding person may be exposed to?

A Motherâ€™s Milk Reference
B: LactMed
C: Medications in Milk
D: LactationRx

Which of the following medications is safe for use while breastfeeding and has no expected impact on milk supply?

A Pseudoephedrine
B Furosemide
C Ibuprofen
D Drospirenone/ethinyl estradiol tablets

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-785-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATING PHARMACIST INTERVENTIONS DURING TRANSITIONAL CARE MANAGEMENT VISITS FOLLOWING A POST-ACUTE CARE DISCHARGE: A RETROSPECTIVE CHART REVIEW

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Transitional care management (TCM) is a mechanism by which health systems can improve communication and care coordination upon a patients discharge. Numerous studies have demonstrated that with TCM, there are reductions in 30 day readmission rates, total health care costs, and the length of stay at post-acute care (PAC) centers. Pharmacists play a vital role in this process by identifying medication errors or concerns. This study aims to evaluate the pharmacist scope in PAC TCM reviews. This information will help guide future delivery of services by appraising and ascribing pharmacist actions.A retrospective chart review was conducted on adults who were discharged from a PAC facility between January 1 2021-June 30 2021 and who had a TCM appointment with a Community Health Network pharmacist 30 days post PAC discharge. Patients who were pregnant, incarcerated, or fell outside the range of 18-89 years old were excluded. The primary objective was quantifying pharmacist interventions during TCM visits 30 days after a PAC discharge. Secondary objectives included qualifying pharmacist interventions during TCM visits and describing the number of visits conducted in-person or virtually. A subanalysis was completed to identify if there was an impact on readmission rates based on the time a pharmacist spoke to patient after PAC discharge.In total, 265 patients met eligibility criteria. The average age at time of discharge was 72 years old. The median time to a pharmacist visit was 3.4 days after PAC discharge. A total of 987 interventions were observed, with an average o 3.7 interventions completed per visit. The most frequent interventions detected included identifying that additional physician intervention or action was needed, safety intervention completed, and medication adherence discussed. Further results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss the purpose behind the Hospital Readmissions Reduction Program.

Review current literature surrounding the impact that pharmacists have during transitional care management.

Self Assessment Questions:

The premise behind the Hospital Readmissions Reduction Program is to

A Identify low risk patients and ensure they have proper follow up aft
B: Increase the patientsâ€™ overall costs of healthcare
C: Arrange transportation to and from post-acute care facilities and h
D: Improve care coordination to reduce avoidable readmissions

Which one of the following statements is true?

A Transitions of care management conducted via telehealth were fou
B Significant decreases in readmission rates have been shown wher
C Current literature demonstrates that the majority of pharmacist-led
D dPharmacist involvement during transitions of care management l

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-786-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

RETROSPECTIVE ANALYSIS EVALUATING IMPACT OF RACE ON PHARMACIST MANAGED DIABETES OUTCOMES

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Introduction:Diabetes is one of the most prevalent disease states in America, with a little over 1 in 10 adults being diagnosed. Within this population lies potential for health disparities in diabetes prevalence, outcomes, and treatment with guideline directed care. Numerous studies have shown that minority populations suffer a greater burden of disease, experience more complications, and have poorer diabetes outcomes compared to non-minority populations. The objective of this study is to analyze diabetes outcomes and pharmacy interventions across race to identify potential disparities in care.Methods: A retrospective chart review will be completed on patients newly referred for pharmacist diabetes management from August 2020-June 2021 to compare diabetes outcomes and care between non-Hispanic white and non-Hispanic black populations. The primary objective will assess mean A1c reduction over 3 months. The secondary objectives will compare percentage of patients attaining A1c <8%, percentage of patients on a statin, number of pharmacy appointments, and number of pharmacist interventions (which includes number of diabetes medication changes). Inclusion criteria include: age 18-90 years old, type 2 diabetes mellitus, baseline A1c >9%, attendance of an appointment with ambulatory care pharmacist under a collaborative drug therapy management (CDTM) protocol at Community Health Network during the study time frame, and at least one additional A1c. Exclusion criteria include: missing race data in chart and vulnerable populations. Results will be compared with descriptive statistics and multivariate analysis to assess the impact of race on diabetes outcomes. Results and Discussion:Data collection is ongoing, with final results to be presented at Great Lakes Conference and Community Health Network Symposium in May 2022. This research will help assess the presence or degree of healthcare disparities which will be an important step in working to achieve health equity among all populations.

Learning Objectives:

Define health disparities and recognize different examples.

Review available data on the impact of race on diabetes outcomes.

Self Assessment Questions:

Which of the following is true about health disparities?

A Health disparities are preventable differences in health outcomes I
B: Populations facing health disparity are defined only by race or ethr
C: Health disparities are not related to social determinants of health.
D: Health disparities were resolved in Healthy People 2020 agenda.

When comparing diabetes outcomes between non-Hispanic white and minority populations, minority populations have been found to have:

A Higher prevalence of diabetes
B Greater burden of disease
C Worse diabetes outcomes
D All of the above

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-787-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IMPLEMENTATION OF PROSPECTIVE AUDIT AND FEEDBACK ON AZITHROMYCIN USE FOR SINUSITIS WITHIN THE AMBULATORY SETTING

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Azithromycin is one of the most commonly prescribed antibiotics; however, within the last decade Streptococcus pneumoniae has become increasingly resistant to azithromycin, which has led to its removal from the treatment guidelines for bacterial sinusitis. An evaluation on the use of azithromycin at one of the Froedtert & Medical College of Wisconsin ambulatory clinics, found that only 8.6% of azithromycin prescriptions fo respiratory conditions were prescribed in accordance with current institutional guidelines. One of the most common indications for azithromycin use was sinusitis; of the 120 azithromycin prescriptions analyzed, 40 of these were prescribed for the indication of sinusitis. The purpose of this study is to reduce the utilization of azithromycin for sinusitis within the primary care setting.This quasi-experimental study analyzed antibiotic prescribing practices at ambulatory clinics within the Froedtert system before and after an educational intervention regarding azithromycin use. The educational intervention focused on place of azithromycin in therapy and institutional sinusitis guidelines, and provided pre-intervention data of current prescribing practices of azithromycin for sinusitis. The education was provided to prescribers practicing within the southern region at an all provider meeting. The data obtained for the southern region will also be compared to data from prescribers in the central region which will act as a control. The primary outcome is the rate of azithromycin prescriptions for sinusitis pre and post education.Secondary outcomes include the rate of amoxicillin/clavulanate, doxycycline and fluoroquinolone prescriptions fo sinusitis, percent of patients with sinusitis who are treated in accordance with recommendations outlined in the F&MCW Guideline, rate of azithromycin prescription for sinusitis by individual clinic, antibiotic duration of therapy for sinusitis, and incidence of C. difficile infection within 30 days of diagnosis, in patients receiving antibiotic therapy.The study is currently ongoing and results/conclusions will be reported in the final project manuscript.

Learning Objectives:

Identify first line antimicrobial therapy for sinusitis and alternatively where azithromycin should be used as a therapy option.

Recognize the role of prospective audit and feedback as a tool for antimicrobial stewardship.

Self Assessment Questions:

What caused azithromycin to be removed from the guideline for bacteria sinusitis?

A Increasing number of Streptococcus pneumoniae isolates that are
B: Extensive side effect profile
C: Azithromycin does not cover Moraxella catarrhalis well
D: High cost of the medication

Which of the following is considered a first line option for bacterial sinusitis?

A Azithromycin
B Amoxicillin/clavulanate
C Cephalexin
D Sulfamethoxazole/trimethoprim

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-649-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

COMPARISON OF BLEEDING EVENTS IN PATIENTS WHO UNDERWENT PERCUTANEOUS CORONARY INTERVENTION AND WERE DISCHARGED ON TRIPLE ANTITHROMBOTIC THERAPY OR AN ANTICOAGULANT AND A P2Y12 INHIBITOR

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Our purpose is to evaluate how often patients who underwent PCI at University Hospitals Cleveland Medical Center were prescribed triple therapy or a P2Y12 inhibitor with an anticoagulant, and what the incidence, location, medical response were to major and minor bleeding and what other cardiovascular events were experienced.

Learning Objectives:

Discuss pre- and post-treatment considerations for patients undergoing percutaneous coronary intervention for patients who require concomitant anticoagulation

Review current research evaluating antithrombotic strategies for patients needing anticoagulation after undergoing percutaneous coronary intervention

Self Assessment Questions:

The 2021 ACC/AHA/SCAI Guideline for Coronary Artery Revascularization recommend the duration of triple therapy to be limited to:

A A.1 - 2 weeks following procedure

B: B.1 -4 weeks following procedure

C: C.30 days following procedure

D: D.1 year following procedure

If a patient is placed on triple therapy following PCI, what is the preferred P2Y12 inhibitor to be used in combination with an anticoagulant?

A A.Cangrelor

B B.Clopidogrel

C C.Prasugrel

D D.Ticagrelor

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-650-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

ASSESSMENT OF ANTI-FACTOR XA MONITORING OF UNFRACTIONATED HEPARIN COMPARED TO ACTIVATED PARTIAL THROMBOPLASTIN TIME AT A COMMUNITY HEALTH SYSTEM

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Purpose: Unfractionated heparin (UFH) is a key component of inpatient anticoagulation, which is commonly used as prophylaxis and treatment for thromboembolic disorders. Traditionally, UFH was monitored solely by activated partial thromboplastin time (aPTT), which is an indirect measurement of UFH activity that is subject to biological and analytical influences. Recent literature suggests that anti-factor Xa (aFXa) monitoring provides less physiologic variability and is associated with faster therapeutic goal attainment. Mercy Health Muskegon added aFXa monitoring for heparin in August 2021. On August 17th, providers were able to order pharmacy to dose UFH consults, which allowed pharmacists to choose the appropriate monitoring method and follow approved institutional protocols for initial starting rates and subsequent adjustments. The purpose of this quality improvement project was to compare aPTT vs. aFXa monitoring after implementation of the previously introduced pharmacy driven UFH dosing protocols to determine percentage of patients at therapeutic goal within 24 hours.Methods: This was a single-center, retrospective evaluation of patients who received an intravenous UFH infusion using the pharmacy to dose protocols from November 2021 to March 2022 at Mercy Health Muskegon. Patients were excluded if they were less than 18 years old, pregnant, incarcerated, or experienced non-protocol infusion interruptions. The primary outcome was the percentage of patients who achieved therapeutic levels within 24 hours of UFH initiation using aPTT compared to aFXa monitoring. Secondary outcomes include percentage of patients achieving therapeutic goal within 48 hours, time to first therapeutic result, number of UFH rate changes, number of bleeding and clotting events, cost-benefit comparison between aFXa and aPTT, percent adherence to protocol adjustments, average UFH dose required to achieve therapeutic goal, and time from consult placement to heparin administration.Results: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference

Learning Objectives:

Identify potential benefits of utilizing anti-factor Xa monitoring compared to aPTT for UFH infusions

Describe a pharmacist's role in pharmacy-driven UFH dosing protocols

Self Assessment Questions:

Which of the following is not a perceived benefit of aFXa monitoring ove aPTT?

A Direct measure of UFH activity

B: Less physiological variability

C: Faster time to therapeutic goal

D: Institution specific therapeutic goal range

Which of the following steps is included in the pharmacy-driven UFH dosing protocols?

A Physician orders a pharmacy to dose consult

B Pharmacist selects appropriate monitoring method based on patie

C Pharmacist enters orders for heparin bolus and infusion

D All of the abvove

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-788-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

SERUM OSMOLARITY VERSUS OSMOLAR GAP FOR PREDICTION OF MANNITOL-INDUCED ACUTE KIDNEY INJURY

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Mannitol is useful for the reduction of cerebral edema and intracranial pressure in select clinical scenarios. However, mannitol-induced acute renal failure (MI-ARF) is a common adverse effect. Serum osmolarity (SOsm) is a useful surrogate measure for serum mannitol concentrations but osmolar gap (OG) may better correlate with mannitol serum concentrations and risk of MI-ARF. To date, there are no comparative studies of SOsm and OG in predicting the risk of MI-ARF ir patients with cerebral edema receiving mannitol.

Learning Objectives:

Discuss primary literature and guideline recommendations regarding the use of serum osmolarity (SOsm) and osmolar gap (OG) for monitoring for patients receiving mannitol therapy.

Identify the risk of mannitol-induced acute renal failure (MI-ARF) based on OG and SOsm cutoffs and determine the ability of these values to predict MI-ARF.

Self Assessment Questions:

The primary mechanism of mannitol-induced acute renal failure is mediated through which of the following processes?

A A.Formation of vacuoles within the proximal tubule of the kidneys

B: B.Dehydration leading to increased vasopressin release and renal

C: C.Inflammation in the kidneys leading to the inability to filter proper

D: D.Intratubular precipitation of mannitol crystals

Clinicians target a serum osmolarity of ____ or an osmolar gap of ____ in patients on mannitol therapy to reduce the risk of acute kidney injury.

A A.<300 mOsm/L; <55 mOsm/L

B B.<320 mOsm/L; <60 mOsm/L

C C.<320 mOsm/L; <20 mOsm/L

D D.<300 mOsm/L; <20 mOsm/L

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-651-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

DETERMINING THE IMPACT OF TRANSITIONS OF CARE WITH PRESCRIPTION FILLS AT DISCHARGE IN A PEDIATRIC BEHAVIORAL HEALTH POPULATION

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There can be many barriers to a successful transition home after hospital discharge for pediatric patients. Within the pediatric behavioral health population, additional challenges are presented to guardians due to issues with ensuring medication adherence and avoiding medication ingestions. Transitions of care for these patients is crucial and the purpose of this study is to determine the impact of a transitions of care program in pediatric behavioral health patients. Navigation of insurance coverage issues combined with additional barriers within the behavioral health population can lead to challenges with transitions of care (TOC). A transitions of care service was instituted within a pediatric behavioral health hospital to help overcome these barriers. The TOC service includes ensuring medication access, delivery of medications to patients and families at discharge, and counseling on all medications. A retrospective chart review and prescription claims evaluation will be conducted for all patients enrolled in Medicaid who were discharged fron a pediatric behavioral health hospital with behavioral health mediations from October 2020 to May 2021. Those patients who have commercial insurance or were cash-paying and received the transitions of care service during the study period will be excluded. The primary outcome o the study will be to describe the utilization of the TOC service & resultan initial fill completion at discharge compared to those who did not receive the transition of care services. Secondary outcomes include assessmen of adherence via days to subsequent fills. Demographics will be collected to assess baseline characteristics of the study population. Psychiatric medical history, duration of admission to the behavioral health hospital, & insurance fill history will be collected to explore the primary and secondary outcomes of the study.

Learning Objectives:

Explain the impact of a pharmacist-led transition of care service in the pediatric population

Identify if prescription fill dates are impacted when patients receive transitions of care counseling from a pharmacist

Self Assessment Questions:

What is the role of the pharmacist in transitions of care?

A Optimize medication therapy

B: Improve quality of life and safety outcomes of patients

C: Reduce hospital readmissions

D: All of the above

Which of the following is a limitation of this study?

