Phenobarbital Taper for Alcohol Withdrawal in the Intensive Care Unit

Erica L. Allen, PharmD - PGY1 Pharmacy Practice Resident, OhioHealth Riverside Methodist Hospital
Adam J. Smith, PharmD, BCPS, BCCCP; Jordan V. DeWitt, PharmD, BCPS, BCCCP; Jocelyn A. Owusu-Guha, PharmD, BCCCP; Mallory Faherty, PhD, ATC

UAN: 0048-0000-2021-014-L01-P

Learning Objectives:
1. Identify potential advantages to using phenobarbital for managing alcohol withdrawal.
2. Review current literature and suggested dosing regimens for phenobarbital use in alcohol withdrawal.

Purpose:
Acute alcohol withdrawal syndrome (AWS) contributes to increased morbidity and mortality in the intensive care unit (ICU). Currently, benzodiazepines are first-line for managing AWS. Phenobarbital is also commonly used due to its advantages of dual GABA stimulation and glutamate inhibition, long half-life, and effectiveness in patients with resistance or tolerance to benzodiazepines. This study aims to evaluate the efficacy and safety of phenobarbital for AWS in the ICU.

Methods:
This was a retrospective study of adult ICU patients treated with phenobarbital for AWS between June 1, 2019 and June 30, 2020. The standardized phenobarbital taper utilizes an initial weight-based load of either 10 mg/kg or 6 mg/kg using ideal body weight followed by an oral taper to complete a total of four days. Efficacy was evaluated by determining the incidence of taper modifications and concurrent medication usage, including benzodiazepines, propofol, dexmedetomidine, and gabapentin. The incidence of drug interactions and adverse effects were evaluated for safety.

Results:
Two hundred and nine patients were included in this study, 98 receiving a 6 mg/kg load and 111 receiving a 10 mg/kg load. Thirty-one patients (14.8%) had a taper modification and 86 patients (41.1%) received a concurrent medication following phenobarbital taper initiation. There was no significant difference between the two load groups. Eighty-five patients (40.7%) received an interacting medication. Sixty-nine patients (33%) experienced an adverse effect, with the most common being excessive sedation. Excessive sedation was associated with concurrent propofol and dexmedetomidine use (p< 0.00001) and was not different between the two load groups (p=0.199).

Conclusions:
This study found that a phenobarbital taper with loading doses of 6 mg/kg and 10 mg/kg appear to be safe and efficacious. Additional studies are needed to evaluate AWS outcomes associated with phenobarbital use.
Clinical pharmacy specialist impact on guideline compliance for glycemic management of general medicine patients

Erin L. Alworth, PharmD - PGY1 Pharmacy Resident, Aultman Alliance Community Hospital
Zachary S. Selker, PharmD; Nichole J. Thorne, PharmD; Megan E. King, PharmD, BCACP; Jayme C. Jones, PharmD; Thomas J. Rouzzo, PharmD

UAN: 0048-0000-2021-015-L01-P

Learning Objectives:

1. Discuss the 2020 American Diabetes Association (ADA) Standards of Medical Care in Diabetes as it relates to glycemic management of hospitalized patients.
2. Recognize the pharmacist’s role in glycemic management within a rural, community hospital.

Purpose:
The ADA recommends insulin for the treatment of hyperglycemia >180 mg/dL in the inpatient setting, with a target of 140-180 mg/dL for most hospitalized patients. The ADA strongly discourages reliance on sliding scale insulin alone to manage hyperglycemia, and recommends an insulin regimen consisting of basal, prandial, and correctional components. Glycemic management at Aultman Alliance Community Hospital has typically relied on sliding scale insulin, which has led to suboptimal control of serum glucose concentrations. This study aims to determine if pharmacist intervention can improve compliance to current guidelines for glycemic control among non-critically ill patients within a rural, community hospital setting.

Methods:
This pre- and post- intervention analysis has received Institutional Review Board approval. Patients who are at least 18 years of age, admitted to a general medicine unit with a documented history of diabetes and a mean 24-hour blood glucose >180 mg/dL are included in the study. Patients with new-onset diabetes, active diabetic ketoacidosis or hyperglycemic hyperosmolar syndrome, pregnancy, or those admitted to the intensive care unit are excluded. Retrospective data was collected for patients receiving standard care from December 1, 2019 to March 31, 2020. Prospective data is being collected for patients enrolled in the intervention group from December 1, 2020 to March 31, 2021. During the intervention period, pharmacists will review blood glucose values daily and make therapeutic recommendations following a standard protocol. The primary objective is to detect a difference in mean daily blood glucose values between study groups. Secondary objectives include episodes of hyperglycemia, episodes of hypoglycemia, number of insulin therapy adjustments made, and acceptance rate of pharmacist recommendations.

Results:
Final results will be presented at the Ohio Pharmacy Residency Conference.

Conclusions:
Final results and conclusions will be presented at the Ohio Pharmacy Residency Conference.
Impact of a Pharmacist Led Warfarin Discharge Program on the Accuracy of Transitions of Care

Amneh Alzatout, Pharm.D. – PGY1 Pharmacy Resident UC Health – West Chester Hospital
Marcie Malone, Pharm.D. and Claire Stall, Pharm.D.

UAN: 0048-0000-2021-016-L04-P

Learning Objectives:

1. Explain the general concepts of transitions of care and discuss data outlining medication errors related to this process.
2. Review a warfarin discharge program to improve transitions of care for warfarin at UC Health.

Purpose:
Involving a pharmacist in transitions of care (TOC), specifically during discharge from an inpatient facility, can reduce readmission rates, prevent medication errors, and resolve insurance-related issues. Anticoagulants are a drug class with a high risk of adverse drug events after discharge. Ensuring a system is in place to prevent these events is essential. From an internal audit performed in 2019, it was found that up to 65% (n = 13) of patients admitted on warfarin therapy had an opportunity for enhanced TOC, defined as ensuring the discharge summary (DCS) and after visit summary (AVS) match and do not contain inconsistencies. At WCH, a warfarin discharge program (WDP), which included: pharmacists recommending warfarin discharge dosing and educating providers on how to properly discharge a patient on warfarin, was implemented. The aim of this study was to determine if implementing a pharmacist-led WDP will lead to an improved transfer of warfarin dosing information at TOC.

Methods:
This study was a retrospective, single-center, chart review at an academic-affiliated community hospital. The study included adult patients admitted to WCH who received warfarin during admission and pharmacy was consulted to dose between January 5, 2020 – March 5, 2020 (pre-WDP) and January 5, 2021 – March 5, 2021 (post-WDP). The primary objective was to assess whether pharmacist’s warfarin dosing recommendations contained with the progress notes were accepted on discharge. Secondary objectives included comparing the WCH Anticoagulation (AC) clinic staff surveys pre-WDP and post-WDP, comparing the discharge documents [DCS, AVS, and continuation of care (COC)] for duplicate warfarin information, and comparing whether the DCS contained duplicate warfarin information for providers who received pharmacy education versus providers who did not receive education post-WDP.

Results:
Data analysis is ongoing and results will be presented at the 2021 Ohio Pharmacy Resident Conference.

Conclusions:
To be presented at the 2021 Ohio Pharmacy Resident Conference.
Implementation of pharmacogenomic testing in a rural ambulatory clinic

Curtis A. Applegate, PharmD, – PGY1 Resident at Firelands Regional Medical Center
Aaron D. LePoire, PharmD, BCACP; Blake A. Troller, PharmD, BCPS; Dawn Fitt, RPh

UAN: 0048-0000-2021-017-L04-P

Learning Objectives:

1. Identify actionable pharmacogenomic interventions based on clinical guidelines.
2. Discuss the impact of implementing pharmacogenomic testing in an ambulatory care setting.

Purpose:
Pharmacogenomics is the study of how genes influence a patient’s response to drug therapy. Recent advances in software integration combined with broader insurance coverage have made implementing pharmacogenomic testing attainable for more patients. Testing patients for a variety of genes can be accomplished with a simple cheek swab. Providing pharmacogenomic testing as a pharmacy service provides many benefits to patients and providers with studies showing a reduction in healthcare costs, fewer adverse drug events, and optimized drug selection. Results from this study will help evaluate the clinical impact of implementing pharmacogenomic testing in a rural ambulatory clinic.

Methods:
This study was approved by the University of Findlay’s institutional review board. It is a prospective observational study taking place from December 2020 to April 2021. Adult patients who are eligible for pharmacogenomic testing will be swabbed by medical staff and scheduled for a follow up appointment with a pharmacist. The pharmacist will interpret the results of the test and make recommendations to the provider.

The primary outcome is the number of actionable items generated per patient tested. Actionable items are defined as evidence-based recommendations based on the Clinical Pharmacogenetics Implementation Consortium (CPIC) guidelines. The secondary outcome is the percentage of recommendations accepted. The total number of interventions generated per patient will be manually assessed from the electronic medical record.

Results:
Final results will be presented at the Ohio Pharmacy Residency Conference.

Conclusions:
Final conclusion will be presented at the Ohio Pharmacy Residency Conference.
Comparison of three different dose ranges of systemic steroids for acute exacerbation of chronic obstructive pulmonary disease (AECOPD) on patient length of stay (LOS)

Sumaia S. Aqtash, BSPharm – PGY-1 Resident, Western Reserve Hospital
Courtney N. Hochman, PharmD, BCPS, CACP; Erin M. Onder, PharmD, BCPS, CIC; Keith D. Posendek, PharmD, BCPS, BCGP

UAN: 0048-0000-2021-018-L01-P

Learning Objectives:

1. Review primary literature and guidelines regarding steroid use in AECOPD
2. Discuss the impact of three different systemic steroid dose ranges on the patient length of stay

Purpose:
According to Global Initiative for COPD guidelines, prescribing a short course of oral corticosteroids (prednisone 40mg for 5 days) to treat patients hospitalized with AECOPD caused a reduction in the rate of treatment failure, rate of relapse, and improved lung function. Despite evidence-based guidelines, there is no consensus on steroid-dosing regimens to treat COPD exacerbations. Therefore, patients with severe COPD exacerbations often experience different treatment protocols related to steroid dosage and duration. The purpose of the study is to explore the effect of three different systemic steroid dose ranges on the patient length of stay (LOS) as well as the impact on blood pressure (BP) and blood glucose (BG).

Methods:
This is a retrospective chart review of 136 patients admitted to WRH with an AECOPD from January 1, 2018 to December 31, 2019. Total steroid therapy received during hospital stay was collected. All steroids given were converted to a methylprednisolone equivalent and the average daily dose was calculated. Patients were divided into three groups: Group 1 (≤ 80mg/day), Group 2 (81-120mg/day), and Group 3 (≥ 121mg/day). Comparison of LOS between groups was evaluated. Secondary objectives include analyzing the effects of using three different systemic steroid dosage ranges on BP and BG.

Results:
There was a statistically significant difference in the LOS between groups 1 and 3 (p< 0.001). Group 1 vs. 2 and Group 2 vs. 3 comparisons were not statistically significant. The longest LOS was seen in Group 1 [mean(SD)= 3.5(1.4)] and the shortest LOS was seen in Group 3 [mean(SD)= 2.3(1.1)]. No statistical significance was seen in BP or BG.

Conclusions:
While there was a difference in LOS between Groups 1 and 3, there was no difference between Groups 2 and 3. Hence, doses ≥121mg/day of methylprednisolone equivalents can be avoided without adverse effect on LOS, BG, and/or BP.
Agree to Disagree? Equianalgesic Consensus amongst Hospice and Palliative Providers

Lynn Aung, PharmD - PGY2 Pain and Palliative Care Pharmacy Resident, OhioHealth Riverside Methodist Hospital
Tommy Petros, MD; Jessica Geiger PharmD, MS, BCPS, CPE, Sara Graham, DO

UAN: 0048-0000-2021-019-L08-P

Learning Objectives:

1. Recognize a multitude of opioid conversion ratios and tables exist
2. Identify areas of opportunity for education regarding opioid conversion ratios

Purpose:
Opioids used for pain are 85-95% effective when administered for the right patient in the right dose at the right time. Converting between opioids and routes of administration may be necessary due to effectiveness, pill burden, organ dysfunction, or insurance coverage. Although multiple opioid conversion tables exist, a universally accepted opioid analgesic conversion table does not. OhioHealth’s Hospice and Palliative Medicine (HPM) teams have an HPM opioid conversion table available for reference, but consensus has not been evaluated.

Methods:
REDCap distributed a survey used to determine if consensus is reached regarding the HPM opioid conversion table and the differences between healthcare professionals relating to opioid conversions. The goal of this study was to determine if there is consensus regarding the HPM opioid conversion table amongst the OhioHealth HPM pharmacists, physicians, and nurse practitioners.

Results:
Forty-two of 53 OhioHealth HPM pharmacists (3), physicians (26), and nurse practitioners (15) responded to the survey. Consensus was reached for 60% (3) of the opioid conversion ratios tested. Reasons for utilizing the HPM opioid conversion table included practice expectation (50%), ease of memorization (43.2%), evidence-based ratios (36.4%), and good clinical outcomes (43.2%). The majority of those surveyed (59.1%) reported utilizing the HPM conversion table, and none reported an adverse effect attributed to the conversion ratios.

Conclusions:
Although consensus was not reached for two conversion ratios tested, consensus was reached for the three remaining ratios. Notably, none of the HPM providers experienced an adverse effect, including respiratory depression, attributed to the conversion ratios. Of those reporting they do not utilize the HPM conversion ratios, reasons stated were unfamiliarity, difficulty understanding/using the ratios, and lack of evidence. Additional education pertaining to evidence for the ratios and discussions regarding concerns may be necessary to reach consensus on all conversion ratios.
Antimicrobial Agents Prescribing Changes during the COVID-19 Pandemic in Patients Admitted with Pneumonia

Addisu A Azene, PharmD, MSc - PGY1- Resident, UTMC
Kellie Buschor, PharmD, BCPS, BCCCP; Tiffany Russo, PharmD

UAN: 0048-0000-2021-020-L01-P

Learning Objectives:

1. Discuss the impact of COVID-19 pandemic in hospitalized patients with pneumonia
2. Describe the use of the Spectrum Score in assessing antimicrobial prescribing patterns

Purpose:
During the SARS-CoV-2 pandemic, antimicrobials are being used in patients with pneumonia as empirical coverage for possible bacterial and fungal infection. Rapid diagnostic and decision support tools were not as routinely performed for safety reasons, which likely negatively affected antimicrobial stewardship. This has led to a potential for increased unnecessary antimicrobial use. The impact of the COVID-19 pandemic on antimicrobial prescribing trends remains unknown. At the University of Toledo Medical Center (UTMC), due to infection control concerns respiratory cultures were not available for COVID-19 patients in the early stages of the pandemic. As a result, de-escalation of broad-spectrum antimicrobials was more difficult, and the changes to antimicrobials prescribing trends is unknown. The purpose of this study is to identify the impact of potential changes to antimicrobial prescribing trends for the treatment of pneumonia in patients admitted at UTMC during the COVID-19 pandemic.

Methods:
IRB-approved, single-center retrospective cohort including all patients 18 years or older admitted to the MICU service with pneumonia and received > 48 hours of antimicrobials between March 1, 2019 to April 30, 2019 (pre-COVID group) and between March 1, 2020 to April 30, 2020 (during-COVID group). Patients excluded were: completing a previous course of antimicrobials, immunosuppressed, or had a pre-existing lung condition. Primary outcome: to compare the antimicrobial spectrum score between patients admitted for pneumonia before and during the COVID-19 pandemic (rate of antimicrobial de-escalation at day 4). Secondary outcomes: duration of antimicrobial therapy, rate of de-and re-escalation, hospital and ICU lengths-of-stay (LOS), 30-day readmission, Clostridium difficile infection, and in-hospital and 30-day all-cause mortality.

Results:
265 patient encounters screened, 75 were included (Pre-COVID = 35, during COVID = 40). Baseline characteristics were similar between groups with 54.6% male and average age of 64 years. Primary and secondary outcome analysis is ongoing.

Conclusions:
To be determined.
Azithromycin vs Beta Lactams in Acute Exacerbations of COPD

Nour Baalbaki*, PharmD, Ascension St.John Hospital
Christopher Giuliano, PharmD, MPH; Carrie L. Hartner, PharmD, BCPS, BCCCP; Bianca Aprilliano, PharmD Candidate, Pramodini Kale-Pradhan, PharmD, FCCP; Leonard Johnson, MD  Department of Pharmacy, Internal Medicine, and Infectious Diseases Ascension St. Jo

UAN: 0048-0000-2021-021-L01-P

Learning Objectives:
1. Review the recommended therapies for the management of AECOPD
2. Discuss existing evidence on the effectiveness of beta lactams and azithromycin in AECOPD

Purpose:
Bacterial infections cause approximately 50% of acute exacerbations of chronic obstructive pulmonary disease (AECOPD). The 2020 Global Initiative for Chronic Obstructive Lung Disease guidelines recommends a wide range of antibiotics, but evidence comparing agents is limited. Recently, our institutional order sets for AECOPD removed azithromycin as an inpatient treatment option, conflicting with guidelines. The purpose of this study is to compare the effectiveness of azithromycin to beta lactams in the treatment of hospitalized patients with AECOPD.

Methods:
This multicenter, retrospective, observational study was conducted across six Ascension hospitals in Southeast Michigan. Adult patients admitted with AECOPD who received at least two consecutive days of either a beta lactam or azithromycin from January 1st, 2015 to October 15th, 2020 were included. Patients were excluded if they received concomitant azithromycin and beta lactam therapy during the first two days. The primary endpoint was to compare the treatment failure rate in patients receiving azithromycin versus beta lactams. Treatment failure was a composite endpoint defined as in-hospital mortality, admission to intensive care, initiation of invasive mechanical ventilation, requirement of a new antibiotic, steroid therapy escalation, or readmission due to AECOPD within 30 days. Secondary endpoints included each individual component of the composite endpoint. Based on previously reported treatment failure rates of 17% for azithromycin and 9.4% for cephalosporin, a total sample size of 642 patients (428 azithromycin cases and 214 cephalosporin cases) was needed (alpha=0.05, beta=0.2). Differences between both groups will be assessed using Student’s t-tests for continuous variables, Mann Whitney U for non-normally distributed variables, and chi-square tests for categorical variables. Multivariable analysis for the primary outcome will be done using logistic regression.

Results:
To be presented at the 2021 Ohio Pharmacy Resident Conference

Conclusions:
To be presented at the 2021 Ohio Pharmacy Resident Conference
Impact of body mass index on the anticoagulation effect of direct-acting oral anticoagulants (DOACs) in patients admitted to an academic medical center: a retrospective cohort study

Jae Yun Baek, PharmD - PGY1 Pharmacy Resident at The University of Toledo Medical Center
Julie A. Murphy, PharmD, FASHP, FCCP, BCPS; Mariann D. Churchwell, PharmD, FCCP, BCPS; Mary C. Smith, PharmD, BCPS

UAN: 0048-0000-2021-022-L01-P

Learning Objectives:

1. Explain current literature on the effect of direct-acting oral anticoagulants (DOACs) in patient populations with extremes of weight
2. Discuss the safety and efficacy of DOACs in patients with obesity compared to non-obese patients in an academic medical center

Purpose:

Treatment guidelines for atrial fibrillation and venous thromboembolism favor the use of direct-acting oral anticoagulants (DOACs) over warfarin based on four landmark trials. However, a limited number of studies directly compare DOACs in patients with obesity compared to non-obese. The purpose of this study is to investigate the impact of body mass index (BMI) on the safety and efficacy of DOACs.

Methods:

This retrospective cohort study included patients admitted to the University of Toledo Medical Center between July 1, 2019 and June 30, 2020 and prescribed apixaban, rivaroxaban, or dabigatran for atrial fibrillation (thromboembolism prophylaxis) or treatment of deep vein thrombosis (DVT) or pulmonary embolism (PE). The primary outcome was the difference in composite outcome of thromboembolic events (i.e., DVT, PE, cerebrovascular accident, or transient ischemic attack) and bleeding events (i.e., major, minor, and life-threatening) in patients with obesity versus non-obese receiving DOACs. Difference in composite outcome for patients with Class 1 and 2 obesity vs patients with Class 3 obesity was examined.

Results:

Two-hundred seventy-six patients were included [obese (n=138), non-obese (n=138)]. No difference in primary outcome between the obese and non-obese groups [23.2% vs 24.6%; P=0.778] was identified. No differences in thromboembolic events [3.6% vs 1.4%; P=0.251] or bleeding events [21% vs 23.9%; P=0.564] in the obese vs non-obese groups were identified. There was a difference in the composite outcome for patients with Class 1 and 2 obesity (n=88) vs patients with Class 3 obesity (n=50) [30.7% vs 14.0%; P=0.039].

Conclusions:

No significant difference in the composite outcome of thromboembolic and bleeding events was identified between groups. Although the current study is limited by its single center design, this study provides additional information on the safety and efficacy of DOACs in patients with obesity. Multicenter prospective studies are needed to see if these results can be replicated.
Evaluation of the Management of Alcohol Withdrawal in a Community Hospital Intensive Care Unit

Aaron Barber, PharmD- PGY1 Pharmacy Practice Resident
Jodie Fink, PharmD, BCPS

UAN: 0048-0000-2021-023-L01-P

Learning Objectives:
1. Describe the pathophysiology and symptomology of Alcohol Withdrawal Syndrome (AWS)
2. Discuss current treatment modality options for Alcohol Withdrawal Syndrome

Purpose:
Alcohol withdrawal syndrome (AWS) is characterized as a dysregulation of inhibitory and excitatory neurotransmitters resulting in autonomic hyperactivity. Patients experiencing AWS may present with diaphoresis, nausea, vomiting, tremor, and anxiety. In more severe cases, patients may experience seizures or delirium tremens (DT). Treatment strategies for AWS are widely variable from institution to institution. The goal of this project is to identify the methods used to treat AWS in a community hospital intensive care unit, and recognize differences in patient outcomes associated with different treatment modalities.

Methods:
This project is a retrospective chart review conducted for patients who were admitted to the intensive care unit from January 1, 2019 through November 20, 2019 and treated for alcohol withdrawal syndrome. Information collected includes medications used to treat the symptoms of alcohol withdrawal. Dosage information was collected on benzodiazepines, barbiturates, antipsychotics, propofol, and α2 adrenergic agonists. In order to relate this information to patient care, patient outcomes focused data such as length of stay in the hospital and in the ICU, mechanical ventilation and days requiring mechanical ventilation, and whether or not the patient expired during their stay was also collected. Information was analyzed using descriptive statistics in order to find trends between treatment options and patient outcomes.

Results:
Data review and analysis is ongoing. Final results and conclusions will be presented at the Ohio Pharmacy Residency Conference.

Conclusions:
Data review and analysis is ongoing. Final results and conclusions will be presented at the Ohio Pharmacy Residency Conference.
Evaluation of Heparin Infusion Rates in Intravenous Drug Misusers (IVDM)

Kenneth Barga, PharmD - PGY1 Pharmacy Practice Resident - OhioHealth Riverside Methodist Hospital
Katherine Crawford, PharmD, BCCP

UAN: 0048-0000-2021-024-L01-P

Learning Objectives:

1. Describe pharmacokinetic parameters using the ABCD Model: Administration, Bioavailability, Clearance, and Distribution with a focus on renal elimination.
2. Compare dosing of pharmacokinetically adjusted medications in patients with a history of IVDM and how it may relate to weight-based heparin infusions.

Purpose:
Existing literature has shown anecdotally increased requirements of vancomycin and aminoglycosides when dosed based on pharmacokinetic parameters in patients with a history of IVDM. In February of 2020, a 31 year-old male with current IVDM presented to OhioHealth Riverside Methodist Hospital for the treatment of a pulmonary embolism. To reach therapeutic activated partial thromboplastin time (aPTT), he required upwards of 38-52 units/kg/hr, when the initial starting rate was 18 units/kg/hr according to OhioHealth’s Heparin Infusion Protocol. For these reasons, it was hypothesized that patients with a history of IVDM initiated on weight-based heparin infusions may require higher than expected infusion rates to achieve therapeutic aPTT.

Methods:
This study is a multicenter, retrospective chart review of patients with a history of IVDM who were admitted to an OhioHealth facility between 10/1/2015 and 9/30/2020 and treated with continuous heparin infusions. Patients were identified using ICD9 (304.40, 304.50, 305.50, 305.60) and ICD10 (F11.10, F14.10, F15.10, F16.10) codes. To be included within our study, subjects were at least 18 years of age, had a documented history of current or recent (within the past six months) IVDM, and received weight-based heparin infusions at an OhioHealth facility with an EPIC go-live date on or prior to 10/1/2015. Pregnant females, patients with a heparin infusion < 48 continuous hours, and patients transferred from non-OhioHealth facilities were excluded. Variables of particular interest included: median heparin infusion rates to maintain therapeutic aPTT, average time to reach therapeutic aPTT, and International Society of Thrombosis and Haemostasis (ISTH) Criteria for moderate to severe bleeding. Of note, there was no control comparator group; therefore, no statistical significance was able to be determined.

Results:
Forty-one patients met the inclusion and exclusion criteria necessary to be evaluated. Of these 41 patients, 39 reached therapeutic aPTT while on a weight-based heparin infusions, which were initiated and titrated using OhioHealth’s Heparin Infusion Protocol. All 41 patients were initiated on a heparin infusion at a rate of 18 units/kg/hr. The mean time to therapeutic aPTT was 38.48 hours (SD: 26.4 hours) with a mean infusion rate of 27.64 units/kg/hr (SD: 7.14 units/kg/hr). No statistical significance could be derived from this retrospective chart review as there was no control group; however, the results indicate the potential for clinical significance.

Conclusions:
The findings in this study support the potential need for altered heparin infusion protocols specific to patients with a history of IVDM; however, further research is necessary to show statistical significance in order to justify a protocol change.
Evaluation of Continuous Glucose Monitor Use and Provider Perceived Utility

Jonathan Belvo, PharmD - PGY-1 Pharmacy Resident, Summa Health System - Akron City Hospital
Michelle Cudnik, PharmD, BCACP; Christopher Shelby, PharmD, BCPS; Jesseca Keller, PharmD, BCACP

UAN: 0048-0000-2021-025-L01-P

Learning Objectives:
1. Summarize the background literature of continuous glucose monitors (CGM’s)
2. Describe differences between personal and professional CGM’s

Purpose:
The American Diabetes Association states that 34,200,000 Americans had diabetes in 2018. Many advances over the past several decades have improved diabetic patient care, including the development of continuous glucose monitor (CGM) technology. Two of Summa Health’s residency clinics, the Internal Medicine Center (IMC) and Family Medicine Center (FMC), were in the process of adding professional CGM services at project initiation. The objective of this quality improvement project was to complete implementation of professional CGM services within these clinics and to evaluate provider satisfaction and perceived utility of CGM data.

Methods:
Patients within the IMC and FMC meeting inclusion criteria were queried about interest in the program. If interested, patients had a professional CGM placed by a pharmacist which was worn for 14 days. Patients returned to the office to have the CGM removed, data downloaded and reviewed with the patient, and adjustments made to therapy incident to this information. Patient data was collected via retrospective chart review and provider questionnaires were sent out through email. Questionnaires utilized a 5-point Likert scale to evaluate satisfaction and perceived utility of CGM data for each patient’s primary care provider. Descriptive statistics were used to analyze data.

Results:
Overall, data was collected on 10 patients. Of the 9 unique providers, 7 filled out the survey. Of those seven, 4 providers marked yes to reviewing CGM patient data and 3 marked no. Questions evaluating provider satisfaction and perceived utility averaged a 4.3/5 which correlated to agree – strongly agree. All providers responded yes to interest in enrolling more patients in professional CGM services.

Conclusions:
Implementation of a professional CGM service was completed in both clinics. Data from enrolled patients was reviewed by a majority of providers who rated data favorably for satisfaction and perceived utility; all providers had interest in enrolling future patients in a professional CGM service.
Return on Investment of Pharmacist-Led Transitions of Care Services Across a Community Health System

Brittany A Bennett, PharmD – PGY2 Ambulatory Care Pharmacy Resident at St. Elizabeth Healthcare
Emma Sapp, PharmD, BCACP; Erica Neff, PharmD, BCACP, LDE; Jennifer Copenhaver, PharmD, BCPS; Sarah Gillian, PharmD, BCPS; Suzanne Francis, PharmD, BCACP, CDCE

UAN: 0048-0000-2021-026-L04-P

Learning Objectives:
1. Review the benefits of optimal transitions of care throughout a health system.
2. Discuss potential return on investment for pharmacist-led transitions of care services.

Purpose:
When patients are discharged following a hospital admission, there is a shift in responsibility from the inpatient clinical team to the patient’s primary care provider. This transition of care leaves patients vulnerable to medication errors, as several medications are typically changed during admission. Most of these errors can be attributed to poor communication between the inpatient clinical team and the primary care provider. As the medication experts, pharmacists are in a unique position to mitigate medication errors and adverse drug events as patients navigate the transitions of care from home to hospital admission and back home again. Pharmacists have shown value in transitions of care services through inpatient pharmacist-led medication reconciliation programs at admission and discharge. These programs have shown decreases in adverse drug event-related hospital readmissions, emergency department visits, and all-cause readmissions. While these results show immense value in pharmacist-led transitions of care services, they only begin to scratch the service of their potential. The purpose of this study is to determine the potential return on investment of ambulatory care pharmacists participating in both inpatient and outpatient transitions of care services.

Methods:
Select clinical pharmacists at St. Elizabeth Healthcare reviewed patients at discharge based on their reason for admission, number of hospitalizations in the past five years, and number of scheduled medications at discharge. Eligible patients were referred to ambulatory care pharmacists working in St. Elizabeth Physicians primary care offices for post-discharge follow-up and comprehensive medication reviews when appropriate. Return on investment was calculated based on pre-determined values for pharmacist interventions utilized by the St. Elizabeth Healthcare system based on currently published literature.

Results:
Data collection and analysis are currently being conducted. Results and conclusions will be presented at the Ohio Pharmacy Resident Conference.

Conclusions:
Data collection and analysis are currently being conducted. Results and conclusions will be presented at the Ohio Pharmacy Resident Conference.
Impact of dual antibiotic prophylaxis on sternal wound infections in cardiac surgery patients
Sarah Berman, PharmD, PGY1 Pharmacy Resident, The Christ Hospital
Hilary Raidt, PharmD, BCCCP, Abigail Rhoades, PharmD, BCCCP, Angela Haskell, PharmD, BCPS

UAN: 0048-0000-2021-027-L01-P

Learning Objectives:
1. Identify current guideline recommendations for the use of antimicrobial prophylaxis prior to cardiac surgery.
2. Discuss potential risk factors for sternal wound infection after cardiac surgery.

Purpose:
Sternal wound infections (SWI) are a prominent concern after cardiac surgery due to associated morbidity and mortality. Recent observational studies have evaluated the use of vancomycin with a cephalosporin as surgical prophylaxis to broaden coverage against resistant organisms, with varying results. This study investigated the effect of vancomycin and a cephalosporin compared to a cephalosporin alone on overall incidence of SWI after cardiac surgery.

Methods:
This single-center retrospective cohort study included all patients who underwent cardiac surgery requiring preoperative antibiotic prophylaxis between January and November 2020. Patients with left ventricular assist device implantation, concomitant infectious pathology, receipt of other antibiotics within 24 hours, or allergy to beta-lactams were excluded.

Patients who received preoperative vancomycin with a cephalosporin were included in the combination therapy group and compared to patients who received a cephalosporin alone. Case-matching based on the presence of diabetes and body mass index was performed to minimize confounding. The primary outcome of this study was overall postoperative SWI within 30 days. This outcome was assessed using a chi square test with a p-value less than 0.05 indicating significance.

Results:
Of the 339 analyzed patients, 184 patients met criteria for inclusion. There was no significant difference in incidence of overall SWI between monotherapy and combination groups (3 versus 4 respectively, p=0.69). There were also no significant differences in secondary outcomes including but not limited to 30-day mortality, readmission, or reoperation. Incidence of acute kidney injury (AKI) was numerically higher in the combination therapy group, although this was not significant.

Conclusions:
Addition of vancomycin to a cephalosporin did not reduce incidence of SWI prior to cardiac surgery and may have increased incidence of adverse events such as AKI. However, this study is limited by sample size, and more research is needed to determine impact of patient-specific risk factors.
Impact of resuming antidepressants and antipsychotics on delirium incidence in the ICU

Jessica Beyke, PharmD - PGY1 Resident St. Elizabeth Healthcare
Nicholas D Krabacher, PharmD, Lukas T Martin, PharmD, BCCCP

UAN: 0048-0000-2021-028-L01-P

Learning Objectives:
1. Review the potential implications of delirium diagnosis and previous literature that has evaluated restarting psychotropic medications in ICU patients.
2. Discuss the results and conclusions of the study presented and how they will impact practice recommendations moving forward.

Purpose:
Abrupt discontinuation of psychopharmacologic medications can lead to the onset of significant withdrawal effects in patients who are on chronic therapy. These effects appear similar to the presentation of delirium in intensive care unit (ICU) patients. Delirium diagnoses are associated with increased mortality, longer ICU and hospital length of stay, and greater healthcare costs. Early restart of these medications has shown to decrease sedation requirements with possible delirium incidence. This study is designed to evaluate if early restart of antidepressant or antipsychotic medication prevents incidence of delirium in an ICU setting.

Methods:
This retrospective observational cohort study evaluated patients 18 years or older, stable on an antidepressant or antipsychotic, mechanically ventilated, and admitted to the ICU. Patients were excluded if they had a history of cognitive dysfunction or brain injury, had a need for alcohol or opioid withdrawal management, were admitted for an overdose, or required a deep level of sedation. Data collection was performed through retrospective review of electronic medical records. Patients on chronic psychopharmacologic therapy were stratified to either early or late restart groups based on whether with at least 50 percent of the medications were restarted within 5 days of admission. The primary outcome was incidence of delirium, as defined by any positive Confusion Assessment Method score during admission. Secondary outcomes included median Richmond Agitation-Sedation score, ICU length of stay, length of time on mechanical ventilation, cumulative dose of sedative medication, additional antipsychotic requirement during admission, number of total delirium-free days, and percent ICU days delirium-free. Subgroup analyses included specific antidepressant or antipsychotic agent and use of other medications prior to admission contributing to withdrawal.

Results:
Data collection and analysis are being conducted. Results will be presented at the 2021 Ohio Pharmacy Resident Conference.

Conclusions:
Conclusions will be presented at the 2021 Ohio Pharmacy Resident Conference.
A Cost Analysis on the Implementation of Pharmacists into Primary Care Setting Based Upon Alternative Payment Models

Shivani Bhakta, PharmD - PGY2 Ambulatory Care Resident at St. Elizabeth Healthcare
Erica Neff, PharmD, BCACP; Emma Sapp, PharmD, BCACP; Elizabeth Berryman, PharmD, BCPS, BCACP; Ana Hincapie, PhD, MS; Suzi Francis, PharmD, BCACP, CDCES; Leandro Llambi, PharmD

UAN: 0048-0000-2021-029-L04-P

Learning Objectives:
1. Discuss the benefits of alternative payments models and potential effect on patient care outcomes
2. Describe the structures of the alternative payment model used within the study and how metrics can be completed for equivalent star ratings
3. Discuss the potential return on investment for pharmacy-related measures in an alternative payment model

Purpose:
Alternative payment models (APM) focusing on patient outcomes are becoming more common place to optimize patient care. As opposed to traditional fee-for-service models which reimburse per service, third-party payers compensate healthcare systems for meeting various quality measures in these emerging models of reimbursement. APM quality measures often include pharmacy-related measures such as medication adherence and statin therapy use. Therefore, alternative payment models and/or earnings could supplement pharmacist implementation into primary care settings. The purpose of this study is to determine the return on investment through third-party reimbursement after the implementation of pharmacists within an alternative payment model described as value-based performance.

Methods:
A large provider group with multiple primary care sites implemented an ambulatory care department funded by revenue from alternative payment model contracts. Pharmacists are responsible for meeting pharmacy-related quality measures in addition to providing standard ambulatory care services in provider offices. A retrospective review was performed reviewing all pharmacist interventions for one specific contract containing around 5,000 patients in 2019. Pharmacy-related metrics within the contract included medication adherence to diabetes medications, renin-angiotensin system antagonists, and statin therapy as well as statin use in patients with diabetes and cardiovascular disease. The primary outcome of the study was return on investment (ROI) and potential full-time equivalent (FTE) based upon incentives earned from pharmacy-related metrics for one specific contract. ROI and potential FTE were determined by looking at the difference in alternative payment model revenue after the first year of full pharmacy department hiring in relation to pharmacist cost. Secondary outcomes included an analysis of pharmacist time spent related to patient interventions and contract performance. Results were calculated as total pharmacist time spent per measure and potential earnings per pharmacist time spent.

Results:
Results to be presented at OPRC 2021 conference

Conclusions:
Conclusions to be presented at OPRC 2021 conference
Impact of extended emergency department length of stay on antibiotic re-dosing delays in septic patients

Samiyah Bhatti, PharmD- PGY-1 Acute Care Pharmacy Resident ProMedica Toledo Hospital
Tara L. Harpenau, PharmD, BCIDP; Brian M. Hoffman, PharmD; William B. Kirsch, PharmD, BCPS

UAN: 0048-0000-2021-030-L01-P

Learning Objectives:
1. Describe the importance of early antibiotic administration in septic patients
2. Discuss current literature evaluating delays to second dose of antibiotics in septic patients

Purpose:
The Surviving Sepsis Campaign emphasizes the importance of time to the first antibiotic dose in the setting of sepsis and septic shock. However, risk factors for and consequences of a delay to the second dose in this population is less understood. The purpose of this study was to assess the association of an extended emergency department length of stay (ED LOS) &gt; 6 hours with antibiotic re-dosing delays in septic patients, as well as differences in outcomes.

Methods:
A retrospective cohort study comparing septic patients with an ED LOS of &gt; 6 hours to those with an ED LOS of &lt; 6 hours was performed between March 2018 to February 2020. Patients &gt; 18 years old admitted from the ED with a sepsis or septic shock diagnosis, quick sepsis related organ failure assessment score &gt; 2, and who received at least two doses of the same IV antibiotic class were eligible. The primary outcome was incidence of delays to the second dose of antibiotics. Secondary outcomes included intensive care unit (ICU) LOS, hospital LOS, rate of transfer from non-ICU to ICU settings, rate and duration of mechanical ventilation, and in-hospital mortality.

Results:
Of the 132 patients included in this study, 34 patients had an ED LOS &gt; 6 hours and 98 patients had an ED LOS &lt; 6 hours. A delay to second dose of antibiotics occurred in 8 (23.5%) patients in the ED LOS &gt; 6 hours group versus 25 (25.5%) patients in the ED LOS &lt; 6 hours group (p=0.8182). Secondary outcomes did not significantly differ between the two groups.

Conclusions:
There was no statistically significant difference in the incidence of delays to the second dose of antibiotics among septic patients with an ED LOS of &gt; 6 hours versus those with an ED LOS of &lt; 6 hours.
Student Perception of Virtual Objective Structured Clinical Examinations and of Pharmacy Residents as Standardized Patients

Alisha Bias, PharmD-PGY1 Community-Based Resident at the University of Cincinnati
Karissa Kim, PharmD; Anne Metzger, PharmD, BCPS, BCACP

UAN: 0048-0000-2021-031-L04-P

Learning Objectives:

1. Explain the impact virtual Objective Structured Clinical Examinations have on student anxiety
2. Discuss student perception of virtual Objective Structured Clinical Examinations

Purpose:
Due to the pandemic, the University of Cincinnati College of Pharmacy (UCCOP) transitioned to virtual Objective Structured Clinical Examinations (OSCE) using videoconferencing technology and recruited pharmacy residents as standardized patients (SP). The aims of this research are to evaluate student perception of the virtual OSCE, assess the impact on student anxiety, and to evaluate scoring variation and adjustments when utilizing pharmacy residents as the simulated patient versus the traditional SP.

Methods:
Third-year pharmacy students who completed the virtual OSCE at the UCCOP were invited to participate and received two validated online surveys. The State-Trait Anxiety Inventory (STAI), consisting of 40 statements assessing student anxiety states and traits, was administered before the OSCE. After OSCE completion, the OSCE Student Perception Questionnaire, with additional items assessing the pharmacy resident as the SP, was administered.

Results:
Of the 85 students, 26 students (30.6%) and 12 students (14.1%) completed the STAI and OSCE questionnaire, respectively. Before the OSCE, 14 students (53.8%) experienced moderate anxiety and 12 students (46.2%) experienced severe anxiety. Additionally, 12 students (46.2%) demonstrated moderate anxiety traits while 11 students (42.3%) demonstrated severe anxiety traits. Eleven students (91.7%) felt the OSCE was stressful and intimidating. Eight students (66.7%) agreed the OSCE covered a wide range of clinical skills, was a learning opportunity, and was a useful experience. Seven students (58.3%) felt residents were more effective as the SP and 10 students (83.3%) preferred the resident for future OSCEs. There were no scoring adjustments made when utilizing pharmacy residents as the SP.

Conclusions:
This research suggests that virtual OSCEs induce high levels of anxiety in pharmacy students which is consistent to that seen with in-person OSCEs. Additionally, this study suggests a benefit in utilizing pharmacy residents as SPs for future OSCEs without compromising student well-being or efficacy.
Evaluating the impact of pharmacist-driven education on the appropriate treatment of asymptomatic bacteriuria

Cassie Bicknell, PharmD, PGY-1 Pharmacy Resident
Kasie L. Landin, PharmD, RPh, BCIDP; Karen L. Kier, Ph.D., M.Sc, RPh, BCPS, BCACP, CTTS, FASHP

UAN: 0048-0000-2021-032-L01-P

Learning Objectives:
1. Discuss the differences between urinary tract infections (UTI) and asymptomatic bacteriuria (ASB).

Purpose:
Asymptomatic bacteriuria (ASB) is defined by the IDSA as a bacterial presence of colony forming units (CFU) ≥ 100,000 in the urine while the patient is clinically asymptomatic or without the presence of urinary symptoms. In the acute setting, differentiating between ASB and UTI can be difficult based on patient presentation with non-specific symptoms or altered mental status (AMS). As medication experts, pharmacists are in an important position to help drive evidence-based practice in healthcare. The primary aim of this study was to promote proper treatment of ASB at Lima Memorial Hospital through the platform of pharmacist-driven education amongst hospitalist providers.

Methods:
This was a single-center, retrospective and prospective chart review study that aimed to demonstrate the potential impact of pharmacist-driven education on ASB treatment among hospitalist providers. Chart review collected the following information: demographics, initial antibiotic chosen for treatment, days of treatment (defined as one dose received for given day), C. difficile infection post-antibiotic ASB treatment, and hospitalization days. Providers completed both pre- and post-education surveys to track ASB treatment patterns. The pharmacist investigators provided a video education session regarding proper treatment of ASB for providers to view between retrospective and prospective data collection to determine if education impacted provider treatment. The primary outcome of this study assessed the difference of antibiotic treatment days between the retrospective and prospective data. Secondary patient outcomes such as hospital length of stay, C. difficile infection post-antibiotic use, and treatment rates among those with confusion/dementia/AMS as the only symptom were also evaluated. Results were presented to the hospitalist provider group to foster a continuing relationship with the antimicrobial stewardship pharmacist.

Results:
Data analysis is in progress.

Conclusions:
Results and conclusions will be presented at the 2021 Ohio Pharmacy Resident Conference.
Effects of Rapid Sequence Intubation Agents on Mortality in Patients with COVID-19

Shannon Blattert, PharmD, PGY2 Emergency Medicine Pharmacy Resident, Detroit Receiving Hospital – Detroit Medical Center
Rachel Wein, PharmD, BCPS; Kyle Mangan, PharmD; Linda Park, PharmD, BCPS

UAN: 0048-0000-2021-033-L01-P

Learning Objectives:

1. Describe the pathophysiology of infection with COVID-19 pneumonia, and which disease state it resembles
2. Recognize the importance of best practice standards for oxygenation and ventilation of patients with COVID-19 pneumonia

Purpose:
Mechanical ventilatory support with tracheal intubation may improve oxygenation and help improve outcomes; however, it also has the possibility to aggravate lung injury and induce circulatory derangement. Providing best practice recommendations regarding intubation and ventilation for patients with COVID-19 pneumonia remains of utmost importance for the foreseeable future. More studies are needed to provide further recommendations for medication use in rapid sequence intubation of patients with COVID-19 pneumonia, as well as timing of intubation. The purpose of this study is to evaluate the effects on mortality and other outcomes of intubation timing and the use of various rapid sequence intubation agents in patients with COVID-19 pneumonia.

Methods:
A retrospective study of adult patients that presented to Detroit Receiving Hospital, Harper University Hospital, or Sinai-Grace Hospital with a positive coronavirus PCR lab test between March 1, 2020 and August 31, 2020 and required intubation. Pre-existing data was pulled by the Pharmacy IT director for patients that met these inclusion criteria. Data collected included: demographics, admission and discharge details, labs and vitals before and after intubation, modified RSI v. awake intubation, location at intubation, induction agent used, neuromuscular blocking agent, steroid and vasopressor use and adverse events post-intubation. The primary outcome was all-cause mortality (within 24 hours of intubation). Secondary outcomes included hypoxemia, tachypnea, hypotension, tachycardia, unconsciousness, cardiac arrest and pneumothorax. Study analysis will use descriptive statistics, including mean and median values for continuous variables with the standard deviation or interquartile range reported as applicable, and the use of frequency distribution, Chi-squared tests, and Fisher’s Exact tests for categorical variables. A P-value of < 0.05 will be considered statistically significant.

Results:
Data collection is in process. Results will be presented at the Ohio Pharmacy Resident Conference.

Conclusions:
Results will be presented at the Ohio Pharmacy Resident Conference.
Evaluating Anticoagulation Failure in Patients with Prostate Cancer Treated with Enzalutamide

Anastassia Blewett, PharmD - PGY1 Pharmacy Resident at The Christ Hospital Health Network
Anli McCoy, PharmD, BCOP; Kristin Herald, PharmD, BCPS, BCOP; Kathryn Weber, PharmD, BCPS, BCCP

UAN: 0048-0000-2021-034-L01-P

Learning Objectives:

1. Identify role of enzalutamide in evidence-based prostate cancer therapy.
2. Summarize drug interactions associated with enzalutamide and concomitant anticoagulation therapy.

Purpose:
Enzalutamide is an oral androgen receptor inhibitor used for prostate cancer treatment. Patients may receive enzalutamide with concomitant anticoagulation for comorbidities such as venous thromboembolism (VTE) or atrial fibrillation. Enzalutamide is metabolized through similar pathways as several anticoagulants. Interpreting these interactions is important to determine the level of anticoagulation patients are receiving. This study aimed to assess the incidence of anticoagulation failure, defined as documented VTE, stroke, or transient ischemic attack (TIA), while on concomitant enzalutamide therapy.

Methods:
This was a single-center, retrospective study evaluating patients who received anticoagulation with concomitant enzalutamide therapy. Patients were included if they were 18 years or older, had a prostate cancer diagnosis, and were treated with enzalutamide and concomitant anticoagulation. Anticoagulant agents included apixaban, rivaroxaban, dabigatran, warfarin, and enoxaparin. Patients were excluded if they did not receive anticoagulation at the time of enzalutamide therapy. The primary outcome was clinically documented anticoagulation failure. Secondary outcomes included bleeding events, hospitalization and mortality due to anticoagulation failure or bleeding, and a comparison of failure rates among agents. Statistical analysis included descriptive statistics and Fisher’s exact tests.

Results:
Fifty-two patients were included in the study. There was one documented anticoagulation failure. This patient had a documented TIA while on concomitant therapy that required hospitalization. Secondary outcomes included seven bleeding events. Five of the bleeding events required hospitalization and one resulted in death. The majority of the patients with bleeding events were also on aspirin therapy. Two of the patients had an acute kidney injury at the time of the bleeding event.

Conclusions:
Concomitant therapy with enzalutamide and anticoagulants may increase the risk of anticoagulation failure and bleeding. Additional studies with larger sample sizes are needed to raise provider awareness and confirm clinical significance of drug interactions with enzalutamide.
Utilizing Students to Improve eCarePlan Submission Rates in a Clinically-Integrated Pharmacy Network

Connor Bowers, PharmD - CPESN Ohio Pharmacy Resident
Alison Haas, Katie Westgerdes, Kevin Day, Karen Kier

UAN: 0048-0000-2021-035-L04-P

Learning Objectives:

1. Describe the purpose of the study and its importance to the profession of pharmacy.

Purpose:
Community Pharmacy Enhanced Services Network (CPESN) Ohio is a network of clinically-integrated pharmacies in Ohio whose goal is to provide increased care and better access to services to the patients of their communities. eCarePlans are a documentation of social and clinical interactions that are utilized and leveraged by the network. Members of the network are required to submit a minimum number of care plans per quarter per their contract although many struggle to do so. The objective of this study is to determine if the eCarePlan submission rate of under-engaged CPESN pharmacies coached by a trained-student is equal or greater-than to that of under-engaged CPESN pharmacies coached by a CPESN Resident. Care plans will be measured from the start of this study to one month following the visit date training. Pharmacy students at large are an untapped resource for expanding the role(s) of the community pharmacist, especially in upcoming care delivery models such as eCarePlan submission. Focusing on improving quality measures within the CPESN Ohio network will lead to quality improvement in the community pharmacy setting, and is replicable across all CPESN networks across the country.

Methods:
CPESN’s Progress Tracker will be utilized to identify the number of eCarePlans submitted and underperforming pharmacies in the Ohio network. Pharmacies not submitting a required 10 care plans per quarter will be reached out to through email or phone and asked if they would like to receive help from either a student or myself (principal investigator). Pharmacies will also be asked to volunteer if they simply do not understand how to submit eCarePlans and would like help. A survey assessing barriers will be sent before their visit date to assess what should be addressed ahead of time. Students will be trained on how to submit care plans in the appropriate software vendors (based on the store they are assigned) by the CPESN Ohio Resident. Video tutorials and in-person training may be available. Students will then set up a visit day with the pharmacy where they can teach the pharmacy staff in person. Dependent variables are the struggling pharmacies, independent variables are the students/resident training the stores. Care plans will be measured from the start of this study to one month following the visit date training. The number of care plans submitted will be compared between stores visited by students versus the stores visited by the CPESN Ohio Resident.

Results:
This study is ongoing. Results expected May 2021.

Conclusions:
This study is ongoing. Results expected May 2021.
Low-Dose Digoxin Immune Fab for the Reversal of Digoxin Toxicity

Michael Braun, PharmD - OhioHealth Grant Medical Center
Daniel Dybdahl, PharmD; Taylor Roberson, PharmD, BCPS

UAN: 0048-0000-2021-036-L01-P

Learning Objectives:

1. Compare clinical outcomes for standard dosing vs low-dose symptom driven dosing of digoxin immune fab
2. Evaluate operational measures related to digoxin immune fab utilization before and after an institutional prescribing guideline update

Purpose:
Digoxin is a cardiac glycoside used for the treatment of atrial fibrillation and heart failure with reduced ejection fraction. American Association of Poison Control Centers’ National Poison Data System reported 1,689 cases of cardiac glycoside toxicity in 2018. Digoxin immune fab, the antidote for digoxin toxicity, has widely variable dosing from the manufacturer recommendations and is based upon the amount ingested, yielding a dose of 40 mg to 3,200 mg. One pharmacokinetic modeling study hypothesized that smaller doses may be used with similar effects in the clearance of serum digoxin concentrations. The paucity of data surrounding this topic shows that more studies should be conducted to evaluate this dosing strategy. The goal of this study is to compare the two dosing regimens clinically to compare efficacy.

Methods:
A retrospective cohort analysis was performed among patients who had received a documented administration of digoxin immune fab at any OhioHealth hospital or medical center from January 1st 2017 to October 31st, 2020. Clinical outcomes evaluated are time to resolution of arrhythmia, time to normalization of potassium and magnesium, time to normalization of heart rate and blood pressure, and all-cause mortality at discharge. Time from order placement to verification is our operational outcome. To evaluate possible confounding factors, we collected rates of vasopressor use, mechanical ventilation, hospital length of stay, and the presence of an implanted pacemaker. Descriptive statistics will be used to analyze the data.

Results:
Data collection and analysis are in process with final results to be presented at OPRC.

Conclusions:
Data collection and analysis are in process with conclusions to be presented at OPRC.
Unfractionated Heparin Dosed Using Adjusted Body Weight in an Obese Population

Kelsey Brebberman*, PharmD – PGY2 Cardiology Pharmacy Resident, The Christ Hospital
Kathryn Weber, PharmD, BCPS, BCCP; Rebecca Dudley, PharmD; Hilary Raidt, PharmD, BCCCP; Abigail Rhoades, PharmD, BCCCP

UAN: 0048-0000-2021-037-L01-P

Learning Objectives:
1. Outline the pharmacokinetic properties of unfractionated heparin in obese patients
2. Discuss the rationale for using adjusted body weight in obese patients when dosing heparin using a weight-based nomogram

Purpose:
Weight-based dosing of unfractionated heparin (UFH) using a standardized nomogram titrated by actual body weight (ABW) proves to achieve rapid anticoagulation and reduce the risk of recurrent thrombosis in non-obese patients. In obese patients, UFH dosing using adjusted body weight (AjBW) has been proposed due to low distribution to adipose tissue and a nonlinear dose-weight relationship. The purpose of this study is to compare the percentage of patients who achieve therapeutic anti-factor Xa (anti-Xa) levels at 24 hours when dosing UFH with ABW versus AjBW.

Methods:
This retrospective, single-center cohort study evaluates adults with a body mass index ≥35 kg/m2 treated with a weight-based heparin nomogram for venous thromboembolism titrated to an anti-Xa goal of 0.3-0.7 IU/mL using either ABW or AjBW. Exclusion criteria includes heparin initiation at another institution, a baseline anti-Xa ≥ 0.04 IU/mL, or if no baseline, administration of a direct-acting oral anticoagulant within 72 hours. The primary outcome is the percentage of patients with therapeutic anti-Xa levels at 24 hours. Selected secondary outcomes include percentage of supra- and subtherapeutic anti-Xa levels on first appropriate check and at 24 hours, rates of stroke or systemic embolism (SSE), and rates of bleeding.

Results:
Of 959 patients screened, 137 were included: 99 (72%) and 38 (28%) patients received UFH dosed using ABW and AjBW, respectively. At 24 hours, significantly more AjBW patients had a therapeutic anti-Xa level (76% vs. 45%, p=0.001). There was no difference in subtherapeutic levels, but supratherapeutic levels were more common in the ABW group at 24 hours. There was no difference in rates of SSE or bleeding.

Conclusions:
At 24 hours, patients dosed using AjBW were more likely to have therapeutic anti-Xa levels and less likely to be supratherapeutic. Use of AjBW appears to be safe and effective for weight-based dosing of UFH in obese patients.
Impact of Pharmacist-Led Chronic Disease State Management, using a Billable Reimbursement Model, within a Federally Qualified Health Center

Micaela Bresler, Pharm.D. – PGY2 Ambulatory Care Pharmacy Practice Resident*
Bryan Bowman, RPh – Clinical Pharmacist Renee Just, RD – Registered Dietitian Craig Stiens, Pharm.D. – Director of Pharmacy Services Bethanne Brown, Pharm.D., BCACP, NCTTP – Clinical Professor of Pharmacy Practice and Clinical Pharmacist

UAN: 0048-0000-2021-038-L04-P

Learning Objectives:

1. Describe the demographics and barriers present within Primary Health Solutions’ patient population(s).
2. Discuss the process of starting a new clinical pharmacy service within a Federally Qualified Health Center.
3. Review the ups and downs of the billing process for a new clinical pharmacy service.
4. Report best practices used and patient outcomes for a pharmacist-led chronic disease management service.

Purpose:
Studies have shown that when pharmacists perform medication therapy management (MTM) and are responsible for managing chronic disease states, there are positive outcomes.1-4 The purpose of this research is to determine clinical outcomes for patients who are managed by a pharmacist and dietitian in one federally qualified health center (FQHC) for the following targeted illnesses: diabetes (Hemoglobin A1c lowering), hypertension (improved blood pressure) and/or hyperlipidemia (improved LDL or appropriate statin dose). This study will focus on the outcomes related to diabetes (primary objective), but also examine the impact on hypertension and/or hyperlipidemia management (secondary objective(s)) by comparing lab values after the patient has seen the pharmacist/dietitian with those when they were solely being cared for by their primary care provider (PCP).

Methods:
This Investigational Review Board (IRB) approved, retrospective study from 9/1/20 to 5/1/21 examines the clinical outcomes of patients who participated in pharmacist/dietitian managed collaborative appointments. A provider would send a referral to the chronic disease management service due to a patient’s non-compliance or uncontrolled chronic disease(s). The pharmacist then contacted the patient to schedule an appointment. Each appointment was scheduled to last 60 minutes and was split between the two healthcare professionals, with the pharmacist billing the insurance provider for the time spent with the patient. At each visit, basic vital signs (weight, blood pressure, pulse, blood glucose), a comprehensive or targeted medication review was completed. At the end of the study, providers will also be surveyed to determine satisfaction with the service. To determine the primary and secondary objectives, reports from the electronic health record will be combined to assess the data points, analyze the information using a two sample t-test, and identify clinical benefit.

Results:
Data is currently being collected and analyzed.

Conclusions:
Results and conclusions will be presented at the 2021 Ohio Pharmacy Residency Conference.
A Retrospective Review of the Efficacy and Safety of Medication Management Following Transcatheter Aortic Valve Replacement (TAVR)

Leah Bruno, PharmD - PGY1 Pharmacy Resident Summa Health Akron Campus
Nicholas J Panno, PharmD, BCPS, AACC-Jessica Cather, PharmD, BCPS, BCPP-Peter Bittenbender, MD-Justin Dunn, MD-Michelle Michel, MSN, APRN-M David Gothard, MS

UAN: 0048-0000-2021-039-L01-P

Learning Objectives:
1. Outline the management of aortic stenosis and benefits of TAVR
2. Discuss the current pharmacologic treatment recommendations and risks for patients post-TAVR

Purpose:
Aortic stenosis is the most common form of valvular heart disease across the United States. Most patients are asymptomatic, but when symptomatology worsens, medications are not curative nor delay the progression of valvular disease. Intervention needs surface in the later phases of life, so less invasive strategies are beneficial. TAVR provides this through its minimally invasive approach and faster recovery time than surgical replacement. Limited literature exists comparing all antithrombotic options: single antiplatelet therapy (SAPT), dual antiplatelet therapy (DAPT), and oral anticoagulation (OAC). Dimensionless Index (DI), a marker of aortic stenosis severity, has not been studied with regards to pharmacologic management. The primary purpose of this study is to evaluate the change of DI in relation to postoperative antithrombotic therapy.

Methods:
This retrospective chart review evaluated TAVR recipients from December 24, 2014 to July 31, 2019. Merge Cardio was referenced for echocardiographic data not reported. Data collection occurred at index admission, day thirty, and at one year. The three treatment arms are SAPT, DAPT, and OAC with or without antiplatelet therapy. Descriptive statistics was utilized for demographic group comparisons and repeated measures analysis of variance for the primary outcome.

Results:
453 patients met study criteria with 102 patients prescribed SAPT, 292 DAPT, and 59 OAC. The mean baseline DI was 1.65 (SD 0.81), 1.70 (SD 0.68), and 1.65 (SD 0.67) for SAPT, DAPT, and OAC respectively. As a covariate, baseline DI was used for comparison at the follow-up periods. No differences were observed between the treatment arms (p=0.347). SAPT patients had mildly worse changes in DI, but not significantly via pairwise comparison to DAPT (p=0.213) or anticoagulation (p=0.214).

Conclusions:
Antithrombotic treatment strategies did not have a statistically significant influence on the change of DI post-TAVR at one year. Further investigation is warranted to evaluate their effect over a longer timeframe.
Epilepsy Clinic: A multidisciplinary model utilizing ambulatory pharmacy services in older adults

Carly Burns, PharmD, PGY2 Ambulatory Care Pharmacy Resident Detroit Medical Center
Rohit Marawar, M.D., FAES; Candice Garwood, Pharm.D., FCCP, BCPS, BCACP

UAN: 0048-0000-2021-040-L04-P

Learning Objectives:
1. Discuss medication adherence screening tools in epilepsy patients
2. Describe the pharmacists’ role in medication-related outcomes in an epilepsy clinic

Purpose:
The mainstay of treatment in epilepsy is antiepileptic drugs (AEDs). Nonadherence to AEDs is common among older adults and even higher among minorities with epilepsy. Nonadherence is often secondary to the development of adverse effects, as well as the presence of underlying psychiatric and neurologic conditions. There are limited publications describing multidisciplinary models including pharmacists caring for patients with epilepsy. This study evaluated patient outcomes related to a multidisciplinary team, including a pharmacist, providing care for older adults with epilepsy.

Methods:
This is a retrospective study of older adults 55 years of age and older with a diagnosis of epilepsy presenting to the multidisciplinary Epilepsy Clinic at an academic medical center. During the Epilepsy Clinic visit, the pharmacist performed medication reconciliation, assessed adherence using the Medication Adherence Rating Scale (MARS), and performed supportive care recommendations. A control group consisting of older adults who have not received pharmacist care were evaluated to compare the incidence of emergency department visits and hospital admissions three months post-clinic visit.

Results:
Study participants were primarily African American (81.2%) with a mean age of 63.6 + 8.0 years. In the pharmacist intervention arm, a medication reconciliation and adherence evaluation were performed in all patients. MARS was performed during 34 encounters with a mean score of 8.2 + 1.7. The pharmacist evaluated all patients for Beer’s Criteria medications; these medications were identified in 23.4% of encounters. The pharmacist also screened for and advised on the management of preventative therapies associated with AEDs. Additional analyses are currently being conducted; results and conclusions will be presented at the 2021 Ohio Pharmacy Resident Conference.

Conclusions:
Pharmacists in epilepsy clinics can improve medication adherence screening, medication reconciliation, and preventative care.
Pharmacy driven conversion from darbepoetin to epoetin alfa-epbx in an outpatient hemodialysis clinic

Dylan M Burns, PharmD, RPh
Emily A Ritchie, PharmD, RPh, BCPS; Karen L. Kiers, M.Sc, RPh, BCPS, BCACP, CTTS, FASHP

UAN: 0048-0000-2021-041-L01-P

Learning Objectives:

1. Review the 2012 KDIGO Clinical Practice Guidelines for Anemia
2. Discuss the observed benefits of switching to epoetin alfa-epbx for the treatment of anemia in hemodialysis patients

Purpose:
Hemodialysis patients often receive erythropoietin-stimulating agents (ESAs) as a part of their anemia management. Darbepoetin offers the convenience of once-weekly dosing at the expense of increased costs to a healthcare organization. Epoetin alfa-epbx, a biosimilar product to epoetin alfa, provides an opportunity to improve patient care while reducing organizational costs. Limited data is currently available regarding the conversion between darbepoetin and epoetin alfa-epbx. The purpose of this study was to assess hemoglobin management when converting from a darbepoetin-based protocol to an epoetin alfa-epbx-based protocol.

Methods:
We conducted a single-centered, prospective cohort study involving hemodialysis patients currently receiving darbepoetin. In November 2020, hemodialysis patients were transitioned to epoetin alfa-epbx utilizing an approximate one mcg darbepoetin to 250 units epoetin alfa-epbx conversion ratio. An updated anemia management protocol was created highlighting the appropriate uses of iron and ESA therapy, the updated target hemoglobin range (10-10.9 g/dL), and this conversion ratio. Patient were analyzed over a ten-month period starting in June 2020. The primary endpoint was defined as the proportion of hemoglobin levels within the target range. Key secondary outcomes included the monthly cost of ESA therapy and monthly iron usage per person.

Results:
Thirty-five hemodialysis patients were included in this study. The proportion of hemoglobin within the target range was not statistically different when comparing epoetin alfa-epbx to darbepoetin (26.75% vs 28.74%). Epoetin alfa-epbx was associated with a significant decrease in monthly cost when compared to darbepoetin ($26,116 vs $49,580). The monthly iron usage per person significantly increased following the implementation of the updated protocol (340 mg vs 284 mg).

Conclusions:
Compared to darbepoetin, epoetin alfa-epbx was not associated with a significant difference in the proportion of hemoglobin levels within the target range; however, epoetin alfa-epbx was associated with a significant reduction in monthly ESA cost.
Impact of a pharmacist-led pneumococcal polysaccharide vaccine (23-valent) immunization initiative

Stephanie Busick, PharmD
Michelle O’Brien, PharmD, BCACP; Anna Nelson, MD, MS; Jessica Tzou, MD

UAN: 0048-0000-2021-042-L06-P

Learning Objectives:

1. Identify eligible patients for the pneumococcal polysaccharide vaccine (23-valent)
2. Discuss the impact of a pharmacist-led initiative on pneumococcal polysaccharide vaccine (23-valent) immunization rates

Purpose:
Pneumococcal polysaccharide vaccine (23-valent) is indicated for the prevention of pneumococcal disease, caused by Streptococcus pneumoniae, in patients ≥ 2 years of age. A demographic often missed, yet indication for inoculation with pneumococcal polysaccharide vaccine (23-valent) is adults between the ages of 19-64 with conditions or lifestyle choices that are not considered immunocompromising including chronic heart disease, chronic liver disease, chronic lung disease, diabetes, alcoholism, and smoking. The purpose of this quality improvement project is to increase the immunization rate of this patient population, thereby improving health outcomes.

Methods:
Patients with a scheduled visit at a single-site family medicine center between 19-64 years of age, without a pneumococcal polysaccharide vaccine (23-valent) will be identified via a weekly report generated by the information technology department. Investigators will review each identified patient chart to assess if patient has a qualifying condition to receive the pneumococcal polysaccharide vaccine (23-valent). If eligible, the nurse and provider scheduled to see the patient will be notified. Nurse and/or provider will offer the vaccine at the patient visit and document in the electronic medical record if the patient received or denied the vaccine. Investigators will review the eligible patients charts at the end of the week and document the outcome in a spreadsheet. The goal vaccination rate for this project is 80%. Additionally, patient demographics including race, age, sex, indication for immunization, and insurance status will be recorded and analyzed to see if there is a specific demographic that is consistently missed.

Results:
To be presented at the 2021 Ohio Pharmacy Resident Conference.

Conclusions:
To be presented at the 2021 Ohio Pharmacy Resident Conference.
Learning Objectives:

1. Identify which patients are eligible to receive chronic care management services (CCM).
2. Describe how to implement and obtain monthly reimbursement incentives for CCM.

Purpose:
According to the Center for Disease Control, 133 million people in America have a chronic condition. Two-thirds of Medicare beneficiaries have two or more chronic conditions contributing to poor health outcomes and increased health costs. Chronic Care Management (CCM) has been recognized as a critical component in health-care delivery. Pharmacists at federally qualified health centers are in a position to provide CCM services, however, little is known about how to integrate CCM into the existing pharmacy workflow. The primary objective of this study is to describe the implementation of pharmacist-led CCM services to patients of a federally qualified health center.

Methods:
A stepwise approach will be utilized to develop and implement a pharmacist-led chronic care management service in an underserved health clinic. Implementation steps will include:
1. Identify eligible patients to participate in the CCM program
2. Identify soft-ware and tools to provide CCM services in a manner that can be easily integrated into the current pharmacy workflow to avoid workflow duplications
3. Train pharmacy staff on CCM requirements, including patient eligibility, documentation, and billing
4. Enroll eligible patients into the program
5. Run a pilot program to identify and provide solutions to any roadblocks that may arise during the course of running a CCM service.
6. Identify methods of reimbursement for CCM services

An electronic health record will be used to identify patients who meet the requirements for CCM enrollment. Outcomes assessed will include: number of drug therapy problems identified per CCM visit, average time spent by a pharmacist per CCM visit, number of CCM visits that occurred throughout the project, and challenges experienced during project implementation.