A Patients had to have been discharged with over 5 medications to r

B Commercial insurance patients were not included

C Patients were called after discharge for follow up and some may n

D The TOC service was only offered on Tuesdays and Thursdays

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-789-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

ASSESSMENT OF STUDENT IDENTIFIED GROWTH AND GOAL ACHIEVEMENT IN A REQUIRED PHARMACY COURSE SERIES

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Purpose: To assess student perception of their patient counseling skills, ascertainment of self-identified objectives, and areas for further mastery after completion of a two-semester self-care course series. This project also sought to determine if skills students identified as improved aligned with ACPE standards. Methods: This retrospective study compared responses collected from nearly identical student surveys completed in both the fall and spring semesters of the self-care course. The two cohorts included Academic Year (AY) Fall 2019/Spring 2020 and AY Fall 2020/Spring 2021. Six questions using a 5-point Likert scale assessed student confidence of their patient counseling skills. Surveys also included a free response portion regarding goal creation (fall) and goal accomplishment (spring). Additionally, the spring survey asked students to identify a future goal regarding these skills during the remainder of their pharmacy curriculum. Results: Overall, students had greater confidence in their patient interviewing skills after course completion as demonstrated by higher responses on the Likert scale. The most common types of goals identified by students in the fall semester included increasing drug knowledge, improving various conversation skills, and becoming more comfortable with the patient interview. These results were consistent across both cohorts, with the second cohort specifically identifying motivational interviewing. When compared with goals identified as being mastered throughout the course the top 3 areas were drug knowledge, patient counseling, and physical assessment. During the P3 and P4 year, students further identified wanting to work on motivational interviewing and knowledge retention. Conclusions: The two semester self-care series resulted in improved confidence and goal achievement for student pharmacists. Additionally, goals identified as mastered were consistent with ACPE standards in domains 2 and 3.

Learning Objectives:

Identify parts of the Pharmacists' Patient Care Process (PPCP) covered in the self care course as it relates to student identified goals

Describe what ACPE standards and objectives relate to self-care course series

Self Assessment Questions:

In the Pharmacists Patient Care Process, the patient interview would fall under which primary section?

A Collect

B: Assess

C: Plan

D: Implement

ACPE Standard 3.6 focuses on communication skills of the student pharmacist. Which of the following student goals would align best with this standard?

A I want to increase my drug knowledge of OTC medications

B I would like to gain confidence in taking a patientâ€™s blood press

C I hope to improve the flow when I interview a patient and eliminate

D I want to learn more about appropriate non-pharmacological interv

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-790-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

ASSESSMENT OF A PROTON PUMP INHIBITOR DEPRESCRIBING TOOL IMPLEMENTED IN PHARMACIST COMPREHENSIVE MEDICATION REVIEWS

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Purpose: Proton pump inhibitors (PPIs) are one of the most common medications being overused and overprescribed. Primary care prescribers are responsible for a large number of PPI prescriptions. Pharmacist-led deprescribing recommendations may therefore be most impactful within the primary care setting. The purpose of this study is to assess the impact of a PPI deprescribing tool when included as part of the pharmacists comprehensive medication review (CMR) workflow within two outpatient pharmacy clinics.Methods: This Institutional Review Board approved this multi-center retrospective chart review to assess the effectiveness of pharmacist education on a PPI deprescribing assessment tool and the impact on PPI deprescribing recommendations. Pharmacists were educated on the PPI deprescribing assessment tool in October 2021. Patients were identified using claims on the OutcomesMTM platform. Patients met criteria for inclusion if they were 18 years of age or older, prescribed a PPI, within OutcomesMTM and contracts with the one of the included outpatient clinics. Patients were excluded if they were deceased or had a documented indication that warranted long-term use of a PPI. The primary outcome of this study is to determine if there is a difference in the number of PPI deprescribing recommendations made following pharmacist education and implementation of a PPI deprescribing tool. The secondary outcomes were to determine the number of PPI deprescribing recommendation between facilities and the number of accepted PPI deprescribing recommendation following pharmacist education and implementation of a PPI deprescribing tool. Results: Data collection and analysis remain ongoing. Results will be presented at the 2022 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Recognize areas of patient care to implement PPI deprescribing education and assessment tools.

Identify PPI treatment indications that may warrant deprescribing.

Self Assessment Questions:

Which of the following areas of patient care can PPI deprescribing recommendations be made?

A Transitional Care Facilities

B: Inpatient

C: Primary Care Offices

D: All the above

Which of the following diagnoses warrant long-term PPI treatment (>12 weeks)?

A Barrett's Esophagus

B Heartburn

C Gastro-esophageal reflux disease

D Peptic Ulcer Disease

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-652-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

BACITRACIN VERSUS SALINE AS IRRIGATION FLUID FOR PREVENTION OF SURGICAL SITE INFECTIONS

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Purpose: With the 2021 US Food and Drug Administration (FDA) request for withdrawal of bacitracin for injection from the market there became need to switch current surgical irrigation practices. Our institute was previously using bacitracin as the preferred irrigation fluid in most surgeries. With the removal from market it was decided among the surgical and pharmacy teams to transition our irrigation solution to saline. This project aims to compare the two agents and draw a conclusion on the effectiveness of bacitracin and saline in prevention of surgical site infections.Methods: This is a retrospective, multi-center study evaluating the benefit of antibiotic containing solution washout in surgeries compared to standard fluid washout solution. Patients in the normal saline washout group were collected from the period May 1st 2021 through December 31st 2021. This time period was selected to reflect the changes made in our institutes preferred washout fluid after the April 2021 FDA recommendation to pull Bacitracin for injection from market. Patients in the Bacitracin washout group were collected from the period May 1st 2019 through December 31st 2019. Inclusion criteria was as follows: surgical procedure at an IU Health System Hospital that historically used bacitracin. Exclusion criteria included: patient received any other topical antimicrobial agent during their surgical procedure (i.e. antibiotic, antibiotic spacer, antifungal), patient has the surgical operation due to infection, patient received antibiotics other than the surgical prophylactic antibiotics within that admission prior to surgery, and patient did not get the right agent for surgical prophylactic antibiotics, did not get it within the 60 minutes of cut time, or got the wrong dose. The primary objective of this study is to evaluate rate of surgical site infection within 30 days of operation. Results / Conclusion: Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss the evidence behind using Bacitracin for surgical washout fluid to prevent surgical site infections

Review results comparing bacitracin vs saline washout fluid for surgical site infection prevention

Self Assessment Questions:

Per the IDSA surgery guidelines up to how many days after the surgery can a surgical site infection occur if no implant is placed?

A 10 days

B: 14 days

C: 30 days

D: 60 days

What is a risk factor for a surgical site infection?

A Age <60 years old

B Diabetes Mellitus

C History of cancer

D Having received antibiotics prior to surgery

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-653-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

COMPARISON OF COMMUNITY ACQUIRED PNEUMONIA EMERGENCY DEPARTMENT PRESCRIBING HABITS AND OUTCOMES AT A LARGE ACADEMIC MEDICAL CENTER AND A MIDSIZE COMMUNITY HOSPITAL

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Purpose: Community-acquired pneumonia (CAP) is one of the most common causes of emergency department (ED) presentation. Many patients diagnosed with CAP are discharged with prescription antibiotics for outpatient treatment. While the recently updated 2019 IDSA guidelines on CAP treatment make clear recommendations for both inpatient and outpatient treatment, it is unclear if these recommendations are followed in clinical practice. Patient outcomes and treatment concordance with these guidelines are often untracked. The purpose of this study is to determine prescribers concordance with the 2019 guidelines and subsequent emergency department or urgent care visits for CAP among those treated outpatient.Methods: This study is a retrospective electronic medical record review of patients discharged from the emergency departments of a large academic medical center and a midsize community hospital from March 2020 to July 2021 with a final diagnosis of community-acquired pneumonia. The review tracked patients 18 and older, who were not nursing home residents, did not have a COVID-19 diagnosis while in emergency department or at subsequent presentation after discharge, cystic fibrosis, hospital admission or ED presentation within 90 days prior, were immunocompromised, or receiving dialysis. Their records were reviewed and patients were categorized based on whether antibiotic treatment prescribed at discharge from the ED was concordant with 2019 guidelines based on drug, route, frequency, strength, and duration of said treatment. Additionally, subsequent presentation at any ED or urgent care clinic within the system with a CAP diagnosis was also tracked. Primary outcome to be measured is guideline concordance. Secondary measures were 30-day subsequent inpatient admission or ED/urgent care visit for pneumonia and concordance between teaching prescribers and non-teaching prescribers.Results/Conclusions: Complete results and conclusions will be presented at the 2022 GLPRC

Learning Objectives:

Review the current ATS guideline recommended outpatient therapy for community-acquired pneumonia.

Identify guideline-concordant outpatient treatment for community-acquired pneumonia.

Self Assessment Questions:

Which of the following comorbidities would make a patient a candidate for dual therapy or fluoroquinolone monotherapy?

A History of liver disease

B: Hypertension

C: Active Malignancy

D: A & C

What is the guideline-recommended duration of outpatient community-acquired pneumonia?

A At least 5 days

B 3 to 7 days

C 7 to 10 days

D Up to 7 days

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-654-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

DEVELOPMENT AND EVALUATION OF A REVISED INPATIENT PHARMACIST PRODUCTIVITY MODEL AT A LARGE ACADEMIC MEDICAL CENTER WITH A GENERALIST-SPECIALIST PRACTICE MODEL

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Background: The Ohio State University Wexner Medical Center (OSUWMC) is a 1,506-bed academic medical center comprised of seven hospitals and has a hybrid generalist and specialist pharmacist model. Pharmacists responsibilities include attending patient care rounds, pharmacokinetic monitoring, medication therapy management, patient education, medication reconciliation, order verification, dispensing verification, answering drug information questions, and attending emergency responses. OSUWMC historically utilized the standard benchmarking tool of PAA (pharmacy adjusted admission)/CM (case mix index) metric. CMI is a broad hospital-level index of patient complexity and the direct correlation to pharmacy workload is controversial. In 2015, OSUWMC implemented a weighted verifications model, which included a multiplier for each drug class, assigning a different weight to classes that require more pharmacist intervention and monitoring. Generalist and specialist roles overlap, the current productivity model does not accurately reflect practice at OSUWMC. Purpose: The goal of this project is to develop a revised pharmacist productivity model that best reflects current practice using reporting capabilities within the electronic health record (EHR). The revised productivity model will provide a framework from ongoing measurement of productivity over time. This project will compare units of service between the new and old productivity model over a three-month period.Methods: Retrospective data from a three-month time period over three different years (January to March of 2019, 2020, 2021) will include but is not limited to the following: verification data, clinical scoring, clinical documentation, patient profile reviews, MAR messages, and patient daily census and acuity scores. Pharmacist activities will be analyzed and given a time standard based on complexity. A comprehensive pharmacy roster will categorize pharmacy staff into generalist vs. specialist job titles, and pharmacist work will be mapped according to activity and individual. Results and Conclusions: Research is in progress. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Define the definition of productivity and the various forms of productivity values

Explain the various components and important considerations of a pharmacist productivity model

Self Assessment Questions:

What is the definition of productivity?

A Measures output per unit of input, such as labor, capital, or any otl

B: Measures how fast employees can work

C: Measures output per unit of input solely based on capital considera

D: Measures the overall revenue total produced over a period of time

What is the definition of the pharmacy intensity score (PIS)?

A A score that is calculated at each admission based on the risk leve

B A score that describes a patientâ€™s overall acuity throughout the

C Resource-based relative value intensity (R-BRVI) grouping system

D Resource-based relative value intensity (R-BRVI) grouping system

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-791-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

IMPACT OF AN ELECTRONIC MEDICAL RECORD BIOLOGIC PRODUCT SELECTION TOOL ON PAYOR CLAIM APPROVALS IN THE OUTPATIENT SETTING IN A COMPREHENSIVE CANCER CENTER

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Purpose/Background: To help mitigate the potential for economic challenges and patient care delays due to biologic product selection, Th James Cancer Hospital identified a need to develop and implement an electronic medical record (EMR) biologic selection tool. The adoption of biosimilar medications is increasing, and they have the potential to reduce health care expenses. A growing payor trend is the implementation of single source coverage of biologics and biosimilars based on payor contracts with manufacturers. This study will assess the workflow and financial impact after tool implementation. The primary objective is to determine turnaround time from initial drug order placement to insurance claim approval prior to and after tool implementation. Secondary objectives include to assess reasons for rejected claims, to compare the volume of rejected and approved claims and to measure the economic impact to the health-system. Methods: This pre-post tool evaluation and process improvement study will assess data through an EMR-generated report in the oncology outpatient infusion settings associated with The James Cancer Hospital. Retrospective analyses will be evaluated based on specific time points t assess tool efficacy. Pre-implementation 6-month time windows will be evaluated from August 2020 to February 2021 and March 2021 to August 2021. February 2021 marked the date a list of payor-preferred biosimilars was communicated to pharmacists and August 2021 as phase 1 for tool implementation. Post-implementation 3-month time windows will be evaluated from September 2021 to November 2021 and January 2022 to March 2022. Variables to be evaluated will be the date and time of order placement and the change in payor referral status, as well as the number of instances a product was changed to a payor-preferred product compared to the instances a product was not changed Results and Conclusion: Data collection and analysis are ongoing and will be presented at the conference.

Learning Objectives:

Discuss the potential outcomes associated with inappropriate selection of biosimilar agents that may negatively impact health care systems.

Describe the operational strategies and considerations needed to implement a biologic selection tool within the EMR.

Self Assessment Questions:

Which of the following biologic agents were studied during Phase 1 of this study?

A Bevacizumab

B: Infliximab

C: Rituximab

D: Trastuzumab

Which of the following builds were used to build the biosimilar auto-selection functionality within EPIC?

A Advanced Order Groups

B Rule Based Order Groups

C SmartText

D Intelligent Medication Selection

Q1 Answer: A Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-792-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

DILTIAZEM INTRAVENOUS BOLUS DOSES IN THE MANAGEMENT OF ATRIAL FIBRILLATION WITH RAPID VENTRICULAR RESPONSE

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PurposeThe 2014 AHA/ACS/HRS guideline for acute rate control management of AF w/RVR recommends IV administration of a beta-blocker or a non-DHP CCB to decrease HR. Several studies have shown that lower doses of diltiazem may be as effectives as standard or weight based doses in achieving therapeutic response in patients who present with AF w/RVR. The primary objective of this study is to determine the efficacy of <0.25mg/kg or 0.25mg/kg bolus doses of diltiazem in patients who present to the ED with AF w/RVR.MethodsThe hospital system IRB approved this retrospective chart review study at three community hospitals. The study population consisted of adults who presented to the ED with a diagnosis of AF w/RVR and received diltiazem bolus doses as the initial rate control treatment. The primary endpoint was efficacy. The main secondary endpoints were treatment failure, time to achieve HR <100 bpm, and incidence of adverse events.Summary of results Achievement of HR <100 bpm or conversion to sinus rhythm within 1 hour of diltiazem bolus administration without requiring additional doses of diltiazem or other rate control agents was observed in 12.8% compared to 20% of patients who received diltiazem IV bolus dose of <0.25mg/kg and 0.25mg/kg respectively ($p < 0.12$). Mean time to achieve HR <100bpm in patients who received diltiazem bolus dose <0.25mg/kg was 284min vs 133min in patients who received diltiazem bolus dose 0.25mg/kg ($p < 0.001$). Incidence of hypotension was 8.5% vs 10.4% in the <0.25mg/kg and 0.25mg/kg groups respectively (p <0.17). Bradycardia occurred in 3.5% vs 3.3% in the 0.25mg/kg and 0.25mg/kg groups respectively (p <0.29).ConclusionThere was no statistically significant difference in the achievement of HR <100bpm within 1 hour of administration of diltiazem bolus dose <0.25mg/kg or 0.25mg/kg. This study found results similar to previous studies.

Learning Objectives:

Describe the pathophysiology and complications of atrial fibrillation (AF) with rapid ventricular response (RVR)

Explain current strategies to manage atrial fibrillation with rapid ventricular response

Self Assessment Questions:

Which of the following could result in atrial fibrillation with rapid ventricular response?

A Increase in parasympathetic and increase in sympathetic nervous

B: Decrease in parasympathetic nervous system and increase in sym

C: Atrial Ischemia

D: B and C

What is the role of diltiazem in atrial fibrillation with rapid ventricular response?