Results:
Final results will be presented at the Ohio Pharmacy Resident Conference

Conclusions:
Final conclusions will be presented at the Ohio Pharmacy Resident Conference
Impact of pharmacist education on prevention of medication order reconciliation errors

Kayla Christman, PharmD, PGY-1 Pharmacy Resident at University Hospitals St. John Medical Center
Lin Urquhart, PharmD, BCPS; Zachary Lavely-Planisek, PharmD, BCPS

UAN: 0048-0000-2021-044-L05-P

Learning Objectives:

1. Discuss the importance of transitions of care and accurate medication reconciliations
2. Identify techniques where pharmacy intervention can aid in accurately restarting patients' home medications

Purpose:

Transitions of Care is defined as the movement of a patient from one setting to another. Joint Commission has a National Patient Safety Goal which evaluates medication errors of omission, contraindications, and duplications. Studies show 60% of medication errors occur at a transition-of-care point. However, pharmacist-acquired medication histories result in significantly reduced medication discrepancies. In reference to a secondary outcome, in 2019 at University Hospitals St. John Medical Center, a therapeutic interchange was implemented for metered dose inhalers to nebulized medications. For example, a home fluticasone/salmeterol inhaler is converted to individual budesonide and formoterol nebulized solutions. Although this is a major cost savings for the institution, it is necessary to evaluate if medication errors occur upon discharge after the interchange implementation. The purpose of this study is to assess the benefits of providing pharmacist-based education to medical residents about the order reconciliation process and potential errors that may occur.

Methods:

This chart review will analyze the error rate when initiating home medications from the order reconciliation prior to and post implementation of pharmacist education to medical residents. Medical charts from the inpatient teaching service from December 2019 to February 2020 will be compared to December 2020 to February 2021. The two secondary outcomes are: 1) Number of high risk medication errors that were avoided (i.e. medications on the ISMP list), 2) Continuation of correct metered dose inhaler (MDI) upon discharge after the aerosol interchange. Both primary and secondary objectives will be evaluated using the Mann-Whitney U test statistical analyses. A minimum of 30 reconciliations are needed in each group to achieve a power of 90% with an alpha set at 0.05.

Results:

Final results will be presented at the Ohio Pharmacy Resident Conference

Conclusions:

Final conclusions will be presented at the Ohio Pharmacy Resident Conference
Evaluating outcomes of patients who received reversal for bleeding caused by alteplase in the setting of acute ischemic stroke (AIS)

Katherine Chuong, PharmD - PGY1 Pharmacy Resident at Beaumont Hospital, Troy
Alex Chaben, PharmD, BCCCP; Jennifer Pilotto, PharmD, BCPS

UAN: 0048-0000-2021-045-L01-P

Learning Objectives:
1. Discuss the safety and efficacy of strategies used today to reverse alteplase in AIS
2. Describe the outcomes of patients who received reversal versus those who did not receive reversal

Purpose:
Alteplase is a fibrinolytic agent that has proven benefit in improving neurological outcomes in AIS when used within 4.5 hours of symptoms onset and without contraindications. The major adverse effect of alteplase is bleeding, particularly intracranial hemorrhage. Alteplase does not have a specific reversal agent, thus all strategies to reverse alteplase-related bleeding are general reversal measures for any bleeding event and lack safety and efficacy data from large scale clinical trials. All reversal measures also pose unique indications and risks, and therefore a decision must be made on whether a bleed warrants reversal at all. The purpose of this study is to describe the methods currently utilized at our institution to reverse alteplase bleeding, and whether patients who received reversal had meaningfully different outcomes than patients who did not receive reversal.

Methods:
This single-center, retrospective chart review evaluated patients who received alteplase to treat acute ischemic stroke from January 1st 2019 to November 1st 2020. The primary outcome is to define the proportion of patients who bled on alteplase and received reversal, versus the patients who bled on alteplase and did not receive reversal. Our secondary outcome is to compare patient outcomes between these two groups, such as length of stay, intensive care unit (ICU) needs beyond 24 hours, risk factors for stroke and bleed, and rates of known adverse effects of the various reversal measures.

Results:
Results and conclusions will be presented at the Ohio Pharmacy Residency Conference.

Conclusions:
Results and conclusions will be presented at the Ohio Pharmacy Residency Conference.
Learning Objectives:

1. Recall evidence-based options for the management of analgesia related to geriatric acute fracture pain in an emergency setting.
2. Compare the efficacy and safety of opioid versus non-opioid analgesic agents when used first-line for the treatment of acute geriatric fracture pain.

Purpose:
Safe and effective acute pain management is essential to optimizing post-fracture outcomes in geriatric patients. While acute pain management warrants treatment based upon patient-reported pain scores, specific guidelines on the management of pain in geriatric patients are lacking. Aging patients present a unique challenge of optimizing analgesia while minimizing medication safety risks in a population at increased risk for adverse drug reactions. The objective of this research was to compare efficacy and safety profiles of analgesic agents in the treatment of acute fracture pain in patients over the age of 65.

Methods:
This study was a single-center, retrospective cohort study which included geriatric patients (age 65 and older) who presented to the emergency department for management of acute fracture from January 2020 through January 2021. Patients were stratified as either receiving multimodal or single-agent analgesia, and matched based upon fracture type and age range (young old age 65-74, middle old 75-84, and oldest old 85 and older). The primary outcome was to evaluate the reduction in patient-reported pain scores pre- and post-opioid versus non-opioid first-line analgesia. Additional outcomes included changes in pain scores between single agent and multimodal analgesia, the need for repeated administration of analgesic agents based on agent and fracture type, efficacy of analgesic class by fracture type, and adverse events in the geriatric population. It was hypothesized that there is a difference in pain reduction in geriatric patients with fractures treated with opioid versus non-opioid therapy.

Results:
Data collection and analysis currently in process. Final results will be presented at the 2021 Ohio Pharmacy Residency Conference.

Conclusions:
Final results and conclusions will be presented at the 2021 Ohio Pharmacy Residency Conference.
The Evaluation of Mandatory Alerts on Long-Acting Opioid Prescriptions and the Use of a Community Pharmacy Naloxone Protocol

Ranelle P. Coffman, PharmD* – PGY1 Community-Based Resident at Kroger Health and the University of Cincinnati Ashley Johnson, PharmD, BCACP; Stacey Frede, PharmD, BCACP, CDE; Michael Pleiman, PharmD, CDE; Katelyn Johnson, PharmD, MS, BCACP

UAN: 0048-0000-2021-047-L08-P

Learning Objectives:
1. Discuss the importance of naloxone therapy and physician-approved protocols in a large community pharmacy chain
2. Describe the impact of mandatory alerts on the dispensing of naloxone using a physician-approved protocol

Purpose:
Previous studies on physician-approved naloxone protocols have shown that these protocols are effective, needed, and frequently underused, but no previous study has evaluated the effect mandatory alerts have on the use of these protocols and the dispensing of naloxone. The purpose of this study was to determine the impact of mandatory alerts on the dispensing of naloxone by pharmacists using a physician-approved protocol. The objectives of this study were to measure 1) the percentage change in the number of dispensed naloxone prescriptions and 2) the pharmacists’ knowledge and confidence dispensing naloxone per protocol.

Methods:
This study was conducted at five pharmacies within one regional division of a large community chain between June 1st to July 31st, 2020. Prior to implementation, participating pharmacists electronically completed a survey regarding their knowledge and confidence dispensing naloxone using a five-point Likert scale. A technology enhancement was completed to create a mandatory alert in the electronic dispensing system for all patients who received long-acting opioid medication(s). During the intervention, the pharmacist engaged with the patient, determined the appropriateness of naloxone, educated the patient on naloxone, and dispensed naloxone if patient agreed. After the interaction, pharmacists documented the intervention and successful dispensing of naloxone, if applicable. Following implementation, pharmacists completed a post-survey. Descriptive statistics were used to analyze the effect of the mandatory alerts on the percentage change in the number of dispensed naloxone prescriptions compared to the year prior as well as any change in pharmacists’ knowledge and confidence dispensing naloxone via a physician-approved protocol.

Results:
Final results will be presented at the Ohio Pharmacy Residency Conference.

Conclusions:
Final conclusions will be presented at the Ohio Pharmacy Residency Conference.
Perceptions and barriers to the annual influenza vaccine as compared with the COVID-19 vaccine in an urban underserved population

Janessa Cohrs, PharmD, PGY1 Community Care Pharmacy Practice Resident at The Ohio State University College of Pharmacy and The Charitable Pharmacy of Central Ohio
Jay Mirtallo, MS, RPh, BCNSP, FASHP; Jennifer Seifert, MS, RPh, BCGP; Sarah Jones, PharmD; Ashley Erdmann, PharmD; Junan Li, PhD

UAN: 0048-0000-2021-048-L06-P

Learning Objectives:
1. Describe the importance of understanding patients’ perceptions and barriers to vaccination
2. Identify an underserved population at a charitable pharmacy’s perceptions and barriers to vaccination

Purpose:
For a vaccine to be successful, it must not only pass rigorous safety and efficacy standards throughout laboratory tests and clinical trials, but the wider community must also perceive it as important, safe, effective, and necessary. However, there are many complex, multifactorial barriers and hesitancies to vaccination including (but not limited to) concerns about vaccine side effects, safety, efficacy, and necessity; societal and peer influences; lack of education and understanding; needle fears; and mistrust of the healthcare system. Specific challenges for underserved patient populations can be related to access and cost of vaccines. Since community pharmacists improve vaccine access and increase vaccination rates, it is beneficial for pharmacists to understand perceptions and barriers to vaccinations in their community to increase vaccine rates and ensure widespread uptake.

This observational cross-sectional study aims to assess and compare barriers and perceptions of the annual influenza to the COVID-19 vaccine for underserved patients of a charitable pharmacy that serves an urban population with income at or below 200% of the federal poverty level in central Ohio.

Methods:
To conduct this study, all patients who qualify to receive medications from an outpatient charitable pharmacy who speak English or Spanish had the opportunity to take an electronic survey on an iPad while at the pharmacy or on a personal electronic device. The survey incorporated questions developed by the World Health Organization’s Strategic Advisory Group of Experts on Vaccine Hesitancy on a 5-point Likert scale. Questions about the influenza and COVID-19 vaccines mirrored one another to maintain consistency in responses and analysis. Demographic data such as age, race, sex, insurance status, education level, and U.S. citizenship/residency status were also collected in the survey.

Results:
Research in progress. To be presented at the 2021 Ohio Pharmacy Resident Conference.

Conclusions:
To be presented at the 2021 Ohio Pharmacy Resident Conference.
Mobile Health Use by Undeserved Patients with Type 2 Diabetes across Urban Supermarket-Based Community Pharmacies

Max Conrad, PharmD - PGY1/MS Community-Based Pharmacy Administration Resident; OSU College of Pharmacy, Kroger Health
Bella Mehta, PharmD, FAPhA; Erin Blank, PharmD; Louise Faiella, PharmD; Victoria Swick, PharmD; Jignasha Patel, PharmD; Junan Li, PhD, MS

UAN: 0048-0000-2021-049-L04-P

Learning Objectives:

1. To determine the number of undeserved patients with type 2 diabetes who are using mobile health applications for nutritional support
2. To determine access to mobile devices for underserved patients with type 2 diabetes
3. To determine the types of applications used by undeserved patients with type 2 diabetes for nutritional support

Purpose:
Mobile health (mHealth) technology has shown to be effective in achieving many positive health-related outcomes in underserved patients, such as adherence and health literacy. For underserved patients with type 2 diabetes, mHealth applications have potential to positively impact their nutrition. Community pharmacy teams utilizing mHealth technology may gain information and perspective related to a patient’s eating habits and health goals. This information may allow patients and pharmacy teams to make more well-informed decisions related to their patient’s condition.

Methods:
This study will survey patients receiving medication from two chain supermarket-based community pharmacies located in underserved urban areas. Survey participants will be pre-identified based on reports detecting patients who have filled medications in the past 90 days for the treatment of type 2 diabetes at participating stores. Specific medications identified include metformin, GLP-1 agonists, SGLT2 inhibitors, long- and short-acting insulins, and sulfonylureas. Patients consenting to participate will complete a 21-question survey assessing their demographic information, use of mobile technology, as well as use of, access to, and types of mobile health applications they use for nutritional support. Survey results will be collected over the course of three weeks in spring 2021. Surveys will be stored in a secure cabinet following completion and analyzed by a biostatistician following collection.

Results:
Research is in progress. Results will include the number of survey participants using mHealth applications for nutritional support, the percentage of patients with access to mobile devices, and analysis of the types of mobile health devices used for nutritional support.

Conclusions:
Analysis of the study findings will aid in projecting utilization of mHealth technology and mHealth applications in underserved patients with type 2 diabetes. Community pharmacy teams can use collected types of mHealth applications to leverage specific mHealth applications for nutritional support in the studied patient population.
Impact of pharmacist-driven glucose management for type 2 diabetes in the acute care setting

Paige R. Cornett*, Pharm.D., PGY1 Resident, UC Health – West Chester Hospital
Suzanne L. Van Fleet, Pharm.D., BCCCP; Hanna B. Earich, Pharm.D.; Marcie A. Malone, Pharm.D.

UAN: 0048-0000-2021-050-L01-P

Learning Objectives:
1. Review current guideline recommendations regarding the use of insulin in hospitalized patients
2. Describe available literature regarding the impact of pharmacist interventions in glycemic management for hospitalized patients

Purpose:
Pharmacist glycemic management interventions in hospitalized patients have been shown to increase adherence to guideline-directed basal-bolus insulin regimens. The purpose of this research project is to analyze outcomes of a pharmacist-driven glycemic management pilot. Upon study completion, the impact of this pilot on glycemic metrics, along with the sustainability of this service within UC Health – West Chester Hospital, will be assessed.

Methods:
This single center, retrospective chart review was completed at an academic-affiliated community hospital. The pharmacy department recently completed a pharmacist-driven glycemic management consult service two month pilot. This service was available by request to all UC Health hospitalists for type 2 diabetic patients on a medical-surgical floor. Pharmacists managed insulin therapy for consulted patients based on a pilot-specific basal/bolus/correction guideline. The primary endpoint was to compare hyperglycemic patient days, defined as days with ≥1 blood glucose reading &gt;180 mg/dL, pre- and post-implementation of the pilot. Secondary outcomes include hypoglycemic days, median blood sugar for hyper- and hypoglycemic days, average correction insulin usage, incidence of diabetic ketoacidosis (DKA) or hyperglycemic hyperosmolar state (HHS), hospital length of stay, and readmission rates.

Results:
Forty nine patients were included in the pre-intervention group, consisting of 286 total patient days. Hyperglycemia and hypoglycemia occurred in 199 (69.6%) and 13 (4.5%) of patient days in the pre-group, respectively. The median blood sugar for hyper- and hypoglycemic days was 186 mg/dL and 109 mg/dL, respectively. The median amount of correction insulin used per day was 3 units. In the pre-group, no patients developed either DKA or HHS during admission. The median length of stay was 6.2 days. Diabetes-related 30-day readmissions occurred in zero patients. Final results for post-intervention group will be presented at the Ohio Pharmacy Residency Conference.

Conclusions:
Final results and conclusions will be presented at the Ohio Pharmacy Residency Conference.
Pharmacist Management of Positive Culture Results at Discharge

Monica E. Coupe, PharmD; PGY1/MS Health System Pharmacy Administration and Leadership Resident, OhioHealth Grant Medical Center
Paul Miller, PharmD, BCPS

UAN: 0048-0000-2021-051-L01-P

Learning Objectives:
1. Describe potential patient care outcomes using collaborative practice agreements
2. Explain the impact of pharmacists managing culture results at discharge from emergency departments

Purpose:
When patients present with an infectious etiology, but do not require hospital admission, the reports of microbial cultures are frequently received after the patient has been discharged from the emergency department. Various healthcare personnel including physicians, nurses, and pharmacists can review these cultures and recommend the best antimicrobial therapy. With the recent emergence of collaborative practice agreements, a pharmacist can directly interpret the cultures, sensitivities, and patient information to independently manage antibiotic therapies. This study seeks to determine if pharmacist management of culture results after discharge through a collaborative practice agreement is superior to pharmacist-physician collaboration or to nurse-physician collaboration.

Methods:
This retrospective and prospective study compares percentages of appropriately managed positive culture results at discharge from freestanding emergency departments. Three standards of care regarding follow-up of culture results were evaluated and compared. A collaborative practice agreement and antibiotic treatment algorithm were created with physician and pharmacist collaboration. Appropriate disease state management is defined by the treatment algorithm.

Results:
Final results will be presented at the Ohio Pharmacy Residency Conference.

Conclusions:
Final results and conclusions will be presented at the Ohio Pharmacy Residency Conference.
Scheduled Acetaminophen and Concomitant Opioid Use in the Acute Inpatient Setting

*Morgan C. Cutting, PharmD- University of Toledo Medical Center
Keith M. Riley, PharmD, BCPS

UAN: 0048-0000-2021-052-L08-P

Learning Objectives:

1. Discuss the impact of scheduled acetaminophen on opioid use in the acute inpatient setting
2. Describe the use of common analgesic medications in the acute inpatient setting

Purpose:
Many published studies have evaluated risk factors for opioid dependence but methods to reduce and minimize the use of unnecessary opioid analgesics in the inpatient setting still remains limited. Currently at the University of Toledo Medical Center (UTMC), it is unclear if scheduled acetaminophen can be used to help decrease opioid use. In the acute inpatient setting, we want to optimize pain management without the use of additional unnecessary opioid analgesics. If our research demonstrates that pain control can be achieved through use of a multimodal approach including scheduled oral acetaminophen, we can reduce the use of excessive opioid analgesia. The purpose of this study is to determine if scheduled acetaminophen can be used to optimize opioid analgesics (in morphine equivalents) needed to treat pain in the acute inpatient setting.

Methods:
IRB-approved, single-center retrospective cohort including adult patients 18 years or older admitted to UTMC between January 1, 2019 and June 30, 2020 who received at least one dose of analgesic medication. Patients were excluded if patient had confirmed pregnancy, if patient was less than 18 years of age. The primary outcome was to determine if scheduled acetaminophen reduces the average amount of opioids (in morphine equivalents) during a patient's hospital stay. Secondary endpoints include comparing the number of opioids on discharge medication reconciliation, determining difference in rates of naloxone use in patients with scheduled acetaminophen versus traditional analgesia, determine if scheduled acetaminophen results in increased pain scores vs traditional opioid analgesia.

Results:
Pending, to be presented at OPRC meeting

Conclusions:
Pending, to be presented at OPRC meeting
Retrospective Evaluation of Direct Oral Anticoagulant Use in Obesity for Treatment of Acute Venous Thromboembolism

Jonathan Czyzewski, PharmD - Kettering Medical Center
Kin Chan PharmD. BCPS, Elizabeth Jacob PharmD., BCPS, Aleda Chen PharmD., PhD.

UAN: 0048-0000-2021-053-L01-P

Learning Objectives:

1. State the 2016 International Society on Thrombosis and Hemostasis (ISTH) recommendation for the use of direct oral anticoagulants in obesity.
2. Define pharmacokinetic changes in obesity.

Purpose:
The 2016 ISTH guidelines recommend against the use of direct acting oral anticoagulants (DOAC) in patients who weigh more than 120 kg or have a body mass index (BMI) greater than 40 kg/m². The same guidelines cite pharmacokinetic data that shows reduced exposure in patients with obesity, and the original approval studies are inconsistent with weight categories. The objective of this study was to examine the incidence of recurrent venous thromboembolism (VTE) in patients prescribed apixaban or rivaroxaban with a BMI greater than 40 kg/m² at Kettering Health Network (KHN).

Methods:
This study was a retrospective chart review of patients who were prescribed apixaban and rivaroxaban to treat acute VTE. Included patients had a BMI greater than 40 kg/m² and were prescribed starting doses of apixaban or rivaroxaban to treat VTE. Excluded patients included those with a CrCl less than 30 mL/min on rivaroxaban or 25 mL/min on apixaban, patients with active malignancy, patients with a platelet count less than 50,000 or patient with another indication for anticoagulation. The primary outcome was recurrent VTE within 6 months of the initiation of apixaban or rivaroxaban. Secondary outcomes were the composite incidence of recurrent VTE and major bleeding within 6 months.

Results:
For the primary outcome, it was found that 4.7% experienced a VTE event. No major bleeding events occurred in the study. The average length of stay for patients with recurrent VTE was 4.3 days.

Conclusions:
This study adds to the body of evidence that apixaban and rivaroxaban are effective in patients who weigh more than 120 kg or have a body mass index greater than 40 kg/m² for the treatment of VTE.
Assessment of supplemental insulin use for hospitalized patients with type 2 diabetes mellitus receiving systemic corticosteroids

Banibrata Das, PharmD, Ph.D. – PGY1 Pharmacy Resident, ProMedica Toledo Hospital/Russell J. Ebeid Children’s Hospital
Sarah E. Petite, PharmD, BCPS, The University of Toledo College of Pharmacy and Pharmaceutical Sciences; Julie A. Murphy, PharmD. FASHP, FCCP, BCPS, The University of Toledo College of Pharmacy and Pharmaceutical Sciences

UAN: 0048-0000-2021-054-L01-P

Learning Objectives:
1. Compare the relationship between the pharmacokinetics of different insulin types and corticosteroid dosing regimens
2. Evaluate guideline recommended use of supplemental insulin in hospitalized patients receiving systemic corticosteroids

Purpose:
In 2020, the American Diabetes Association (ADA) recommended Neutral Protamine Hagedorn (NPH) insulin to manage hyperglycemia induced by once daily short-acting systemic corticosteroids and insulin glargine for long-acting corticosteroids or multiple-daily dose corticosteroid use. The purpose of this project was to assess appropriate versus inappropriate use of supplemental insulin in non-critically ill hospitalized patients with type 2 diabetes mellitus (T2DM) who received systemic corticosteroid therapy for management of exacerbations of chronic obstructive pulmonary disease (COPD) and asthma.

Methods:
This IRB-approved retrospective cohort study was conducted in adult patients with T2DM hospitalized for acute exacerbation of asthma or COPD who had received systemic corticosteroid ≥10 mg prednisone equivalents and insulin for at least three days. Patients were included in the appropriate group if NPH insulin was used to manage hyperglycemia induced by once daily short-acting systemic corticosteroids or insulin glargine was used for long-acting corticosteroids or multiple-daily dose corticosteroid use. Any deviation from this was considered as inappropriate. The primary outcome was the difference in hospital length of stay (LOS). Key secondary outcomes were difference in point of care (POC) blood glucose (BG) levels and median supplemental insulin doses between the two groups.

Results:
Sixty-five patients were in each group. Baseline characteristics were similar except for HbA1c values (7.9% vs. 6.8%; p = 0.002) between appropriate and inappropriate groups, respectively. There was no difference in hospital LOS (median [IQR], 4.5 [2] vs. 4.0 [2.7] days, p = 0.477). POC BG levels were significantly higher (median [IQR], 288 [89] vs. 231 [100] mg/dL, p < 0.001) in the appropriate group requiring higher supplemental insulin doses (median [IQR], 66 [56] vs. 12 [26] units, p = 0.004).

Conclusions:
No difference in hospital LOS was observed between appropriate and inappropriate supplemental insulin use groups. Systemic corticosteroid-induced hyperglycemia was poorly controlled in both cohorts.
Improving the Compliance to a Nurse Driven Heparin Protocol Through Effective Education

Rachel Davis, PharmD - Mount Carmel Health System
Gina Gelonese, PharmD; Katrina Reynolds, PharmD; Theresa Strong, PharmD

UAN: 0048-0000-2021-055-L01-P

Learning Objectives:

1. Describe the importance of accurate management of a patient on a heparin infusion.
2. Understand the parameters used to assess compliance to the heparin protocol.
3. Analyze the compliance to the heparin protocol before and after a nurse education.
4. Discuss the results of the primary outcome focusing on their representation of our current practice.

Purpose:
The Institute for Safe Medication Practices has deemed heparin a high-risk medication due to its dynamic pharmacokinetics and high risk of bleeding. Careful monitoring of PTT levels is imperative for both safety and effectiveness. The purpose of this study is to provide an effective education to improve nurse compliance to the nurse driven heparin protocol, therefore, improving both safety and effectiveness.

Methods:
The primary outcome, compliance to the nurse driven heparin protocol, was assessed through a retrospective chart review. A list of patients on a heparin infusion for at least 24 hours was obtained from the electronic medical record system at three Mount Carmel Health facilities. The following data will be collected from patient charts: time in which the PTT level is drawn, PTT value obtained, changes in rate of the heparin infusion, baseline characteristics and safety outcomes. The primary outcome will be assessed for statistical significance between patients on a heparin infusion before the education and those after the education.

Results:
Outcomes were assessed in 76 patients prior to the nurse education and 66 patients after the nurse education. Baseline characteristics including sex, age, BMI, baseline PTT level and chronic use of an anticoagulant were similar between the two groups. Obtainment of the PTT level within 1 hour of the correct time as determined by the heparin nomogram occurred 73.1% of the time prior to the education and 75.3 % of the time after the education (p=0.6108). Titration of the heparin infusion occurred within 1 hour of the PTT value resulting 42.3% of the time prior to the education and 49.6% of the time after the education (p values 0.0218). Finally, the dose was correctly adjusted based on the heparin nomogram 83.1% prior to the education and 92.7% of the time after the education (p value.)

Conclusions:
There was a statistically significant increase in two of the three primary outcomes. The heparin infusion being titrated within 1 hour of the PTT level resulting and the correct adjustment in the infusion rate showed a statistically significant improvement after the education. No difference was seen in obtaining the PTT levels at the correct times. The lack of statistical significance in one of the three primary outcomes is likely due to multiple confounding variables out of researcher control, including, the nursing staff having to take care of multiple patients. Due to the risk associated with heparin and statistically significant improvement in two of the three primary outcomes, management of a patient on a heparin infusion should be a vital party of nurse education.
Cost-benefit analysis of penicillin allergy skin testing in an inpatient community hospital setting

Nicholas DePeel, PharmD - Mercy Health - Fairfield Hospital
Andrea Seeger, PharmD - Mercy Health - Fairfield Hospital

UAN: 0048-0000-2021-056-L04-P

Learning Objectives:

1. Describe the process and clinical benefit of penicillin allergy skin testing (PST).
2. Identify potential barriers to implementing PST in the in-patient setting.

Purpose:
Roughly 10% of patients in the United States have a documented allergy to penicillins, making it one of the most commonly reported drug allergies in the country. Alternative antibiotics are often more expensive to the patient and healthcare system, promote the development of broadly resistant pathogens, and increase the risk of serious adverse events. There is evidence to suggest that after a period of 10 years approximately 90% of patients will not have systemic allergic reactions when exposed to penicillins. One of the safest and most reliable methods to evaluate the risk of a patient developing an allergic reaction to penicillins is with PST. This study aims to evaluate the practicality and cost savings potential of pharmacist-driven PST in an inpatient, community hospital setting.

Methods:
This was an IRB-approved prospective study that evaluated the cost savings associated with PST for patients identified as appropriate PST candidates from October 1, 2020 through March 12, 2021. Forty-five patients were identified as candidates and were interviewed to evaluate the reported allergy and to obtain consent to enroll in the study. Nine patients were enrolled in the study and followed through with testing. Estimates of cost savings were based on acquisition costs and the cost of test supplies. Estimates of patient cost savings were based on patient charges.

Results:
Through the administration of nine skin tests, our health system directly lost $1,017.05 when accounting for the cost of the test components. The direct patient cost savings to patients was $6,669.00 excluding the cost of the test, which was free for the purposes of the study.

Conclusions:
To be presented at the 2021 Ohio Pharmacy Resident Conference.
Impact of pharmacy students integrated in a university-based COVID-19 task force

Eric Dierkes, PharmD, CTTS
Michael Rush, PharmD, MBA, BCACP, CDE/CDCES, NCTTP  Karen L. Kier, Ph.D., M.Sc., R.Ph., BCPS, BCACP, CTTS, FASHP, FCCP

UAN: 0048-0000-2021-057-L04-P

Learning Objectives:

1. Describe the impact student pharmacists had on patient satisfaction in COVID-19 surveillance and vaccinations
2. Review the overall impact that working on a COVID-19 task force had our pharmacy students’ qualify of life and career goals

Purpose:
The goal of this initiative is to understand how a COVID-19 task force primarily staffed by student pharmacists has affected patient satisfaction and intern quality of life and career goals. Throughout the pandemic, our student interns have maintained a steady role in our COVID-19 testing protocols as well as our vaccination initiative. Our goal is to evaluate the effectiveness of our student interns in terms of satisfaction from those who have been tested and vaccinated. In addition, evaluation of the student interns’ reflection of their roles and the impact their position has had on their future career as a pharmacist will be assessed.

Methods:
Ohio Northern University utilizes pharmacy interns for the COVID-19 task force in both surveillance testing and vaccinations initiatives. To combat the spread of COVID-19 at Ohio Northern University, surveillance and symptomatic testing was offered each weekday. To adequately satisfy the testing load of 3% of the campus population, symptomatic individuals, and 15 NCAA Division III athletic teams, student interns were tasked with all nasal sample collection after being trained by current pharmacy residents. For vaccination support, the interns would lead the patient through the vaccine administration record form as well as administer and bill each vaccination at the HealthWise pharmacy. To assess patient satisfaction, a survey will be sent out to each patient at ONU via a Google form. The Delphi technique will be utilized to facilitate a focus group discussion answering a list of ten questions revolving around quality of life and career goals after being a pharmacy intern on the COVID-19 task force. Content analysis will be used to categorize the themes with the focus group results.

Results:
Final results to be presented at Ohio Pharmacy Residency Showcase.

Conclusions:
Final results and conclusions to be presented at Ohio Pharmacy Residency Showcase.
Learning Objectives:

1. Review key guideline recommendations related to Chronic obstructive pulmonary disease (COPD) management
2. Review Centers for Medicare and Medicaid Services (CMS) criteria related to COPD management
3. Discuss findings related to the management of COPD in the Summa Health Internal Medicine Center

Purpose:
Chronic obstructive pulmonary disease (COPD) is associated with significant morbidity and mortality. The Centers for Medicare and Medicaid Services (CMS) has criteria for service reimbursement based on COPD guidelines which highlight the importance of an inhaled long-acting bronchodilator, tobacco cessation counseling, appropriate vaccinations, and hospital readmission. The purpose of this quality improvement project is to characterize compliance with CMS criteria and guideline recommendations within Summa Health’s Internal Medicine Center (IMC).

Methods:
Data was collected through retrospective chart review. Included patients had COPD and were seen in the IMC January–June 2019. Data collected included COPD hospitalizations, smoking history, COPD pharmacotherapy, pulmonology referral, PFTs, and immunizations. Descriptive statistics were calculated and Pearson chi-square test was used to compare groups.

Results:
Two hundred and six patients were included with 56.3% female and an average age of 61 years. Patients prescribed a long-acting bronchodilator (76%) were significantly more likely to have been referred to pulmonology than those who did not have a prescription (55.4% vs 29.3%, p=0.001). There was no association between hospitalization for COPD and prescription of long-acting bronchodilator (p=0.561). Seventy-two percent of patients had completed PFTs, 68% of whom had an FEV1/FVC ratio of 70% or less. Rates of recommended vaccinations were: 76% (Pneumovax23 prior to age 65); 61% (Pneumovax23 after age 65); 80% (Prevnar13); 75% (current TDaP); and 72% (current influenza). The majority of patients had a history of smoking, of whom 57% (n=114) were still smoking. Forty-two active smokers (37%) were prescribed smoking cessation pharmacotherapy with the majority receiving nicotine replacement therapy.

Conclusions:
A majority of patients with COPD were prescribed a long-acting bronchodilator and received appropriate vaccinations. Less than half of participants had a definitive diagnosis of COPD based on spirometry. New initiatives in the clinic should focus on obtaining current PFTs, smoking cessation appointments, and appropriate inhaler selection and teaching.
Impact of Antibiotic Time-Out in An Intensive Care Unit

Natalia Dziadosz, PharmD, PGY-1 Pharmacy Resident, Cleveland Clinic Mercy Hospital
Rachael Craft, PharmD, BCIDP; Matthew Reale, PharmD, BCCCP

UAN: 0048-0000-2021-059-L01-P

Learning Objectives:

1. Review the Core Elements of Hospital Antibiotic Stewardship Programs per the Centers of Disease Control and Prevention (CDC)
2. Discuss impact of pharmacist-led antibiotic time out

Purpose:
Antibiotic resistance continues to grow in the United States, with costs upwards of 21 billion dollars per year. Furthermore, multidrug resistance (MDR) organisms causing over 35,000 deaths annually. To improve antibiotic prescribing in a hospital setting, the Centers for Disease Control and Prevention, Joint Commission, and Infectious Disease Society of America (IDSA) recommend the implementation of antibiotic time-outs (ATO) after 48 hours. The purpose of this study will be to institute an ATO in order to evaluate appropriateness of antibiotic therapy.

Methods:
This quasi-experimental study aims to assess the impact of an ATO on utilization of targeted antibiotics (vancomycin, piperacillin-tazobactam, ampicillin-sulbactam, ceftriaxone, metronidazole, azithromycin, carbapenem). Recommendations made during ATO will be evidence based. Interventions will focus on common sources of infection including aspiration pneumonia, community acquired pneumonia, hospital acquired pneumonia, urinary tract infection, asymptomatic bacteriuria, and skin and soft tissue infections. The primary outcome of the study is antimicrobial treatment duration. Secondary outcome includes average duration of empiric antimicrobial treatment post-implementation of ATO and incidence of de-escalation of broad-spectrum antibiotics. Demographic data to be collected will include age, sex, height and weight. Clinical data including admitting diagnosis, source of infection, white blood cell count, temperature, creatinine/creatinine clearance, procalcitonin, culture data, initial antibiotic started, duration of treatment, and length of stay will be recorded as well. Data collected from patients during March-May 2020 will be retrospectively compared with patients during October-December 2020 when ATO will be implemented. Inclusion criteria will be patients admitted to the Intensive Care Unit with an intensivist consult. Exclusion criteria will be any patient with Infectious Disease consult, pregnant patients and patients under 18 years old. Data will be analyzed with appropriate statistical tests..

Results:
Final results to be presented at the Ohio Pharmacy Residency Conference.

Conclusions:
Final conclusions to be presented at the Ohio Pharmacy Resident Conference.
How salty is too salty: Evaluating the safety and efficacy of hypertonic saline

Heba El-Ghoroury, PharmD – PGY2 Critical Care Resident at Mercy Health St. Vincent Medical Center
Rachel Leis, PharmD, BCPS, BCCCP; Alison Paplaskas, PharmD, BCCCP

UAN: 0048-0000-2021-060-L01-P

Learning Objectives:

1. Review the current literature assessing the safety and efficacy of different concentrations of hypertonic saline in hyponatremia and cerebral edema patients
2. Describe the use of hypertonic saline and the incidence of side effects at an academic level 1 trauma center

Purpose:

Hypertonic saline has proven to be beneficial in treating hyponatremia and cerebral edema. However, there is a lack of guidance in the literature regarding the use of specific concentrations. This study was designed to assess the safety and efficacy of 2%, 3%, and 23.4% sodium chloride at an academic level 1 trauma center.

Methods:

This retrospective, single-center study evaluated patient data from January 1, 2017 through December 31, 2019. Adult patients were eligible if they received 2%, 3%, or 23.4% sodium chloride and were administered the hypertonic saline therapy for at least 24 hours with at least 4 serum sodium levels. Patients were excluded if they were pregnant, incarcerated, dialysis dependent, developmentally delayed, or a transfer. The primary outcome examined the incidence of hypernatremia 24 hours after initiation of hypertonic saline defined as > 10-12 mEq/L increase in sodium for hyponatremic patients or sodium > 155 mEq/L in cerebral edema patients. Secondary outcomes included the incidence of hyperchloremia, hypokalemia, and acute kidney injury (AKI). Other secondary outcomes included incidence of thrombophlebitis, extravasation, seizures, or osmotic demyelinating syndrome.

Results:

Ninety-seven patients were included in this study. Forty patients (41%) received 2%, fifty-four patients (56%) received 3%, and three patients (3%) received 23.4% sodium chloride. All patients received hypertonic saline for cerebral edema. Six patients (6%) experienced hypernatremia within 24 hours of hypertonic saline initiation. Seventy-one patients (73%) were hyperchloremic, two patients (2%) were hypokalemic, and no patients had an AKI within 72 hours of hypertonic saline initiation. No patients experienced thrombophlebitis, extravasation, seizures, or osmotic demyelinating syndrome.

Conclusions:

At an academic level 1 trauma center, patients received 2%, 3%, or 23.4% sodium chloride for cerebral edema. While hypertonic saline therapy use in this study has been shown to be appropriate and generally safe, hyperchloremia did occur in most patients.
Evaluating the impact of adding indications of use to inpatient antimicrobial orders

Emily Enslen, PharmD – PGY1 Pharmacy Practice Resident with The Jewish Hospital – Bon Secours Mercy Health
Joshua P Crawford, PharmD, BCPS

UAN: No Continuing Education for this Program

Learning Objectives:
1. Discuss causes of antimicrobial resistance and the impact on healthcare costs and outcomes.
2. Review recent literature relevant to the addition of indications to antimicrobial orders.

Purpose:
Mandatory antimicrobial indication inclusion was implemented at The Jewish Hospital (TJH) for all antimicrobial orders on September 22, 2020. TJH has an established Renal Dosing Program in order to give pharmacists the ability to adjust doses of pre-approved medications based on renal function. Antimicrobials were added to the list of approved medications in 2016, and the pharmacy team became practiced in searching the electronic medical record (EMR) to identify an indication when possible. This study evaluated the impact on antimicrobial therapy when indication for use is included in antimicrobial orders at TJH.

Methods:
This was a retrospective study of adult patients admitted to TJH who received antimicrobial treatment within 24 hours of presentation. To better compare practice before required indication selection (pre-implementation), data from October of 2015 was used, before pharmacists were able to exercise clinical judgement in adjusting antimicrobial dosing. This was compared to data from October of 2020 (post-implementation) to determine the impact of this intervention. Data was collected from the EMR of patients receiving care from inpatient units or the emergency department at TJH. Orders were randomly selected, and a retrospective chart review was performed to evaluate outcomes for five commonly prescribed antibiotics (cefepime, levofloxacin, meropenem, piperacillin-tazobactam, and vancomycin). Accuracy of the orders was determined by referencing most recent Infectious Disease Society of America guidelines and through utilization of an online drug information database. Secondary outcomes include duration of therapy, pharmacist interventions, and accuracy of the selected indication (post-implementation group only). Data between groups will be compared using chi-square and sample t-tests.

Results:
Data analysis is currently being conducted.

Conclusions:
Results and conclusions will be presented at the Ohio Pharmacy Residency Conference.
Evaluating pharmacy student perception and understanding of social determinants of health in an interprofessional community-based practice

Ashley Erdmann, PharmD - PGY1 Community Care Pharmacy Practice Resident with The Ohio State University College of Pharmacy and The Charitable Pharmacy of Central Ohio
Jay Mirtallo, MS, RPh, BCNSP, FASHP; Jennifer Seifert, MS, RPh, BCGP; Bethany Collier, LSW, CPhT; Katherine Kelley, PhD; Sarah Jones, PharmD; Janessa Cohrs, PharmD; Junan Li, PhD

UAN: 0048-0000-2021-061-L04-P

Learning Objectives:

1. Analyze students’ perceptions of their pharmacy school curriculum on their preparedness to address social determinants of health
2. Describe the importance that an advanced pharmacy practice experience (APPE) rotation in an underserved setting has on enhancing students’ perception to their preparedness to address social determinants of health in a clinical setting

Purpose:
Social Determinants of Health (SDOH) are factors outside of clinical decisions and personal behaviors that affect a patient’s health and quality-of-life. These factors include age, cultural background, income, transportation, education, and place of residence. Underserved populations, defined as populations with incomes below 200% of the federal poverty level, are more likely to experience poor health outcomes. The ability to understand and address the SDOH is paramount to provide every patient with high-quality, accessible healthcare.

At this charitable pharmacy, the pharmacy staff is led by pharmacists and a full-time licensed social worker, who precept fourth year students completing advanced pharmacy practice experiences (APPE). During the rotation, students participate in several interprofessional activities to enhance their learning surrounding SDOH. Pharmacy students engage with a social worker, social work students, and pharmacists throughout the month, participate in topic discussions, and develop solutions for patients’ SDOH-related health barriers.

The purpose of this observational study is to evaluate students’ perceptions on the impact of their didactic curriculum and various experiential rotations on the their preparedness when working in underserved communities, addressing social determinants of health; and students’ perceptions of and ability to apply knowledge of SDOH in a clinical setting.

Methods:
Students who completed an APPE rotation from May 2020-April 2021 will be asked to participate in the survey, which incorporates open-ended, multiple choice, and Likert scale questions. The survey contains 3 parts focused on SDOH: assessment of the pharmacy curriculum; assess clinical knowledge and perception during the experiential rotation; assess preparedness to manage SDOH.

Results:
Data will be analyzed using chi-squared tests or Fisher’s exact tests where appropriate. Comparisons of Likert-scale data will be analyzed using student’s t tests or one-way ANOVA tests; comparisons between Likert-scale variables will be evaluated using Pearson’s correlation coefficient analyses.

Conclusions:
To be presented at the Ohio Pharmacy Resident Conference 2021.
Comparison of Graft Versus Host Disease (GVHD) Prophylaxis Regimen on Outcomes for Patients with Sickle Cell Disease or β-Thalassemia Undergoing Allogeneic Hematopoietic Stem Cell Transplant (HSCT)

Molly Esordi, PharmD- PGY1 Resident, Children’s Hospital of Michigan
Patricia Rayner, PharmD, BCOP

UAN: 0048-0000-2021-062-L01-P

Learning Objectives:
1. Review current literature regarding GVHD prophylaxis regimens for pediatric patients with sickle cell disease or β-thalassemia undergoing allogeneic HSCT
2. Describe the difference in outcomes between different GVHD prophylaxis regimens after HSCT

Purpose:
Currently, HSCT is the only cure for hemoglobinopathies such as sickle cell disease and β-thalassemia. Matched donor HSCT should be considered in all patients with sickle cell disease and, as soon as feasible, in patients with β-thalassemia to avoid development of iron overload and iron-related tissue damage. GVHD is a substantial risk associated with HSCT due to an immune response mounted against the recipient by mature donor T cells contained within the allograft. All patients undergoing allogeneic HSCT require an immunosuppressive regimen to decrease the risk of GVHD. The purpose of this study was to compare the efficacy of tacrolimus and methotrexate to tacrolimus and mycophenolate in the prevention of GVHD after HSCT in pediatric patients with sickle cell disease or β-thalassemia.

Methods:
This was a retrospective cohort study that included patients with a diagnosis of sickle cell disease or β-thalassemia that underwent an allogeneic HSCT from 2008 to 2019. The primary endpoints were incidence of acute and chronic GVHD. Secondary endpoints included GVHD grade, incidence and severity of mucositis, parental nutrition requirement and time to neutrophil engraftment. Chi squared test was used for nominal data and Mann Whitney U test for ordinal data.

Results:
Twenty patients with either sickle cell disease (n = 15; 75%) or β-thalassemia (n = 5; 25%) that received an allogeneic HSCT were included in the study. All patients received stem cells from a matched donor bone marrow harvest. Seventeen patients had a matched related sibling donor while three had a matched unrelated donor. Of the 20 patients included, 14 received GVHD prophylaxis with tacrolimus-mycophenolate and 6 received tacrolimus-methotrexate. Nine patients in the mycophenolate group developed acute GVHD compared to three in the methotrexate group (p = 0.642). Three patients in the mycophenolate group developed chronic GVHD compared to three in the methotrexate group (p = 0.303). GVHD grade was greater in the tacrolimus-methotrexate group (Mean rank = 9.5) than the tacrolimus-mycophenolate (Mean rank =6.95 ) group, p = 0.305. Ten patients in the tacrolimus-mycophenolate group developed mucositis and six in the tacrolimus-methotrexate group (p = 0.267). Patients in the tacrolimus-methotrexate group had a higher severity of mucositis (Mean rank = 9.33) compared to the tacrolimus-mycophenolate group (Mean rank = 8.0 ), p = 0.598. Six patients in the mycophenolate group required parental nutrition and three in the methotrexate group (p = 1.000). Average time to neutrophil engraftment in the mycophenolate group was 10.5 days compared to 13.6 days in the methotrexate group (p = 0.062).

Conclusions:
There are no statistically significant differences in the incidence of acute or chronic GVHD, severity of GVHD, time to neutrophil engraftment, or requirement of parental nutrition for patients undergoing allogeneic HSCT, receiving prophylaxis with tacrolimus-methotrexate compared to tacrolimus-mycophenolate.
Evaluation of Physician, Pharmacist, Nurse and Patient Agreement on New Medication Counseling Points

Lena Farhat, PharmD - PGY - 1 Pharmacy Resident, Beaumont Hospital, Dearborn
Nedeen Berry, PharmD Candidate, Sean McConachie, PharmD, BCPS, Insaf Mohammad, PharmD, BCACP

UAN: 0048-0000-2021-063-L04-P

Learning Objectives:
1. To review professional guidance related to medication counseling in clinical practice.
2. To identify similarities and differences in the importance of different counseling points between patients and healthcare providers.

Purpose:
Patients who are knowledgeable about their medications are more adherent and more satisfied with their care than less-informed patients. However, healthcare providers often communicate inadequate information to patients during medication counseling and there is limited research assessing what should be discussed during counseling. The objective of this study is to compare opinions of healthcare providers and patients on the relative importance of counseling points for newly prescribed medications.

Methods:
This is a cross-sectional analysis evaluating the opinions of nurses, pharmacists, physicians, and inpatients regarding counseling points that are discussed during medication education. Two versions of a 15-item survey were developed and administered to healthcare providers and patients at Beaumont Hospital, Dearborn from September 2020 through March 2021. Questions focused on demographic characteristics of respondents and opinions on the relative importance of medication counseling points. Specifically, respondents stratified a list of 15 counseling points into three categories: “very important,” “somewhat important,” and “least important.” The Fisher’s exact test was used to compare differences between the two cohorts. An alpha value of 0.001 was considered significant.

Results:
A total of 100 patients and 208 healthcare providers completed the survey. Both cohorts, on average, perceived the same five counseling points to be most important in medication counseling: name, purpose, side effects, dose, and frequency of the medication (p>0.05 for all analyses). Patients considered administration timing, therapeutic duration, food interactions and storage as more important than providers (p

Conclusions:
Healthcare providers and patients agreed on the five most important counseling points to be discussed during medication counseling. Consensus among healthcare professionals on the relative importance of many counseling points is lacking.
Inpatient Venous Thromboembolism - Are Glucocorticoids a Prime Suspect?

Brian A Feldpausch, PharmD - Ascension St. John Hospital
Stephanie B Edwin, PharmD, BCPS-AQ Cardiology; Carrie L Hartner, PharmD, BCPS, BCCCP; Christopher A Giuliano, PharmD, MPH

UAN: 0048-0000-2021-064-L01-P

Learning Objectives:

1. List adverse effects with short term use of inpatient glucocorticoids
2. Describe the relationship between glucocorticoid use and venous thromboembolism

Purpose:
Glucocorticoids have been associated with an increased risk of developing venous thromboembolism (VTE). The association is described as dose dependent and more prevalent with new receipt of glucocorticoids within 90 days. Despite data evaluating VTE risk with glucocorticoids in the outpatient setting, literature is lacking to characterize the impact of inpatient steroids on VTE risk. The goal of this project is to determine whether inpatient glucocorticoid use is associated with an increased incidence of VTE.

Methods:
This is a retrospective case-control study of patients at Ascension St. John Hospital with an in-hospital VTE from October 2015 to December 2019. Adult patient cases were identified by ICD-10 codes for acute venous thromboembolism. Controls were selected from all patients without a VTE diagnosis and matched by hospital length of stay and patient location (medical/surgical). Patients were excluded from each group for a history of VTE, receipt of therapeutic anticoagulation, or pregnancy. All patients were evaluated to determine the presence or absence of glucocorticoid exposure. For patients with glucocorticoid exposure, dose in prednisone equivalents, duration, and route of administration were assessed. Based on previous literature, 78 cases of VTE and 234 controls without VTE were collected assuming a rate of glucocorticoid exposure of 10% in the cases versus 2.5% in the controls to achieve power. The relationship between glucocorticoid exposure and VTE was evaluated using Chi-square test. A multivariable logistic regression with VTE as the outcome was conducted to control for confounding variables.

Results:
Final results will be presented at the Ohio Pharmacy Residency Conference.

Conclusions:
Final conclusions will be presented at the Ohio Pharmacy Residency Conference.
Learning Objectives:

1. Summarize recommended antibiotic recommendations to treat community-acquired pneumonia and urinary tract infection
2. Compare antibiotic prescribing patterns between institutions with and without dedicated pharmacist-led resources

Purpose:
This study aims to investigate if and how empiric antibiotics prescribed for admitted patients diagnosed with community-acquired pneumonia or urinary tract infections in the emergency department significantly differ in institutions that have established antimicrobial stewardship pharmacists or initiatives present in those emergency rooms from those that do not. In the United States, more than 16 million patients are treated with antibiotics in emergency departments each year. Community-acquired pneumonia and urinary tract infections are two of the most common diagnosed infections in emergency departments. Up to 50% of all antibiotic use in emergency departments have been estimated as inappropriate. Given the ramifications of growing antibiotic resistance, toxicities with select agents, (i.e. fluoroquinolones), and secondary-acquired infections (i.e. Clostridioides difficile). Antimicrobial stewardship efforts have expanded in recent years, yet most efforts do not often include dedicated resources to emergency departments.

Methods:
This study was a retrospective chart review that compared adherence to standardized, first-line, guideline-focused recommendations between two regional hospitals within the same health system. Demographics, antibiograms, and hospital sizes were comparable to each other. One hospital had a dedicated FTE pharmacist on site to serve an antimicrobial stewardship role while the other did not. Patients were screened and allocated to chart review. Baseline patient characteristics were catalogued which included patient allergies, recent antibiotic use, recent bacterial culture data and sensitivities, and co-morbidities (i.e. high risk for sepsis). Evaluation of selected antibiotics used to treat community-acquired pneumonia or urinary tract infections were studied closely for appropriateness as determined by standardized antibiotic guidelines. Antibiotic appropriateness was judged on several key factors that included: antibiotic adjustment within 24 hours if the patient was admitted, patient allergy history, tolerance of medications within the same family, or selection of antibiotics prescribed on discharge. While the study assessed if an antibiotic was too broad, antibiotic selection on discharge was also evaluated on its appropriateness on being broad enough (i.e. selection of antibiotics too narrow to treat community acquired pneumonia in patients with comorbid disease).

Results:
Data is being finalized and will be shared prior to conference

Conclusions:
Data is being finalized and will be shared prior to conference
Pharmacy impact on heart failure team

Gabrielle N Fish, PharmD, PGY1 Pharmacy Resident, St. Elizabeth Healthcare
Kathleen E Miller, PharmD, MPA, BCPS, BCCCP; Jordan W Adkins, PharmD, BCPS

UAN: 0048-0000-2021-066-L04-P

Learning Objectives:

1. Review the clinical features and list current guideline directed medical therapy of heart failure.
2. Outline, discuss and evaluate the key roles and the impact of pharmacists on a multidisciplinary heart failure team.

Purpose:

In 2012 the Centers for Medicare and Medicaid Services implemented the Hospital Readmission Reduction Program, reducing reimbursement to hospitals with excessive heart failure (HF) readmission rates. To better serve these patients and to decrease readmissions many health systems have implemented multidisciplinary HF teams. Literature suggests the addition of a pharmacist to the HF team increases optimized guideline directed medical therapy, patient adherence, and decreases medication related adverse events, thereby, reducing excessive readmissions and healthcare costs. The purpose of this project is to quantify pharmacy interventions on the HF team and determine the impact these contributions have on patient outcomes.

Methods:

A retrospective chart review was conducted on patients admitted to a community health system with a consult for the HF team from October 1st, 2020 to December 31st, 2020. Data collected included demographics; ejection fraction; HF discharge medication reconciliation information; HF interventions; pharmacy suggested guideline directed medical therapy initiation and titration; diuretic therapy management; and readmissions or emergency visits for HF within the specified time. Using primary literature as reference, each adverse event avoided on the discharge medication reconciliation will be categorized based on severity (minor, significant and serious) and assigned a monetary value based on this categorization. Time, in minutes, spent completing admission and discharge medication reconciliations and providing drug information and patient education will also be collected. The readmission and emergency visit rate will be compared to a historical control group of patients admitted for HF prior to the HF team creation, between October 1st, 2017 to December 31st, 2017. All other interventions will be collected as single occurrences and combined to assess quantity of pharmacy contributions.

Results:

Data collection and analysis are currently being conducted. Results will be presented at the Ohio Pharmacy Resident Conference.

Conclusions:

Conclusions will be presented at the Ohio Pharmacy Resident Conference.
Designing and implementing a continuous glucose monitor program for diabetic patients in a family practice setting.

Becky Fisk, PharmD, PGY2 Ambulatory Care Resident, Mercy Health St. Vincent Medical Center
Lisa McIntyre, PharmD, BCACP

UAN: 0048-0000-2021-067-L01-P

Learning Objectives:
1. Describe the benefits of a continuous glucose monitoring program for diabetic patients.
2. Recall the impact that pharmacists may have on a continuous glucose monitoring program.

Purpose:
The purpose of this design project is to implement a continuous glucose monitor (CGM) program within Mercy Health Family Physicians (MHFP) on Jefferson Avenue. The staff at MHFP have expressed interest in utilizing CGM for their diabetic patients but do have a protocol in place to manage the patients or devices. Studies have shown CGM’s improve A1c and reduce patients time spent in hypoglycemia. Involving Medication Management Services -Jefferson (MMSJ) in the process will allow for identification of appropriate patients, proper evaluation of data and medication dose adjustments through an established diabetes collaborative practice agreement.

Methods:
The team of pharmacists working within MMSJ will collaborate with attending physicians, resident physicians, and medical staff on this project. We will utilize improvement science of PDSA to define and test the necessary components of a CGM program workflow, design the standard protocols, identify process owners, develop data collection tools, and monitor for continuous improvement of these processes. This will include at a minimum: patient identification, insurance coverage strategies, education of patients and providers, documentation and follow-up.

Results:
Data collection and PDSA testing is ongoing with preliminary results to be presented at the 2021 Ohio Pharmacy Residency Conference.

Conclusions:
Preliminary conclusions will be presented at the 2021 Ohio Pharmacy Residency Conference.
Impact of SGLT-2 Inhibitors on Loop Diuretic Utilization in Heart Failure

*Nichole K. Flaspohler, PharmD – PGY1 Pharmacy Resident, St. Elizabeth Healthcare
Jordan W. Adkins, PharmD, BCPS; Kathleen E. Miller, PharmD, MPA, BCPS, BCCP

UAN: 0048-0000-2021-068-L01-P

Learning Objectives:

1. Review SGLT-2 inhibitor trials related to chronic heart failure patients with or without diabetes
2. Discuss the need for a loop diuretic dose change upon initiation of a SGLT-2 inhibitor

Purpose:
Sodium-glucose cotransporter 2 (SGLT-2) inhibitors have shown through randomized clinical trials to provide cardiovascular benefits in heart failure with reduced ejection fraction (HFrEF) patients with and without diabetes. Inhibition of SGLT-2 causes increased excretion of sodium, glucose, and water. There are safety concerns of over-diuresis in patients when SGLT-2 inhibitors are added to a regimen that contains a loop diuretic. The purpose of this study is to evaluate if patients with chronic HFrEF require a dose adjustment of their loop diuretic when initiating a SGLT-2 inhibitor.

Methods:
A retrospective chart review was conducted from January 2019 to December 2020. The electronic medical record was used to identify chronic heart failure patients at St. Elizabeth Healthcare older than 18 years of age, with an ejection fraction less than or equal to 40%, and initiated on a SGLT-2 inhibitor while on loop diuretic therapy. Exclusion criteria included prior treatment with a SGLT-2 inhibitor and a glomerular filtration rate of less than 25 ml/min. Data collection included: demographics; ejection fraction; diabetes mellitus status; New York Heart Association Class; baseline serum creatinine; baseline glomerular filtration rate; chronic kidney disease status; systolic pressure at baseline; hemoglobin A1C at baseline; heart failure medications; loop diuretic and dose in IV furosemide-equivalent units before and after initiation of SGLT-2 inhibitor; other diuretics and their dose changes; SGLT-2 inhibitor and dose; reason for diuretic changes; admissions related to side effect of over diuresis; incidence of ketoacidosis; amputation; signs of over diuresis; incidence of over diuresis; acute kidney injury; and doubling of serum creatinine. The primary endpoint was the number of patients who had their loop diuretic dose decreased after SGLT-2 initiation.

Results:
Data collection and analysis are in progress. Results will be presented at the Ohio Pharmacy Resident Conference.

Conclusions:
Conclusions will be presented at the Ohio Pharmacy Resident Conference.
Evaluation of Pharmacist Intervention on EKG monitoring in Patients on QT Prolonging Medications

* Hannah Foley, PharmD - PGY-1 Pharmacy Resident St. Charles Hospital
Masa Scott, PharmD, BCPS, Psychiatric Clinical Pharmacist, Lauryl Hanf-Kristufek, PharmD, BCPS, CACP, Residency Program Director, Katie Thomas, PharmD, Clinical Pharmacist

UAN: 0048-0000-2021-180-L01-P

Learning Objectives:

1. Describe the various risk factors for QTc prolongation that are incorporated into the Tisdale QTc Prolongation Risk Calculator.
2. Discuss the impact of a standardized pharmacist QTc monitoring protocol based on QTc prolonging medications on EKG monitoring.

Purpose:
Drug-induced QTc prolongation is more prevalent than previously thought and is associated with the potentially fatal rhythm, Torsades de Pointes. The list of medications that cause QTc prolongation continues to grow and several are among the top 200 prescribed medications. Despite this fact, there is little literature-based guidance on QTc-interval monitoring. Pharmacists have the skill set to assist in monitoring at risk patients. The aim of this study is to determine if standardized pharmacist intervention will increase the number of indicated EKG orders for patients on QTc prolonging medications and improve patient safety.

Methods:
This IRB approved study evaluated patients on QTc prolonging medications who meet inclusion criteria will be identified in the computer database and evaluated prospectively utilizing the Tisdale Risk Score for QTc Prolongation. The pharmacist will use this information to evaluate the appropriateness of current EKG monitoring. When indicated the pharmacist will reach out to care providers to ensure FDA recommended EKG monitoring is ordered and implemented. The pharmacist will also reach out to providers with any further recommendations to help manage QT prolongation risks. Recommendations can include drug discontinuation, dosage adjustments, electrolyte replacement, and alternative therapy suggestions.

Results:
A total of 61 patients were included in the study. 48 patients (78.7%) received indicated EKG monitoring recommended by a pharmacist. EKG recommendations by a pharmacist had a 93.8% provider acceptance rate. 77% of the patients received QTc related interventions including drug discontinuation, dosage adjustments, electrolyte replacement, and alternative therapy suggestions. There was a total of 99 non-EKG pharmacist interventions with an 87.9% provider acceptance rate.

Conclusions:
A Standardized pharmacist led monitoring protocol based on QT prolonging medications led to an increase in proper EKG monitoring in the community hospital setting. Pharmacy interventions regarding QT prolongation were well accepted by the healthcare team.
Learning Objectives:
1. Recognize risk factors for necrotizing enterocolitis (NEC)
2. Explain the different antibiotic regimens and their evidence for use in the treatment of NEC

Purpose:
Necrotizing enterocolitis (NEC) is a common gastrointestinal emergency with high rates of morbidity and mortality. Several organizations have given guidance on antibiotic regimens, but no published guidelines exist. The purpose of this study is to provide guidance on antimicrobial selection and duration.

Methods:
A multi-center, retrospective, chart review was performed for antibiotic regimens of neonates with NEC from March 2016 through March 2020. A total of 51 patients were included. Patients included were those with a NEC diagnosis, less than 36 weeks gestational age, and greater than 7 days postnatal age. Excluded patients were those with any intestinal malformations (e.g. Hirschsprung’s disease) or spontaneous intestinal perforation (SIP).

Results:
A total of 8 different antibiotic regimens were identified. The most common regimen was vancomycin, cefepime, and metronidazole for 14 days, which accounted for nearly half of all regimens. NEC was classified according to the modified Bell’s staging criteria, with 54.9% of patients categorized as stage 1, 35.3% as stage 2, and 9.8% as stage 3. The average duration of therapy according to the staging was 8 +/- 3.27 days, 11 +/- 5.57 days, and 21 +/- 12.86 days, respectively. Average time to reach full enteral feeding volume post NEC treatment for modified Bell’s stages I, II, and III was 8.05 +/- 6.45, 13.57 +/- 13.13, and 36.25 +/- 8.85 days, respectively.

Conclusions:
The overall antibiotic treatment duration was exceeded based on the modified Bell’s staging criteria of NEC. This extended use of antimicrobials could lead to a prolonged time to full enteral feeding volume, alteration of gut microbiota, increased antimicrobial resistance, increased risk of adverse effects, and increased overall length of hospital stay. A review of antimicrobial prescribing practices is warranted.
Changes in Opioid Prescribing Patterns from an Urban Emergency Department after Implementation of State-wide Opioid Reform

Julia Fuhst, PharmD - Ascension St. John Hospital PGY1 Pharmacy Resident
Renee Paxton, PharmD, BCPS, BCCCP; George Delgado, Jr., PharmD

UAN: 0048-0000-2021-070-L08-P

Learning Objectives:
1. Discuss the importance of opioid prescribing and dispensing reform
2. Describe the effects of the 2017 opioid reform legislature in the state of Michigan

Purpose:
In December 2017, the State of Michigan passed a comprehensive 10-bill law with the goal of decreasing inappropriate opioid prescribing. Public Act 251 of 2017 limited the quantity of opioids that could be prescribed for acute pain to no more than a seven-day supply within a seven-day period, effective on July 1, 2018. The purpose of this study is to compare trends in opioid prescribing upon discharge from the emergency department (ED) at Ascension St. John Hospital (ASJH) before and after the 2017 opioid laws in Michigan were implemented.

Methods:
This is a pre-post quasi experimental study conducted at ASJH located in Detroit, Michigan. The objective is to compare opioid prescribing trends at patient discharge from the ED before and after the opioid reform. Patients were identified if they were discharged from the ED from January 1, 2016 through December 31, 2016 and from January 1, 2019 through December 31, 2019. Patients 18 years and older were included if they were discharged from the ED with a prescription for an opioid medication for acute pain. Opioids included were hydrocodone, oxycodone, tramadol, morphine, and acetaminophen with codeine. The primary endpoint is to compare the average number of pills prescribed in each opioid prescription before and after the implementation of the law reform. Secondary endpoints include a comparison of the amount of morphine milliequivalents prescribed per day before and after the implementation, the percent of patients discharged with a concurrent benzodiazepine and/or multimodal pain control, and an analysis of the change in specific opioids prescribed after the implementation.

Results:
To be presented at the Ohio Pharmacy Residency Conference

Conclusions:
To be presented at the Ohio Pharmacy Residency Conference
Comparison of Cefazolin and Ceftriaxone as Primary Prophylaxis in Cardiac Surgery

Juan Galvan-Cruz, PharmD, PGY1 Pharmacy Resident, Beaumont Hospital, Royal Oak
Alexandra Serafino, PhramD & Megan Cadiz, PharmD

UAN: 0048-0000-2021-071-L01-P

Learning Objectives:

1. Review literature regarding antibiotic prophylaxis in cardiac surgery
2. Identify guideline recommendations for primary prophylaxis in cardiac surgery

Purpose:
Recent literature reports increasing rates of gram-negative infections in cardiac surgery. As a result, our institution changed the preferred agent for standard antibiotic prophylaxis from cefazolin to ceftriaxone in 2016. This study aimed to assess whether the use of cefazolin versus ceftriaxone can effectively decrease the incidence of post-surgical infections in patients undergoing cardiac surgery.

Methods:
Identify guideline recommendations for primary prophylaxis in cardiac surgery

Results:
Data was collected from 399 patients (199 for cefazolin and 200 for ceftriaxone). Patient demographics were similar between groups. There was no significant difference in overall incidence of infection (22.6% for cefazolin vs 19.5% for ceftriaxone; p=0.45). Gram-negative infections were more common in the cefazolin group (7.0% vs 2.5%; p=0.05). All-cause readmission (18.6% cefazolin vs 9.5% ceftriaxone;)

Conclusions:
The institutional change from cefazolin to ceftriaxone as standard prophylaxis in cardiac surgeries resulted in fewer gram-negative bacterial infections and lower readmission rates, although no difference in the overall incidence of infection was observed.
Analyzing the use of the long acting antipsychotic, paliperidone, and it’s effect on number of hospital visits

Kendall L. Germann*, PharmD - PGY-1 Pharmacy Resident, Mercy Health St. Rita’s Medical Center
Kristi N. Ziegenbusch, PharmD, RPh, BCPS; Lindsey M. Peters, PharmD, RPh, BCPS; Kirsten N. Bell, PharmD Candidate 2021; Eyob D. Adane, PhD, BSPharm, BCPS

UAN: 0048-0000-2021-072-L01-P

Learning Objectives:

1. Identify the indications for the administration of long acting injectable antipsychotics.
2. Discuss the potential benefits of administering long acting injectable antipsychotics.

Purpose:
Antipsychotic medications are FDA-approved for multiple indications and are available in many different dosage formulations. Long acting injectable antipsychotics (LAIA) require less frequent administration compared to oral antipsychotics for the treatment of mental health disorders. St. Rita’s Medical Center, a Bon Secours Mercy Health hospital, participates in a drug distribution program for the LAIA, Invega Sustenna (paliperidone). The primary objective of this project is to retrospectively evaluate the number of visits to a Mercy Health facility as well as the length of stay for each visit in patients who received long acting injectable paliperidone or oral paliperidone. The secondary objective will be to evaluate changes in the route of administration or dose during admission for patients who received paliperidone.

Methods:
This study is a single-center retrospective chart-review of patients who have been diagnosed with schizophrenia, schizoaffective disorder, or bipolar disorder type I and received either oral or injectable paliperidone while admitted to Mercy Health St. Rita’s Medical Center from January 1, 2018 to December 31, 2019. Following IRB approval, data will be collected by performing a chart review within the electronic medical record to meet the necessary sample size. Data collected will include demographic information, number of visits within one year, length of hospital stay, route of administration, and any changes in route of administration. Qualitative and categorical data will be summarized using the appropriate nonparametric statistical test. Likewise, quantitative data will be summarized using the appropriate parametric statistical test.

Results:
Data collection and analysis is currently being conducted. Final results will be presented at the 2021 Ohio Pharmacy Resident Conference.

Conclusions:
Final conclusions will be presented at the 2021 Ohio Pharmacy Resident Conference.
Fixed vs conventional dosing of 4-factor prothrombin complex concentrate (4F-PCC) in urgent warfarin reversal

Erin Gordon, PharmD OhioHealth Grant Medical Center
Daniel Dybdahl, PharmD

UAN: 0048-0000-2021-073-L01-P

Learning Objectives:

1. Review the indications and dosing strategies of 4-factor prothrombin complex concentrate for warfarin reversal
2. Discuss current literature and practice guideline recommendations surrounding warfarin reversal

Purpose:
4F-PCC has become the standard of care for emergent warfarin reversal, however, the optimal dosing strategy remains unclear. The FDA approved dosing is based on INR and body weight with a maximum dose of 5000 units, however, these recommendations were not a result of dose finding studies. In an effort to minimize drug exposure, adverse events and costs, several other dosing strategies have been studied, albeit in small, retrospective trials. The existing literature has found similar efficacy with fixed doses ranging from 1,000-2,000 units for warfarin reversal.