A Slows AV nodal conduction

B Prolongs refractoriness in the AV node

C Inhibits calcium ions from entering cardiac smooth muscles

D All of the above

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-655-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EFFICACY AND SAFETY OF ANGIOTENSIN II COMPARED TO CATECHOLAMINE VASOPRESSORS AS A FIRST-LINE VASOPRESSOR FOR PERIOPERATIVE HYPOTENSION IN KIDNEY TRANSPLANT RECIPIENTS

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Purpose:Perioperative use of catecholamine vasopressors (CV) in kidney transplantation (KT) have been associated with negative outcomesand the development of arrhythmias. A more balanced renal vasoconstriction with angiotensin II (ATII) may benefit renal hemodynamics and preserve allograft function, while avoiding arrhythmi complications. We aimed to compare the efficacy and safety of ATII to CV when used for perioperative hypotension in KT. Methods: This single center, retrospective, cohort study included adult patients with perioperative distributive shock requiring vasopressors during KT. Patients who received either ATII or CV were matched via propensity scoring. Propensity scoring was based on African American race, male, deceased donor KT (DDKT), body mass index, donor terminal serum creatinine (SCr), and cold ischemic time (CIT). The primary objective of efficacy was divided into two parts: short-term allograft function and hemodynamics. Secondary objective examined adverse events. Results:With the exception ofdonor SCr and CIT, patients were well matched with respect to baseline demographics. There were no differences in the incidence of immediate, slow, delayed graft function, or 1-month and 3-month glomerular filtration rate ($p>0.05$). The need for additional continuous infusion vasopressors both intra- and postoperatively were also similar ($p>0.05$). The duration of intraoperative vasopressors was similar between groups, but postoperative vasopressors were used longer in the ATII group (47.5 hours vs. 13.77 hours, $p=0.046$). There were significantly less postoperative arrhythmias in the ATII group (5% vs 30%, $p=0.037$). Conclusion:ATII was equally as efficacious as catecholamine vasopressors when used for perioperative hypotension surroundingKT, with a lower incidence of arrhythmias.

Learning Objectives:

Describe the clinical concerns associated with the use of catecholamine vasopressors for perioperative hypotension in kidney transplantation.

Discuss the benefits of using angiotensin II for perioperative hypotensior in kidney transplantation.

Self Assessment Questions:

Use of catecholamine vasopressors in the perioperative period of kidney transplantation is NOT associated with:

A Decreased urine output after kidney transplantation

B: Slower normalization of recipient serum creatinine

C: Increased mortality

D: Decreased rate of rejection

The ideal vasopressor for kidney transplant patients should:

A Constrict the afferent arteriole

B Constrict the efferent arteriole

C Avoid ischemia

D All the above

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-656-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

PHARMACIST-GUIDED FLUID STEWARDSHIP IN THE INTENSIVE CARE UNIT

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Purpose: To determine if pharmacist-driven fluid stewardship initiative leads to a lower incidence of fluid overload.

Learning Objectives:

Discuss negative outcomes of fluid overload in the intensive care unit

Identify if pharmacist involvement in fluid management can reduce rates of fluid overload.

Self Assessment Questions:

Which of these fluids are preferred for large volume resuscitation?_

A a. Normal saline
B: Albumin
C: c.Balanced Fluids (such as lactated ringers)
D: d.Dextrose

Which of these markers best indicates fluid responsiveness?

A a.Systolic blood pressure >100 mmHg
B b.Collapsibility of IVC with inspiration
C c.Capillary refill time >2 seconds
D d.Heart rate >90 BPM

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-657-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

IMPACT OF TIME TO TREATMENT ON CLOSTRIDIOIDES DIFFICILE INFECTION PROGRESSION

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Clostridioides difficile is a highly contagious pathogen transmitted via oral-fecal route causing severe diarrhea. Due to significant nosocomial development, management of Clostridiodes difficile infection (CDI) has become a priority for infection control within institutions. Despite established research and treatment guidelines optimizing CDI management, the relationship between time to treatment and CDI progression has not been well-described. The purpose of this investigation was to determine the impact of time to CDI directed antimicrobial therapy on disease progression.This multi-center, IRB approved, retrospective cohort investigation identified patients 65 years or older admitted to Henry Ford Health System between January 1, 201 and January 28, 2022 with a CDI diagnosis confirmed by a positive toxin test. Patients were included if classified as non-severe (white blood cell count less than 15,000 cells/mm3 and serum creatine less than 1.5 mg/dL) at time zero and received CDI directed antimicrobial therapy for at least 72 hours. CDI time zero was defined as the time of diarrhea onset prior to CDI confirmation, or time of presentation for patients with community-onset diarrhea. Patients were excluded if pregnant, incarcerated, received CDI directed therapy 1 week prior to diagnosis, o had severe or fulminant CDI at time zero. The primary endpoint is the percentage of patients who progress from non-severe to severe or fulminant CDI. Secondary endpoints include the impact of time to CDI directed therapy on hospital and intensive care unit length of stay, and 30-day mortality. Early versus delayed CDI directed antimicrobial therap were compared. This threshold was identified using Classification and Regression Tree (CART) analysis. Chi-squared analysis will evaluate th primary endpoint and Students T or Mann-Whitney U analysis for secondary endpoints. Confounders will be assessed by univariate and multivariate logistic regression analysis.Results and conclusions will be presented at the Great Lakes Pharmacy Residents Conference.

Learning Objectives:

Classify a patient as having non-severe, severe, or fulminant Clostridiodes difficile infection

Explain the impact of time to clostridioides difficile directed antimicrobial therapy on progression of infection from non-severe to severe or fulminant disease

Self Assessment Questions:

A 66-year-old male with a past medical history of chronic kidney disease type 2 diabetes, hypertension, and osteoarthritis presents to the emergency department with a chief complaint of diarrhea. Patient reports to have had loose, watery, unformed stools occurring 3-5 per da for the past 4 days. A basic metabolic panel, complete blood count and a toxin A and B test indicate a positive Clostridiodes difficile infection (CDI) diagnosis with a serum creatine of 1.32 mg/dL and a white blood cell count of 8,200 cells/mm3. Based on the provided information, how would the patients CDI be characterized?

A Non-severe
B: Severe
C: Fulminant
D: Megacolon

Three days later the patient is still complaining of diarrhea and reports an increase in frequency to about 8-10 per day Upon reviewing the patients labs, you discover the following: a serum creatine of 1.87 mg/d and a white blood cell count of 14,100 cells/mm3. Based on the new information provided, which CDI classification is appropriate for this patient?

A Non-severe â€“ The patientâ€™s labs show no clinically significan
B Non-severe â€“ The patientâ€™s stool frequency is still within the
C Severe â€“ Based on the patientâ€™s recent elevation in white bl
D Severe â€“ Based on the patientâ€™s recent elevation in serum c

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-658-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

PHARMACIST DRIVEN STEP-UP INHALER PROTOCOL TO REDUCE EXACERBATIONS IN COPD PATIENTS

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Significant morbidity and mortality are associated with COPD and increased frequency of COPD exacerbations. Many patients at UPH-Meriter who are admitted with COPD exacerbations are discharged home without their home inhaler regimen significantly analyzed. Often times, it may be appropriate for patients to have their inhaler regimen escalated to prevent further exacerbations according to the internationally recognized Global Initiative for Chronic Obstructive Lung Disease (GOLD) Guidelines most recently updated in 2020. Additionally many patients would benefit from inhaler technique education in the cases where patients are not using home inhalers appropriately. This project will utilize an algorithm for escalation of inhaler therapy or provision of inhaler education by inpatient clinical pharmacists. The focus areas will be in non-ICU areas including general medicine and cardiovascular care units. The objective of this study is to decrease rates of COPD hospitalizations and re-admissions

Learning Objectives:

Identify patients who would benefit from inhaler escalation after a COPD exacerbation

Describe interventions to improve patient outcomes for COPD exacerbation admissions

Self Assessment Questions:

Patient AZ admitted for COPD exacerbation, which is the 2nd exacerbation theyve had this year. Which of the following should be considered when assessing their PTA regimen?

A Ease of inhaler use and appropriateness of therapy

B: Inhaler cost

C: Patientâ€™s health literacy

D: All of the above

Which of the following patients would benefit most from an inhaler escalation?

A 90-year-old patient entering hospice

B 63-year-old patient with recurrent hospitalizations and low health li

C 44-year-old patient who is first diagnosed with COPD

D 76-year-old patient with near perfect adherence admitted with pnei

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-793-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

COVID-19 VACCINATION AS A PREDICTOR OF INFLUENZA VACCINATION STATUS

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Statement of Purpose: It is unknown if there is an association between receiving a COVID-19 vaccine and an influenza vaccine. The purpose of this study is to assess the likelihood of persons who received a Coronavirus Disease 2019 (COVID-19) vaccine to also receive an influenza vaccine for the 2021-2022 influenza season. The primary objective is to compare rates of influenza vaccination amongst patients who received a COVID-19 vaccine at a regional grocery chain pharmacy from 2020 to 2021. The secondary objectives are to assess rates of influenza and COVID-19 vaccination among different patient populations based on age, race/ethnicity, COVID-19 vaccine received, and series completion. Methods: This is a retrospective analysis utilizing data recorded by pharmacy staff at 3 grocery store-based community pharmacies and affiliated vaccination clinics. Patients included are adults who received at least one dose of a COVID-19 vaccine from a regional grocery store-based community pharmacy between January 1, 2021, through December 31, 2021. Data will be sourced from pharmacy claims software and the Michigan Care Improvement Registry (MCIR), Michigans vaccine registry, operated by the Michigan Department of Health and Human Services (MDHHS). Patient name, address, and date of birth sourced from pharmacy claims data will be used to locate patients in MCIR to determine influenza vaccination status from the years 2017 through 2021. Additionally, sex, race/ethnicity, history of pneumococcal vaccination, manufacturer of COVID-19 vaccine received and number of COVID-19 vaccine doses will be collected. A McNemar test will be used for primary analysis to determine the difference in proportion of flu vaccination received compared with paired samples from the previous years. A logistic regression will also be conducted utilizing the outcome variable of post-COVID flu vaccination status with predictor variables including pre-COVID flu vaccination and other demographic factors collected. Results: Results will be presented at the conference.

Learning Objectives:

Describe trends in influenza vaccination rates in the United States across age and racial/ethnic groups

Recognize the growing role that community pharmacy serves in meeting the vaccination needs of the population

Self Assessment Questions:

For the 2020-2021 influenza season, which racial/ethnic groups were vaccinated against influenza at the highest rate?

A American/Alaska Native and non-Hispanic Black

B: Non-Hispanic Black and White

C: Hispanic/Latino and Asian

D: Asian and non-Hispanic White

Where did more than half of the population receive their influenza vaccine during the 2020-2021 influenza season?

A Health system/doctor's office

B Mass clinic

C Community pharmacy

D Through their employer

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-839-L06-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

RATE OF LEAVING AGAINST MEDICAL ADVICE WHILE RECEIVING TREATMENT FOR INFECTIVE ENDOCARDITIS IN PATIENTS RECEIVING MEDICATION-ASSISTED TREATMENT (MAT)

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A substance use disorder (SUD) is defined by the recurrent use of alcohol and/or illicit substances that cause clinically significant impairment, including both physical and mental health issues. Medication-assisted treatment (MAT) is the use of medications, in addition to counseling and behavioral therapies, as an approach to treat SUDs. Current literature has shown that people who use illicit drugs commonly leave the hospital against medical advice (AMA) which leads to more frequent readmissions and an increased risk of mortality. Intravenous drug use has been associated with an increased risk of infective endocarditis (IE), specifically related to poor sterile technique, frequency of injections, and repetitive penetration of the skin. Current studies exist to evaluate the relationship between illicit drug use and IE and illicit drug use and leaving AMA, but there are limited studies that evaluate the relationship between MAT and AMA rates in patients receiving treatment for IE. The purpose of this study is to evaluate the impact of MAT on a patients likelihood to leave the hospital AMA while being treated for IE. The primary endpoint was rates of leaving AMA in patients who were compliant with in-house MAT versus rates in those who did not receive MAT. This single-center, retrospective chart review included data from patients with both an active SUD and IE diagnosis. Adult patients admitted to SMMC between July 2017 and July 2021 with an international classification of diseases (ICD) code related to endocarditis were screened for enrollment. Some patients had multiple admissions during this time period and each admission was considered a unique observation as long as the inclusion criteria were met. Patients were considered to have MAT compliance if they received MAT on 85% of their hospital admission days. The results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the association between intravenous drug use and infective endocarditis

Discuss MAT options for patients who are hospitalized with active substance use disorders

Self Assessment Questions:

Which options are available to start in the hospital for a patient with substance use disorder?

A Narcan (naloxone)

B: Vivitrol (naltrexone)

C: Suboxone (buprenorphine/naloxone)

D: Both B and C

Which of the following statements is correct?

A Oral illicit drug use is associated with a higher risk of endocarditis

B Poor sterile technique and repeated penetration of the skin increas

C Patients who use illicit drugs commonly have good sterile techniqu

D MAT is not recommended for inpatient treatment of substance use

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-860-L08-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

DROPERIDOL PLUS LORAZEPAM VERSUS HALOPERIDOL PLUS MIDAZOLAM FOR THE TREATMENT OF ACUTE AGITATION IN THE EMERGENCY DEPARTMENT

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Purpose Patients with acute agitation can pose a threat to medical staff as well as themselves and result in delayed medical treatment, restraint injuries, and acidosis. When verbal de-escalation fails for undifferentiated agitation, patients often require medication sedation. Several studies have compared monotherapy agents, but there is a lack of data evaluating the optimal empiric medication combination. The purpose of this study is to compare the safety and efficacy of intramuscular (IM) droperidol plus lorazepam to haloperidol plus midazolam in acute undifferentiated agitation.MethodsThis was a prospective, observational, unblinded study implemented at a tertiary academic medical center. Starting September 1, 2021, patients 18 years and older admitted to the University of Louisville Hospital with acute undifferentiated agitation requiring security activation received IM administration of either haloperidol 5mg plus midazolam 5mg or droperidol 5mg plus lorazepam 2mg. According to a departmental quality improvement protocol, the preferred medication regimen alternated monthly. Patients were excluded if they were pregnant, incarcerated, had known alcohol withdrawal, had intravenous or intraosseous access, were hemodynamically unstable (systolic blood pressure < 90 mmHg, heart rate < 50 bpm), or had a known contraindication to study medications. Patients were evaluated using the emergency department sedation assessment tool (SAT) at baseline, 5, 10, 15, 30, and 60 minutes following medication administration. The primary outcome was the percent of patients with adequate sedation 10 minutes after medication administration, defined as SAT score 0. Secondary outcomes included average SAT scores at 5, 15, 30, and 60 minutes, change in SAT scores at each time interval, administration of rescue sedation, need for airway interventions, and occurrence of extrapyramidal symptoms. Results/Conclusions: Study enrollment and data collection are currently ongoing. To date, we have enrolled 37 patients. Results and conclusions will be presented at the 2022 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Review the pharmacologic properties of commonly used medications for the management of acutely agitated patients in the Emergency Department

Select appropriate pharmacologic agents for acute agitation based on current literature.

Self Assessment Questions:

Droperidol expresses is pharmacologic effect of sedation by which mechanism?

A D2 Receptor Antagonist

B: D2 Receptor Agonist

C: GABA-A Receptor Antagonist

D: GABA-A Receptor Agonist

A patient with known alcohol abuse presents to the emergency department in acute agitation, emergency medical services states that the patient has not had a drink in over 24 hours, and they were unable to get IV access. Which of the following would be the most appropriate first line therapy for agitation management?