The purpose of this research study is to evaluate safety, efficacy, and operational impact of fixed dose 4F-PCC as compared to weight-based dosing for warfarin reversal.

Methods:
We aim to understand the impact of fixed dosing 4F-PCC dosing protocol by comparing two cohorts of patients who received 4F-PCC for urgent warfarin reversal. Adult patients who presented to Grant Medical Center (GMC) between January 1, 2019 and December 31, 2020 were stratified by dosing strategy used. This retrospective, cohort study has the following specific aims:

Aim 1: Compare the efficacy of 4F-PCC dosing regimens using the surrogate markers of post-infusion INR, length of stay, and discharge disposition.
Aim 2: Compare the safety of 4F-PCC dosing regimens by examining mortality and thromboembolic complications.
Aim 3: Evaluate the operational impact of fixed dose 4F-PCC by examining the cost to the patient and health system, as well as delays in therapy.

Results:
Final results will be presented at the Ohio Pharmacy Residency Conference.

Conclusions:
Final conclusions will be presented at the Ohio Pharmacy Residency Conference.
A Retrospective Evaluation of the Effectiveness of a COVID-19 Anticoagulation Protocol in a Community Hospital

Patrick Gray, PharmD - PGY1 Pharmacy Resident Mercy Health - Lorain Hospital
Sarah Suffel, PharmD, BCPS, CACP

UAN: 0048-0000-2021-074-L01-P

Learning Objectives:

1. Discuss the hypercoaguable state precipitated by the severe acute respiratory syndrome coronavirus 2 in COVID-19 positive patients.
2. Discuss the effectiveness of a d-dimer driven anticoagulation protocol compared to standard of care in COVID-19 patients.

Purpose:
The causative agent of COVID-19, severe acute respiratory syndrome coronavirus 2, through its deleterious effects on the respiratory system is theorized to increase the risk of a hypercoagulable state. That potentially leads to complications of venous thromboembolism (VTE), particularly pulmonary embolism (PE). Elevated d-dimer, a fibrin-based degradation product of clots, provides a measurable indicator for hypercoagulability. An optimal anticoagulation dosing regimen for COVID-19 positive inpatients with hypercoagulable state remains to be determined. The aim of this study is to assess the effectiveness of our institution’s d-dimer driven COVID-19 anticoagulation protocol versus the standard of care for VTE prophylaxis in this retrospective cohort study.

Methods:
Data were collected from the CarePath/EPIC electronic medical records of all inpatients ≥ 18 years of age positive for COVID-19 from 01MAY2020 to 31DEC2020 at Mercy Health – Lorain Hospital. Patients were stratified into two groups, COVID-19 positive inpatients who received anticoagulation according to a COVID-19 anticoagulation protocol and COVID-19 positive inpatients who did not receive anticoagulation according to the COVID-19 anticoagulation protocol. The effectiveness of the anticoagulation protocol compared to standard of care was determined by assessing rates of thrombotic events and mortality in each study group. Additionally, frequency of thrombotic event type (PE vs DVT) in each group was assessed.

Results:
Results will be presented at the Ohio Pharmacy Residency Conference.

Conclusions:
Conclusions will be presented at the Ohio Pharmacy Residency Conference
Impact of a Pharmacist-Led Educational Program on Recommending Calcium and Vitamin D to Those Patients on Bisphosphonates

Lauren M Gurich, PharmD, BSPS * -Pharmacy Resident at McLaren St. Luke’s
Leslie S Clemensen, MD; Michelle M O’Brien, PharmD, BCACP; John C Zona, MD, MEd, FAAFP

UAN: 0048-0000-2021-075-L01-P

Learning Objectives:

1. Identify the appropriate supplementation necessary for when a patient is taking a bisphosphonate
2. Explain the importance proper documentation in a patient’s medication list

Purpose:
Calcium and vitamin D are crucial elements to ensuring optimal outcomes with bisphosphonate treatment. Often, dietary intake of calcium and vitamin D is insufficient and recommending supplementation could be missed for patients taking bisphosphonates in a primary care setting. Whether it is an oversight in prescribing or a lack of documentation in patient medication lists, this is an area identified as a gap in care for patients taking bisphosphonates. The goal of this project to determine if a pharmacist-led education intervention has a positive impact on providers recommending calcium and vitamin D for patients who are taking a bisphosphonate.

Methods:
This project will be conducted at a single site family medicine center and includes a retrospective chart review, provider education session as the intervention, and subsequent prospective chart review. The retrospective chart review will be conducted from May 2020-October 2020 and a percentage of patients on bisphosphonates that have vitamin D and calcium on their medication list will be generated. A provider education session will be presented to inform prescribers about the optimization of bisphosphonate therapy with the use of calcium and vitamin D, based on current guideline recommendations, and ensuring proper documentation on the patients’ medication lists. A prospective chart review will be conducted from November 2020-April 2021 and a percentage of patients on bisphosphonates that have calcium and vitamin D on their medication list will be generated.

The chart reviews will be generated from list of patients on bisphosphonates from the electronic medical record with the help of information technology department. The information collected will be stored on a secure and protected spreadsheet for evaluation. The ultimate goal of this project is to see an increase provider awareness on recommending calcium and vitamin D and updating the patient profiles for those on bisphosphonates.

Results:
In progress

Conclusions:
In progress
Evaluation of the Use of Topical Antimicrobials in Open Surgical Wounds: Retrospective Period Prevalence Study

Josef Hadib Nissan, PharmD - Pharmacy Resident, The MetroHealth System
Nina Naeger Murphy, PharmD, BCPS AQ-ID; Nilam Patel, PharmD, BCPS; Mary Borovicka, PharmD, BCCP; David Gothard, BSTT; Michelle Hecker, MD

UAN: 0048-0000-2021-076-L01-P

Learning Objectives:
1. Define surgical site infections (SSIs) and review SSI classifications and surgical wound types
2. Review primary literature recommendations for the prevention of surgical site infections
3. Discuss the use of topical antimicrobials for surgical site infection prophylaxis at MetroHealth and compare the number of SSIs and adverse events

Purpose:
This period prevalence study primarily aims to evaluate the proportion of patients receiving topical antimicrobials during surgical procedures at MetroHealth over a 28-day timeframe. Secondarily, this study aims to describe the types of antimicrobials administered, the methods of preparation, and to evaluate the number of surgical site infections and adverse events within 28 days of surgery in patients whom a topical antimicrobial was administered.

Methods:
Patients ≥ 18 years undergoing surgery in an operating room were included. The primary outcome of period prevalence was determined by dividing the number of patients receiving TAM by the total surgical population during a 28-day timeframe. The orthopedic subset was utilized for secondary endpoints including the development of SSI and/or AE within 30 days after surgery. The use of TAM was examined by surgical type via Pearson Chi-square. SSI incidence was measured via Fisher’s exact test.

Results:
723 patients were included in the study. Of those, 24.5% (n=177/723) received TAM. In the orthopedic subset (n=218), 40.8% (n=89/218) of patients received TAM. Of those, 47.2% (n=42/89) received topical antibiotics, 40.4% (n=36/89) antiseptics, and 12.4% (n=11/89) dual agents. TAMs were typically applied as powder (67.6%) and the most common was vancomycin (34.5%). Patients who received an implant were more likely to receive TAM (95.3% vs 72.1%, p=0.001). Patients undergoing emergent surgery were also more likely to receive TAM (42.9% vs 20.2%).

Conclusions:
While the use of TAM in surgery was not found to be a widespread practice at our institution, it is an important consideration for ASP.
Assessing insulin dosing for inpatient diabetes management in patients with renal impairment

Lindsay Hall, PharmD - PGY1 Pharmacy Resident, University Hospitals Portage Medical Center
Derek Frost, PharmD, MBA, BCPS; Jessica Emshoff, PharmD, BCPS, BCGP

UAN: 0048-0000-2021-077-L01-P

Learning Objectives:

1. Discuss the current guideline recommendations for insulin dosing in renal impairment.
2. Assess the relationship between renal function and insulin dosing requirements.

Purpose:
Insulin, which is the most widely used agent for the inpatient management of diabetes, has traditionally been dosed based on body weight. Evidence has suggested that patients with renal impairment may require reduced doses of insulin to maintain euglycemia. However, there is limited data available regarding the relationship between renal impairment and insulin dosing. Additionally, a definitive recommendation for insulin dosing in renal impairment is not currently endorsed by any major clinical guidelines. The objective of this study is to determine if patients with renal impairment require lower doses of insulin to maintain glycemic control compared to patients without renal impairment.

Methods:
This study was submitted to the Institutional Review Board for approval. The electronic medical record system was used to identify patients 18 years and older with a diagnosis of type II diabetes who were admitted to our hospital between October 15th, 2019 and October, 15th 2020. The following data is being collected for each patient: patient age, admission HbA1c and blood glucose, GFR, type of insulin received, mean daily insulin dose, mean daily blood glucose, number of hypoglycemic and hyperglycemic events, number of oral antidiabetic medications continued upon admission, and length of stay. All data is being recorded without patient identifiers and confidentially is being maintained. Renal impairment is being defined as GFR.

Results:
This study is currently ongoing. Results will be available at a later date.

Conclusions:
Although evidence suggests that patients with renal impairment may require lower doses of insulin than patients without renal impairment, a definitive recommendation has not been endorsed by any major clinical guideline. The data from this study will be used to assess the relationship between renal impairment and insulin dosing in the inpatient setting.
Evaluating the Impact of Pharmacist-Led Continuous Glucose Monitoring Educational Interventions on Markers of Quality of Life and Device Utilization in a Large Community Pharmacy Chain

Gadeer R Hanbali, PharmD - Kroger Health / University of Cincinnati
Ashley Johnson, PharmD, BCACP; Joseph Wedig, PharmD, BCACP; Michael Hegener, PharmD, BCACP, Katelyn Johnson, PharmD, MS, BCACP

UAN: 0048-0000-2021-078-L01-P

Learning Objectives:
1. Review the current American Diabetes Association guidelines for patient utilization of continuous glucose monitoring (CGM) devices
2. Discuss the impact of pharmacist lead educational interventions for patients using CGM devices on patients’ markers of quality of life

Purpose:
Few studies have investigated the impact of pharmacist continuous glucose monitor (CGM) device education on quality of life (QOL) and device utilization adherence, specifically in patients with type 2 diabetes mellitus in the community pharmacy setting. Providing patients with targeted education for device utilization and data interpretation may improve clinical outcomes, decrease the frequency of hypoglycemia, and increase device utilization. The primary objective was to determine the impact of pharmacist-led educational interventions on patients’ markers of QOL post CGM initiation in the community pharmacy setting. The secondary objectives were to assess patients’ TIR, episodes of hypoglycemia, CGM device fill history, and device utilization.

Methods:
This project was implemented in one regional division of a large community pharmacy chain, consisting of 103 pharmacies. New therapy fill reports from the dispensing system were generated to identify eligible study participants. Patients with either type 1 or type 2 diabetes mellitus were included. Pregnant, non-English-speaking, or patients under the age of 18 were excluded. A pharmacy resident telephonically communicated with participants in the intervention and control groups, at the fourteen-day and three-month mark from the date of first fill of the CGM device. At the fourteen-day follow-up, participants in the control group completed a survey, which collected information on QOL markers, TIR data, episodes of hypoglycemia, and device utilization. Participants in the intervention group completed the same survey along with an educational intervention. At the three-month follow-up, the post-intervention survey was administered, and additional patient education was provided for both groups. The survey responses were collected telephonically and stored in a HIPAA-compliant platform, Research Electronic Data Capture (REDCap). A paired t-test was used to analyze pre- and post-survey data from the intervention and control group. Descriptive statistics were used to analyze secondary objectives.

Results:
Final results in progress.

Conclusions:
Final results in progress.
Nurse practitioner driven telephonic primary care in a charitable pharmacy: a cost-benefit analysis

Joshua Heiden, PharmD, PGY-1 Resident, University of Cincinnati/St. Vincent de Paul Charitable Pharmacy
Lydia Bailey, PharmD, BCACP; Elizabeth Berryman, PharmD, BCPS, BCACP; Michael Espel, RPh; Russell Curington, PharmD, BC-ADM

UAN: 0048-0000-2021-079-L04-P

Learning Objectives:

1. Describe the role of an outcomes based charitable pharmacy in underserved care
2. Discuss the clinical and economic benefit of telephonic primary care provided by a nurse practitioner in collaboration with a charitable pharmacy

Purpose:
This study documented hospitalizations, emergency department visits, and medication therapy related interventions to examine the clinical significance and cost savings generated by the addition of a nurse practitioner (NP) providing telephonic primary care to an underserved population in collaboration with a charitable pharmacy.

Methods:
A retrospective chart review identified 20 patients who initiated care with the pharmacy and NP between February and June 2020 (NP group). A matched comparator group with similar baseline characteristics was identified, with these patients having utilized only pharmacy services (Non-NP group). The primary endpoint was the change in number of patients with hospitalizations and emergency department visits along with estimated costs to surrounding health systems from six months prior to and six months following initiation of services at the charitable pharmacy, with a benefit-cost ratio generated to determine the economic benefit of this collaboration.

Results:
For both the NP and Non-NP group, the number of patients with hospitalizations significantly decreased from baseline to six-month follow-up (25% reduction, p= 0.021 for both groups). In regard to emergency department visits, there was a statistically significant reduction for the NP group (55% reduction, p)

Conclusions:
A positive clinical benefit was seen for both groups of patients at the charitable pharmacy. The collaboration between the nurse practitioner and pharmacy demonstrated a positive economic impact through the reduction of hospitalizations and emergency department visits, generating a benefit-cost ratio greater than 1.0.
High Dose Minocycline for the Treatment of Acinetobacter Infections

Shelbye Herbin, Pharm.D, Detroit Receiving Hospital & University Health Center
Amina Ammar, Ryan Gumbleton, PharmD., BCCCP, Jing J. Zhao, PharmD, Shannon Olson, Pharm.D., BCIDP., Stephanie Smith, PharmD., Marco R. Scipione, Pharm.D., BCPS., AQ-ID

UAN: 0048-0000-2021-080-L01-P

Learning Objectives:

1. Describe potential treatment options for Acinetobacter infections
2. Discuss the outcomes that increased doses of minocycline had on patient outcomes compared to other treatment options

Purpose:
The aim of this study is to compare treatment outcomes in patients, with Acinetobacter infections who were given high-dose minocycline 200mg q12 hours or an alternative treatment option.

Methods:
This is a retrospective study of patients with Acinetobacter infection between January 1st 2019 and October 31st 2020 at the Detroit Medical Center (DMC). Patients were divided into groups based on administration of high-dose minocycline (HDM) 200mg every 12 hours or other treatment options. The primary outcomes were clinical and microbiological success at the end of therapy (EOT). Secondary outcomes included length of hospital stay, days of treatment, 30-day readmission, 30-day readmission with an Acinetobacter species, isolation of a minocycline non-susceptible Acinetobacter species within 30 days of EOT, and discontinuation of minocycline due to adverse events.

Results:
There were 320 patients that were screened for inclusion and 116 were excluded. Of the 204 included patients, 38 received HDM and 166 received an alternative agent. The majority of isolates were respiratory, 23/38 (60.5%) in the HDM group and 99/166 (59.6%) in the alternative group. Lack of clinical response at the EOT occurred in 16 (42.1%) patients in the minocycline group and 62 (37.3%) patients in the alternative group. Infection related mortality occurred in 9/38 (23.7%) patients in the HDM group versus 24/166 (14.5%) in the alternative treatment group. In the HDM group, 16 (42.1%) patients had a repeat culture after treatment with 4/16 (25%) still positive for the Acinetobacter species. In the alternative treatment group 61 (36.7%) had a repeat culture and 17/61 (27.9%) positive for Acinetobacter species. The median duration of treatment (9 [6-11] days versus 10 [2-18] days) and length of stay (16 [18.25-26.75] versus 29 [14-49]) were shorter in the HDM group compared to the alternative treatment group, respectively.

Conclusions:
HDM may be an option for patients who are unable to tolerate other treatment options or who have an Acinetobacter infection resistant to other methods of treatment.
Impact of fluid resuscitation on positive pressure ventilation in patients with severe sepsis or septic shock and systolic heart failure

Ariana Hester, PharmD - The Christ Hospital
Abigail Rhoades, PharmD, BCCCP; Jenny Foster, PharmD, BCPS; Hilary Raidt, PharmD, BCCCP; Hannah Adams, PharmD, BCCCP

UAN: 0048-0000-2021-081-L01-P

Learning Objectives:
1. Recall the current guideline recommendations for fluid resuscitation in patients with severe sepsis and septic shock.
2. Review the literature surrounding optimal fluid resuscitation in patients at high risk of volume overload.

Purpose:
The Surviving Sepsis Campaign recommends an initial fluid resuscitation of 30 mL/kg in all patients with sepsis-induced hypoperfusion. However, there is apprehension to administer fluids liberally to patients at high risk for volume overload as studies have shown that these patients may have worse outcomes.

Methods:
This retrospective cohort study investigated the use of standard (≥30 mL/kg) versus restrictive (0-30 mL/kg) fluid resuscitation received within 3 hours of severe sepsis or septic shock identified in adults with systolic heart failure (ejection fraction ≤40%). Patients with other shock states, renal dysfunction on hemodialysis, left ventricular assist device or pregnant patients were excluded. The primary outcome was initiation of positive pressure ventilation, including invasive and non-invasive, within 72 hours of sepsis identification. Secondary outcomes included diuretic, vasopressor or inotrope requirement within 48 hours, intensive care unit and hospital lengths of stay, 30-day readmission, and mortality.

Results:
A total of 175 patients were included. On average, patients in the restrictive group (n=88) received 13.8 ± 8.6 mL/kg intravenous fluids compared to 37.4 ± 9.8 mL/kg in the standard group (n=87). Baseline characteristics were similar between the groups with the exception of lower lactate at sepsis identification (2.7 vs. 4.1 mmol/L, p<0.005) and more concurrent heart failure exacerbations (26 vs. 9, p<0.005) in the restrictive group. A total of 38 (44%) and 38 (43%) patients receiving standard and restrictive resuscitation, respectively, required initiation of respiratory support (p=0.97). Patients in the restrictive resuscitation group were administered diuretics more frequently at 48 hours compared to the standard group (31 vs. 19, p=0.04). No differences in secondary outcomes were observed.

Conclusions:
There was no difference in the incidence of positive pressure ventilation initiation between septic systolic heart failure patients receiving standard or restrictive fluid resuscitation.
End of life order set utilization for the care of dying patients in a community hospital

Tim Hogan, PharmD - Pharmacy Resident, University Hospitals Ahuja Medical Center
Jodie Fink, PharmD, BCPS and Shirley Thomas, MD

UAN: 0048-0000-2021-082-L04-P

Learning Objectives:

1. Describe patient’s symptoms at the end of life
2. Understand the components of an end of life order set
3. Manage medication therapy for a patient at the end of life

Purpose:
Currently, there are no published guidelines with specific dosing recommendations for comfort medications for patients who are in the process of dying in an inpatient setting. Patients dying in the hospital are at high risk for poorly managed symptoms and for receiving unwanted or burdensome end-of-life (EOL) interventions. Due to the high variability in practice management of caring for dying patients and prescribing end-of-life medications in an inpatient setting, increased usage of an EOL order set could be beneficial in providing guidance to practitioners. The primary objective of this study is to characterize the use of the end of life order set at Ahuja Medical Center.

Methods:
A retrospective chart review was performed on patients over the age of 18 who died at Ahuja Medical Center during 2019. Several outcomes were assessed, including the percent of patients in which the EOL order set used, the percent of patients with hospice and/or palliative care consults, the percent of patients who had comfort medications ordered or administered, the average dose of comfort medications given during the final 48 hours of life, and the percent of patients who had code status changes during their admission. Analysis of the data is reported using descriptive statistics. The Institutional Review Board (IRB) at University Hospitals has approved this study.

Results:
In total, 270 patients died at Ahuja Medical Center during the study period. Of these deaths 66 (24.4%) occurred in the emergency department, with 65 (98.5%) of these patients dying from cardiopulmonary arrest. The remaining 204 deaths (75.6%) occurred in the inpatient setting, and were subsequently stratified into two groups: those in which the EOL order set was used (n=104) and those in which the EOL order set was not used (n=100). 98.1% of patients in the EOL group were ordered opioid analgesics, compared to 66.0% in the group that did not have EOL orders. Morphine was the most commonly prescribed opioid during the study period. All comfort medications, including morphine, hydromorphone, fentanyl, lorazepam, hyoscyamine, glycopyrrolate, and haloperidol were ordered and administered more frequently in the EOL group. Furthermore, the doses of comfort medications in the final 48 hours of life were, on average, higher for patients in the EOL group. Lastly, of the 204 inpatient deaths, 106 patients had DNR orders placed at some point during their admission. 138 patients had DNR-CC orders and 50 patients were full code.

Conclusions:
Symptom management is the mainstay of treatment for dying patients, and the use of the EOL order set helps to ensure that patients receive adequate management of their symptoms at the end of life. As evidenced by the lack of opioid prescribing in the non-EOL group in the final 48 hours of life (34% without opioid orders), EOL order set use and further education of providers and nursing staff is warranted to encourage appropriate management of the symptoms at the end of life.
Impact of Pharmacy Discharge Transition of Care Process

Molly Holland, PharmD, PGY2/MS Health-System Pharmacy Administration Resident OhioHealth Mansfield Hospital
Amanda Styer, PharmD, BCPS; Maria Pruchnicki, PharmD, FCCP, BCPS, BCACP, CLS; Shelby Anderson, PharmD; Charles McCluskey III, PharmD, MBA, BCPS; Anna Graham, MPH; Randall Thompson

UAN: 0048-0000-2021-083-L04-P

Learning Objectives:
1. Review importance of an effective transitions of care program for patient care.
2. Discuss pharmacy involvement in discharge transition of care, and effects on quality and clinical outcomes in a patient

Purpose:
To evaluate the quality and safety impact with implementation of a new discharge pharmacy program, delivering patients’ home medications to bedside before discharge from the hospital.

Methods:
This retrospective quality improvement project assessed quality and clinical impacts of a discharge pharmacy program at OhioHealth Mansfield Hospital, comparing data post-implementation (October through December 2020) to pre-implementation (October through December 2019). The pharmacy is able to dispense discharge medications to bedside before the patient leaves the hospital, while offering pharmacist counseling, medication reconciliation, and payment barrier resolution. Working with the quality team, it was determined that the Medical-Surgical Oncology unit had opportunity for resource improvement for patients at time of discharge. Primary endpoints include HCAHPS scores, cumulative readmission rates, and discharge barriers identified in the Medical-Surgical Oncology unit. Secondary endpoints include number and description of interventions on discharge medication list made by pharmacists. Data analysis included Fischer’s exact test for HCAHPS data, Chi-square test for readmissions data, and descriptive data.

Results:
A total of 49 patients on the Medical-Surgical Oncology unit with medications delivered to bedside before discharge, was compared to a patient population of 123 encounters discharged from the same unit in 2019, before the discharge pharmacy service was offered. All cause 30-day readmissions (22% in 2019 and 2020), and 60-day readmissions (25% in 2019 to 20% in 2020) did not show statistical significance with the new service (p=0.94, 0.51 respectively). HCAPHPS was not found to have statistical significance 2019 to 2020 (p=0.24 to 0.99) in regards the questions related to medication therapies.

Conclusions:
This project did not find any correlation of quality scores with the addition of the new discharge pharmacy service; however, many barriers decreased the patient population of the discharge service in 2020. Further studies should be completed now that the discharge pharmacy has been fully contracted and established.
A Lean approach to the medication distribution model for a 150 bed community-based hospital

Kerrigan Hoover, PharmD - PGY1 Pharmacy Resident, Blanchard Valley Hospital
Mark Johannigman, PharmD; Michael Leifheit, PharmD, BCPS

UAN: 0048-0000-2021-084-L04-P

Learning Objectives:
1. Review the various medication distribution processes involved within the hospital setting
2. Discuss the importance of effective and efficient medication distribution relating to pharmacy and nursing workflow, as well as patient care

Purpose:
The purpose of this study is to assess the current medication distribution model of a 150 bed community-based hospital and explore opportunities to enhance the effectiveness of the medication dispensing process using a Lean approach. The ultimate goal is to eliminate waste, improve process flow, and incorporate innovation by utilizing a continuous improvement cycle. Currently, the study pharmacy uses a hybrid model with both centralized and decentralized medication distribution systems. With organizational plans for relocation of the inpatient pharmacy, this in-depth analysis of the current pharmacy distribution model is necessary for redesigning purposes.

Methods:
The risks and benefits of each distribution model will be considered. The cart fill process using the centralized automated system will be reviewed for occurrences of re-work for the pharmacy staff. The time necessary to complete both the centralized (cart-fill) and decentralized (cabinet-fill) processes will be determined. The number of intravenous products batched during first, second, and third shift will be collected and analyzed for workload distribution. The access to the cabinets by the nurses will be evaluated and the overlap of medication administration schedules will be determined. The patient discharge times will be collected from each unit to review the relevance of the timing of the current once daily cart fill. Nursing staff will be surveyed for insight on current issues with medication location, cabinet wait time, and expectations relating to future distribution changes. Each piece of information gathered will then be used to develop the most effective and efficient medication distribution process for the future pharmacy workload.

Results:
Final results to be presented at Ohio Pharmacy Residency Showcase.

Conclusions:
Final results and conclusions to be presented at Ohio Pharmacy Residency Showcase.
Impact of a pharmacist-led mood stabilizer laboratory monitoring protocol

Krista J Horvath, PharmD, PGY-1 Pharmacy Resident at Mercy Health St. Charles Hospital
Masa Scott, PharmD, BCPS, Behavioral Health Pharmacist; Lauryl Hanf-Kristufek, PharmD, BCPS, CACP, Residency Program Director

UAN: 0048-0000-2021-178-L01-P

Learning Objectives:

1. Define the importance of mood stabilizer monitoring and literature related to mood stabilizer monitoring.
2. Identify the potential importance of a pharmacist regarding mood stabilizer monitoring of inpatient psychiatric patients.

Purpose:
First-line recommended treatment for mood disorders is management with a mood stabilizer. The Food and Drug Administration (FDA) recommends ongoing clinical monitoring of mood stabilizers in order to improve clinical outcomes and medication adherence, detect early symptoms of recurrence, and reduce adverse drug reactions. Despite recommendations, only one-third to one-half of patients taking a mood stabilizer are appropriately monitored. The aim of this study is to determine if a newly implemented pharmacist-led mood stabilizer lab monitoring protocol ensures appropriate monitoring of mood stabilizers of psychiatric inpatients in accordance with guideline recommendations.

Methods:
Between November 1, 2020, and January 31, 2021, this prospective study evaluated 120 adults admitted to the Mercy Health St. Charles Behavioral Health Institute (BHI) on a mood stabilizer for a mood disorder. A newly implemented, hospital-wide mood stabilizer lab monitoring protocol was utilized that allowed pharmacists to order guideline recommended tests. Each study subject’s chart was reviewed for current monitoring, and the pharmacist ordered any missing guideline recommended monitoring tests per protocol.

Results:
Pharmacist interventions regarding laboratory or therapeutic drug monitoring of mood stabilizers were completed in 54 (45%) of 120 total subjects. Additionally, 17 subjects had one or more monitoring tests outside the target parameter(s), regardless of whether a pharmacist ordered the monitoring test. The number of pharmacist recommendations made, other than lab intervention per protocol, was 24 (p=0.037), of which 15 (62.5%, p=0.009) were accepted by providers. Pharmacists ordered tests per protocol including therapeutic drug levels (p=0.0001), lipid panels (p=0.0001), liver function tests (p=0.006), TSH’s (p=0.006), urinalyses (p=0.186), complete blood counts (p=0.433), electrolytes (p=0.433), renal function tests (p=0.433), and fasting glucose levels (p=0.433).

Conclusions:
In psychiatric inpatients receiving a mood stabilizer for a mood disorder, a pharmacist has a beneficial impact on mood stabilizer monitoring in accordance with guideline recommendations.
Expansion of clinical pharmacy services via telehealth blood pressure monitoring in a federally qualified health center

Joseph Hostetler, PharmD
Rebecca Munger, PharmD, BCACP; Kenneth Furdich, PharmD, BCACP; Magdi Awad, PharmD, MSA

UAN: 0048-0000-2021-085-L04-P

Learning Objectives:

1. Discuss the need for telehealth services.
2. Understand how pharmacists can manage BP remotely.
3. Discuss ways to overcome challenges of remote BP monitoring

Purpose:
Many patients have difficulty attending routine care visits such as those to manage blood pressure (BP) due to limited transportation, inability to leave work, or inadequate childcare. These barriers have been worsened by the ongoing SARS-CoV-2 pandemic. Telehealth services may help to overcome these barriers. Previous studies have shown a reduction in blood pressure when pharmacists manage hypertension using home blood pressure monitoring compared to usual care. This service implementation project aims to use telehealth services to improve patients’ BP management at the clinic.

Methods:
This protocol was not found to be human subjects research and did not require IRB approval. Pharmacy will partner with a managed care organization to implement a telehealth BP monitoring program. BP monitoring equipment with Bluetooth data transmission capabilities will be supplied by a third-party company. Physicians/Pharmacists will identify patients with hypertension to participate in the program. Patients will be seen in person for an initial pharmacy visit. During the visit, a medication review will be done, and the pharmacist will enroll the patient in the program. The patients will be required to check their blood pressure by 11 AM daily; if the blood pressure is not logged by this time, then an automated reminder call will be given. If the patients do not log in their blood pressure for 4 days, a live call is placed. Providers/pharmacists will set normal, non-critical high, and critical high blood pressure values. Patients’ BP readings will be faxed to the pharmacy monthly. If a patient gets 4 consecutive non-critical high readings, the patient will be contacted, and the results will be faxed to pharmacy. If a patient logs a critical high value; the patient, an emergency contact or medical service, and the clinic will be notified. Pharmacy will follow up on BP over the phone, for dose adjustments.

Results:
4 patients are enrolled.
At the end of month 1, Patient 1’s BP decreased from 147/87 to 132/85.

Conclusions:
In progress.
Infusion Center Productivity Model: Developing and Evaluating an Operational Productivity Tool

Jordan Hughes, PharmD, PGY1 Health-System Pharmacy Administration and Leadership Resident
Joshua Ilenin, PharmD, MS

UAN: 0048-0000-2021-086-L04-P

Learning Objectives:

1. Review historical pharmacy productivity model limitations in the mixed skill workflow pharmacy setting
2. Outline accepted operational productivity models in outpatient cancer treatment centers
3. Define the preferred operational productivity tool in a large community teaching hospitals outpatient infusion center

Purpose:
ASHP strongly discourages the use of pharmacy productivity models that solely base productivity on the number of doses dispensed. Traditional pharmacy productivity is highly variable based on the level of complexity of hazardous and nonhazardous medications. To accurately reflect the true productivity of a mixed-skill workflow area such as oncology infusion, a pharmacy productivity model should assess all of the clinical and operational efforts of the staff. Currently, the lack of a gold standard productivity model creates an opportunity for assessing and implementing weighted dispensing pharmacy productivity models within our oncology infusion center. Past studies have attempted to identify the most accurate pharmacy productivity indicator through assignment of weighted outputs in relative value units (RVU) and current procedural terminology (CPT) codes. The purpose of this study is to evaluate productivity measures to determine which indicator properly supports our specific infusion centers.

Methods:
This was a prospective study that utilized manual and EPIC time reporting data to appropriately assess all clinical and operational activities. Collection of pharmacy productivity and manual time studies will occur from September 1, 2020 to December 31, 2020 to analyze two different models of pharmacy productivity. EPIC time to verify reports, EPIC dispense check, EPIC dispense preparation, and manual time studies were conducted to appropriately assess the infusion center workload. Average times of clinical and operational activities were determined to assign weighted outputs. The two productivity model designs are compared to one another to assess which indicator properly supports our specific infusion centers.

Results:
Results and conclusions will be presented at the Ohio Pharmacy Residency Conference.

Conclusions:
Results and conclusions will be presented at the Ohio Pharmacy Residency Conference.
A Retrospective Analysis of a Diabetes Pay for Performance Based Bonus Program

Sarah Huster, PharmD Kroger Health/University of Cincinnati
Stacey Frede, PharmD, BCACP, CDE, Pamela C. Heaton, BPharm, PhD, FAPhA

UAN: 0048-0000-2021-087-L04-P

Learning Objectives:
1. Describe the reimbursement challenges community pharmacists face in new value-based care models
2. Discuss the role of the community pharmacist in a population health management strategy for patients with diabetes
3. Evaluate clinical outcomes and financial feasibility of a population health management strategy for patients with diabetes

Purpose:
The purpose of this project is to evaluate the implementation of a diabetes population health management strategy to improve the care of patients with diabetes. The objectives are to determine the impact of a population health management strategy in monitoring A1c results, lowering A1c in patient’s whose baseline A1c is greater than 9.0%, and providing financial feasibility and return on investment (ROI) in the community pharmacy setting.

Methods:
This project is a retrospective data analysis that took place in approximately 216 pharmacies located within multiple regional divisions of a large community pharmacy chain. Patients eligible for this project were identified and communicated by a third-party prescription insurance provider for either no documented A1c in 2020 or a documented A1c greater than 9.0% in 2019 or 2020. Patients without a documented A1C received a verbal reminder from a pharmacy technician to complete an A1C at-home testing kit. Patients identified as having an A1C greater than 9.0% received interventions through a tiered intervention strategy, including an educational discussion regarding diabetes complications, a diabetes targeted medication review, and follow up with the pharmacist. Statistical analysis will be performed to determine the proportion of patients who completed an A1c test after receiving an educational intervention compared to baseline, and the change in pre-intervention and post-intervention A1c values. Data for this project was provided by a performance information management platform.

Results:
During the 2020 measurement period, 96.7% of eligible patients completed an A1c test and 77.9% of eligible patients recorded an A1c of 9.0% or less. Further statistical analysis, including ROI calculations, will be completed once all performance data is available.