A IM Droperidol

B IM Haloperidol

C IM Midazolam

D IM Droperidol + IM Lorazepam

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-660-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IMPACT OF MICROBIOLOGICAL DISCORDANCE BETWEEN MULTIPLEX PNEUMONIA POLYMERASE-CHAIN REACTION (PCR) TESTING AND TRADITIONAL CULTURE METHODS ON TIME TO ANTIBIOTIC DE-ESCALATION IN THE ICU

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Mortality from pneumonia ranges from 15% to 50% in the intensive care unit (ICU). Initiating appropriate antibiotics within four hours of presentation may impact patient survival. The FilmArray pneumonia (PNA) panel is an FDA-approved multiplex polymerase-chain reaction (PCR) assay that can detect bacterial and viral targets, in addition to resistance markers, from bronchoalveolar lavage (BAL) and endotracheal aspirate specimens. The PNA PCR results more quickly than traditional sputum culture incubation and interpretation. The purpose of this study is to measure the impact of microbiological discordance between multiplex PCR testing and traditional culture methods on time to antibiotic de-escalation.This is a retrospective, single center, cohort study conducted in a tertiary care hospital in central Kentucky with 50 ICU beds. Mechanically ventilated patients that are 18 years or older, hospitalized for greater than 24 hours, and have a positive PNA PCR result during the time of March 1, 2020 to November 1, 2021 will be analyzed. Vulnerable populations, patients on antibiotics for less than 48 hours, or those that have viral, fungal, or bacterial pathogens not included on the PNA PCR panel will be excluded. Patients will be divided into cohorts based upon concordance or discordance of PNA PCR and sputum culture results. The primary outcome of the study is time to antibiotic de-escalation. Secondary outcomes include time to most narrow antibiotic therapy, mortality, ICU readmission, ICU length of stay (LOS), hospital LOS, and cost. Data collection and analysis is still in progress. Data will be evaluated for normality of distribution and appropriate statistical methods will be utilized to compare continuous and categorical variables. All data will use a 95% confidence interval and an alpha of 0.05 for significance. Final results to be presented at the conference.

Learning Objectives:

Discuss the time needed to identify an organism with traditional culture methods versus PCR testing.

Recall the relevant targets identified via the multiplex pneumonia PCR Panel.

Self Assessment Questions:

How long do traditional culture methods usually take to identify an organism?

A 4 to 12 hours

B: 18 to 24 hours

C: 24 to 48 hours

D: >72 hours

The BioFire FilmArray Pneumonia Panel identifies which of the following targets?

A Bacteria, viruses, fungi, and antimicrobial resistance genes

B Bacteria, viruses, and antimicrobial resistance genes

C Bacteria and viruses

D Bacteria and antimicrobial resistance genes

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-659-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

IMPACT OF AN INTERDISCIPLINARY HEART FAILURE CLINIC ON HEALTH OUTCOMES AND COSTS IN PATIENTS WITH HEART FAILURE WITH REDUCED EJECTION FRACTION

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In 2014, SSM Health-Monroe Clinic implemented a collaborative heart failure clinic where patients see both a cardiologist and a pharmacotherapist during their visit to clinic. During the visit, there is a collaborative discussion between the cardiologist and pharmacist regarding appropriate interventions to make during the visit. This presen analysis represents phase four of data collection. The goal was to examine the effectiveness of the heart failure clinic in reducing mortality, and healthcare costs; as well as assessing medication utilization compared to patients that were not enrolled in the clinic. This retrospective review included patients identified to have an ejection fraction of <40% via echocardiogram. This first echocardiogram for each patient was determined to be day zero. Repeat echocardiograms were removed from the data set and did not reset the clock. Patients were excluded from data analysis if they were 88 years old or greater at the time of their first echocardiogram. Each chart was reviewed to determine date of death or if the patient was still alive at the time of analysis on July 31, 2021 to determine survival time. Patients were identified to be enrolled in the heart failure clinic by identifying 2 or more pharmacist notes in cardiology clinic. Data was stratified by enrollment in heart failure clinic for comparison between the two groups. Difference in mortality were determined via Kaplan-Meier Survival Analysis. Hospitalization and Emergency Department charges with a diagnosis of heart failure with reduced ejection fraction or congestive heart failure at SSM-Health Monroe Hospital from January 1, 2019 to July 31, 2021 were obtained and stratified. Patients were determined to be on classes of medications via chart review based on the presence of the medicatior on their medication list with renewals present and estimated 80% or higher coverage of days between time zero.

Learning Objectives:

Describe interventions that pharmacists can make in a collaborative setting to improve patient outcomes

Identify heart failure related outcomes that can be improved through a multidisciplinary clinic practice

Self Assessment Questions:

What are some interventions that pharmacists can provide in a collaborative heart failure clinic setting

A Medication titration/optimization

B: Medication education

C: Disease state education

D: All of the above

Based on the present analysis, what outcomes were improved through the heart failure clinic?

A Mortality

B Healthcare costs

C Appropriateness of dosing

D All of the above

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-661-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EVALUATING THE INCIDENCE OF HYPOTENSION UPON DE-ESCALATION OF NOREPINEPHRINE OR VASOPRESSIN IN PATIENTS WITH SEPTIC SHOCK IN THE RECOVERY PHASE

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Purpose: The concurrent use of norepinephrine and vasopressin are common in septic shock to maintain a target mean arterial pressure (MAP) of 65 mmHg. The Surviving Sepsis Campaign Guidelines recommend these as initial vasoactive agents however no guidance is provided on their de-escalation during the recovery phase. Specifically, there are limited studies evaluating the order of discontinuation of these two vasopressors in septic shock. The goal of this study is to determine if there is a difference in the rates of clinically significant hypotension when norepinephrine is discontinued first compared to vasopressin in septic shock patients initially receiving both vasopressors.Methods: The Institutional Review Board approved this single-center, retrospective cohort study of patients admitted to the intensive care units (ICU) at John H. Stroger Jr., Hospital of Cook County from July 1st, 2016, to July 31st, 2021. Adult patients will be included if they had a diagnosis of septic shock and concurrently received continuous norepinephrine and vasopressin for at least 12 hours. Patients will be excluded if they expired within 48 hours of ICU admission, palliative care intention and had incomplete documentation of vasopressor administration or had a positive test for SARS-CoV-2 during the admission. The primary outcome is clinically significant hypotension defined as a MAP <65 mmHg within 24 hours of study drug discontinuation or re-initiation of vasopressors after discontinuation of study drug. Secondary outcomes include ICU and hospital length of stay. Safety outcomes include rates o acute kidney injury defined as an increase in creatinine 1.5 times or more and the use of renal replacement therapy (CRRT, HD). Other data collected includes utilization of mechanical ventilation and the use of other vasopressors.Results and ConclusionsResults and conclusions wi be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the role of vasopressor therapy in septic shock

Review the standard of care for septic shock management

Self Assessment Questions:

Which of the following scenarios would be most appropriate to initiate vasopressor therapy in a patient in septic shock?

A Immediately after diagnosis of septic shock

B: Post antibiotic administration

C: Persistent hypotension despite adequate fluid resuscitation

D: Vasopressors are not recommended in septic shock

According to the Surviving Sepsis Campaign Guidelines 2021, which of the following is an appropriate management strategy in a septic shock patient with inadequate mean arterial pressure despite receiving appropriate crystalloid therapy and on norepinephrine infusion running a 25 mcg/min?

A Increase norepinephrine dose

B Add epinephrine

C Decrease norepinephrine dose and add vasopressin

D Add vasopressin

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-662-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

PHYSICAL COMPATIBILITY OF INTRAVENOUS LIPIDS WITH COMMON NEONATAL INTESIVE CARE UNIT MEDICATIONS

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PurposeParenteral nutrition is critical to the management of premature neonates that are unable to receive adequate nutrition via the enteral route. Intravenous fish oil and plant-based lipid emulsions have become increasingly utilized in the neonatal intensive care unit (NICU) populatior due to its lower incidence of cholestasis than fully soybean-based product. Data on Y-site compatibility of fish oil and plant-based lipid emulsion with medications used in the NICU population is limited.The purpose of this study is to determine if six common NICU medications (dopamine, epinephrine, norepinephrine, levetiracetam, fosphenytoin, and dexamethasone) are incompatible with fish and plant-based lipid emulsions via the dynamic light scatter method.Methods:Each medication being evaluated was sterilely prepared to the standard concentrations utilized at Gundersen Lutheran Medical Center. Each medication was then mixed in a 1:1 ratio with fish oil and plant-based lipid emulsion and allowed to incubate for a minimum of 4 hours to simulate Y-site exposure. Three samples were prepared from each lipid-medication mixture and were further diluted to a lipid concentration of less than 0.1 mg/mL. The diluted samples were analyzed via dynamic light scatter to determine the intensity-weighted mean diameter of each emulsion. The analysis for each sample was performed in triplicate.Results and Conclusion:The results and conclusion of this study will be presented at the 2022 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify USP defined testing methods for physical compatibility of intravenous lipid emulsions.

Classify the selected parenteral medications as compatible or incompatible with IV fish oil and plant-based lipid emulsion.

Self Assessment Questions:

Which of the following statements is correct?

A Per USP <729>, physical compatibility between intravenous lipid e

B: An emulsion is considered physically compatible/stable if the perc

C: Physical compatibility of a medication cannot be assumed betwee

D: Recent studies and practices suggest dynamic light scatter may b

Intravenous lipid emulsion (fish oil and plant based) is compatible at the Y-site with which of the following medications:

A Norepinephrine

B Epinephrine

C Levetiracetam

D Further data is needed in order to consider any of the above medi

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-794-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EVALUATING ADHERENCE TO A PROCALCITONIN ALGORITHM IN LOWER RESPIRATORY TRACT INFECTIONS AND ITS EFFECT ON DURATION OF ANTIBIOTIC THERAPY

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Purpose: When determining proper treatment of lower respiratory tract infections, procalcitonin levels can be useful in differentiating bacterial versus viral respiratory tract infections, determining antibiotic treatment duration, and evaluating appropriate antibiotic coverage. In 2018, the Antimicrobial Stewardship Committee at Memorial Hospital of South Bend (MHSB) published a procalcitonin algorithm for lower respiratory tract infections, including pneumonia. This study will evaluate if the use and adherence to the procalcitonin algorithm in patients diagnosed with pneumonia had an effect on antibiotic days of therapy. Methods: This single-center research was conducted through a retrospective chart review of adult patients who were admitted to MHSB before and after the implementation of a procalcitonin algorithm for lower respiratory tract infections. This study included patients at least 18 years of age being treated with antibiotics with an admission diagnosis of pneumonia. Patients were included if they were admitted from July 1, 2017 through December 30, 2017 and from July 1, 2019 through December 30, 2019. Exclusion criteria included patients initially admitted to the intensive care unit, patients receiving antibiotics prior to pneumonia diagnosis, and patients diagnosed with lower respiratory tract infections that required long-term antimicrobial therapy. A clinical surveillance tool was used to identify patients that met the inclusion criteria and any patients that met the exclusion criteria were removed. The primary outcome is the antibiotic days of therapy per 1000 patient days. Secondary outcomes include length of hospitalization, de-escalation of antibiotic therapy, and admission to the ICU. Adherence to the procalcitonin algorithm was evaluated in the post implementation arm.Results: Further data collection and analysis is ongoing. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Explain what a procalcitonin level is and what an elevated measurement can indicate.

Discuss how a procalcitonin algorithm can be used to guide antibiotic therapy and optimize antimicrobial stewardship.

Self Assessment Questions:

Which procalcitonin level would add to other clinical evidence to strongly encourage the use of antibiotics for a patient with a potential pneumonia

A 0.05 mcg/L

B: 0.1 mcg/L

C: 0.2 mcg/L

D: 0.7 mcg/L

A 72-year-old patient presents to the hospital with shortness of breath, cough, and a fever. His current labs include a WBC of 15000 cells/mm3 a respiratory rate of 25 breaths/minute, a temperature of 101.2 degrees F, and a procalcitonin level of 1.57 mcg/L. Other labs and vital signs are within normal range. Based on the information above, what managemen would be most appropriate?

A Do not start antibiotics; the patient does not have any signs or sym

B Do not provide antibiotics; the procalcitonin level excludes diagnos

C Start treatment with ceftriaxone and azithromycin; the procalcitonir

D Start treatment with vancomycin and cefepime; the procalcitonin le

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-663-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

PRACTICE PATTERNS OF ANTIBIOTIC PRESCRIBING IN PATIENTS CHRONICALLY ANTICOAGULATED WITH WARFARIN IN THE EMERGENCY DEPARTMENT: A RETROSPECTIVE REVIEW

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Purpose: Antibiotics may influence warfarins impact on INR through multiple pathways, including modulation of cytochrome P450-mediated metabolism and disruption of vitamin K synthesis. This can lead to excessive anticoagulation and associated adverse outcomes. Currently, there is no formal review by a pharmacist at Gundersen Lutheran Medical Center (GMLC) when patients who are anticoagulated with warfarin are prescribed concomitant antibiotics for outpatient use. Aim is to evaluate practice patterns and proactive interventions in patients chronically anticoagulated with warfarin who are prescribed acute antibiotics from the emergency department for outpatient use. Review of antibiotic choice and warfarin dosing could lead to proactive changes to dosing or patient follow up to prevent adverse events leading to a return visit to urgent care or emergency department in the future. Methods: This single center, retrospective review of patients chronically anticoagulated with warfarin who visited the GLMC emergency department from August 1, 2020 to August 1, 2021 and were prescribed one of the following oral antibiotics or antibiotic classes for outpatient use: sulfamethoxazole-trimethoprim, metronidazole, fluoroquinolones, or macrolides. Primary outcomes evaluated include the occurrence of proactive warfarin dose adjustment and follow up INR date changes. Secondary outcomes included rate of warfarin associated adverse drug events (ADR) reported within one month, or representation to the emergency department for ADR within one month. Results/Conclusion: Data analysis is ongoing. Findings will be presented at the 2022 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify antimicrobial medications that may warrant a proactive warfarin dose adjustment.

Define the potential risk of using specified antimicrobials in patients anticoagulated with warfarin.

Self Assessment Questions:

Which of the following antimicrobial agents may necessitate a proactive warfarin dose adjustment?

A nitrofurantoin

B: amoxicillin

C: sulfamethoxazole/trimethoprim

D: cefadroxil

AG received metronidazole in the emergency department and is going to be discharged with a prescription for metronidazole. He is on warfarin fo a mechanical mitral valve replacement in 2018. What CYP450 enzyme would we be mainly concerned with the metronidazole impacting?

A CYP 3A4

B CYP 2C9

C CYP 1A2

D CYP 2D6

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-795-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EFFECT OF REMOVAL OF BOTH 5-FLUOROURACIL BOLUS AND LEUCOVORIN ON SURVIVAL OUTCOMES AND TOXICITIES IN COLORECTAL MALIGNANCIES

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5-fluorouracil (5-FU) is the cornerstone of systemic treatment for colorectal cancer. Leucovorin potentiates the effects of 5-FU, improving progression-free survival and response rate compared to 5-FU alone, though overall survival data are mixed. The dose-limiting toxicity of 5-FU is leukopenia, and the combination of 5-FU/leucovorin may result in stomatitis and diarrhea. Addition of continuous intravenous infusion (CIVI) 5-FU to bolus 5-FU and leucovorin, with or without another chemotherapy agent, has demonstrated improved disease-free survival, time to progression, and survival time. Bolus and CIVI 5-FU, leucovorin with either irinotecan (FOLFIRI) or oxaliplatin (FOLFOX) make up two first-line treatment options for metastatic colorectal cancer. A modified FOLFIRINOX regimen, which omitted bolus 5-FU and decreased the irinotecan dose, was studied in patients with pancreatic cancer and resulted in decreased toxicity compared to FOLFIRINOX. Providers at UC Health have extrapolated these findings to the colorectal setting and remove the bolus 5-FU and leucovorin to mitigate adverse events. There is no study comparing the use of FOLFOX or FOLFIRI with and without 5-FU bolus/leucovorin in colorectal cancer. This retrospective study will compare the use of FOLFOX or FOLFIRI with and without 5-FU bolus/leucovorin in patients treated for metastatic colorectal cancer at UC Health between July 1, 2012 to June 30, 2021. Outcomes include progression-free survival and adverse events. Progression is defined by imaging or other clinically based documentation. Adverse events assessed include hematologic toxicity, diarrhea, mucositis/stomatitis, nausea, vomiting, hand/foot syndrome, and febrile neutropenia. Presence and grade of toxicity, based on provider diagnosis or the Common Terminology Criteria for Adverse Events version 5 (CTCAE.v5), will be noted. Statistical analysis will be conducted using t-test, Wilcoxon Rank Sum, or Chi Square test, as appropriate. Multivariate linear regression will be performed including baseline variables with univariate p-value of <0.2.

Learning Objectives:

Explain the mechanism of 5-FU and leucovorin in colorectal cancer.

Describe the toxicities associated with bolus 5-FU and continuous intravenous infusion (CIVI) 5-FU.

Self Assessment Questions:

Which of the following statements most accurately describes the mechanism of 5-FU and leucovorin in colorectal cancer?

A Leucovorin antagonizes 5-FU and works to decrease the side effe
B: Leucovorin and 5-FU are both pyrimidine analogs and produce syr
C: The presence of leucovorin increases the efficacy of 5-FU.
D: 5-FU allows leucovorin to bind to thymidylate synthase and form a

Which of the following statements most accurately describes the toxicity profiles associated with bolus 5-FU and continuous intravenous infusion (CIVI) 5-FU?

A Bolus 5-FU is associated with more hematologic toxicity than CIVI
B CIVI 5-FU works primarily to inhibit RNA synthesis.
C Bolus 5-FU is associated with a greater tumor response comparec
D Removal of the 5-FU bolus in modified FOLFIRINOX in pancreatic

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-664-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

FACTORS CONTRIBUTING TO MEDICATION RELATED ISSUES FOLLOWING HOSPITAL DISCHARGE

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Transitions of care is the process by which patients move from one healthcare setting to another, most commonly, from an inpatient to outpatient basis.Each transition requires enhanced planning andcollaborationandcan resultin medication errors if not appropriately executed.These can lead to an increased length of stay, higher readmission rates, and adverse drug reactions.This study will attempt to identify if specific determinants correlate with an increase in medication related call backs following hospital discharge.

Learning Objectives:

Recognize a pharmacist's role in transitions of care.

Recall factors that contribute to successful transitions of care based on previous literature.

Self Assessment Questions:

1.Which of the following is/are ways that pharmacists can facilitate with the transitions of care process?

A a.Complete an admission medication reconciliation
B: b.Counsel a patient on a new medication prior to discharge
C: c.Collaborate with case managers to submit a prior authorization fc
D: d.All of the above

2.Which of the following is not an example of a factor that could positively impact the transitions of care process based on previous literature?

A a.Completing an admission medication reconciliation
B b.Counseling a patient on a new anticoagulant
C c.Sending the discharge orders to the incorrect pharmacy
D d.Collaborating with other healthcare providers about discharge the

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-833-L05-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EVALUATION OF INDICATION-BASED ANTIBIOTIC ORDER SENTENCES ON EMERGENCY DEPARTMENT DISCHARGE PRESCRIPTIONS

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PurposeInternal data at Henry Ford Health System emergency departments (HFHS ED) revealed suboptimal antibiotic prescribing 77.4% of the time for urinary tract infections (UTI), lower respiratory trac infections (LRTI), and acute bacterial skin and skin structure infections (ABSSSI). Excessive duration was the most common opportunity for improvement. This study evaluated the effects of indication-based antibiotic order sentences on antibiotic prescribing at ED visits.MethodsThis was an IRB approved quasi-experiment conducted a the five HFHS hospitals. To address gaps in prescribing trends, antibioti order sentences were introduced into the electronic health record. Prescribers were able to search for an antibiotic by name or indication tc retrieve an orderable pre-populated with short-course duration and dose per normal renal function. The pre-order sentence group (January 1 to June 30, 2019) was compared to the post-order sentence group (September 8 to December 3, 2021). Included patients were adults > 18 years of age who received an antibiotic prescription for an uncomplicated URI, LRTI or ABSSSI at ED discharge. Exclusion criteria included a positive SARS-CoV-2 test or admission to the hospital. The primary composite endpoint was an appropriate antibiotic regimen prescribed at the ED visit, which was defined as antibiotic selection, dose, and duration optimized per local and national guidelines. Secondary endpoints included any documented outpatient contact or revisits, escalation of antibiotics, and incidence of reported adverse drug events within 7 days. A minimum sample size of 113 patients per group was calculated based on a two-tailed alpha of 0.05, 90% power, and an effect size of 20%. Bivariable analyses were performed using 2, Fishers exact test, students t-test, or Mann-Whitney U test as appropriate with statistical significance defined at p<0.05.Results and ConclusionsTo be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify patients with UTI, LRTI, and ABSSSI who are eligible for short-course antibiotic therapy.

Describe some of the ways to improve on antibiotic prescribing in the ED

Self Assessment Questions:

What is the appropriate short-course regimen for the treatment of pyelonephritis in a 29-year old female with normal renal function?

A Cephalexin 500mg twice daily for 7 days

B: Ciprofloxacin 500mg twice daily for 7 days

C: Trimethoprim-sulfamethoxazole 1 double-strength tablet twice dail

D: Amoxicillin-clavulanate 875mg twice daily for 5 days

What is the appropriate short-course regimen for the treatment of community-acquired pneumonia in a 82 year old male with multiple co-morbidities and normal renal function?

A Amoxicillin-sulbactam 875mg twice daily for 7 days

B Ciprofloxacin 500mg twice daily for 5 days

C Doxycycline 100mg twice daily for 5 days

D Amoxicillin-clavulanate 875-125mg twice daily plus doxycycline 10

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-665-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF A PHARMACY-LED STATIN MEDICATION USE REVIEW AND OUTREACH INITIATIVE

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The Statin Use in Persons with Diabetes (SUPD) and the Statin Therapy for Patients With Cardiovascular Disease (SPC) measures serve as metrics of a health systems adherence to guideline recommendations fc use of statin medications. These metrics are a current focus of pharmacist-led quality improvement initiatives to improve statin prescribing and medication adherence. Data on pharmacist-led intervention effectiveness varies widely, with recommendations by retail pharmacists to primary care providers producing acceptance rates as low as 20%. Interventions involving ambulatory-care-based pharmacists may prove more effective in increasing statin prescribing rates. This study aims to analyze the impact of patient profile review with provider o patient outreach by ambulatory-care-based pharmacists and pharmacy students on the SUPD and SPC measures.

Learning Objectives:

Classify patient populations with clinical indications and contraindication to statin medication use

Describe how pharmacist-led outreach can improve statin adherence rates and quality-based metrics

Self Assessment Questions:

Which of the following is true of the based-on recommendations from th 2018 ACC Guideline on the Management of Blood Cholesterol?

A Begin moderate-intensity statin therapy in patients 40 to 75 years

B: Begin moderate-intensity statin therapy in patients 40 to 75 years

C: : Begin moderate-intensity statin therapy in patients with clinical A

D: : Use of a high-intensity statin therapy is not recommended in pati

Based on the interventions found in this study, which was the most common intervention performed by pharmacy students?

A Message sent to provider to recommend statin initiation

B Telephone call to patient for adherence counseling

C Mychart electronic message sent to patient for adherence counsel

D Pharmacy students initiated statin prescription based on collabora

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-796-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATING THE SAFETY AND EFFICACY OF TENECTEPLASE COMPARED TO ALTEPLASE FOR ACUTE ISCHEMIC STROKE IN A COMMUNITY HOSPITAL

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Purpose: Strokes are considered the leading cause of long term disability and the 5th leading cause of death in the United States. An estimated 85-87% of strokes are considered ischemic strokes. Currently alteplase is the only FDA-approved fibrinolytic used for the treatment of strokes; however, the 2019 Stroke Guidelines indicate that tenecteplase may be considered as an alternative to alteplase. In June 2021, SSM Health in the Wisconsin region transitioned from alteplase to tenecteplase as the fibrinolytic agent of choice in the treatment of acute ischemic stroke. The purpose of this study is to evaluate the safety and efficacy of tenecteplase compared to alteplase at our institution. Methods: A retrospective chart review was performed on adult patients 18 years old or older who received alteplase from January through June of 2021 or tenecteplase from June through December 2021 for an acute ischemic stroke. The following data was collected: patient name, age, sex, prior home medications, prior history of stroke, confirmation of stroke by a neurologist or imaging, cause of stroke, bleed incidences as assess by a neurologist, fibrinolytic dose, time from onset of stroke symptoms to hospital arrival, administration time of fibrinolytic, time to thrombectomy, restoration of blood flow to area, use of reversal agents, blood pressure and whether blood pressure medications were used, National Institute of Health Stroke Score (NIHSS) at baseline and at 24 hours, Modified Rankin Scores at discharge and at 90 days, 90 day mortality, discharge disposition, and cost. The primary outcome was a reduction in Door to Needle (DTN) time. The secondary outcomes were rate of adverse events (e.g. bleeds), reduction of NIHSS at 24 hours, increase in Modified Rankin score at 90 days, and estimated annual cos savings. Results and Conclusions: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss the advantages of tenecteplase as compared to alteplase in the treatment of acute ischemic stroke.

Recall the recommended dosing regimen of tenecteplase for acute ischemic stroke.

Self Assessment Questions:

What is an advantage of tenecteplase use over alteplase in the treatment of acute ischemic stroke?

A Shorter half life

B: Increased administration time

C: Simpler dosing regimen

D: Decreased fibrin specificity

What is the correct dosing regimen of tenecteplase for the treatment of acute ischemic strokes?

A 0.25 mg/kg (max of 25 mg) single IV bolus over 5 seconds

B 0.25 mg/kg (max of 50 mg) single IV bolus over 1 minute

C 0.9 mg/kg (max of 90 mg) over one hour with initial 10% given ove

D 0.9 mg/kg (max of 25 kg) single IV bolus over 5 seconds

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-666-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

IMPROVING BROAD-SPECTRUM ANTIBIOTIC SELECTION IN THE EMERGENCY DEPARTMENT: IMPACT OF ED PHARMACIST INTERVENTION & ORDER PANEL CREATION

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Purpose: Inappropriate initiation of broad-spectrum antibiotics upon presentation to the emergency department (ED) can lead to antimicrobial resistance. Per the Centers for Disease Control and Prevention, an ongoing threat facing emergency departments is antibiotic resistance with more than 2.8 million antibiotic-resistant infections occurring yearly. In 2017, the Joint Commission announced a new hospital Medication Management standard emphasizing the need to reduce the use of inappropriate antimicrobials in all health care settings due to antimicrobial resistance. This study implemented and evaluated a standardized guide for antimicrobial initiation within the ED for the following indications: unidentified source, septic shock, community acquired pneumonia, urinary tract infection, diabetic foot infection, intraabdominal infection, and febrile neutropenia. The empiric antimicrobial guide included therapy options for methicillin-resistant Staphylococcus aureus (MRSA), Pseudomonas aeruginosa, and anaerobic bacteria based on risk factors. Alternative pharmacotherapy options for drug allergies and dosing recommendations were provided. The guide was approved by various hospital committees; education was provided to ED physicians, providers, pharmacists, and registered nurses. Education was also provided to admitting hospitalists and inpatient pharmacists to ensure appropriate antimicrobials were continued upon inpatient admission. The guide is designed to improve empiric antibiotic selection within the ED by reducing inappropriate antimicrobial prescribing. Methods: Single center, case control study by electronic health record review of patients who presented to Meriter ED and were initiated on any of the following antibiotics and subsequently admitted to the hospital: cefepime IV, daptomycin IV, meropenem IV, metronidazole IV, piperacillin-tazobactam IV, and/or vancomycin IV. Patients were compared before and after implementation of the empiric antimicrobial guide. Primary outcomes include days of therapy of antipseudomonal, anti-MRSA, and anti-anaerobic agents per 1000 patient days present in the emergency department. Results: To be discussedConclusion: To be discussed

Learning Objectives:

Discuss the importance of appropriate empiric antibiotic initiation in the emergency department

Review impact of pharmacist intervention on antibiotic selection

Self Assessment Questions:

Which of the following risk factors should be assessed prior to the initiation of empiric antimicrobial therapy to reduce inappropriate antimicrobial prescribing?

A Risk factors for methicillin-resistant Staphylococcus aureus (MRS/

B: Risk factors for Pseudomonas aeruginosa (i.e.: prior P. aeruginosa

C: Risk factors for anaerobic bacteria (i.e.: suspected empyema)

D: All of the above

Pharmacist intervention and physician education on appropriate empiric antimicrobial selection can accomplish which of the following?

A Increase hospital length of stay

B Reduce acceleration of antibiotic resistance

C Increase adverse effects experienced by patients

D Induce C. difficile infection

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-797-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF PHARMACY TECHNICIAN IMMUNIZATION ADMINISTRATION IN THE COVID-19 VACCINATION CAMPAIGN

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Background:There is a growing need for delegation to ensure workload efficiencies and safety in pharmacies. Technicians may play a critical role in expanding clinical services. Before COVID-19, only a handful of U.S. states allowed for technicians to administer vaccinations. Sullivan University College of Pharmacy and Health Sciences developed and launched an ACPE approved Pharmacy Technician Immunization Administration Training in January 2021. This training included diverse completion options available for the injection technique and covered administration technique, storage and handling, patient care considerations, adverse reactions, and documentation. Thepurpose of this study wasto assess the implementation of technicians administering immunizations. Methods:Two survey instruments, one pharmacist specific, were developed and deployed in the fall of 2021 to assessperceptions on technician administration of immunizations, technician preparedness, and barriers encountered during implementation.Response frequencies anddescriptive statisticswerecalculated for each item utilizing Microsoft Excel. Results: Most responses received were from pharmacists and technicians with 1 years of experience working in rural independent pharmacies. Of technicians who responded, 89.28% agreed that the Sullivan University immunization training left them prepared to administer vaccinations, while 86.11% of pharmacists agreed. Both pharmacists (91.67%) and technicians (80.00%) believed technicians were easily integrated into immunization workflow. The majority (98.19%) of technicians thought managers were supportive of technicians performing new tasks. Lastly, 98.19% of technicians would like to continue administering necessary vaccinations beyond the public health emergency, and 94.28% of responding pharmacists were supportive of technicians doing so. Conclusions:Results from this study indicate that pharmacy technician training participants felt adequately prepared to administer immunizations, and that technician immunization administration was successfully integrated into pharmacy workflow. Overall, both technicians and supervising pharmacists were supportive of continued technician immunization administration. These findings support the expansion of technician immunization and other advanced technician roles.

Learning Objectives:

Describe major points in the background literature for technician immunization training.

Discuss benefits of technician immunization training.

Self Assessment Questions:

Previous literature on pharmacy technicians administering immunizations exhibits:

A technician refusal to give vaccinations.

B: pharmacist disapproval of technicians immunizing.

C: technician increased confidence in vaccine administration after tra

D: pharmacist desire to administer vaccinations.