Conclusions:
Community pharmacists are well positioned to effectively assist patients in monitoring and managing their diabetes while improving population health outcomes. Future studies should continue to evaluate the economic impact of interventions provided by community pharmacists.
Safety and efficacy of direct oral anticoagulants for the treatment of atrial fibrillation or acute venous thromboembolism in individuals of high body weight

Jennifer Irish, PharmD
Qianyue Liu, PharmD, Caitlin Carron, MPH, Jenna Holzhausen, PharmD, BCPS

UAN: 0048-0000-2021-088-L01-P

Learning Objectives:
1. Review current literature and society recommendations on the use of DOACs in individuals of high body weight
2. Describe pharmacokinetic considerations when using DOACs in individuals of high body weight

Purpose:
Limited clinical data exists to support the use of direct oral anticoagulants (DOACs) in patients of high body weight (HBW). The International Society on Thrombosis and Haemostasis (ISTH) recommends avoiding DOACs in patients &gt;120 kg or BMI &gt;40 kg/m^2 until further evidence supports this practice. The purpose of this study was to evaluate the efficacy and safety of DOACs in patients of HBW compared to patients of normal body weight (NBW).

Methods:
This retrospective chart review compared bleeding and thrombotic event rates in HBW patients (&gt;120 kg or BMI &gt;40 kg/m^2) versus NBW patients (50-120 kg and BMI 18.5-40 kg/m^2) within 90 days of DOAC initiation. Adult patients (age ≥18 years) with atrial fibrillation (AF) or acute venous thromboembolism (VTE) were included if newly initiated on apixaban or rivaroxaban between July 1st, 2016 and November 30th, 2019. Patients were excluded if the DOAC was discontinued before 90 days of therapy for reasons other than bleeding or treatment failure. The primary efficacy outcome was a composite of recurrent VTE, ischemic stroke, and myocardial infarction. The primary safety outcome was the occurrence of a major bleeding event. Secondary outcomes included 90-day mortality and 30-day readmission.

Results:
A total of 143 patients were included, with 61 HBW patients (median weight [IQR]=130 [122, 144] kg; BMI [IQR]=43.9 [40.7, 48.3] kg/m^2) and 82 NBW patients (median weight [IQR]=78 [63, 93] kg; median BMI [IQR]=26.9 [22.2, 31.9] kg/m^2). There was no difference in the incidence of thrombotic events (3.3% HBW vs. 1.2% NBW, p=0.39) or major bleeding events (4.9% HBW vs. 7.3% NBW, p=0.41) between groups. No difference in 90-day mortality (6.6% HBW vs. 7.3% NBW, p=0.57) or 30-day readmission (32.8% HBW and 30.7% NBW, p=0.46) was observed.

Conclusions:
The incidence of thrombotic and bleeding events were similar in patients of HBW and NBW treated with DOACs.
Evaluating ICU Length of Stay after Implementation of a Vasopressin Discontinuation Protocol

*Evan M James, PharmD - Pharmacy Resident OhioHealth Grant Medical Center
Kent L Wilin, PharmD, BCCCP - Lead ICU Clinical Pharmacy Specialist OhioHealth Grant Medical Center

UAN: 0048-0000-2021-089-L01-P

Learning Objectives:

1. Describe current practice of vasopressor management after a patient's septic shock has resolved
2. Report the impact of an early vasopressin discontinuation protocol at a level I trauma center

Purpose:
Vasopressin is a high-cost medication used adjunctively in patients with septic shock. Guidelines recommend norepinephrine and vasopressin as first and second line agents, respectively, in septic shock. However, current guidelines lack any guidance on how to appropriately wean vasoactive agents once shock has resolved. This lack of guidance coupled with the high-cost of vasopressin has created an urgent need for more literature surrounding optimal management of this medication. Our study aims to evaluate the implementation of an early vasopressin discontinuation protocol while offering a new specific management protocol for other institutions to adopt.

Methods:
This study was an IRB-approved retrospective cohort at OhioHealth Grant Medical Center. Adult patients admitted to the ICU with septic shock requiring norepinephrine and vasopressin were included. Patients admitted prior to protocol implementation were compared to those admitted after protocol implementation. The primary endpoint was to assess ICU length of stay. Additional outcomes included hospital length of stay, total vasoactive requirements, and total vasoactive costs.

Results:
Final results will be presented at the Ohio Pharmacy Residency Conference.

Conclusions:
Final results and conclusions will be presented at the Ohio Pharmacy Residency Conference.
Chart Review on the Limitations of Access to Continuous Glucose Monitors for Patients at a Diabetes Clinic in a Small Community Hospital

Jayme C. Jones*, PharmD - PGY-1 Pharmacy Resident, Aultman Alliance Community Hospital
Kevin S. Fuschetto, PharmD, BCACP, BC-ADM; Megan E. King, PharmD, BCACP

UAN: 0048-0000-2021-090-L04-P

Learning Objectives:
1. Identify functions of a continuous glucose monitor (CGM).
2. List the four CMS qualifying criteria for payment of a CGM device through Medicare.

Purpose:
Centers for Medicare and Medicaid Services (CMS) has four qualifications which must be met by a patient for a continuous glucose monitor (CGM) to be covered by Medicare. Evidence is lacking to identify if CMS criteria is inhibiting patients from obtaining a CGM and better control of blood glucose.

Methods:
Patients at the Aultman Alliance Community Hospital MEDS Clinic were included in the analysis if they were age ≥18 years, had a diagnosis of DM1 or DM2, and had a visit at the MEDS Clinic prior to CGM initiation with finger-stick data available. Pediatrics and patients with gestational diabetes were excluded. Insurance information, qualifying criteria, monitoring frequency, average blood glucose, and HbA1c values were obtained through a retrospective chart review. Each patient’s statistics were compared between the visit prior to and after CGM placement. The primary objective was to compare payer and number of CMS criteria met for patients utilizing a CGM, then analyze the patient demographics by insurance payer and criteria fulfilled. The secondary objective was to determine if monitoring frequency of a flash CGM correlates to a change in HbA1c and average blood glucose.

Results:
The primary endpoint resulted in 2 out of the 28 patients analyzed being covered exclusively under Medicare. All 4 CMS qualifiers were met by one patient. The secondary endpoint indicated a statistically significant increase in testing frequency, a statistically significant decrease in average blood glucose, and a decrease in average HbA1c after patients switched to a CGM.

Conclusions:
Current CMS requirements limit access to CGM devices. This could hinder care and lead to suboptimal outcomes for diabetes patients with Medicare. Switching patients from self-monitored blood glucose (SMBG) to a CGM device may increase patient participation in their diabetes management by increasing the frequency of testing, which can improve outcomes including reduction in HbA1c and average blood glucose.
Identifying Rare Toxicities of Immune Checkpoint Inhibitors in Adults with Cancer

Dylan Kakos, PharmD - PGY1 Sinai-Grace Hospital
Joel Appel, DO; Stephanie Beachnau, PharmD

UAN: 0048-0000-2021-091-L01-P

Learning Objectives:

1. Describe the mechanism of action of FDA-approved immune checkpoint inhibitors
2. Discuss the incidence of rare immunotherapy-related toxicities and areas of improvement with toxicity management

Purpose:
Immune checkpoint inhibitors are a newer class of anti-cancer drugs that are increasingly being used to treat different cancer subtypes. There are currently three classes of immune checkpoint inhibitors on the market: CTLA-4 inhibitors, PD-L1 inhibitors, and PD-1 inhibitors. These medications are efficacious throughout various indications; however, due to the nature of their immunomodulatory mechanism, patients can experience significant and sometimes severe, toxicities affecting multiple major organ systems. This study aims to identify the incidence of rare toxicities of immune checkpoint inhibitors that may be underreported in the primary literature.

Methods:
This is an observational, retrospective, multicenter chart review study of adult patients who have been treated with immune checkpoint inhibitors at Detroit Medical Center Sinai-Grace Hospital and Huron Valley Hospital. This study includes patients 18 years and older treated with atezolizumab, avelumab, durvalumab, pembrolizumab, nivolumab, cemiplimab, and ipilimumab between July 2015 – July 2020. Patient data were collected through the utilization of the hospital’s electronic medical record system. After screening for inclusion criteria, comprehensive chart reviews were conducted via admitting history and physical notes and hematology and oncology notes to identify any treatment-related adverse events. The physiological systems that were evaluated for adverse events include hematological, neurological, renal, cardiac, gastrointestinal/liver, dermatological, endocrine, pulmonary, ophthalmic, and rheumatological. Specific factors that were considered include pertinent laboratory values, cancer subtypes, immune checkpoint inhibitor dose, and patient demographic information. The primary endpoint is to identify the incidence of rare immune checkpoint inhibitor toxicities that may be underreported in the literature. Secondary endpoints include the incidence of specific immune-mediated toxicities, stratified by demographic information, and appropriate side effect management per National Comprehensive Cancer Network (NCCN) guidelines.

Results:
Results will be presented at the Ohio Pharmacy Resident Conference.

Conclusions:
In Process
Impact of an ambulatory care pharmacist-led comprehensive chart review

Frisca Kang, PharmD, PGY-1 Pharmacy Resident, ProMedica Flower Hospital
Brittany Holzhauer, PharmD, BCPS, Clinical pharmacist, ProMedica Toledo Hospital; Kaysie Brittenham, PharmD, Clinical pharmacist, ProMedica Toledo Hospital

UAN: 0048-0000-2021-092-L04-P

Learning Objectives:
1. Describe Hospital Readmissions Reduction Program
2. Review current evidence on pharmacist-led transitions of care programs on 30-day readmissions

Purpose:
Ineffective transitions of care (TOC) are associated with not only increased adverse events but also high hospital readmission rates and costs. Although various research has demonstrated that pharmacist-led intervention programs in TOC settings decrease 30-day readmission rates, there is still conflicting evidence as to the benefits of these programs, possibly due to the heterogeneity of the program designs. The purpose of this study was to evaluate 30-day hospital readmissions and the impact of an ambulatory care, pharmacist-led comprehensive chart review prior to physician follow up after hospital discharge.

Methods:
A before-and-after quasi-experimental single site study was conducted at adult internal medicine clinic within a large health system. Patients with hospital discharge follow up appointments from August 1, 2019 to December 31, 2019 were considered for enrollment in the historical group. Patients with hospital discharge follow up appointments from August 1, 2020 to December 31, 2020 were considered for enrollment in the interventional group. Prior to patients’ appointments, an ambulatory care pharmacist performed a comprehensive chart review for patients in the interventional group and recommended interventions to the care team for consideration. The primary outcome was the difference in 30-day readmission rates between the historical comparator group and the interventional group.

Results:
One hundred fifty four and one hundred twenty patients were included in historical group and interventional group, respectively. The difference in the primary outcome, 30-day readmissions, was not statistically significant between the historical group and the interventional group (10.3% and 16.7%, respectively; p-value = 0.13). In addition, the difference in 60-day readmissions, 30-day ED visits, and mortality were not statistically significant.

Conclusions:
This study did not show a significant reduction in 30-day readmissions with an ambulatory care pharmacist-led comprehensive chart review prior to hospital discharge appointments. However, limitations of this study could have potentially masked the true effect of the intervention.
Phenobarbital in the setting of acute alcohol withdrawal
Sai Karwande, PharmD - PGY1 Pharmacy Resident Cleveland Clinic Mercy Hospital
Jeremy Hall, PharmD, BCPS; Mackenzie Tenkku, PharmD, BCPS

UAN: 0048-0000-2021-093-L01-P

Learning Objectives:
1. Review current management strategies for acute alcohol withdrawal syndrome
2. Discuss the potential advantages of phenobarbital use for acute alcohol withdrawal

Purpose:
Alcohol use disorder (AUD) is a prevalent condition with an estimated 5% mortality rate. Chronic AUD may progress to acute alcohol withdrawal syndrome (AWS), which can be fatal. Benzodiazepines have the best evidence base in treatment of AWS. For refractory cases, clinicians utilize the barbiturate, phenobarbital. Recent studies support the use of phenobarbital as first-line treatment for AWS. Compared to lorazepam, phenobarbital has a longer half-life and better suited mechanism of action. The objective of this study is to compare alcohol withdrawal related complications in patients treated with phenobarbital alone, phenobarbital plus lorazepam, or lorazepam alone.

Methods:
This research will be a single-center, quasi-experimental study. Physicians within the ED will receive education about the possible benefits and drawbacks of phenobarbital use in the setting of AWS. Treatment modality will depend on the clinician’s judgment. Baseline data including age, sex, blood alcohol content (BAC), Clinical Institute Withdrawal Assessment of Alcohol Scale (CIWA) score, and past medical history will be recorded for each patient enrolled. Further data including components of subsequent CIWA scores, disposition after admission, and length of stay will also be collected. Patients will be followed throughout their hospital encounter to track CIWA score components, treatment failure, airway support requirements, and total phenobarbital and lorazepam doses. All data will be recorded without patient identifiers and maintained confidentially. Patients involved in this study include: adults aged 18 years or older presenting to the emergency department with acute AWS warranting admission. Those meeting the following criteria will be excluded: age.

Results:
Final results will be presented at the Ohio Pharmacy Residency Conference.

Conclusions:
Final results and conclusions will be presented at the Ohio Pharmacy Residency Conference.
First year experience with elexacaftor/tezacaftor/ivacaftor therapy and its impact on adherence to concomitant medications in individuals with cystic fibrosis

Lisa L. Kenney*, PharmD, PGY1 Pharmacy Resident, University Hospitals Specialty Pharmacy
Olivia Giddings, MD, PhD; Ankica Katic, MSN, APRN-CNP; Jenna Nye, MSN, APRN-CNP; Kimberly McBennett, MD, PhD; Erica Roesch, MD; Katherine Bruening, MD; Leesa Prunty, PharmD, BCPS, BCPPS

UAN: 0048-0000-2021-094-L01-P

Learning Objectives:
1. Identify patients eligible for elexacaftor/tezacaftor/ivacaftor therapy for cystic fibrosis
2. Review monitoring and safety considerations associated with elexacaftor/tezacaftor/ivacaftor

Purpose:
Elexacaftor/tezacaftor/ivacaftor (ETI) is the first triple combination cystic fibrosis transmembrane conductance regulator (CFTR) modulator approved for cystic fibrosis (CF). ETI has allowed patients who have at least one F508del or other responsive mutation in the CFTR gene, which makes up almost 90% of the CF population, access to a highly effective modulator. The purpose of this study is to review ETI to quantify safety and efficacy, and to evaluate the impact of ETI on adherence to other maintenance CF medications at the LeRoy W. Matthews CF Center.

Methods:
Safety and efficacy of ETI were evaluated using a retrospective chart review of eligible patients between October 2018 and October 2020. Inclusion criteria included individuals diagnosed with CF with at least one F508del mutation in the CFTR gene, ages 12 years and older, and that have received treatment for at least 6 months with ETI. The primary objective of this study is to quantify the change in lung function after ETI initiation, measured by the forced expiratory volume in 1 second (FEV1). Secondary objectives include efficacy, quality of life, and safety. Adherence surveys will be sent to patients taking ETI who are 18 years of age or older to determine if the frequency of use of concomitant CF medications decreased and/or were discontinued after starting ETI.

Results:
While on ETI, FEV1 increased nearly 8% and patients reported decreased frequency of cough and sputum production. Hospitalizations due to exacerbations decreased. Full results from the retrospective study and adherence surveys will be available for presentation at the Ohio Pharmacy Residency Conference.

Conclusions:
ETI was overall efficacious and well tolerated. Decreases in cough, sputum production, exacerbations, and hospitalizations were observed after patients started ETI.
Clinical Outcomes Associated with Empiric Anaerobic Coverage in Hospitalized Patients with Pneumonia

Kristina Khaireddine*, PharmD- Harper University Hospital, Detroit Medical Center
Jing J. Zhao, PharmD - Harper University Hospital, Detroit Medical Center, Maggie Cooper, PharmD - Denver Health Medical Center

UAN: 0048-0000-2021-095-L01-P

Learning Objectives:

1. Describe current guideline recommendations for empiric anaerobic coverage in patients with community acquired pneumonia
2. Recognize potential outcomes associated with empiric anaerobic coverage in patients with community acquired pneumonia

Purpose:

For community-acquired pneumonia (CAP), the Infectious Diseases Society of America recommends against routine use of anaerobic antibiotics for suspected aspiration pneumonia unless in the presence of a lung abscess or empyema. Despite this recommendation, anaerobic coverage is often utilized when there is suspicion for aspiration. However, there are very few clinical trials comparing treatment regimens with and without anaerobic coverage for patients hospitalized with suspected aspiration. The usefulness of adding empiric anaerobic coverage to CAP treatment is important given the high disease prevalence and for stewardship purposes. The purpose of this study is to evaluate whether the addition of anaerobic treatment leads to better outcomes in hospitalized patients with CAP.

Methods:

We conducted a retrospective cohort study at four university hospitals between January 2017 and January 2020. Patients diagnosed with CAP and received at least 48 hours of antibiotics were included. Patients were divided into two groups: 1) those who received empiric anaerobic coverage, 2) those who did not receive empiric anaerobic coverage. Exclusion criteria included: age less than 18 or great than 89 years old, antibiotic usage for another indication within the same admission, pregnant or lactating, documented lung abscess, lung cancer, empyema, necrotizing pneumonia, and pneumonia with documented aerobic organism by respiratory culture. Data collected included: demographics, comorbidities, risk factors for aspiration, evidence to support the diagnosis of pneumonia, antibiotic regimen, cultures, and length of stay. The primary outcomes will be those who achieved clinical response which is defined by set criteria at day 5 or discharge if sooner. Secondary outcomes will be length of stay, type of antibiotics, and duration of antibiotic treatment. Statistical analysis will include Student’s t-test to evaluate continuous variables and Chi-squared test to evaluate categorical variables.

Results:

Final results will be presented at the OPRC.

Conclusions:

Final results and conclusions will be presented at the OPRC.
Preventing inappropriate treatment of asymptomatic bacteriuria through pharmacist-driven educational intervention in a rural emergency department

Tara Kidd, PharmD – PGY1 Pharmacy Practice Resident, OhioHealth Marion General Hospital
Katlyn Brown, PharmD; Clare McMahon, PharmD; Erica Wibberley, PharmD

UAN: 0048-0000-2021-096-L01-P

Learning Objectives:
1. Discuss the impact of pharmacist-driven education on inappropriate antibiotic prescribing for asymptomatic bacteriuria (ASB)
2. Summarize treatment recommendations from the 2019 IDSA ASB guidelines regarding special populations

Purpose:
The inappropriate treatment of asymptomatic bacteriuria (ASB) results in patients receiving unnecessary antibiotics, which can lead to increased antibiotic resistance, adverse effects, and an increased cost to the healthcare system. Since treatment is often started in the emergency department (ED), the goal of this study was to evaluate the impact of pharmacist-driven targeted education on inappropriate antibiotic prescribing for ASB within a rural ED.

Methods:
In this quality improvement study with retrospective chart review, targeted education summarizing the 2019 IDSA ASB treatment guidelines was delivered to ED providers over a two-month period. Outcomes of interest were compared in three-month blocks prior to and following the intervention. The primary outcome was reduction in the frequency of antibiotics administered inappropriately for ASB, and the educational intervention was considered successful if there was a statistically significant reduction. Secondary outcomes evaluated inappropriate antibiotic administration in clinically challenging patients: those presenting with altered mental status, recent falls, indwelling catheters, or spinal cord injuries. Other secondary outcomes included percentage of contaminated urinalyses (UA), percentage of UAs suggestive of UTI, and number of treated patients without urinary symptoms and a negative UA.

Results:
Five hundred patients were included in this study (322 in the pre-intervention period and 178 in the post-intervention period). One hundred seven patients (33.2%) received inappropriate antibiotic administration in the pre-intervention group, whereas only 45 patients (25.3%) received inappropriate antibiotic treatment in the post-intervention group (p=0.06). In clinically challenging patients, 89 (31.6%) and 36 (24.8%) of the patients were treated inappropriately prior to and following education, respectively (p=0.15).

Conclusions:
This study did not find a statistically significant association between pharmacist-driven educational interventions and the frequency of inappropriate antibiotic prescribing for ASB. However, the frequency of inappropriate administration of antibiotics did decline, indicating pharmacists can positively impact antimicrobial use.
Evaluation of immune mediated adverse events of extended interval immunotherapy versus standard interval dosing

Lindsey R Koch, PharmD - PGY2 Oncology Pharmacy Resident, St. Elizabeth Healthcare
Alicia M Gesenhues, Pharmacy Oncology Coordinator, PharmD, BCOP. Kristina Hesse, Pharmacist In Charge, PharmD, BCPS, BCOP. Goetz H Kloecker, Medical Oncologist, MD, MSPH, MBA

UAN: 0048-0000-2021-097-L01-P

Learning Objectives:

1. Review the current immune checkpoint inhibitors and their mechanism of action
2. Identify the common immune mediated (imAEs) adverse events and their incidence

Purpose:
Immune checkpoint inhibitors have revolutionized the treatment of many cancers. There has been a recent push to minimize healthcare visits for oncology patients due to increased concern for complications from the SARS-CoV2 national pandemic. This practice change has raised the question on the optimal frequency of administration and the impact of potential treatment interruptions on immunotherapy. Recent accelerated FDA approvals for extended-interval immunotherapy dosing was approved based on pharmacokinetic modeling data thus limiting the clinical trial safety data that is available to providers. While these approvals provide advantages for patients, there are many unanswered questions regarding which patients to transition and the incidence of immune mediated adverse effects. The purpose of this study is to evaluate incidence of immune mediated adverse events in patients who have been transitioned to extended interval immunotherapy compared to the incidence when treating with standard interval immunotherapy.

Methods:
This multi-center, retrospective, cohort study includes patients receiving extended interval atezolizumab, durvalumab or pembrolizumab at a St. Elizabeth Healthcare outpatient infusion clinic. Patients were included if they received an extended interval immunotherapy treatment between May 2020 through March 2021. Data collected from the medical record includes indication for treatment, baseline comorbidities, classification, and grade of immune mediated adverse effect experienced, cycle of treatment it occurred and if it was during standard or extended interval dosing. Incidence of adverse events will be compared to trial reported reference ranges of each of the immunotherapy agents.

Results:
Data collection is currently being conducted; results and conclusions will be presented at the Ohio Pharmacy Resident Conference.

Conclusions:
Data collection is currently being conducted; results and conclusions will be presented at the Ohio Pharmacy Resident Conference.
Comparing hydrocortisone dosing strategies in septic shock

Melissa Kohl, PharmD, PGY2 Pharmacy Resident, Critical Care, ProMedica Toledo Hospital/Russell J. Ebeid Children’s Hospital
Erica A. Sheridan, PharmD, MBA, BCCP, Clinical Pharmacy Specialist; Brian A. Kurish, PharmD, BCCCP, Clinical Pharmacy Specialist, Critical Care

UAN: 0048-0000-2021-098-L01-P

Learning Objectives:

1. Describe the mechanism for steroid use in septic shock
2. Explain how different hydrocortisone dosing strategies affect vasopressor requirement

Purpose:
Stress-dose steroids reduce mechanical ventilation (MV) rates and septic shock duration with conflicting evidence regarding mortality benefit. Steroid dosing strategies include hydrocortisone 200 mg daily as a continuous infusion, 100 mg every 8 hours and 50 mg every 6 hours. However, there is unclear benefit to one intermittent bolus strategy versus the other. At our institution there is no protocol for dosing stress-dose steroids and is based on provider preference. This study aims to determine a possible benefit for higher initial hydrocortisone doses in septic shock reversal.

Methods:
Patients who received hydrocortisone 50 mg every 6 hours or hydrocortisone 100 mg every 8 hours between June 1, 2017 and June 30, 2019 were included if they met Sepsis-3 criteria for septic shock and required at least 0.15 mcg/kg/min of norepinephrine equivalents for at least 1 hour prior to steroid initiation. The primary outcome was change in vasopressor requirement 24 hours after steroid initiation. Secondary endpoints included change in vasopressor requirement at 2, 4, 8, and 12 hours after steroid initiation, length of MV, and reversal of shock.

Results:
Sixty-four patients met inclusion criteria and were analyzed. The hydrocortisone 100 mg group had similar change in vasopressor requirement at 2, 4, 8, 12 and 24 hours after steroid initiation compared to the hydrocortisone 50 mg group. The hydrocortisone 50 mg group had a shorter length of MV (23.5 h vs. 54.6 h; P=0.0028) and a similar rate of shock reversal (55.6% vs 54.3%; p=0.93).

Conclusions:
No differences were seen between the two groups in regards to vasopressor requirement 2, 4, 8, 12 and 24 hours after steroid initiation and time to reversal of shock, but the hydrocortisone 50 mg group was associated with a shorter duration of MV. Further research is warranted to investigate these differences in a larger study.
Safety and Efficacy of Direct Oral Anticoagulants in Patients with Kidney Dysfunction

Jamie Kooiman, PharmD - PGY1 Pharmacy Resident Harper-Hutzel Hospital
Elizabeth Wilpula, PharmD, BCPS, Denise Sutter, PharmD, BCPS, Elizabeth Petrovitch, PharmD, BCPS

UAN: 0048-0000-2021-099-L01-P

Learning Objectives:

1. Describe the current evidence for use of direct oral anticoagulants in patients with reduced kidney function and recognize the gaps in current literature.
2. Discuss the safety and efficacy of oral anticoagulation for patients with creatinine clearance less than 30 mL/min.

Purpose:
Patients with renal dysfunction have an increased risk of both thrombotic and bleeding events, making proper management of anticoagulant regimens exceedingly important. While warfarin is the first line agent for these patients, drug interactions and monitoring requirements add additional burden to patients already with significant comorbidities. Direct oral anticoagulants (DOACs) avoid these issues, making them an ideal alternative, but evidence of safety and efficacy in this population is lacking because major randomized controlled trials excluded patients with advanced kidney disease. We aim to evaluate the safety and efficacy of DOACs compared to warfarin in patients with a CrCl.

Methods:
This study is a retrospective chart review composed of adult patients discharged from a Detroit Medical Center hospital from 2018 to 2019 with an oral anticoagulant prescription for an FDA labeled indication (non-valvular atrial fibrillation/flutter, venous thromboembolism, peripheral arterial disease) and a CrCl

Results:
The results and conclusions of this study will be presented at the Ohio Pharmacy Residency Conference.

Conclusions:
The results and conclusions of this study will be presented at the Ohio Pharmacy Residency Conference.
Comparison of AKI in critically ill patients with piperacillin-tazobactam or cefepime based therapy without vancomycin exposure

Elizabeth Kraus, PharmD, PGY-1 Pharmacy Resident, ProMedica Flower Hospital
Brett Keskes, PharmD, Kristen Monarch-Mocek, PharmD

UAN: 0048-0000-2021-100-L01-P

Learning Objectives:
1. Recall potential causes for AKI in critically ill patients.
2. Compare and contrast rates of AKI in critically ill patients with piperacillin-tazobactam or cefepime based therapy without vancomycin exposure.

Purpose:
Vancomycin plus piperacillin-tazobactam or cefepime is one of the most commonly used combinations of antimicrobials in the hospital setting. It is well known that the incidence of acute kidney injury (AKI) is increased with piperacillin-tazobactam and vancomycin combination therapy. However, limited data exists evaluating the renal effects of piperacillin-tazobactam or cefepime monotherapy in the critically ill patient population. Since AKI is associated with increased mortality and overall healthcare cost, the purpose of this study is to determine if there is an association between the incidence of AKI and the use of piperacillin-tazobactam or cefepime.

Methods:
This retrospective, multisite cohort study included patients 18 years of age or older who received piperacillin-tazobactam or cefepime for at least 48 hours and were admitted to the intensive care unit (ICU) between September 1, 2017 to September 1, 2020. Patients were excluded if they were admitted with AKI or had chronic dialysis treatment, received piperacillin-tazobactam or cefepime for less than 48 hours or concomitant vancomycin therapy, or died during the therapeutic period. The primary outcome was to evaluate the incidence of AKI. Secondary outcomes included discontinuation and/or change in antibiotics, initiation of renal replacement therapy during the therapeutic period, and length of stay (LOS) in days.

Results:
Statistical analysis is in progress. Final results will be presented at the Ohio Pharmacy Resident Conference.

Conclusions:
Final conclusions will be presented at the Ohio Pharmacy Resident Conference.
Impact of pharmacists’ intervention on patients undergoing surgery with active or a past medical history of opioid use disorder

Autumn Krempasky, RPh, PharmD--Pharmacist Resident, Mary Rutan Hospital
Karen Kier, PhD, RPh, BCPS, BCACP, CTTS and Jessi Davis, RPh, Pharm D, BCACP

UAN: 0048-0000-2021-101-L08-P

Learning Objectives:

1. Identify the need for Pain Management Stewardship programs in hospitals
2. Discuss the impact pharmacists may have on patients undergoing surgery with a past medical history of opioid use disorder

Purpose:
A past medical history of illicit substance abuse or current opioid use can make treating pain following surgery complex. Including all pertinent healthcare providers into the decision-making process before initiating new pain medications provides optimal continuity of care. The purpose of this program is to determine if a pharmacists’ intervention for pain management during pre-operation planning can have a positive impact on patients’ health and the healthcare system, particularly by maintaining adequate pain control without compromising opioid abuse recovery progress. This new intervention is part of a much larger Pain Management Stewardship Program that aims to address the continued opioid epidemic throughout the United States.

Methods:
When patients undergo their initial evaluation by the Pre-Anesthesia Team (PAT), a notification will be sent to the clinical pharmacist when a patient presents with a PMH of opioid use disorder or active opioid abuse. The pharmacist will then contact the physician that is managing the patient’s pain or substance abuse treatment and collaborate on a plan for pain management following surgery. The pharmacist will document the recommendation in the EMR, including medication recommendations, current home medications, name of the physician currently managing patient’s pain, nonpharmacological recommendations, and details of the patient’s PMH. The pharmacist will monitor the patient following surgery to assess whether the pharmacist’s recommendation was accepted and whether the patient accepted the medication.

Results:
Data is currently being collected.

Conclusions:
Conclusions will be presented at the 2021 Ohio Pharmacy Residency Conference.
Pharmacist management of vitamin deficiencies in a single-center adult cystic fibrosis clinic

Lienna L. LaBarge, PharmD - PGY1 Pharmacy Resident, DMC Harper University Hospital
Carrie S. Molesa, PharmD, BCPS - DMC Harper University Hospital

UAN: 0048-0000-2021-102-L01-P

Learning Objectives:
1. Describe the physiology surrounding cystic fibrosis that causes decreased absorption of fat-soluble vitamins and severe complications
2. List pharmacist interventions that may help to reduce incidence of vitamin deficiencies

Purpose:
Patients with cystic fibrosis commonly have exocrine pancreatic insufficiency resulting in an inability to absorb fat-soluble vitamins. These deficiencies are concerning as they can lead to debilitating effects such as impaired bone homeostasis, immunodeficiency, corneal ulcers, vision loss, bleeding, and impaired neurologic function. In addition to the complex medication regimens needed to manage cystic fibrosis, high-dose, fat-soluble vitamins taken twice per day are a requirement for many patients. The present study aims to characterize the type and impact of pharmacist intervention in reducing incidence of vitamin deficiency in patients who have cystic fibrosis.

Methods:
This retrospective chart review was conducted at The Detroit Medical Center Adult Cystic Fibrosis Clinic. Patients ages 18 years and older who received primary cystic fibrosis care at the clinic were included. Patients were excluded if they were pregnant, received a negative diagnosis for cystic fibrosis during follow-up in the clinic, never were evaluated by a pharmacist, or never had a vitamin level checked. Data collection included demographic information, comorbid conditions, concomitant CFTR modulator treatment, pancreatic enzyme supplementation, type of pharmacist intervention, self-reported adherence, need for antibiotic treatment, number of hospitalizations, DEXA scan results, FEV1 measurements, HbA1c values, and weight measurements. Data from patients who received an intervention from a pharmacist was compared before and after intervention. The primary outcome was the number of measured vitamin A, D, E, and K levels at or above goal using Chi-squared test for statistical analysis. The secondary outcome included improvement in comorbid conditions measured by number of hospitalizations, number of exacerbations, and T/Z-Score results.

Results:
Final results will be presented at the Ohio Pharmacy Residency Conference.

Conclusions:
Final results and conclusions will be presented at the Ohio Pharmacy Residency Conference.
Learning Objectives:

1. Review the most current guidelines and literature for treatment of severe sepsis and septic shock.
2. Discuss the impact that using sepsis order set may have on the compliance to the Centers for Medicare and Medicaid (CMS) SEP-1 core measure.

Purpose:
Since 2015, hospital performance has been measured against the Centers for Medicare and Medicaid Services (CMS) “SEP-1” sepsis core measure. Beaumont Hospital-Dearborn created an inpatient order set to improve the care of patients with sepsis syndromes and to meet SEP-1 requirements. This study aims to determine the association between order set usage and CMS core measure compliance for patients who develop severe sepsis or septic shock during a hospital admission.

Methods:
This is a retrospective, cohort study of adult patients who developed severe sepsis or septic shock during an admission to Beaumont Hospital, Dearborn (BHD) between February 2020 and February 2021. Patients meeting CMS sampling criteria were included in this study. Groups were defined as patients receiving sepsis treatment with or without the order set. The primary endpoint of this study was to determine the percentage of cases compliant with the CMS SEP-1 measure.

Results:
Twenty-three patients were included in this study (7 patients were treated using the order set, 16 were not). The entire SEP-1 CMS core measure was met in 0% order set group cases versus 6% of the non-order set group cases. While SEP-1 was not met, many of the individual measure components were achieved with a greater frequency in the order set group compared to the non-order set group, including fluid bolus (71% vs 19%), zero-hour lactate (100% vs 38%), initial blood culture draw (100% vs 75%), and antibiotics administered within 3 hours (86% vs 75%). Finally, a lower mortality rate was observed in the order set group (0%) versus the non-order set group (25%).

Conclusions:
In conclusion, use of the order set did not predict compliance to the overall SEP-1 measure. However, this use of the order set correlated with higher compliance to many of the individual components of the measure.
Impact of pharmacist intervention on anticoagulation management and risk for potential exposure during the COVID-19 pandemic

Lindsey Lee, PharmD - PGY1 Pharmacy Resident at The Ohio State University College of Pharmacy
Phillip A. Farwig, PharmD, BCACP, TTS; Lauren Kirk, PharmD, BCACP; Virginia D. Mitchell, PharmD, BCPS, CLS; Jennifer A. Sabatino, PharmD, BCACP; Kelli D. Barnes, PharmD, BCACP

UAN: 0048-0000-2021-104-L04-P

Learning Objectives:
1. Describe anticoagulation management options that can be safely utilized to minimize risk for COVID-19 exposure during the pandemic
2. Identify candidates eligible to switch from warfarin to direct oral anticoagulant therapy

Purpose:
The objective of this study was to describe the number and types of changes made to anticoagulation therapy and monitoring as a result of pharmacist intervention during the coronavirus disease 2019 (COVID-19) pandemic. Secondary objectives include defining barriers to switching warfarin to a direct oral anticoagulant (DOAC), tracking the number of major bleeding and thrombosis events after changes in anticoagulation therapy or monitoring, describing the impact of an extended international normalized ratio (INR) monitoring interval on patient time in therapeutic range (TTR), and comparing the number of in-person healthcare and laboratory visits in the 6 months before and after pharmacist intervention.

Methods:
Between March 1 and April 30, 2020 a primary care anticoagulation intervention was completed in which pharmacists reviewed the electronic health record (EHR) for patients on clinic-managed warfarin therapy to determine the best recommendation for anticoagulation management during the COVID-19 pandemic. Recommendations were discussed with the patient’s primary care provider. For accepted recommendations, patients were engaged in informed decision making. In this study, a retrospective chart review was completed to determine the number and type of changes in anticoagulation therapy and management, barriers to switching patients from warfarin to a DOAC, the number and type of bleeding and thromboembolic events in the 6 months after pharmacist intervention. The TTR (calculated using the Rosendaal method) and the number of in-person healthcare or laboratory visits with an INR drawn in the 6 months before and after the intervention were tracked. Descriptive and inferential statistics were used to evaluate outcomes.

Results:
A total of 149 patients were included. Pharmacists recommended switching to a DOAC (n=47, 31.5%), extending the INR monitoring interval (n=44, 29.5%), switching to home INR monitoring (n=34, 22.8%), no change to anticoagulation (n=21, 14.1%), and stopping anticoagulation (n=3, 2%). Further results are pending.

Conclusions:
Specific conclusions are pending.
Outcomes in Anticoagulation Associated Hemorrhagic Stroke: Warfarin vs Direct Oral Anticoagulants (DOACs)

Jenny Lee, PharmD- The University of Toledo Medical Center
Kellie N. Buschor, PharmD, BCPS, BCCCP

UAN: 0048-0000-2021-105-L01-P

Learning Objectives:
1. Review existing literature on outcomes of patients with anticoagulation related hemorrhagic stroke
2. Discuss patient and medication specific factors that impact functional outcomes in hemorrhagic stroke

Purpose:
In recent years, with the advent and popularity of newer oral anticoagulants, the concern for anticoagulation related hemorrhagic stroke poses a challenge to clinicians. Although there are major studies evaluating risk of bleed and hemorrhagic stroke, functional outcomes of these patients suffering hemorrhagic strokes from anticoagulants are not addressed. The purpose of this study is to determine changes in functional outcomes in patients on warfarin or a DOAC to aid in the selection of oral anticoagulation

Methods:
This study is a retrospective cohort analysis at the University of Toledo Medical Center (UTMC) between the months of August 1st 2015 to August 31st 2020. Patients with prior use of an oral anticoagulant within 7 days of presenting to UTMC and a positive hemorrhagic stroke diagnosis as defined by ICD-10 code were included in the analysis. Key exclusions included a subtherapeutic International Normalized Ratio (INR) < 1.7, concomitant use of parenteral anticoagulation, and hemorrhagic conversion. The primary outcome was to evaluate the modified Rankin Scale (mRS) in patients suffering from a hemorrhagic stroke on warfarin or a DOAC (mRS 0-3= good outcome, mRS 4-6= poor outcome).

Results:
A total of 290 encounters were assessed and 16 patients were included (8 on warfarin and 8 on a DOAC). Primarily, patients were excluded due to a lack of oral anticoagulation at the time of hemorrhagic stroke. Preliminary baseline characteristics were similar between the two groups with the exception of out of hospital aspirin use (warfarin=2, DOAC=5) and history of prior stroke (warfarin =2, DOAC=5). Final results to be presented during conference.

Conclusions:
Conclusions will be presented pending final analysis. Assumptions can be made that a major limitation of this study is the sample population and the retrospective nature of the study design.
Pharmacist-completed Annual Wellness Visit program pilot study

Amanda Liebrecht, PharmD, BCPS - PGY2 Ambulatory Care Resident, Mercy Health St. Rita’s Ambulatory Care
Staci Dotson, PharmD, BCPS, BCACP, BC ADM – Clinical Pharmacist, Mercy Health St. Rita’s Ambulatory Care; Debra Parker, PharmD, BCPS – Clinical Pharmacist, Mercy Health St. Rita’s Ambulatory Care

UAN: 0048-0000-2021-106-L04-P

Learning Objectives:
1. Recall the components of an Annual Wellness Visit per Medicare Part B requirements
2. Identify appropriate preventative health screenings for a patient based on age and risk factors

Purpose:
Medicare Part B covers Annual Wellness Visits (AWV) at no cost to beneficiaries. These visits focus on preventative health measures and screenings. A comprehensive medication review (CMR) is an essential component of the AWV and pharmacists are well-suited to conduct these visits. In addition, several studies have shown that pharmacist-completed AWV are a financially feasible method to justify a pharmacist salary. The purpose of the study is to pilot the workflow, productivity, financial feasibility of a pharmacist-completed AWV program. In addition, intervention and quality metrics data will be compared between AWV run by pharmacists compared with other providers.

Methods:
This quality improvement pilot study will be set in a family medicine residency clinic. There will be three cycles of quality improvement, each lasting 4 weeks. Medicare patients seen at the family medicine clinic with no AWV completed in the past 12 months will schedule an AWV with their provider. An AWV-trained pharmacist will conduct the visits on certain days of the week. Pharmacist visits will include the addition of Medication Therapy Management (MTM) CMR for eligible patients and additional counseling regarding appropriate utilization of the Emergency Department (ED). The two comparison arms will be visits completed with pharmacist involvement compared with no pharmacist involvement. Outcome measures collected will be quantity and type of interventions made, ED visits, hospitalizations, and health-system quality metrics (A1C >9%, screening completion, AWV completion, diabetic statin utilization). Outcomes will be collected at 1, 3, and 6 months after the intervention period and compared between the two arms. Data regarding time spent per patient, visit volumes, and reimbursement will also be collected.

Results:
Data analysis is ongoing and results will be presented at the 2021 Ohio Pharmacy Residency Conference.

Conclusions:
To be presented at the 2021 Ohio Pharmacy Residency Conference.
Retrospective evaluation of a diabetic ketoacidosis protocol in a community health system

Rebekah V. Linville,* PharmD – PGY1 Pharmacy Resident, St. Elizabeth Healthcare
Elizabeth L. Giordullo, PharmD, BCPS, BCCCP; Katherine E. Moore, PharmD, BCCCP

UAN: 0048-0000-2021-107-L01-P

Learning Objectives:

1. Discuss the pathophysiology of DKA and current treatment guidelines
2. Review the current protocol for DKA management
3. Identify areas to improve St. Elizabeth’s compliance with the DKA protocol

Purpose:
Diabetic ketoacidosis (DKA) is an expensive, dangerous, and avoidable complication of diabetes. The average hospital charge associated with DKA treatment increased from $18,987 to $26,566 per admission between 2003 and 2014. While our ability to treat diabetes and its associated complications has significantly improved over the years, patients presenting with uncontrolled diabetes leading to DKA remains a significant problem. The purpose of this retrospective study is to identify the most common variances from a community health system’s DKA protocol. This will allow for targeted interventions and education to improve compliance with the protocol leading to improved patient outcomes and care.

Methods:
The institutional review board approved this retrospective study. The electronic medical record was used to identify all patients receiving an insulin drip for DKA within a community health system from July 2019 – June 2020. Patients at least 18 years of age with a diagnosis of DKA were included in the study. The following data was collected: demographics; primary admission diagnosis; blood glucose at admission; insulin infusion rates; fluids; electrolytes; anti-emetics; long-acting and short-acting insulin; medication costs; length of stay; and mortality. Variances from the hospital protocol were identified and recorded via the following categories: non-protocol adjustment of insulin drip based on blood glucose level, non-protocol fluid change based on blood glucose level, non-protocol response to a hypoglycemic event, and non-protocol monitoring of labs. Data collection is currently ongoing.

Results:
Final results will be presented at the Ohio Pharmacy Resident Conference.

Conclusions:
Conclusions will be presented at the Ohio Pharmacy Resident Conference.
Safety and efficacy of direct oral anticoagulants for the treatment of atrial fibrillation or acute venous thromboembolism in patients of low body weight

Qianyue Liu, PharmD - PGY1 Pharmacy Resident at Beaumont Hospital, Royal Oak
Jennifer Irish, PharmD - PGY1 Pharmacy Resident at Beaumont Hospital, Royal Oak. Jenna Holzhausen, PharmD, BCPS - Clinical Pharmacy Specialist, Cardiac Critical Care at Beaumont Hospital, Royal Oak

UAN: 0048-0000-2021-108-L01-P

Learning Objectives:
1. Review current literature and society recommendations on the use of direct oral anticoagulants in low body weight patients
2. Describe pharmacokinetic considerations when using direct oral anticoagulants in low body weight patients

Purpose:
The Anticoagulation Forum recommends limiting direct oral anticoagulant (DOAC) use in patients weighing < 50 kg. The purpose of this study was to evaluate the efficacy and safety of DOACs in low body weight (LBW) patients compared to normal body weight (NBW) patients.

Methods:
This retrospective chart review compared rates of bleeding and thrombotic events in patients of LBW (< 50 kg) versus NBW (50-120 kg and BMI ≤ 40 kg/m^2) within 90 days of DOAC initiation. Adult patients with atrial fibrillation or acute venous thromboembolism were included if newly initiated on apixaban or rivaroxaban between July 1st, 2016 and November 30th, 2019. Patients were excluded if the DOAC was discontinued before 90 days of therapy for reasons other than bleeding or treatment failure. The primary efficacy outcome was the occurrence of thrombotic events, and the primary safety outcome was the occurrence of major bleeding events.

Results:
There were 82 NBW and 70 LBW patients included. The median weight and BMI in the LBW group was 47 kg [44, 49] and 18.3 kg/m^2 [17.1, 19.9], respectively. Median weight in the NBW group was 78 kg [63, 93] and median BMI in the NBW group was 26.9 kg/m^2 [22.2, 31.9]. There was no difference in the incidence of thrombotic events observed (1.4% LBW vs. 1.2% NBW, p=0.711). Major bleeding events were numerically higher in the LBW group (17.1% LBW vs. 7.3% NBW, p=0.053), but did not reach statistical significance. DOACs were more frequently discontinued due to bleeding in LBW patients (21.4% LBW vs. 3.7% NBW, p

Conclusions:
The incidence of thrombotic events was similar in the LBW group compared to the NBW group. Major bleeding events were numerically higher in the LBW group, which is clinically concerning. Larger trials are needed to evaluate the incidence of bleeding events in LBW patients taking a DOAC.
Evaluation of Emergency Medicine Pharmacist-Facilitated Sexually Transmitted Infection Microbiologic Test Follow-up in Patients Discharged from the Emergency Department

Maribel Llamas Rangel, PharmD
L. Hunter Reese, PharmD, BCPS; Brian McCrate, PharmD, BCPS, BCCCP; Michelle Hecker, MD; M. David Gothard, PhD

UAN: 0048-0000-2021-109-L01-P

Learning Objectives:

1. Identify importance of sexually transmitted infection (STI) culture follow-up in the emergency department (ED).
2. Assess the impact of implementing emergency medicine pharmacist (EMP) culture follow-up at an urban academic medical center’s emergency department

Purpose:
Utilization of pharmacists for positive STI test monitoring may decrease time to treatment interventions and repeat STI-related visits. Recently, EMPs began providing follow-up for patients requiring treatment after ED discharge for positive Trichomonas vaginalis, Chlamydia trachomatis, and Neisseria gonorrhoea nucleic acid amplification tests (NAATs) for the MetroHealth System EDs utilizing a consult agreement. The purpose of this study is to assess the impact on time to patient notification, documented treatment, and/or STI-related visits following EMP implementation on culture follow-up.

Methods:
This is an IRB-exempt, single-center, pre- and post-implementation, retrospective cohort study. Patients 16 years or older discharged from the ED with subsequent positive test for Chlamydia trachomatis, Neisseria gonorrhoea and/or Trichomonas vaginalis were screened for inclusion. The pre-implementation group included patients who required follow-up from June 1, 2019 to September 30, 2019. The post-implementation group included patients who required follow up from June 1, 2020 to September 2020.

Results:
Documentation of follow-up for all patients requiring treatment was significantly higher in the post-implementation group (98% vs 54%, p

Conclusions:
Implementation of EMP STI culture follow-up significantly reduced time from test result to patient outreach and resulted in significantly fewer STI-related repeat visits within 30 days for patients with positive Chlamydia trachomatis and/or Trichomonas vaginalis results.
Impact of pharmacist intervention on hemoglobin A1c and acute care visits for ambulatory care sensitive conditions

Ari Lopez, PharmD - PGY1 Resident in Ambulatory Settings with The Ohio State University College of Pharmacy
Kelli Barnes, PharmD, BCACP, Cory Coffey, PharmD, BCACP, BCPP, Ana Simonyan, PharmD, BCACP, Stuart Beatty, PharmD, BACACP, FAPhA

UAN: 0048-0000-2021-110-L01-P

Learning Objectives:

1. Define ambulatory care sensitive conditions and their role in primary care metrics
2. Assess the impact of pharmacist management on diabetes control and performance-based quality metrics in a network of general internal medicine clinics

Purpose:
The purpose of this study is to evaluate the impact of pharmacist management on diabetes control and performance-based quality metrics. The primary objective of this study is to compare the percentage of patients with hemoglobin A1c ≥ 9% before and at 3, 6, 9, and 12 months after enrollment in pharmacist management. Secondary objectives include tracking the mean percent change in hemoglobin A1c before and at 3, 6, 9, and 12 months after enrollment in pharmacist management as well as the total number of acute care visits for ambulatory care sensitive conditions (ACSC) 12 months before and after enrollment in pharmacist management.

Methods:
This study is a retrospective chart review of all patients > 18 years of age with a hemoglobin A1c ≥ 9%, who are enrolled in pharmacist diabetes management at a network of general internal medicine clinics within a large academic medical center. Patients will be excluded if they had > 3 encounters with a pharmacist prior to July 2018, were established with an endocrinologist for treatment of diabetes during the study period, or if a hemoglobin A1c was not obtained after initiation of pharmacist management. Hemoglobin A1c values before and at 3, 6, 9, and 12 months after enrollment in pharmacist management as well as total number of ACSC hospitalizations and emergency department visits for diabetes in the 12 months before and after pharmacist management initiation will be compared using descriptive and inferential statistics.

Results:
Research in progress

Conclusions:
Research in progress
Pharmacist-driven Workflow to Promote Appropriate Use of Stress Ulcer Prophylaxis (SUP): A Quality Initiative

Loulwa Maktabi, PharmD – PGY1 Pharmacy Practice Resident Mercy Health St. Vincent Medical Center
Deidre Rohaley PharmD, MBA, BCPS; Lisa McIntyre PharmD, BCACP; Aimrie Ream PharmD, BCACP, BCGP

UAN: 0048-0000-2021-111-L04-P

Learning Objectives:
1. List major and minor criteria qualifying patients for SUP
2. Describe complications associated with acid-suppressive therapy
3. Identify potential benefits of multidisciplinary quality initiatives directed towards promoting appropriate use of SUP

Purpose:
Studies have shown overutilization of SUP in both intensive care unit (ICU) and non-ICU patients. This includes prescribing SUP in low-risk patients and continuation upon transfer or discharge. Interdisciplinary quality initiatives have reduced the rates of inappropriate prescribing of SUP and contributed to reduced costs. The purpose of this project is to seek measures to improve appropriate utilization within our institution.

Methods:
This Plan-Do-Study-Act quality improvement project aims to promote appropriate use of SUP via provider education and implementation of a pharmacist-driven workflow to evaluate and adjust therapy. The goal is a thirty percent reduction in SUP overuse by June 2021. Cycle 1 involved development and approval of SUP criteria and a workflow for pharmacists to assess and adjust medication orders for SUP. Cycle 2 included a pharmacy resident-led education session for Internal Medicine and Family Medicine medical residents, which was followed by a random chart audit to assess guideline adherence. For cycle 3, the pharmacy resident piloted the pharmacist-driven workflow on one unit for a week to determine resources needed with a goal of training all pharmacists and expanding to all inpatient units. Additional information will be collected after full implementation of this workflow and compared with baseline data.

Results:
Development and introduction of pharmacy workflow and distribution of criteria and education were well received. A random chart audit of ten patients seen by the Internal and Family Medicine services post-educational sessions revealed appropriate prescribing of acid-suppressive therapy. During the pilot, an average of 23 patients and 15 orders of SUP agents were reviewed daily. Pharmacist interventions during this cycle included SUP discontinuation if guideline criteria were not met, intravenous to oral conversions, renal dose adjustments and agent specific dose adjustments.

Conclusions:
Conclusions will be presented at the 2021 Ohio Pharmacy Resident Conference.
Evaluation of a Pharmacist-driven Vancomycin De-escalation Workflow in Patients with Suspected Pneumonia or Acute Exacerbation of Chronic Obstructive Pulmonary Disease (AECOPD)

Emily L Marvin, PharmD-PGY-1 Pharmacy Practice Resident
Deidre J Rohaley, PharmD, MBA, BCPS; Bryan M Bishop, PharmD, BCPS

UAN: 0048-0000-2021-112-L01-P

Learning Objectives:
1. Review current literature regarding pharmacist-led antibiotic de-escalation workflows.
2. Discuss the impact of a pharmacist-led antibiotic de-escalation workflow.

Purpose:
Antimicrobial stewardship efforts have become increasingly important as antimicrobial resistant infections are associated with worse outcomes and have become more prevalent. Polymerase chain reaction (PCR) nasal swabs for methicillin-resistant Staphylococcus aureus (MRSA) have demonstrated a strong negative predictive value for MRSA respiratory infections. Recent literature has shown that MRSA PCR nasal swabs can be utilized to promote early de-escalation of vancomycin therapy. The purpose of this study is to evaluate the impact of a pharmacist-led antibiotic de-escalation workflow implemented at Mercy Health St. Vincent Medical Center in February 2020.

Methods:
This retrospective, single-center, pre-post chart analysis was approved by the Institutional Review Board approval. Subject data will be obtained and evaluated for inclusion from August 1, 2019 through January 31, 2020 (pre-workflow group) and from March 1, 2020 through August 31, 2020 (post-workflow group). The primary outcome will be the evaluation and comparison of vancomycin duration of therapy in the pre-workflow and post-workflow groups. Secondary outcomes include the evaluation and comparison of acute kidney injury and red man syndrome between the two groups. Subjects 18 years or older, who were admitted for suspected pneumonia or AECOPD and received at least one dose of vancomycin will be included. Those with a concomitant infection requiring vancomycin or who received intranasal mupirocin will be excluded. A drug utilization report will identify patients treated with vancomycin for suspected pneumonia or AECOPD via electronic medical record. Variables to be collected will include baseline demographics, vancomycin ordering and monitoring data, MRSA PCR nasal swab ordering data and results, vancomycin duration of therapy, and adverse events. Data will be analyzed utilizing descriptive statistics. Categorical data will be analyzed utilizing chi-squared or Fisher’s exact test. Continuous data will be analyzed utilizing either the student’s T-test or Mann-Whitney U test.

Results:
Data analysis is ongoing.

Conclusions:
To be presented at the 2021 Ohio Pharmacy Resident Conference.
Development of a hypoglycemia prediction tool for use in patients with diabetes mellitus admitted to Beaumont Hospital, Dearborn

Aradhna Mayalall, PharmD, PGY1 Pharmacy Resident at Beaumont Hospital, Dearborn
David Wilpula, PharmD, BCPS

UAN: 0048-0000-2021-113-L01-P

Learning Objectives:
1. Explain how clinical prediction models are developed and utilized in practice
2. Identify factors that may increase a patient’s risk of hypoglycemia

Purpose:
Hypoglycemia during hospital stay is associated with longer lengths of stay and increased risk of mortality. Although the danger of hypoglycemia is known, there are few tools to guide the initial intensity of diabetes management in hospitalized patients. Thus we rely on clinical judgment and institutional resources when deciding insulin doses and glycemic targets. An objective and simple predictive model for hypoglycemia could be helpful in guiding the initial intensity of treatment. While studies published in the last decade indicate that there is some agreement on major risk factors, the results vary accordingly due to differences in region, methods, scale, and variables utilized limiting their external validity. In this study, we sought to derive and validate a hypoglycemia risk model utilizing variables readily available upon admission at Beaumont Hospital, Dearborn.

Methods:
Patients in the derivation cohort were identified by ICD-10 codes related to diabetes mellitus (both type 1 and type 2) noted during admission occurring between November 1, 2019 and April 30, 2020. Subjects were excluded if they were less than 18 years old at the time of noted admission. The prediction rule was derived from a stepwise logistic regression, with hypoglycemia during the first 72 hours of hospitalization as the primary outcome. Hypoglycemia was defined as a serum or blood glucose reading less than 70 mg/dL, while severe hypoglycemia was defined as less than 50 mg/dL. Risk scores were generated on the basis of the beta-coefficients of the model.

Patients in the validation cohort were identified in a similar manner from records between November 1, 2020 and February 28, 2021. Demographic and clinical variables previously reported were obtained for comparison of baseline characteristics and validation of the prediction rule.

Results:
The hypoglycemia incidence was 12.61% in the derivation cohort. Characteristics independently associated with hypoglycemia included history of hypoglycemic episode within the past 6 months (OR 3.25, p)

Conclusions:
The hypoglycemia prediction rule showed fair accuracy in predicting hypoglycemia.
Evaluation of Pharmacist-Led Telehealth Smoking Cessation Services in a Primary Care Setting

Ariel McDuffie, PharmD - The Ohio State University College of Pharmacy/PrimaryOne Health
Shibu J. Varughese, PharmD, Allyson Duffy, PharmD, BCACP, Andrew Faiella, PharmD, BCACP, Laura F. Hagy, PharmD
Candidate 2022, Kaeli A. Parcel, PharmD Candidate 2022, Jangus B. Whitner, PharmD, BCACP, Alexa S. Valentino, PharmD, BCACP

UAN: 0048-0000-2021-114-L01-P

Learning Objectives:

1. Identify 30-day point prevalence abstinence in both the pharmacists and primary care provider group
2. Explain patient satisfaction of telehealth smoking cessation services received by a pharmacists and a primary care provider
3. Discuss the differences in prescribing patterns and time spent with patients during telehealth smoking cessation visits provided by a pharmacists and a primary care provider

Purpose:
Previous studies of pharmacist-led smoking cessation services concluded that pharmacist interventions may lead to higher or no difference in quitting rates compared to usual care, however, the low quality of evidence is low. This purpose of this study is to fill these gaps by assessing the number/rate of patients with a 30-day point prevalence abstinence, assess patient satisfaction of smoking cessation services, assess the number of encounters and the medications prescribed and time spent counseling per encounter.

Methods:
Prospective cohort survey study to assess smoking cessation and patient satisfaction rates from telehealth smoking cessation services for patients seen by a Primary Care Provider (PCP) only and patients seen by a pharmacist for a new quit attempt between 03/30/2020 and 08/31/2020. Patients who only use other forms of tobacco besides cigarettes and speak a language other than English were excluded. A REDCap survey, written by the study authors, was sent out 7 months following the initial cessation visit using a mixed methods approach. Chart reviews were conducted for the two study arms to assess the number of encounters, medications prescribed, and time spent counseling per encounter.

Results:
Across the pharmacist and PCP groups, 129 patients have been invited to participate in the study at this point (n=41 vs n=88, respectively). Among the invited participants, 15 in the pharmacist group and 27 in the PCP group completed the survey as of 03/30/21. 20% (n=3) of patients in the pharmacist group and 7% (n=2) of patients in the PCP group reached the primary outcome of a 30-day point prevalence abstinence. Results show pharmacists may spend more time than PCPs addressing how smoking cessation medications work, their proper use, and discussing behavioral changes to help with quitting. Pharmacists are also likely to prescribe combos of NRT or medications other than NRT to assist with quitting smoking. Lastly, results show that pharmacists spend more time counseling patients and are more likely to have follow up encounters with patients compared to PCPs.

Conclusions:
Future studies may need to analyze the reason most patients did not reach a 30-day point prevalence abstinence. Further investigation may need to be done to determine the reasons why PCPs may not have offered an appointment with an RPh to some patients. Additionally, there are likely areas that both RPhs and PCPs can focus on to improve and expand services around tobacco use disorder.
Time to first dose of antibiotic therapy in septic patients with β-lactam allergy

Taylor McGuire, PharmD - DMC Sinai Grace Hospital
Linda Park, PharmD, Kyle Mangan, PharmD, Rachel Wein, PharmD, BCPS

UAN: 0048-0000-2021-115-L01-P

Learning Objectives:
1. Discuss the CMS SEP-1 quality measure bundle and its effect on sepsis care
2. Explain how penicillin allergies can impact sepsis treatment and lead to use of alternative antibiotics

Purpose:
Prompt administration of antibiotic agents is associated with improved outcomes in sepsis and septic shock. Kumar et al. reported a 7.6% linear increase in mortality for each hour antimicrobials are delayed. Consequently, the 2016 Surviving Sepsis Campaign guidelines recommended initiation of antimicrobials within one hour of sepsis recognition. However, β-lactam antimicrobials are often first line, posing a possible time delay for those with a β-lactam allergy. The objective of this study is to determine whether time to both initial and appropriate antimicrobials is delayed in this patient population.

Methods:
This study is a retrospective, multi-center cohort study of septic adult patients who presented to any Detroit Medical Center hospital from March 2017 to December 2019. Patients will be included if they received at least one dose of antimicrobial therapy. Patients will be excluded if they were already receiving antimicrobials at the time of sepsis recognition, have a non-β-lactam antibiotic allergy, or if they have a confirmed fungal, viral, or parasitic infection. The control group consists of patients with no known antibiotic allergies. The intervention group includes those with β-lactam allergy. Non-antibiotic allergies are permissible in both groups. The primary outcome is time to initial antibiotics. Secondary outcomes include mortality, length of stay, transfer to the intensive care unit, time to appropriate antibiotics, 30-day readmission rates, incidence of shock, and adverse events.

Results:
In progress

Conclusions:
In progress
Effect of multiple central nervous system active medications on fall risk in patients 45-85 years of age

Jeffrey J. Mikolay, Jr., PharmD, BCPS - Non-Traditional PGY1 Pharmacy Resident University of Toledo Medical Center
Shawn Staples, PharmD Candidate 2021; Mariann D. Churchwell, PharmD, FCCP, BCPS; Julie A. Murphy, PharmD, FASHP, FCCP, BCPS

UAN: 0048-0000-2021-116-L05-P

Learning Objectives:

1. Identify medications defined as central nervous system (CNS) active medications in the American Geriatrics Society 2019 Updated Beers Criteria.
2. Explain the difference in the incidence of falls for patients aged 45 to 85 years based on number of CNS active medications prescribed.

Purpose:
The Beers Criteria indicates that use of ≥ 3 central nervous system (CNS) active medications has been associated with an increased risk of falls in patients aged 65 years and older. It is unknown whether the Beers criteria should be applied to patients younger than 65 years old at risk of fall. The purpose of this study was to compare the incidence of patients experiencing falls based on number of CNS active medications (1-2 versus ≥ 3), as defined by the Beers criteria, for patients aged 45 to 85 years.

Methods:
Patients in this retrospective cohort study were divided into two groups: patients receiving 1-2 CNS active medications (Group 1) and patients receiving ≥ 3 CNS active medications (Group 2). Patients seen in the outpatient setting from July 1, 2016 through June 30, 2018 were eligible for inclusion. Primary outcome was the incidence of patients experiencing falls in Group 1 versus Group 2. Subgroup analyses were conducted.

Results:
Two-hundred thirty-four patients were included (Group 1, n=119; Group 2, n=115). There were more females in Group 2 (71.3%) than Group 1 (58%) (p=0.033). Incidence of falls was higher in Group 2 (30.4%) than in Group 1 (14.3%) (p=0.003). The incidence of falls did not differ between the 45-64 years and 65-85 years groups for Group 1 (10.7% versus 20.5%; p=0.141) or Group 2 (25.3% versus 40%; p=0.104). Incidence of falls did not differ between patients 65-85 years old in Group 1 (20.5%) and Group 2 (40%) (p=0.050). Incidence of falls was increased in Group 2 (25.3%) versus Group 1 (10.7%) (p=0.019) for the 45-64 years group.

Conclusions:
Using three or more CNS active medications in those aged 45 to 85 years is associated with an increased risk of fall compared to using 1-2 CNS active medications.
Patient Perceptions of a Pharmacist-Provided Deprescribing Service in an Independent Community Pharmacy

Katie A. Miller, PharmD- PGY-1 Pharmacy Resident with The Ohio State University College of Pharmacy/Uptown Pharmacy
Rebecca M. Lahrman, PharmD, MS, BCACP- Pharmacist with The Ohio State University College of Pharmacy; Cara D. Hoyt, PharmD- Pharmacist with Uptown Pharmacy; Laura E. Hall, PharmD, BCPS- Pharmacist with The Ohio State University College of Pharmacy

UAN: 0048-0000-2021-117-L04-P

Learning Objectives:

1. Describe the current role of the community pharmacist in relation to clinical services, polypharmacy as a potential area of interest, and how patients generally perceive these services.
2. Discuss the need for understanding of the patients’ perspectives regarding these relatively novel services.

Purpose:
Community pharmacists are being utilized to provide clinical services for their patients. These services from the pharmacist have been generally accepted and valued by patients, but data does not reflect that patients would be willing to pay for such services. In Ohio, there are only select pilot programs that allow for the billing the insurance for such services. Uptown Pharmacy is an independent community pharmacy that is looking to implement a pharmacist-provided deprescribing service after requests from the local community. The goal of this study is to determine patient perceptions of an independent community pharmacist-provided cash-based deprescribing service.

Methods:
A ten-minute descriptive survey via REDCap will be used to capture the results. It will be distributed to two independent pharmacies’ patients and two collaborating physicians’ patients. Using convenience sampling, the pharmacies will contact their participants via phone, text, or email based on their established contact preference to determine if they would like to participate. Participating prescribers will distribute the survey link via a flier to their patients that fit the criteria. The survey will be available for a select time-period with the start and end dates depending on IRB approval. The service itself will be described in text at an eighth-grade reading level for each patient to read upon initiating the survey. The adaptive survey questions will be Likert scale, select-all-that-apply, and open-response.

Results:
Results in progress. Results from the survey will guide the creation and implementation of an independent community pharmacist-provided cash-based deprescribing service while also promoting pharmacist-driven value-based care.

Conclusions:
Not yet available.
BreatheOut: Effectiveness and Feasibility of a Pharmacist-led, Culturally-Tailored Smoking Cessation Program for Transgender and Gender Diverse Patients

Sam J. Miller, PharmD, RPh, AAHIVP - PGY-1 Community-based Pharmacy Resident at The Ohio State University College of Pharmacy and Equitas Health
Laura E. Hall PharmD, BCPS; Rebecca Lahrmam, PharmD MS BCACP; Jacquelyn Kissel, PharmD RPh AAHIVP; Teagan Vaughn, PharmD RPh AAHIVP; Junan Li, PhD; Nick Saltsman, PharmD RPh AAHIVP; Katie Chaney, MHA

UAN: 0048-0000-2021-118-L01-P

Learning Objectives:
1. Identify factors that contribute to smoking-related health disparities experienced by transgender and gender diverse individuals
2. Describe the process and strategies related to cultural tailoring in health behavior interventions
3. Discuss factors and considerations for creating and implementing a smoking cessation program for a medically underserved community in an ambulatory care setting

Purpose:
The purpose of this study is to describe the effectiveness and feasibility of a culturally-tailored smoking cessation program administered by a pharmacist and provide a model for pharmacist involvement in the interdisciplinary healthcare team for trans patients. The transgender population has noted disparities and predictors of tobacco use that are unique from the general population as well as cisgender (non-trans) lesbian, gay, bisexual, and queer individuals. Previous studies have assessed the effectiveness of culturally-tailored smoking cessation programs in minority populations with increased burden of tobacco use, but no studies have described the impact of a pharmacist-led smoking cessation intervention for trans patients.

Methods:
This study will be designed using the PEN-3 Model, which provides a framework to centralize culture in health promotion: the impact of an individual’s cultural identity, their relationships and expectations, and cultural empowerment on health behaviors. This model has been shown in smoking cessation and other health programs to increase acceptability and effectiveness in underserved populations. Population-specific peripheral (imaging, coloring), evidential (population-specific data), linguistic (vernacular, idioms), and sociocultural strategies (cultural values) will be identified through a comprehensive literature search and incorporated into the program design. The study will be administered in an ambulatory care setting at a community health center with integrated clinical pharmacists. Eligible participants will be identified using the gender identity and sex assigned at birth demographic fields and tobacco use fields. The following data will be collected at onboarding: demographics, social determinants assessment, baseline tobacco use assessment, and readiness to quit. Patients will complete 3 smoking cessation visits with the resident pharmacist following a guided program. At the first visit, patients will be offered medication assistance in accordance with guideline-directed therapy. Smoking cessation will be assessed by seven-day point prevalence at 1 month and 3 months following the patient’s selected quit date. To assess feasibility, patient acceptability will be assessed through a post-program survey, and revenue will be assessed for financial sustainability.