Expansion of technician roles can _____

A allow for pharmacist delegation

B balance pharmacy workload

C provide opportunities for technician promotions

D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-840-L06-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

IMPACT OF AN EMERGENCY DEPARTMENT (ED) PHARMACIST-DRIVE PROTOCOL TO DISCONTINUE ANTIBIOTICS FOR UTI ON PATIENTS DISCHARGED FROM THE ED WITH NEGATIVE URINE CULTURES

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Purpose: Optimizing antimicrobial prescribing and reducing unnecessary antimicrobial usage is associated with improved long-term clinical outcomes, including decreased antimicrobial resistance and adverse effects. Emergency Medicine (EM) pharmacists are in a position to play a crucial role in antibiotic stewardship through microbiologic culture follow-up after patients are discharge from the Emergency Department (ED). We propose an EM pharmacist-driven de-prescribing protocol based on negative cultures. The purpose of this study is to implement an EM pharmacist-driven protocol to contact patients with negative culture results discharged from the Loyola University Medical Center (LUMC) ED in order to enhance antibiotic de-prescribing in outpatients discharged from an ED visit. We hypothesized this protocol would in antibiotic-free days. Methods: This was a single center, prospective, observational cohort study including patients seen and discharged from the ED on antibiotics for uncomplicated cystitis who subsequently had negative cultures. Patients in the intervention group were enrolled from August 1, 2021, through an anticipated enrollment period of May 31, 2022. These patients were compared to a historical control of ED patients discharged on antimicrobials between January 1, 2019, to July 31, 2021. Patients were identified using the daily ED culture call-back report, which includes any patients with urine that resulted after discharge from the ED. Patients were contacted to determine if it was safe and appropriate to stop taking the antibiotic due to the negative culture and clinical picture. The primary outcome was days free of antibiotics after pharmacist intervention. The secondary outcomes were potential adverse events to antibiotics, returns to the ED within 72 hours of discharge, and a subsequent hospital admission within 30 days. Results/conclusion: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the antimicrobial stewardship opportunities available to an Emergency Medicine pharmacist

Discuss opportunities for de-escalation of antimicrobials after discharge from the ED

Self Assessment Questions:

Which of the following is consequence of inappropriate antimicrobial use?

A Increase in antibiotic resistance

B: Decrease in healthcare cost

C: Decrease in disease severity

D: Decrease in rate of re-hospitalization

Which of the following is the antibiotic of choice for treating uncomplicated cystitis?

A Vancomycin

B Amoxicillin-clavulanate

C Ciprofloxacin

D Nitrofurantoin monohydrate/macrocrystals

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-798-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

COMPARING TRACE ELEMENT MONITORING IN PARENTERAL NUTRITION DEPENDENT INFANTS PRE- AND POST- PROTOCOL IMPLEMENTATION

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PURPOSE: Parenteral Nutrition (PN) is a means of providing nutrition through intravenous administration for patients who are unable to eat or absorb food enterally or by mouth to maintain a healthy nutrition status. Some infants require long-term PN (> 4 weeks) in which additional supplementations may be warranted. Trace elements (TE) are essential nutrients that the body requires small amounts for various physiological processes and should be provided to all preterm infants requiring long-term PN. Though this is known, there is a lack of agreeance regarding dosing and monitoring of TE in PN dependent infants. For patients receiving PN for several months or have developed cholestasis, it is important to assess the status of the following trace elements: zinc, copper, manganese, chromium, and selenium. The purpose of this study is to evaluate trace element monitoring both pre-implementation and post-implementation of a protocol for appropriate monitoring of zinc, copper, manganese, chromium, and selenium at Riley Hospital for Children.METHODS: This is a retrospective cohort study assessing TE level monitoring before and after a new monitoring protocol was implemented at Riley Childrens Hospital. Data was collected for parenteral dependent infants located in the NICU during the period of 01/01/2010 " 12/31/2020. Some data collected included patient demographics, labs to assess liver function, TE levels, and TE supplementation doses. The primary outcome of this study answers if TE levels were initially collected for patients on PN within 60 to 90 days or had greater than or equal to 2 mg/dL. The secondary outcomes included if follow-up monitoring occurred after the initial set, if supplementation adjustments made based on TE level results, and how often levels were elevated while on PN.RESULTS/CONCLUSION: Data collection and analysis are still currently in progress. Results and conclusions will be presented at the 2022 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss the importance of monitoring trace element levels in PN dependent patients

Review current literature providing guidance on trace element monitoring and supplementation in PN dependent infants

Self Assessment Questions:

Which of the following could be a sign of zinc deficiency?

A Nausea/vomiting

B: Poor wound healing

C: Excess hair growth

D: Diarrhea

When provided in supplementation, which TE has been viewed as a concern of accumulation and causing toxicity in cholestatic infants or those with parenteral associated liver disease?

A Zinc

B Selenium

C Manganese

D Chromium

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-667-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

IMPLEMENTATION OF BARCODE VERIFICATION IN THE IV ROOM

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Incorrect product selection is one of the most common types of errors that can occur while compounding. Barcode verification prior to compounding improves safety by ensuring the correct product is selected. Currently at our institution, barcode verification is only utilized for compounded chemotherapy products and not for other compounded medications. This project aims to expand barcode verification to all compounded medications in order to reduce the number of errors from incorrect product selection. Barcode verification also allows the pharmacy department to bill for waste, and could be further developed to allow for remote product verification. Methods: This project was approved by the local Institutional Review Board. Barcode verification was already built into our electronic medical record and staff were familiar with the process and purpose. Education was provided to the staff regarding the expansion of barcode verification for all compounded medications and training was provided as needed. Error rates after implementation were tracked and compared with estimated compounding error rates from the literature. Staff compliance rates were also tracked for all medications compounded in the IV room. Primary Outcome: Number of medication errors after implementation. Secondary outcomes: Cost savings and staff compliance with the new process.

Learning Objectives:

Explain the benefit barcode verification has on decreasing the number of medication errors while compounding

Discuss additional benefits that barcode verification can offer to the pharmacy department

Self Assessment Questions:

What are the benefits of implementing barcode verification in the IV room?

A Decreases the number of errors in product selection

B: Offers the ability to bill for waste

C: Allows for remote product verification

D: All of the above

What outcomes are being tracked after implementation of barcode verification for all compounded products?

A Staff satisfaction

B Medication errors

C Staff compliance

D B & C

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-834-L05-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

A SYSTEMATIC REVIEW OF CHRONIC PAIN MANAGEMENT IN PATIENTS WITH OPIOID USE DISORDER

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Introduction: Chronic pain is difficult to treat in individuals with opioid use disorder. This is due to the misuse of opioids, transitioning to illicit substances, changes in pain signaling and pathophysiology, provider stigma, and misconceptions that chronic pain cannot be managed with non-opioid modalities. Furthermore, the long-term outcomes of opioids are largely unknown, yet they continue to be used for chronic and attribute to the risk for developing opioid use disorder resulting in clinically significant impairment. There are many treatment approaches to pain management, but there is little to no guidance on how to manage patients with chronic pain and opioid use disorder. With this review, we will be able to clarify the misconceptions and stigma present. The objective of this study is to identify pharmacologic regimens for pain that have the best efficacy and safety evidence for chronic non-cancer pain in patients with opioid use disorder. Methods and analysis: We will perform a systematic review based on best practice guidance from the Institute of Medicine (IOM). All randomized control trials evaluating non-opioid pharmacologic pain regimens will be included. The primary outcome will be changes in pain measured by pain scores or scales. Ou search strategy will include databases PUBMED/MEDLINE, EMBASE, PsycINFO, Web of Science, CINAHL, and Google Scholar with search terms of the agents previously listed as well as chronic pain, opioid use disorder, and analgesics. Project and data management will be done via systematic review software (Rayyan). Data synthesis will include a narrative synthesis with the summary of available evidence through PICOTS outline.

Learning Objectives:

Explain the significance of long-term opioid use.

Describe the intersection of chronic pain and opioid use disorder.

Self Assessment Questions:

Which of the following is NOT a long-term outcome of opioids?

A Cardiac abnormalities

B: Fractures

C: Kidney damage

D: Hyperalgesia

Select the true statement regarding chronic pain.

A The presence of pain and opioid use disorder can result in a reorg

B It is important to keep patient expectations for eliminating pain hig

C Opioids are utilized as a last resort to pain management.

D Risk for developing substance use disorder decreases with reducti

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-861-L08-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EVALUATION OF INPATIENT PHARMACIST WORKLOAD TO ASSESS CURRENT AND FUTURE STAFFING MODELS

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Purpose: Pharmacists are integrated, clinical practitioners whose roles and responsibilities continue to evolve to support medication management needs. Therefore, inpatient pharmacy staffing models must also evolve. The purpose of this project is to create and utilize an assessment tool to evaluate the current staffing model and develop future staffing model changes. Methods: Pharmacist responsibilities will be evaluated by time intensity, complexity, and quantity. Subjective data will be collected via pharmacist survey and objective data via electronic health record reports. Data will be collected over a three month timeframe and stratified by specialty, unit, shift, and day of week to allow for evaluation of differences between specialty, shift, and time of week/season. Preliminary Results: Data collection is ongoing. For the purposes of this abstract, data related to admissions will be presented. Surgery units, on average, have more admissions than all other units (z-score 1.55), whereas critical care units have fewer admissions (z-score - 0.94). Despite surgery floors having more admissions than medicine and oncology units, there is no statistically significant difference between the number of student-facilitated admission medication histories (p = 0.23 and 1, respectively). Surgery floors have more admissions on Tuesdays compared to other days of the week (z-score 0.68). Conclusion: A simila analysis to that presented in the preliminary results will be conducted for all other data points to allow for a comprehensive assessment of the current inpatient pharmacy staffing model. Furthermore, time intensity and complexity of surgery patient admissions relative to all other admissions will be further assessed as this has not yet been completed. Ultimately, assessment of the current staffing model will identify opportunities to modify the staffing model to best meet the medication management needs of our patients.

Learning Objectives:

Describe the relationship between current staffing model resources and pharmacists' daily task workload

Discuss how changes to staffing model and re-allocation of resources can impact pharmacists' daily task workload

Self Assessment Questions:

Which is strategy used to reallocate resources that would allow more pharmacists to practice at top-of-license?

A Decreasing the number of students pharmacists precept throughou

B: Establishing specialized technician roles to aid in non-clinical servi

C: Maintaining consistent staffing model and not re-allocating resourc

D: Periodically assessing staffing model to make future model chang

Which is true of establishing a continuous staffing model assessment tool versus periodically assessing staffing model?

A Institutions cannot account for temporal (seasonal) demands of pa

B Institutions can utilize historical data to determine how to best allo

C Institutions should utilize advanced technology like a reporting plat

D Institutions will be able to determine resource allocation, except fo

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-799-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

COST ANALYSIS AND OPERATIONAL CONSIDERATIONS OF AN AUTOMATED SYRINGE-FILLING ROBOT

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Purpose: There are multiple robotic systems that have been developed to assist in the production of parenteral medication doses with various capabilities and efficiency, and these systems have been adopted by many large hospitals. The draw of cost savings and increased labor efficiency create high interest in the use of robotic technology, however currently there is limited research available to compare available robotic compounding systems, especially outside of chemotherapy and hazardous drug compounding. Bronson Methodist Hospital in Kalamazoo, Michigan commissioned a syringe-filling robotic system from Cargin Pharmacy Technologies in 2017 in order to meet facility demand for certain medication products. The goal of this research project is to provide information on cost-benefit and system functionality of the robotic technology to widen the available body of literature regarding automated compounding.Methods: This study will be conducted as a cost-benefit analysis of the automated syringe-filling robot employed by Bronson Methodist Hospital. Data will be collected on the operation of the automated system and a standard EPIC report will be utilized to quantify doses produced since adoption of the robot. The primary objective will be to perform a cost analysis of preparing 10mL and 20mL syringes from a bulk manufactured product with the automated compounding robot deployed by Bronson Methodist Hospital in comparison to: 1) Manual preparation of syringes using commercially available products, 2) Manual preparation of point-of-care (POC) products using commercially available products, and 3) Purchasing ready-to-administer (RTA) drug products. Other areas of analysis will include efficiency of robot operations, and considerations for quality improvement measures.Results: Data collection is still ongoing at this time. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss important features of robotic compounding systems that increase sterility and reduce medication errors and employee exposure to hazardous products

Recognize factors that can affect the cost-benefit of an automated robotic compounding system

Self Assessment Questions:

Which of the following is a feature that can be integrated into robotic compounding systems to help increase product sterility?

A Application of UV light at critical sites

B: Laminar air flow

C: Self-cleaning programming

D: All of the above

Which of these automated compounding system features can negatively impact the cost-benefit of its use?

A Ability to match or exceed production by manual methods

B Need for high levels of company support due to software/hardware

C Utilization of widely available equipment and/or drug products

D Potential reduction in staffing requirements

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-842-L07-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

EVALUATION OF BASAL-BOLUS VERSUS SLIDING SCALE INSULIN THERAPY ON GLUCOSE VARIABILITY IN NONDIABETIC PATIENTS ADMITTED TO THE INTENSIVE CARE UNIT

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Purpose: Blood glucose variability has been shown to be more strongly associated with mortality than either isolated or mean glucose levels in critically ill patients. As stress hyperglycemia is common among the critically ill, reducing glucose variability may lead to better clinical outcomes in this population. Sliding scale insulin regimens utilize short acting insulin to correct blood glucose by reactive measures as opposed to proactive strategies, resulting in fluctuations in glycemic levels. Basal insulin utilizes long-acting insulin which produces more predictable glycemic control with more uniform action. Each of these methods are less laborious than continuous insulin drips. The purpose of this study is to evaluate measures of glycemic control between basal-bolus and corrective scale insulin therapy for the management of stress hyperglycemia in patients without diabetes admitted to the intensive care unit (ICU).Methods: This multi-center, retrospective review of critically ill adults without diabetes was approved by the regional institutional review board. Patients who received subcutaneous insulin therapy while admitted to an ICU between January 2018 and September 2021 were screened. Patients were included if they had two consecutive blood glucose measurements >180 mg/dL within a 24-hour time period. Patients were excluded if there was evidence of a diabetes diagnosis (ICD codes or A1c 6.5% in the 3 months prior to admission). The primary outcome was glucose variability, defined as the average range in daily blood glucose readings (daily maximum " daily minimum) during the ICU admission. Basal-bolus therapy was defined as scheduled insulin glargine on 80% of ICU days plus insulin lispro sliding scale. Secondary outcomes included frequency of hypoglycemia, time at glycemic goal, and difference in ICU and hospital length of stays. Results/Conclusions: Data collection and analysis are ongoing. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recognize risk factors for stress hyperglycemia in the critically ill

Describe the impact of glucose variability on critical care patient outcomes

Self Assessment Questions:

Which of the following patients is at the highest risk for stress hyperglycemia during their medical ICU admission?

A DF admitted 4 days ago following a subarachnoid hemorrhage, sta

B: TR admitted overnight with COVID-19, unvaccinated, receiving de

C: CB admitted following emergency surgery secondary to trauma, re

D: KM admitted 12 hours ago following an episode of status epilepticu

What is the relationship between high glucose variability and patient outcomes in the critically ill population?

A Strongly associated with better patient outcomes

B Strongly associated with mortality

C Less mortality association than mean glucose levels

D This relationship has not been studied

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-668-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

OPTIMIZING TRANSITIONS OF CARE TO MINIMIZE USE OF BROAD SPECTRUM INTRAVENOUS ANTIBIOTICS PRIOR TO HOSPITAL DISCHARGE

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Purpose: Outpatient parenteral antibiotic therapy (OPAT), defined as the administration of intravenous antibiotics in the outpatient setting, has been shown to be clinically and cost effective. Despite increasing data supporting the use of oral antibiotic therapy for various infectious disease states, OPAT remains a cornerstone for treating deep-seated infections as well as infections with limited oral antibiotic options. When selecting antibiotics for OPAT, major factors to consider include safety and effectiveness of the agent, feasibility of administration, and affordability.Administration feasibility and cost barriers sometimes results in the use of broader than necessary antibiotics in the outpatient setting and consequently promotes the use of broader than necessary antibiotic regimens while the patient remains in the hospital as well. Ove utilization of broader than necessary antibiotics can promote the emergence of multidrug resistance and increase healthcare costs. Therefore, antimicrobial stewardship initiatives are needed to promote the utilization of optimal antibiotics during hospitalization. The primary objective is to decrease use of broader than necessary antibiotics prior to hospital discharge. The secondary objectives are to determine incidence of appropriate utilization of ceftriaxone, ertapenem, and daptomycin prior to discharge and to evaluate antibiotic utilization in patients discharging on OPAT pre and post implementation of an improved antibiotic discharge workflow process. Methods: This is a single-center, quasi-experimental study involving patients who will be discharged from Froedtert Hospital while receiving OPAT with ceftriaxone, ertapenem, or daptomycin. The primary outcome will be the pre-post-comparison of days of therapy of ceftriaxone, ertapenem, and daptomycin prior to discharge. Secondary outcomes will be the percentage of patients who could have received a narrower spectrum antibiotic during admission but did not due to transition to a regimen intended for outpatient and the difference in drug cost.Results: Results and conclusions will be presented at Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Recognize antibiotic characteristics that are assessed to identify optimal agents for outpatient parenteral antibiotic therapy

Discuss potential benefits in retaining narrow spectrum antibiotics while inpatient

Self Assessment Questions:

What antibiotic characteristics are assessed to determine an optimal agent for OPAT?

A safety and effectiveness

B: administration ease

C: affordability to the patient

D: All of the above

What is a potential advantage to preventing the use of broader than necessary antibiotics while inpatient?

A promote ease of administration while inpatient by using once daily

B minimize the development of antimicrobial-resistant bacteria

C prevent adverse drug reactions related to antibiotic usage

D decrease risk of Clostridium difficile infections

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-669-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EVALUATING CULTURAL COMPETENCY OF PHARMACY AND PRE PHARMACY STUDENTS AT A PRIVATE ACADEMIC INSTITUTION

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PurposeCultural sensitivity and awareness are part of the Accreditation Council for Pharmacy Educations 2016 Accreditation Standards. In addition, national pharmacy organizations such as the American Pharmacists Association, American College of Clinical Pharmacy, and American Society of Health Systems Pharmacists have made diversity, equity, and inclusion initiatives a key pillar of their strategic plans moving forward. The purpose of this study is to assess the level of confidence in these topics amongst pharmacy and pre-pharmacy students at varying points of their education, and to ultimately identify potential for curriculum improvement. MethodsAn electronic survey will be developed and administered at a private university in Indiana in the spring semeste of the 2021-2022 academic year. Students at all four levels of the PharmD program will be included, as well as students in both pre-professional years at the institution. This study will utilize a modified version of the Clinical Cultural Competency Questionnaire (CCCQ) with permission from the authors. The CCCQ was originally designed to assess physicians cultural competency but has since been adapted for use in pharmacy students. This survey will assess four different domains of understanding: knowledge of cultural competency, skills in dealing with cultural issues in patient care, comfort level with cross-cultural encounters, and attitudes towards health disparities. Information will be collected on prior cultural competency training, work and education experience, and demographics. All survey responses will be anonymous and all data kept confidential. The primary objective of this study will be to evaluate the competency of pharmacy and pre-pharmacy students within each domain above and to identify potential opportunities for curriculum improvement. The secondary objective will be to evaluate the impact prior experiences (such as work, education, and personal) have on student cultural competency.Results and ConclusionResults will be presented at the 2022 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Define the 4 domains of cultural competency

Identify key findings in literature regarding cultural competency amongst pharmacy students

Self Assessment Questions:

Which of the following is a domain of cultural competency?

A Skills

B: Expertise

C: Experience

D: Awareness

Which of the following statements is true regarding the findings in literature regarding cultural competency amongst pharmacy students?

A The majority of first-year pharmacy students have a strong workin

B Most pharmacy students can identify and recognize elements of c

C Pharmacy students do not improve in the domains of skills and kn

D The study of cultural competency/diversity, equity, and inclusion (D

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-800-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EVALUATING THE IMPACT OF THE FLIP THE PHARMACY ADVANCED PRACTICE EXPERIENCE ON STUDENT ATTITUDES AND PERCEPTIONS OF COMMUNITY PHARMACY

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Background: The Flip the Pharmacy (FtP) program helps community pharmacies shift from a dispensing-focused practice to a patient-centered care practice. Local Practice Transformation Coaches (PTCs) lead the participating pharmacies through this transformation by providing resources and feedback about the sites current workflow and service delivery. In a new advanced pharmacy practice experience (APPE), developed by the Purdue University College of Pharmacy and FtP Team Indiana, APPE students serve as the co-PTCs by doing monthly visits to the transformation sites to provide resources and help troubleshoot workflow deficiencies. Previous literature demonstrates student exposure to advanced community practice results in positive impacts on community pharmacy and professional development. However, there is limited evidence on the change in attitudes toward community pharmacy among APPE students who facilitate community pharmacy practice transformation. Thus, the primary objective of this project is to assess the impact on student attitudes and perceptions of community pharmacy practice and changes in student intention to pursue a community-based position after completing the APPE.Methods The retrospective pre-post survey study instrument is administered via a web-based program, REDCap. The research team developed survey items based on Theory of Planned Behavior constructs. The survey items utilize a five-point Likert scale (1=strongly disagree to 5=strongly agree) and respondents are asked to retrospectively rate each item pre- and post-APPE. The study population consists of approximately fourteen fourth-year professional students in the Purdue University Doctor of Pharmacy program who have or will complete the FtP APPE during the 2021-2022 academic year. For the data analysis, pre-post- paired data will be analyzed using Wilcoxon signed-rank tests and Spearman correlation coefficients will be used to explore whether each TPB construct was correlated with the intention to pursue a community position.Data collection is ongoing. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss the importance of shifting community pharmacy practice from a dispensing-focused practice to a patient-centered care practice.

Recognize the impact of student involvement in pharmacy practice transformation on student perceptions of community pharmacy.

Self Assessment Questions:

Which is TRUE about the Flip the Pharmacy program?

A FtP helps community pharmacies transition from a patient-centere
B: FtP is organized by the National Community Pharmacist Associati
C: Transformation sites are guided through the program by Practice T
D: The FtP practice transformation takes place over 6 months.

Through this novel FtP APPE rotation, students have the opportunity to:

A Visit transformation sites on a weekly basis
B Draft legislation for community pharmacy advancement
C Help transformation sites identify workflow deficiencies
D Provide patients with information regarding pharmacy advancemer

Q1 Answer: C Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-801-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

ANALYSIS OF DRUG-INDUCED PANCREATITIS WITHIN THE VETERANS HEALTH ADMINISTRATION

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BackgroundAccording to the World Health Organization (WHO) database, at least 525 different drugs have been associated with (DIP). In the United States, it is estimated that each year there will be about 220,000 cases of acute pancreatitis and 80,000 new diagnoses of chronic pancreatitis. While most cases of pancreatitis are due to obstructive gallstones or excessive alcohol consumption, drugs are thought to cause up to 2% of all pancreatitis cases. In 2020, there were over 2,900 cases of drug-induced pancreatitis (DIP) reported to the United States Food and Drug Administration (FDA) Adverse Event Reporting System (FAERS). Cases of true DIP are difficult to define, due to the number of potential confounders and lack of reporting. The Veterans Affairs Adverse Drug Event Reporting System (VA ADERS) can be utilized to analyze the most common drugs within the Veterans Health Administration (VHA) associated with DIP. ObjectivesThis study aims to evaluate VA ADERS data to determine the most common drugs utilized within the VHA that are associated with DIP. VHA data will be used in conjunction with publicly available FAERS DIP data to determine similarities and differences, and to analyze if this reported data matches what is currently published about the risk of DIP. MethodsThis is a retrospective data analysis of reports of DIP from October 1, 2007- Sept 30, 2021. All VHA reports of acute and chronic pancreatitis reported to VA ADERS as an adverse drug event and the corresponding suspect drug will be queried from the VA ADERS database. VHA data will be compared to publicly available FAERS data to analyze similarities and differences between the reports of DIP within the two databases.

Learning Objectives:

Describe potential mechanisms of drug-induced pancreatitis (DIP)

Identify Drugs/drug classes with the highest risk of causing drug-induced pancreatitis (DIP)

Self Assessment Questions:

Which of the following is NOT a potential mechanism of drug-induced pancreatitis (DIP)?

A Drug-induced hypertriglyceridemia
B: Pancreatic duct constriction
C: Drug-induced hyperkalemia
D: Accumulation of toxic metabolites

Which drug class has been associated with the most cases of drug-induced pancreatitis (DIP) within the VHA?

A Beta-blockers
B Incretins
C Statins
D Thiazides

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-670-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

INCIDENCE OF ACUTE KIDNEY INJURY AMONG AGE STRATIFIED COHORTS TREATED WITH VANCOMYCIN IN COMBINATION WITH PIPERACILLIN-TAZOBACTAM

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Empiric combination antimicrobial therapy is crucial for the treatment of infections and sepsis. Piperacillin-tazobactam (TZP), a beta-lactam/beta lactamase inhibitor combination, is frequently used concomitantly with vancomycin (VAN) for empiric coverage of healthcare-associated infections. Literature suggests a significant increase in the incidence of acute kidney injury (AKI) when used in combination compared to VAN monotherapy or alternative VAN + beta-lactam combination. Literature doesnt address incidence of AKI stratified by age. This study evaluates the incidence of AKI among patients treated with VAN + TZP stratified by patient age.This is a retrospective, single-center study utilizing age stratified cohorts in a 433-bed community hospital in Lexington, Kentucky. The electronic health record will be used to identify patients age 18 years or older that are hospitalized for at least 24 hours and receive VAN + TZP for at least 3 doses or 48 hours during their hospital stay. Vulnerable populations, death or transfer to hospice, and baseline renal dysfunction defined as chronic kidney disease (CKD) stages 4 or 5 end stage renal disease (ESRD), continuous renal replacement therapy (CRRT), hemodialysis (HD), and peritoneal dialysis (PD) will be excluded. The following data will be collected: patient age, gender, presence of comorbidities included in the Charlson Comorbidity Index (CCI), baseline renal function defined as the best serum creatinine within the first 24 hours of admission, suspected source of infection, antimicrobial treatment duration, intensive care unit (ICU) length of stay (LOS), total hospital LOS, readmission within 30 days of discharge, and incidence of all-cause, in-hospital mortality. Patients will be stratified into four groups based on age, including less than 60, 60-69, 70-79, and 80 years or older. Appropriate statistical methods will be used with 95 percent confidence intervals and an alpha of 0.05.Results and conclusions will be presented at the Great Lakes Pharmacy Residents Conference.

Learning Objectives:

Identify if age plays a role in identifying acute kidney injury in patients receiving empiric vancomycin in combination with piperacillin-tazobactam by utilizing the RIFLE criteria

Recall the literature that suggests a significant increase in acute kidney injury when vancomycin is utilized in combination with beta-lactam/beta-lactamase inhibitor antibiotics

Self Assessment Questions:

Which of the following meets the RIFLE criteria classification for acute kidney injury?

A Serum creatinine 4 times baseline

B: Urinary output < 0.5 mL/kg/hr for 24 hours

C: Anuria for 6 hours

D: Serum creatinine 2 times baseline

Which of the following is a beta-lactam/beta-lactamase inhibitor combination medication often utilized with vancomycin for empiric antimicrobial coverage of healthcare-associated infections?

A Aztreonam

B Trimethoprim-sulfamethoxazole

C Piperacillin-tazobactam

D Omadacycline

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-671-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

TREATMENT OF VENOUS THROMBOEMBOLISM (VTE) IN PATIENTS WITH COVID-19 WITH DIRECT-ACTING ORAL ANTICOAGULANTS VS. UNFRACTIONATED OR LOW MOLECULAR WEIGHT HEPARIN

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Purpose:There is a lacking standard of practice due to the insufficient evidence for optimal treatment of COVID-19 induced venous thromboembolism (VTE). Studies have shown that therapeutic anticoagulation (AC) in critically ill COVID-19 patients did not provide a clinical benefit and may be harmful in patients without confirmed VTE.Many trials have reviewed clinical outcomes and bleeding risks of therapeutic vs. prophylactic AC in COVID-19, but none have described the incidence of bleeding comparing the use of therapeutic anticoagulants in the COVID-19 population with confirmed VTE. The lac of safety studies in this population leads to a lack of clinical guidance towards therapeutic AC selection for treatment of VTE. The aim of this study is to compare the incidence of bleeding in COVID-19 patients being treated with therapeutic AC with parenteral versus enteral anticoagulants for the treatment of confirmed VTE.Methods:This is a retrospective cohort study comparing the incidence of bleeding in COVID-19 patients with confirmed VTE treated with therapeutic AC. Data will be collected via chart review for moderate/severe COVID-19 patients between March 1st, 2020, and August 1st, 2021. The primary outcome is the incidence of bleeding while on LMWH/UFH vs. DOACs for a minimum of 72hrs until a confirmed bleeding event. The secondary outcomes are the average length of stay and reduction in d-dimer by >50% within the first 7 days.Results:Results will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recognize current recommendations for treatment of VTE in the COVID 19 population

Describe the bleeding risks associated with therapeutic AC selection in the treatment of VTE in the COVID-19 population

Self Assessment Questions:

Which of the following management strategies are currently recommended by the COVID-19 guidelines in treatment of VTE?

A Low molecular weight/unfractionated heparin is preferred due to th

B: DOACs are the preferred treatment due to their lower risk of bleed

C: There are no current preferred anticoagulants and therapeutic anti

D: Warfarin should be used to guide therapeutic AC in COVID-19 pat

From the current available literature, what are the risks with utilizing therapeutic anticoagulation in the COVID-19 population for VTE prevention?

A The use of therapeutic AC in critically ill patients diagnosed with C

B It was observed that the use of therapeutic anticoagulation was no

C The use of therapeutic AC compared to prophylactic AC has not b

D Enteral AC compared to parenteral AC has been associated with a

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-672-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

IMPACT OF IMPLEMENTING INFECTIOUS DISEASES PGY-2 PHARMACY RESIDENT WEEKEND ANTIMICROBIAL STEWARDSHII COVERAGE

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Purpose:Antibiotic use contributes to antibiotic resistance; however, antimicrobial stewardship programs (ASP) have shown to reduce the burden of antimicrobial resistance through interventions such as de-escalation, restriction of broad-spectrum agents, and recommending more appropriate durations of therapy. Additionally, ASPs perform high-level interventions such as recommending patients for infectious disease consultation and IV to PO conversions, which have demonstrated improved clinical outcomes, decreased adverse events, and decreased healthcare costs. Resources to monitor antimicrobial prescribing and conduct ASP interventions during weekends, holidays, and evenings are often limited. In addition, there are a lack of data available to support expanding ASP personnel coverage beyond peak hours in the community hospital setting. In July of 2021, an infectious diseases PGY2 pharmacy residency program was initiated at our 350-bed community teaching hospital, providing the opportunity to expand stewardship coverage on select weekends. The goal of this study is to describe the impact of an infectious diseases PGY2 resident on inpatien antimicrobial stewardship interventions compared to weekends where nc ASP coverage is available. Methods:This retrospective cohort study was approved by the Institutional Review Board and conducted using pharmacist documentation within EPIC electronic health record. The primary objective is to describe the impact of an ID-PGY2 in a community teaching hospital through quantification of inpatient antimicrobial stewardship interventions and ED and Urgent Care culture follow up interventions made via collaborative practice agreement. Secondary endpoints include comparing the number of antimicrobial stewardship interventions made on weekends with an ID-PGY2 vs clinical pharmacist or PGY1 pharmacy residents, while also determining the influence of each group by comparing intervention impact. Comparison of interventions were made between four clinical groups: ar ID PGY2 pharmacy resident, a single experienced clinical pharmacist, 2 new PGY1 pharmacy residents, and 2 experienced PGY1 pharmacy residents.

Learning Objectives:

Recognize the goals of implementing an Antimicrobial Stewardship Program based on Centers of Disease Control (CDC) Core Elements

Describe potential impacts of implementing an ID-PGY2 weekend stewardship program

Self Assessment Questions:

Purpose: Antibiotic use contributes to antibiotic resistance; however, antimicrobial stewardship programs (ASP) have shown to reduce the burden of antimicrobial resistance through interventions such as de-escalation, restriction of broad-spectrum agents, and recommending more appropriate durations of therapy. Additionally, ASPs perform high-level interventions such as recommending patients for infectious disease consultation and IV to PO conversions, which have demonstrated improved clinical outcomes, decreased adverse events, and decreased healthcare costs. Resources to monitor antimicrobial prescribing and conduct ASP interventions during weekends, holidays, and evenings are often limited. In addition, there are a lack of data available to support expanding ASP personnel coverage beyond peak hours in the community hospital setting. In July of 2021, an infectious diseases PGY2 pharmacy residency program was initiated at our 350-bed community teaching hospital, providing the opportunity to expand stewardship coverage on select weekends. The goal of this study is to describe the impact of an infectious diseases PGY2 resident on inpatien antimicrobial stewardship interventions compared to weekends where nc ASP coverage is available. Methods: This retrospective cohort study was approved by the Institutional Review Board and conducted using pharmacist documentation within EPIC electronic health record. The primary objective is to describe the impact of an ID-PGY2 in a community teaching hospital through quantification of inpatient antimicrobial stewardship interventions and ED and Urgent Care culture follow up interventions made via collaborative practice agreement. Secondary endpoints include comparing the number of antimicrobial stewardship interventions made on weekends with an ID-PGY2 vs clinical pharmacist or PGY1 pharmacy residents, while also determining the influence of each group by comparing intervention impact. Comparison of interventions were made between four clinical groups: ar ID PGY2 pharmacy resident, a single experienced clinical pharmacist, 2

new PGY1 pharmacy residents, and 2 experienced PGY1 pharmacy residents.

A Restrict broad-spectrum antimicrobials

B: Decrease healthcare costs

C: Combat antibiotic resistance

D: Decrease IV antibiotic use

What impacts did implementation of weekend AMS coverage have based on findings from Siegfried et. al. and Bohn et. al.?

A Significant decrease in antimicrobial DOT/1,000 patient days

B Significant reduction in time to resolution of AMS opportunities

C Decrease hospital LOS

D Increase costs for healthcare systems

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-22-673-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

RISK OF TREATMENT FAILURE IN A PRIMARILY APPALACHIAN OUTPATIENT PARENTERAL ANTIBIOTIC THERAPY (OPAT) PATIENT POPULATION

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Purpose: Outpatient parenteral antimicrobial therapy (OPAT) offers a unique opportunity to bridge the acute and ambulatory healthcare settings and is becoming increasingly employed in patients requiring long term parenteral antimicrobial therapy. OPAT affords patients an opportunity to receive the care they need at home, which increases institutional capacity to treat acutely ill patients and reduces healthcare costs. This freedom is balanced by close follow up from a multidisciplinary team of infectious disease specialists. While OPAT has proven efficacy in studied patients, little data exists on the risks that contribute to a patient failing therapy. Of the data currently available, the data are drawn primarily from more urban populations and little is known about the additional risks associated with living in a more rural area, such as Appalachia. It is likely that patients who live in rural Appalachia have additional risk factors for failure of OPAT, and this study aims to better characterize these risk factors. Having this information will allow healthcare providers to be more selective in whom they refer to OPAT, therefore potentially leading to improved treatment success.Methods: This is a retrospective case control study whereby patients who successfully complete OPAT treatment (control) will be compared to those who did not successfully complete treatment (case). Baseline demographics were collected as well as clinic outcomes of OPAT therapy. The primary outcome is a composite of presence of new infection at the end of treatment, change in original therapy plan, or OPAT related hospital readmission. Secondary outcomes include impact of age, Charlson Comorbidity Index, number of infusions per day, and distance from home to clinic on both risk of treatment failure and patient loss to follow-up.Results: In progressConclusion: In progress

Learning Objectives:

List potential benefits of OPAT treatment

Identify potential risks of OPAT treatment failure in an Appalachian patient population

Self Assessment Questions:

Where does a patient who is enrolled in OPAT ideally receive his/her medication?

A ambulatory clinic

B: patient's home

C: skilled nursing facility

D: none of the above

OPAT has been shown to do which of the following?

A increase hospital length of stay

B complicate discharge planning

C decrease healthcare associated costs

D extend the length of antimicrobial therapy

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-803-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

EVALUATION OF IV VS. PO ANTIBIOTICS AT DISCHARGE FOR THE TREATMENT OF URINARY SOURCE GRAM-NEGATIVE

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Purpose: Most patients diagnosed with gram-negative bloodstream infections (GNB) initially receive intravenous (IV) antibiotic therapy, with no clear guidance from current guidelines on the transition to oral (PO) antibiotic therapy. However, overuse of IV antibiotic therapy can result ir increased duration of hospitalization, increased hospital costs, and increased duration of antimicrobial therapy. Recent retrospective studies have suggested that PO therapy following initial IV therapy results in similar outcomes in GNB. Understanding current physician practice patterns with regards to route of antibiotics used at discharge for GNB and subsequent clinical outcomes can help guide future antimicrobial stewardship initiatives. Methods: This was a multicenter, retrospective cohort study including all adult inpatients with a diagnosis of urinary source gram-negative bacteremia. The included patients had both blood and urine cultures positive for the same organism (Escherichia coli, Klebsiella species, or Proteus mirabilis) and had an active oral antibiotic option available at discharge. Patients were excluded if they had renal o perinephric abscesses, NPO at discharge, allergy to all active oral antibiotic options, polymicrobial blood or urine cultures, first positive blood culture collected greater than 48 hours from admission, placed on comfort measures, or completion of the antimicrobial course while admitted. The primary outcome was the percentage of patients in the overall cohort discharged on oral antibiotics for urinary source GNB. Secondary outcomes comparing patients discharged on IV vs PO antibiotic therapy included duration of hospitalization, overall length of active antibiotic therapy, and 30-day readmission secondary to clinical failure or therapeutic complications. Results and Conclusions: Final results will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify potential benefits of oral step-down antibiotics in urinary source gram-negative bacteremia.

Recognize existing evidence supporting the use of oral antibiotics in gram-negative bacteremia

Self Assessment Questions:

Oral step-down antibiotics is associated with which of the following?

A Longer hospitalizations

B: Lower risks for catheter associated events

C: Higher healthcare costs

D: Decreased mobility

Which of the following is true regarding route of administration of antibiotic therapy for the treatment urinary source gram-negative bacteremia?

A Oral therapy following IV therapy has better outcomes compared t

B Oral therapy has been associated with an increase in duration of h

C In patients with adequate source control, oral antibiotics following

D If clinical improvement is demonstrated on IV therapy, patients sh

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-674-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

LENGTH OF INHALED TOBRAMYCIN FOR PEDIATRIC TRACHEITIS PATIENTS

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Purpose: Tracheitis commonly presents with cough, wheezing, rhonchi, increased sputum production, and/or fever in addition to a positive culture. Common treatments for tracheitis include both systemic and inhaled antibiotics as well as airway clearance and tracheal suctioning. Inhaled tobramycin is commonly used for the treatment of pediatric patients with tracheitis. However, there is a lack of data supporting the use of inhaled tobramycin in non-cystic fibrosis (CF) patients. More evidence is needed to determine the appropriate treatment duration of bacterial tracheitis with inhaled tobramycin. The objective of this study was to compare time to next need for antibiotics in pediatric patients witl tracheitis treated with 10 days of inhaled tobramycin versus > 10 days of inhaled tobramycin. Methods: This retrospective chart review collected data for patients with a diagnosis of tracheitis receiving inhaled tobramycin 80mg BID or 80mg TID who were < 18 years of age with a tracheostomy tube. Patients with a diagnosis of VAP (ventilator-associated pneumonia) or CF were excluded. Patients who were admitted to the PICU were also excluded. The primary endpoint examined was time to next need for antibiotics for the treatment of tracheitis in days. Continuous data points will be evaluated using Mann Whitney U test while categorical data will be evaluated using Chi-squared or Fishers Exact test. Results: 16 patients were included in the preliminary results. The median time to next need for antibiotics for patients treated for 10 days or less was 73 days (IQR 6-750). Patients treated for more than 10 days had a median time to next need for antibiotics of 137.5 days (IQR 49.5-382.8)(p=0.671). Data collection is completed, and final statistical analysis is pending. Conclusions: Final results will be presented during the 2022 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Define the common pathogens in bacterial tracheitis.

Recall risk factors for bacterial tracheitis.

Self Assessment Questions:

Which of the following is the most common pathogen implicated in bacterial tracheitis?

A Pseudomonas aeruginosa

B: Haemophilusâ€¯influenzae

C: Staphylococcusâ€¯aureus

D: Streptococcusâ€¯spp.

Which of the following is a risk factor for the development of bacterial tracheitis?

A Mechanical ventilation

B Limited prior antibiotic therapy

C No prior bacterial colonization

D Adult age

Q1 Answer: A Q2 Answer: A

ACPE Universal Activity Number 0121-9999-22-675-L01-P

Activity Type: Knowledge-based Contact Hours: 0.5
(if ACPE number listed above)

IMPACT ON REFILL PERSISTENCE AFTER IMPLEMENTATION OF A NEW THERAPY SCHEDULED FOLLOW-UP CALL BY COMMUNITY-BASED SPECIALTY PHARMACISTS WITH PATIENTS INITIATED ON HIV PRE-EXPOSURE PROPHYLAXIS

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Background: The purpose of this study is to assess the pharmacist's impact on patient persistence at 30 days after the implementation of a seven-day follow-up call to community-based specialty pharmacy patients beginning HIV pre-exposure prophylaxis. PrEP is an important tool to help reduce HIV transmission. However, persistence rates remain low. A recent analysis found HIV PrEP discontinuation rates were high, with median therapy persistence o be 2 to 4 months in length.Methods: After an initial clinic provider visit, patients begin PrEP if their HIV tests are negative and if safety laboratory tests do not show a medical contraindication. Patients can receive their PrEP medication from one of three embedded community-based specialty pharmacies that serve the primary care clinic. The specialty pharmacist conducts an initial assessment when the patient first fills their PrEP prescription. Later, the pharmacist contacts the patient 25 days following their last prescription fill to determine whether a refill is needed. In this study, new PrEP patients filling either Truvada (TDF/FTC) or Descovy (TAF/FTC) will receive a follow-up consultation phone call from the pharmacist within one week following the pharmacists initial assessment. During this phone call, the pharmacist will assess for adverse drug reactions, identify any possible adherence barriers, access to care barriers, consul if assistance is needed with payment or access to support services, and confirm if the patient currently has a PrEP one-month follow-up appointment with their provider. Patients will be excluded from the study if they are known to be taking PrEP on-demand or are taking the medication for a non-PrEP diagnosis. One of the embedded pharmacies will serve as the intervention site, while the other two will serve as the control sites.Results: A chi-square test will be used to measure statistical significance for the 30-day persistence.Conclusion: Pending.

Learning Objectives:

Identify predictive factors associated with patients likely to have higher PrEP persistence

Discuss barriers associated with PrEP persistence for patients filling at a community specialty pharmacy

Self Assessment Questions:

Which of the following predictive factors is not associated with increased PrEP persistence?

A Use of traditional retail pharmacy

B: Average monthly copays of less than $20

C: Use of a specialty pharmacy

D: Access to health insurance

Which of the following is an example of an access barrier that would lead a patient to stop PrEP?

A Adverse drug effect

B Change in sexual behavior

C Language barrier

D PrEP stigma

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-22-676-L02-P

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USE WITH CAUTION: IMPLEMENTING BEERS CRITERIA CLINICAL DECISION SUPPORT

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Purpose: The purpose of this quality improvement project is to evaluate the utilization of high-risk medications in geriatric patients following implementation of a clinical decision support tool in the ambulatory care setting. Geriatric chronic disease state management is complex due to a multitude of factors such as polypharmacy, clinical complexity, and othe age-related conditions. Health systems have used comprehensive geriatric assessments to predict patient risks factors for poor outcomes and increased mortality. UW Health has recently added a pharmacist role to the home-based primary care (HBPC) clinic, providing an opportunity to implement geriatric-focused medication recommendations in the ambulatory care setting. Incorporating these criteria within the electronic health record (EHR) would assist pharmacists in identifying interventions for optimizing and deprescribing high-risk medications in this patient population. Methods: Various geriatric prescribing guidelines and recommendations were considered for embedment into the EHR: STOPP/START, The Beers Criteria, and anticholinergic cognitive burden (ACB) scale among others. The presentation of the criteria in the EHR played a key role, as reports, accordion displays, and flowsheet documentation all have advantages and disadvantages. The Beers Criteria was chosen as the most clinically applicable tool to incorporate into the EHR; the design included medication categories within a report (e.g. caution with delirium/dementia, increased SIADH risk). Additional enhancements to the EHR will be evaluated in pharmacist workgroups. A standardized documentation note will be created to document the high risk medications and increase visibility within the EHR. Pharmacists will be educated on how to use the report. A post-implementation analysis will assess percent reduction in psychotropics, anticholinergics, and other high-risk medications. The total number of medications intervened on due to pharmacist involvement will also be measured.

Learning Objectives:

Describe available guidelines and criteria for medication prescribing recommendations in the geriatric patient population

Discuss advantages and disadvantages involving various clinical decision support tool display options in the geriatric ambulatory setting

Self Assessment Questions:

Which of the following geriatric guidelines/recommendations was chosen for use in our clinical decision tool?

A Beers Criteria

B: STOPP/START

C: ACB

D: All of the above

What is the benefit to building a clinical decision support tool in the EHR

A Help guide prescribing

B Reduce manual lookup of information

C Educate learners

D All of the above

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-22-804-L04-P

Activity Type: Knowledge-based Contact Hours: 0.5 (if ACPE number listed above)

INCIDENCE OF CYTOMEGALOVIRUS (CMV) VIREMIA AND NEUTROPENIA IN LIVER TRANSPLANT RECIPIENTS AT INTERMEDIATE RISK OF CMV FOLLOWING REDUCED DURATION OF PROPHYLAXIS

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Purpose: Cytomegalovirus (CMV) is the most common viral pathogen influencing liver transplant outcomes. CMV can reactivate in immunosuppressed persons previously exposed to CMV or present as primary infection in previously CMV nave recipients. Organ transplant recipients are stratified into low, intermediate, or high CMV risk based or donor and recipient serology with high-risk recipients necessitating longer duration of CMV prophylaxis. Valganciclovir, while associated witl cytopenia remains the agent of choice for CMV prophylaxis. Frequently, growth colony stimulating factor or reduction in immunosuppression is attempted in effort to manage neutropenia. The purpose of this study is to evaluate our centers strategy of minimizing valganciclovir prophylaxis from 6 months to 3 months in intermediate CMV risk liver transplant recipients and assessment of the clinical impact of this change in practice. Methods: This is a retrospective, single-centered, observational cohort study for patients who received a liver transplant at Loyola University Medical Center. The primary endpoints were incidence of CMV viremia, CMV disease, leukopenia, and neutropenia. Secondary endpoints included the incidence of ganciclovir resistant CMV, number GCSF doses, incidence of anti-metabolite dose reduction, and incidence of rejection. A Chi Square analysis will be used to determine difference between two groups. Results: Results and conclusions will be presented at the 2022 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Review cytomegalovirus (CMV) viremia and disease

Identify different CMV risk stratification categories and guideline recommended CMV prophylaxis therapy in liver transplant recipients

Self Assessment Questions:

CMV is a widespread herpes virus which affects 80% of the population during the first two decades of a persons life.

A True

B: FALSE

C: n/a

D: n/a

What is the CMV risk category for transplant patient with recipient CMV IgG (-)/ IgM (-) serology and donor CMV IgG (+)/ IgM (-) serology?

A Low

B Intermediate

C High

D No risk

Q1 Answer: A Q2 Answer: C

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