Results:
Research in progress at time of submission

Conclusions:
Research in progress at time of submission
Retrospective review of procalcitonin biomarker in pneumonia patients and its correlation to length of therapy

Jenna Moodley, PharmD, Pharmacy Practice Resident, Mount Carmel Health
Patrick Gayetsky PharmD, Rana Mubarak PharmD, Theresa Koski PharmD

UAN: 0048-0000-2021-119-L01-P

Learning Objectives:

1. Review trends in utilization of procalcitonin and its effect on antibiotic therapy in patients diagnosed with community acquired pneumonia
2. Identify opportunities to decrease antibiotic overuse

Purpose:
Antibiotic overuse is a great healthcare concern as it leads to increased antibiotic resistance, side effects, and costs. Procalcitonin, when used appropriately, can aid in evaluating the need for ongoing antibiotic therapy to treat lower respiratory tract infections. Elevated procalcitonin levels can be an indicator of bacterial infections, while low levels can indicate viral infections or improvement. The goal of this study is to evaluate current utilization of procalcitonin by examining the relationship between procalcitonin values and total days of antibiotic therapy in patients diagnosed with community-acquired pneumonia across three hospitals.

Methods:
This study was approved by the Institutional Review Board. Patients included in this study were retrospectively identified by diagnosis of pneumonia. The following data was collected: patient date of admission, age, sex, health-system site, type, other admission diagnoses, days of broad-spectrum intravenous antibiotics, days narrow-spectrum intravenous antibiotics, days of oral antibiotics, days of outpatient antibiotics, procalcitonin level values, procalcitonin level time from admission. The primary outcome of this study is to compare total duration of antibiotic use in patients who received at least one procalcitonin test to that of patients who received no procalcitonin test. Secondary outcomes number of subsequent procalcitonin levels and days of broad-spectrum intravenous, narrow spectrum intravenous, oral, and outpatient antibiotic therapy.

Results:
300 patients admitted for community acquired pneumonia between November 2019 to February 2020 were included in this study. The median age of the patients was 69 years and 51% were women. 141 (47%) patients had a procalcitonin test while 159 (53%) did not. There was no statistically significant difference in total antibiotic days between patients who had a high initial procalcitonin test, low initial procalcitonin test, or no test (9.5 vs 9.4 vs 9.6 days, P= 0.3598). Most of the patients who had PCT testing done had one test done (124/141, 87.9%). PCT testing was done less than one day after admission on average. There were no statistically significant differences in days on antibiotics (total, broad spectrum, narrow spectrum, oral or outpatient) among the three patient groups according to their PCT testing as well.

Conclusions:
This study shows that overall length of antibiotic therapy throughout the health-system is greater than the 5-7 days of therapy recommended in the 2019 IDSA Community-Acquired Pneumonia guidelines, with an average of about 9.5 days of antibiotic therapy. This study also showed that the use of procalcitonin laboratory testing did not influence length of antibiotic therapy and most often, only one value was ordered. Additional education or initiatives are needed to improve the use of guideline-based procalcitonin testing.
Clevidipine versus nicardipine for blood pressure management in patients with acute stroke

Jonathan Moody, PharmD - PGY-1 Clinical Pharmacy Resident at ProMedica Toledo Hospital/Russell J. Ebeid Children’s Hospital
Kevin M. Wohlfarth, PharmD, BCPS, BCCP, BCCCP; Samantha L. Spetz, PharmD, BCCCP; Stephanee L. Schrader, PharmD, BCCCP

UAN: 0048-0000-2021-120-L01-P

Learning Objectives:
1. Compare the pharmacokinetics of clevidipine and nicardipine
2. Assess the use of clevidipine and nicardipine in acute stroke management based on the results presented

Purpose:
Acute uncontrolled hypertension following stroke is associated with poor outcomes, including hemorrhagic conversion and cerebral edema. Data is limited on a preferred antihypertensive agent. This study aimed to evaluate the efficacy and safety of clevidipine versus nicardipine for hypertension post-stroke.

Methods:
This retrospective cohort study evaluated adult patients admitted to the neuroscience intensive care unit (ICU) with acute stroke requiring clevidipine or nicardipine. The primary outcome was the number of patients that reached their assigned blood pressure goal at 6 hours following infusion initiation. Secondary and safety outcomes included patients at goal after 1 hour, time to goal, percentage of time in goal over 24 hours, ICU and hospital length of stay (LOS), 30-day readmissions, hypotension, acute kidney injury, and hypertriglyceridemia rates.

Results:
Thirty-two patients were included, of which 7 received clevidipine and 25 received nicardipine. Seven patients (100%) in the clevidipine group and 21 (84%) in the nicardipine group achieved the primary outcome (p=0.26). Three (42.9%) clevidipine patients and 9 (36%) nicardipine patients reached their blood pressure goal 1 hour after infusion initiation (p=0.74). The median (IQR) percentage of time in goal over 24 hours was 91.7% (91.7-100) in the clevidipine group and 87.5% (78.3-95.8) in the nicardipine group (p=0.79). There was no difference in the median time to blood pressure goal after initiation (p=0.82). The median (IQR) ICU LOS was 3.8 (2.3-4) days in the clevidipine group and 5.6 (2.2-13) days in the nicardipine group (p=0.28). The median (IQR) hospital LOS was 8.9 (8-16.2) days in the clevidipine group and 9.1 (4.3-17.7) days in the nicardipine group (p=0.69). One clevidipine patient (14.3%) and 2 (8%) nicardipine patients were readmitted within 30 days (p=0.54). No difference was seen in safety outcomes.

Conclusions:
There was no significant difference in post-stroke blood pressure goal attainment between clevidipine and nicardipine.
Oral beta-lactams versus fluoroquinolones for the treatment of uncomplicated Enterobacterales-associated bloodstream infections

Grant Morgan, PharmD PGY1 Pharmacy Resident-Beaumont Hospital, Royal Oak
Christine N Yost, PharmD, BCIDP; Veena Rajanna PharmD, MS, BCPS, BCPPS

UAN: 0048-0000-2021-121-L01-P

Learning Objectives:
1. Discuss the role of oral beta-lactams and fluoroquinolones as step-down therapy in uncomplicated Enterobacterales-associated bloodstream infections (E-BSI).
2. Describe the impact of oral beta-lactam and fluoroquinolone dosing regimens (low, standard, and high) on 30-day clinical failure rates for the treatment of uncomplicated Enterobacterales-associated bloodstream infections (E-BSI)

Purpose:
Traditionally fluoroquinolones (FQ) have been the preferred oral step-down therapy (OST) in uncomplicated Enterobacterales-associated bloodstream infections (E-BSI). Multiple studies have evaluated the efficacy of oral beta-lactams (BL) for OST in E-BSI due to rising resistance and adverse reactions with FQ. However, few studies have evaluated the impact of oral antibiotic dosing regimens on clinical failure. The purpose of this study is to assess the impact of oral BL and FQ dosing regimens on clinical failure in uncomplicated E-BSI.

Methods:
This was a retrospective study of adult patients admitted to Beaumont Royal Oak, Troy, or Grosse Pointe between January 1, 2014 and July 31, 2020 who were treated with either a BL or FQ for OST uncomplicated E-BSI. Patients had to be transitioned to oral antibiotics by day 5. Patients were further stratified based on if they received a low, standard, or high dose of an antibiotic based on renal function at discharge. Clinical failure was defined as a 30-day composite of all-cause mortality or recurrence of bacteremia with the index organism.

Results:
A total of 1,507 patients were evaluated, and 903 patients were included (384 BL; 519 FQ). Baseline demographics were similar between the two groups. Most patients in both groups were dosed within the recommended range (98.7% BL; 90.4% FQ). There was no significant difference in the 30-day composite primary outcome between the groups in patients dosed within (17 [4.5%] BL vs. 18 [3.8%] FQ, p=0.64) or below (0 [0.0%] BL vs. 2 [4.0%] FQ, p=0.16) below the recommended range.

Conclusions:
The majority of patients in this study received oral BL or FQ within the recommended dosing range as OST for uncomplicated E-BSI. Patient dosed below the recommended range did not have a difference in 30-day clinical outcomes. However, further studies are necessary to support the optimal dose for treatment.
Pharmacist Counseling During the COVID-19 Pandemic: The Implementation and Evaluation of Pharmacist-Conducted Inhaler Technique Counseling Videos

Megan Muhleman, PharmD - PGY1 Community-Based Pharmacy Resident with The University of Toledo/Kroger Michele Fountain, PharmD; Scott Schimmel, PharmD; Andrew Azzi, PharmD; Mitchell Howard, PharmD, MBA, BCACP

UAN: 0048-0000-2021-122-L04-P

Learning Objectives:
1. Describe the need for alternative counseling options for patients using inhalers during the COVID-19 pandemic
2. Discuss the impact of video inhaler counseling on patient reported technique

Purpose:
The COVID-19 pandemic presents safety concerns for patients and pharmacists during traditional inhaler technique counseling. A 2017 systemic review and metaanalysis found that around 87% of patients using a metered dose inhaler (MDI) and 61% using a dry powder inhaler (DPI) made at least one mistake. Due to a small number of studies evaluating the effectiveness of video inhaler technique counseling with mixed results and lack of DPI inclusion, this study was conducted to determine the impact of video inhaler counseling on patient reported technique and to describe the need for alternative counseling options for patients using inhalers during the COVID-19 pandemic.

Methods:
The study was a prospective interventional study at one division of a large chain pharmacy in Northwest Ohio. Patients eligible were ≥18 years and receiving a prescription for an MDI or DPI. Participants were given a handout at pick-up containing an internet link or QR code to the video. Patients were given 7 days before being contacted by phone to complete a survey. Survey questions assessed patient-identified errors in their inhaler technique, subsequent changes made, and confidence for proper administration.

Results:
A total of 131 patients were identified as eligible, 78 were enrolled, and 25 completed the survey questions. Of those 25 patients, 48% reported at least one self-identified error in their technique. Patient reported confidence for proper administration on a 5-point Likert scale resulted in a mean reported confidence of 4.88 and a median of 5.

Conclusions:
The video counseling was found to be an effective method as 48% of patients responding to the survey reported at least one self-identified error in technique. Future research considerations include utilizing additional pharmacy locations, completing the video counseling intervention at the time of pick-up to eliminate follow up limitations, and focusing on DPIs due to the small number of participants enrolled.
Retrospective drug utilization review of oral vancomycin prophylaxis in prevention of Clostridioides difficile infection

Samantha Musson, PharmD- PGY1 Pharmacy Resident, Mercy Health- Fairfield Hospital
Piper Parker, PharmD, BCPS

UAN: 0048-0000-2021-123-L01-P

Learning Objectives:

1. Discuss the impact of Clostridioides difficile infection and the current literature available regarding prevention measures
2. Review the effects of oral vancomycin prophylaxis in prevention of Clostridioides difficile infection in patients receiving antibiotic therapy

Purpose:
Clostridioides difficile infection (CDI) is more likely to occur while receiving antibiotics, and patients who are 65 years of age and older, immunocompromised status, or have a prior CDI are at an increased risk. Oral vancomycin prophylaxis and probiotics have been used to prevent CDI, but the 2017 IDSA Guidelines made no recommendation for oral vancomycin prophylaxis. The aim of this study was to evaluate the effectiveness of oral vancomycin prophylaxis in hospitalized patients receiving systemic antibiotics in preventing the occurrence of CDI.

Methods:
A retrospective review was done with adult patients receiving systemic antibiotics who received concomitant oral vancomycin prophylaxis from July 1, 2020 to September 30, 2020 and after pharmacist recommended initiation from October 1, 2020 to December 31, 2020. Identification criteria included age greater than 65 years old, hospitalization within 90 days of admission or long-term care facility resident, immunocompromised, prior CDI, or gastric acid suppression while admitted. Exclusion criteria included active CDI, colitis or diverticulitis, or concomitant metronidazole and oral vancomycin. Occurrence of CDI was measured by positive stool specimen for C. difficile toxin within 90 days of discharge. Odds ratios and Fischer’s exact test were used to analyze the data results.

Results:
81 patients met eligibility criteria. Baseline characteristics were similar among the groups aside from infection type and antibiotics used. Prophylaxis with oral vancomycin did not reduce the rate of developing CDI (OR: 3.00, 0.12-75.85; p = 0.75). Restricting the use of oral vancomycin prophylaxis to specific patient populations also did not reduce the rate of developing CDI (OR 0.37, 0.01-9.56; p = 0.28). No reduction in the occurrence of diarrhea was also noted (p = 0.65).

Conclusions:
For patients receiving systemic antibiotics, oral vancomycin prophylaxis did not reduce the rate of CDI within 90 days nor did restricting the use of prophylaxis to at-risk patient populations.
Impact of Pharmacy Education on Algorithm Based Management of Urinary Tract Infections in a Community Hospital

Mario Muttillo*, PharmD
Julie Falk, PharmD BCPS, Melanie Hasle PharmD

UAN: 0048-0000-2021-124-L01-P

Learning Objectives:

1. Discuss the importance of treating urinary tract infections promptly and appropriately
2. Review the importance of antimicrobial stewardship and the consequences of overtreatment of asymptomatic bacteriuria

Purpose:
Urinary tract infections (UTIs) are defined as infections in any part of the urinary system and are most commonly bacterial in nature. Prompt antibiotic therapy is essential for treating UTIs to prevent serious adverse events such as sepsis and renal scarring. However, it is crucial to use antibiotics only when indicated to reduce side effects and prevent antibiotic resistance. University Hospitals has developed an algorithm that gives a stepwise approach to treating these infections. Resistance rates for E.coli have skyrocketed over the past few decades. Previous studies have also shown us asymptomatic bacteriuria in the inpatient setting is over treated. This study aims to improve the empiric treatment of UTIs at a community hospital.

Methods:
This was an IRB approved chart review performed from December 2019 - February 2020 for pre-education data and from December 2020 - February 2021 for post-education data of patients treated at University Hospitals St. John Medical Center (UHSJMC) treated for UTIs. The primary endpoint was to evaluate the appropriateness of empiric antibiotic selection for patients seen in the ED as well as patients admitted to UHSJMC for UTIs based on the implementation of an already established algorithm. The primary endpoint will be evaluated using a chi-squared test. Secondary endpoints included the following: to compare the prevalence of asymptomatic bacteriuria treatment before and after education and to assess the impact prescriber specialty has on prescribing patterns before and after education. It was calculated that 60 subjects will provide a power of 90% with alpha set at 0.05. The secondary endpoint of asymptomatic bacteriuria treatment will be evaluated using chi-squared as well. It was calculated that 30 subjects will provide a power of 90% with an alpha set at 0.05. The next secondary endpoint of prescriber specialty impact will be evaluated using a Mantel-Haenszel chi-squared analysis.

Results:
To be determined

Conclusions:
To be determined
Evaluation of Student Pharmacist Led Community-Based Falls Prevention Program

Kayla Nagy, PharmD, PGY-1 Community Pharmacy Resident, University of Cincinnati College of Pharmacy/Medication Managers
Casondra Seibert, PharmD, BCGP, Bethanne Brown, PharmD, BCACP, TTS, Katherine Hirschy, PharmD

UAN: 0048-0000-2021-125-L04-P

Learning Objectives:
1. Identify risk factors that increase the likelihood of a community dwelling senior experiencing a fall
2. Describe the role of the pharmacist in reducing falls risk among the geriatric population

Purpose:
In the geriatric population, falls are common, can cause injury, and are costly. Pharmacists can screen for fall risks, optimize medication therapy, and educate patients on ways to prevent falls. The purpose of this research project was to determine if a student pharmacist led falls prevention program can reduce number of falls and overall fall risk for participants.

Methods:
Trained student pharmacists from the University of Cincinnati provided the programming. Educational booths covered the following topics: recognizing fall hazards, exercises for balance, and individualized medication reviews. Participants completed a pre-survey, adapted from the Center of Disease Control and Prevention’s Steady U program, before visiting any of the booths. Participants received pamphlets in the mail post event, highlighting information from the event. They were contacted three months after to complete the same survey and four additional open response questions. Results from both surveys were compared to evaluate changes implemented and lasting impact. This project targeted community dwelling seniors and those living in independent living communities. Any person that chose to participate in the voluntary survey and event were included.

Results:
There have been two events with a total of 48 in attendance and 22 consenting to participate. Of the 22 participants, 19 (86%) were female, 17 (77%) lived alone, and 15 (68%) identified as Caucasian. During post-survey collection, 12 participants denied further participation or were lost to follow up. Of the 10 remaining participants, 5 (50%) implemented exercise changes, 1 (10%) implemented hazard safety changes, 6 (60%) discussed medication concerns with a provider which resulted in medication changes, and 3 (30%) had a change in their fall status.

Conclusions:
A student pharmacist led falls prevention program may reduce number of falls and overall fall risk for participants. Further events with larger sample sizes would be helpful in determining full impact.
Weighing the Data: Apixaban and Bleeding in Obese VTE Patients

Tsz Hin Ng PharmD - Ascension St. John Hospital
Christopher A. Giuliano PharmD, MPH, Stephanie B. Edwin PharmD, BCPS-AQ Cardiology

UAN: 0048-0000-2021-126-L01-P

Learning Objectives:

2. Describe available data suggesting the efficacy and safety of direct oral anticoagulants as venous thromboembolism treatments in patients with extreme body weights.

Purpose:
Current recommendations from the International Society on Thrombosis and Haemostasis (ISTH) caution against the use of direct oral anticoagulants (DOACs) for the treatment of venous thromboembolism (VTE) in patients greater than 120 kg or body mass indices (BMI) above 40 kg/m2 as there is a lack of robust clinical evidence and conflicting pharmacokinetic data in this population. The purpose of this study is to evaluate whether DOACs are as safe as warfarin in morbidly obese patients.

Methods:
This is a multi-centered, retrospective cohort study comparing the safety profile of apixaban versus warfarin in morbidly obese patients treated for acute VTE between 01/01/2012 to 12/31/2019. Patients were identified by ICD-9 and ICD-10 codes for acute VTE. Patients were included in this study if they were older than 18 years, BMI greater than 40 kg/m2, or weight greater 120 kg upon anticoagulation initiation. The primary safety outcome is time to major bleeding at 12 months. Secondary outcome includes the incidence of clinically relevant non-major bleeding (CRNMB), incidence of CRNMB and major bleeding, deaths, and total number of hospital encounters in 12 months. Primary outcome was evaluated by Kaplan-Meier curve and log rank test. For secondary outcomes, incidence rates were calculated by dividing the total number of events by the total number of patients in each group over 12 months. Lastly, a subgroup analysis was conducted for the primary and secondary endpoints in patients with a BMI greater than 50 kg/m2 and/or weight greater than 140 kg.

Results:
To be presented at Ohio Pharmacy Resident conference.

Conclusions:
To be presented at Ohio Pharmacy Resident conference.
Evaluating the impact of pharmacist interventions on blood pressure management in chain community setting

Kristy D Nguyen*, Pharm.D, PGY1 Walgreens/University of Cincinnati Residency Program
Lauren Korba, Pharm.D, Bethanne Brown, Pharm.D, BCACP

UAN: 0048-0000-2021-127-L04-P

Learning Objectives:

1. Identify interventions that can be utilized by pharmacist to assist patient with their blood pressure management
2. Discuss the impact of pharmacist interventions on hypertension management in a chain community setting

Purpose:
This study evaluates the impact of pharmacist interventions on patient’s hypertension control in a chain community-based pharmacy through patient education and monthly follow up phone calls. The primary objective is to assess the number of patients who achieve goal blood pressure (BP) based on current guidelines by the end of the study. The secondary endpoints include systolic and diastolic BP improvement, average pharmacist time-spent per intervention and adherence measurement using Hill-Bone Medication Adherence Scale (HBMAS).

Methods:
This study is an Institutional Review Board approved prospective, pretest and posttest experimental design that includes adults 18 years and older with self-reported primary hypertension currently taking medications to lower BP. Participants were excluded if they were unable to consent for any reason or pregnant. After initial enrollment and baseline data collection, the pharmacist reached out to each patient telephonically to evaluate monthly patient reported blood pressure readings and provide education on topics which include: DASH diet, weight loss, physical activity, and medication adherence. Paired t-test will be used to compare pre-post intervention to determine achievement of both primary and secondary objectives.

Results:
Final results will be presented at the Ohio Pharmacy Residency Conference. Recruitment will continue until March 2021. A total of 4 patients (n=4) are currently enrolled. All patients are above the age of 50. Patient genders are evenly distributed where half are male and half are female. The average initial HBMAS 35.5, which indicates 100% patient reported adherence. At baseline, 2 patients were at goal (≤130/80) and 2 patient’s BP readings were elevated (>130/80). After two follow-up phone calls, 1 patient remained goal BP and 3 others reported elevated readings due to recent antihypertensive medication changes. Average pharmacist time-spent per intervention is 16 minutes.

Conclusions:
Final results will be presented at the Ohio Pharmacy Residency Conference
Evaluation of venous thromboembolism prophylaxis utilization in obstetric patients

Teanna N. Nixon, PharmD—PGY1 Pharmacy Resident, St. Elizabeth Healthcare
DeeDee M. Bloemer, PharmD, BCPPS; Natalie M. Thamann, PharmD, BCPS

UAN: 0048-0000-2021-128-L01-P

Learning Objectives:

1. Discuss venous thromboembolism risk in obstetric patients
2. Identify obstetric patients in whom thromboprophylaxis would be beneficial and appropriate

Purpose:
Venous thromboembolism (VTE) is a leading cause of maternal morbidity and mortality. With the rising incidence of obesity, advanced maternal age, and comorbid diseases, thromboembolism risk continues to increase in obstetric patients. Many professional organizations recommend that each healthcare facility create and implement a standardized venous thromboembolism risk assessment tool to improve consistent use of thromboprophylaxis in pregnant and postpartum patients deemed high risk. The purpose of this study is to assess the effectiveness of current VTE risk assessment practices in hospitalized obstetric patients and identify potential gaps in therapy.

Methods:
A retrospective chart review was conducted from August 1, 2020 to September 30, 2020 to analyze antenatal and postpartum patients; VTE patients were analyzed from January 1, 2016 to September 30, 2020 utilizing the electronic medical record. Eligible patients for inclusion in the study included: patients 18 years old or older who were admitted to the obstetric units for extended prenatal monitoring, labor and delivery, or identified as having a pregnancy related VTE event. Data collection included: demographics; smoking status; Padua VTE risk score; VTE and thrombophilia history; parity; gestational age of pregnancy; mode of delivery; anticoagulation therapy during hospitalization; anticoagulation therapy at discharge; use of mechanical thromboprophylaxis; comorbidities including: heart failure, systemic lupus erythematosus, active cancer, or inflammatory bowel disease; and select pregnancy complications including preeclampsia, eclampsia, and postpartum hemorrhage. Three cohorts of patients will be assessed for prevalence of VTE risk factors: patients with extended antenatal admissions, patients in the postpartum period, and patients identified as having a pregnancy related VTE. The primary outcome will be to quantify the prevalence of obstetric patients with established VTE risk factors and the proportion of those patients placed on pharmacologic thromboprophylaxis as indicated. Secondary outcomes include the use of mechanical prophylaxis.

Results:
Data collection and analysis are currently being conducted. Results will be presented at the Ohio Pharmacy Resident Conference.

Conclusions:
Conclusions will be presented at the Ohio Pharmacy Resident Conference.
Characterizing and Validating Risk Factors for Community-Acquired Pneumonia Caused by Methicillin-Resistant Staphylococcus aureus and Pseudomonas aeruginosa

Brianna Noll, PharmD
Ashraf Kittaneh, PharmD; Abigail Benecke, MS; Marie Lockhart, PhD; Lori Barber

UAN: 0048-0000-2021-129-L01-P

Learning Objectives:

1. Identify the most common pathogens in Community-Acquired Pneumonia
2. Describe the 2019 ATS/IDSA Community-Acquired Pneumonia Guideline’s recommendation for identifying patients at risk for Pseudomonas aeruginosa or Methicillin Resistant Staphylococcus aureus

Purpose:
The 2019 ATS/IDSA Community-Acquired Pneumonia (CAP) guidelines recommend locally validating risk factors for resistant bacteria such as Methicillin Resistant Staphylococcus aureus (MRSA) and Pseudomonas aeruginosa (PsA). Current literature is lacking and shows inconsistencies in which risk factors are correlated with MRSA and PsA. The purpose of this study is to characterize local risk factors for CAP caused by MRSA and PsA.

Methods:
This retrospective chart review evaluated patients with admissions between January 1, 2016 and November 1, 2020 at four acute care hospitals. Patients were included if they met the 2019 ATS/IDSA guideline definition for CAP, had aerobic respiratory cultures within 72 hours of admission, and were admitted for at least 48 hours. Patients were grouped by growth of MRSA, PsA or neither on aerobic respiratory cultures. Risk factors were collected for patients who met inclusion criteria for MRSA growth compared to control and PsA compared to control.

Results:
A total of 205 patients met the inclusion criteria for this study. There were 60 patients in the MRSA group, 45 patients in the PsA group, and 100 patients in the control group. Twenty-six risk factors were evaluated in each group. History of COPD was present in 57.8% of patients in the PsA group and 39% of patients in the control group (p=0.04). No statistically significant differences were observed in the other risk factors studied.

Conclusions:
COPD in the PsA group was the only statistically significant risk factor identified among CAP caused by MRSA or PsA. Larger studies are needed in order to further evaluate these risk factors.
Adherence Rates of Prescribed Maintenance Medication(s) versus Pain Medication(s)

*Whitney Oakley, PharmD- PGY1 Community Pharmacy Resident at Family Health Services of Darke County
Rachel Barhorst, PharmD, BCACP, BC-ADM; Juanita Draime, PharmD

UAN: 0048-0000-2021-130-L04-P

Learning Objectives:

1. Discuss medical provider perception of adherence rates to maintenance medication(s) and pain medication(s).
2. Identify potential adherence barriers that exist for patients.
3. Recognize what we as pharmacists can do to help improve adherence rates to medications.

Purpose:
The objective is to assess the adherence and perceptions of pain medications versus prescribed maintenance medications for chronic conditions. Non-adherence is defined as a proportion of days covered (PDC) less than 80%. Non-adherence is an ongoing issue resulting in various health and economic deficits for patients, especially patients diagnosed with chronic pain due to difficulty in managing multiple chronic conditions. Identifying barriers to adherence provides insight on whether non-adherence is increased with patients diagnosed with chronic pain compared to other chronic conditions, and if medical providers can accurately identify non-adherence.

Methods:
An observational study design was utilized to study a sample of adult patients utilizing a medical provider employed at a rural Federally Qualified Health Center in Ohio and currently being prescribed maintenance medication(s) for chronic conditions and pain medication(s). Pain medications were defined as opioid medications. Data collected from pharmacy claims data, ASK-12 surveys via phone if a patient has PDC less than 80%, medical provider questionnaires to capture provider perceptions on patient medication adherence, and chart reviews will then be de-identified and stored in a password protected database to be analyzed through descriptive statistical tests.

Results:
Medical provider perceptions of adherence differ from claims data by approximately 50%. Adherence rates for opioid and inhaler medications were the lowest among medication types observed. Barriers to adherence for opioid medications included patients being scared to take more than necessary, and for inhaler prescriptions the primary barrier included patients not thinking the inhalers were helping control their asthma or COPD.

Conclusions:
Enhancing the skill of medical providers in identifying non-adherence is essential since the provider also carries a responsibility in supporting patients. Finding ways to overcome adherence barriers found with inhaler medications will be a future implication in our practice along with what the impact of uncontrolled pain may have on adherence.
Evaluating Community Pharmacists Knowledge and Attitudes in Providing Mental Health Services

Awura Ama Oduro, PharmD - PGY2/MS Community Administration and Leadership Resident
Bella Mehta, PharmD, Erin Blank, PharmD, Steve Effinger, PharmD

UAN: 0048-0000-2021-131-L04-P

Learning Objectives:

1. Recognize the importance of community pharmacy involvement in mental health service delivery
2. Review the current literature of evidence regarding the barriers to community pharmacist involvement in mental health services

Purpose:
Neuropsychiatric disorders are a leading cause of disability in the United States yet there is a lack of pharmacy-based services available for patients. A lack of knowledge about mental health disorders and confidence have been identified as barriers to implementation of mental health services. The objective of this study is to identify gaps in knowledge and confidence of community pharmacists within a grocery-store chain pharmacy in providing mental health services.

Methods:
A needs assessment in the form of an online survey was developed for a select number of community pharmacists to identify gaps in knowledge and confidence in providing mental health services. The needs assessment used was developed based on the 35-item validated Mental Health Literacy Scale that reflects six attributes of Mental Health Literacy and measures an individual’s knowledge and attitude about help seeking and ability to recognize disorders.

Results:

Preliminary Results

Out of 23 pharmacists, 47% and 43% indicated not being knowledgeable in recommended treatment options for psychosis and eating disorders respectively. Regarding appropriate mental health resources, 29% of pharmacists indicated they did not know where to seek information on mental illness. While majority of pharmacists indicated positive attitudes that promote appropriate help seeking, 13% indicated negative attitudes such as the belief that people with mental illness could snap out of it.

Conclusions:
Pharmacist training on how to identify mental health information, effective communication and recommended treatment options for mental health conditions especially psychosis and eating disorders should be considered in the development of community pharmacy based mental health services. Study findings can potentially support the development of appropriate training for pharmacists in providing care to patients with mental health conditions.
Appropriateness of Pneumonia Classification and Subsequent Therapy in Hospitalized Patients

Caroline Oehlman, PharmD, PGY-1 Pharmacy Resident, OhioHealth Doctors Hospital
Mallory Faherty, PhD, ATC, Jeremy Taylor, PharmD, BCPS

UAN: 0048-0000-2021-132-L01-P

Learning Objectives:

1. Identify if physician practices of pneumonia classification aligns with guideline recommendations.
2. Recognize how pneumonia classification impacts subsequent therapy.

Purpose:
American Thoracic Society (ATS)/Infectious Diseases Society of America (IDSA) have varied with pneumonia classifications throughout guidelines. With the arrival of healthcare-associated pneumonia (HCAP) in 2005 and its final diminution in 2019 with the updated community-acquired pneumonia (CAP) guidelines, providers are left to classify CAP based on risk factors and severity along with hospital-acquired and ventilator-associated pneumonia (HAP/VAP). Therapy recommendations differ depending on pneumonia classification in regard to cultures and empiric antibiotics. This study aims to evaluate the impact of pneumonia classification on subsequent therapy.

Methods:
We conducted a retrospective, cross-sectional review of patients admitted to OhioHealth Doctors Hospital between January 1, 2020 and August 1, 2020. Adults with a diagnosis of community-acquired or hospital-associated pneumonia were included. The primary endpoint is to evaluate physician classification of pneumonia compared to guideline-based categories (GBC) in hospitalized patients. Secondary endpoints include physician-ordering practices of respiratory cultures, rates of positive culture results, and empiric antibiotic selection.

Results:
A total of 219 patients were included. Physician classification of pneumonia was consistent with GBC in 166 patients (75.8%) and discordant in 53 patients (24.2%). Ordering practices of respiratory cultures were guideline-based (GB) in 127 patients (58.0%) versus non-GB in 92 patients (42.0%), p=0008. Out of 68 cultures that resulted, only 11 cases (9.7%) were positive for a respiratory pathogen. Empiric antibiotics were significantly more appropriate in patients with a GBC (89.0%) when compared to those deviating from GBC (20.8%), p

Conclusions:
Pneumonia classification is the catalyst for subsequent therapy. Improper classification may result in an increase of non-GB empiric antibiotic selection and missed opportunities to utilize respiratory cultures for de-escalation.
Assessing Appropriate Panel Size and Optimization of Quality Metrics for Ambulatory Care Pharmacists in the Primary Care Setting

Nimet Ozbay, PharmD
Benjamin King, PharmD, BCACP; Cindy King, PharmD, BCACP

UAN: 0048-0000-2021-133-L04-P

Learning Objectives:
1. Evaluate which assessments for panel size are most appropriate for a pharmacist in diabetes management
2. Discuss how staffing and patient specific factors may affect patient quality metrics.

Purpose:
Chronic disease state management utilizing pharmacists improves quality metrics, allows providers to focus on acute issues, and decreases burnout risk. However, minimal data exists on determining pharmacist panel size and its impact on patient access and quality metrics. This study aims to determine appropriate pharmacist panel size based on workload, quality metrics, and patient access.

Methods:
This study was a retrospective analysis of diabetic patients managed by pharmacists at seven outpatient clinics. The primary objective calculated panel size per FTE utilizing the National Health Interview Survey (NHIS), which averaged six visits to a diabetes provider per patient per year. Secondary objectives calculated the ideal FTE based on provider to pharmacist ratio and determined impact of pharmacist panel size on patient access and quality metrics (composite HbA1c).

Results:
4399 patients were analyzed from 2017-2019 with age (57.4-62.6 years), gender (52.5-63.5% female), race (41.2-93.7% African American), insurance type (13.3%-41% Medicaid), and mean number of medications (13.1-20.3) being significantly different between sites. Primary outcome showed actual panel sizes were less than calculated. However, secondary outcomes indicated each site was understaffed (actual 0.2-0.5 FTE, calculated 2.52-7.34 FTE), and overbooked (95-122% capacity, 17-54.2 days for time to third next available appointment). Patients met the composite quality metric 35.1-56.3% across the sites.

Conclusions:
The NHIS calculation overestimates panel size for pharmacists because unlike other providers, pharmacists do not retain stable at-goal patients. Alternative tools, such as patient access metrics or provider-to-pharmacist ratio, are better suited for determining pharmacist panel size. Increasing pharmacist FTEs can help improve patient outcomes and access.
Identification of high-risk patient populations eligible for transitions of care in a 150-bed community based hospital

Maria Peluso, PharmD - PGY1 Pharmacy Resident, Blanchard Valley Hospital
Kristin Spangler, PharmD, BCPS; Michael Leifheit, PharmD, BCPS

UAN: 0048-0000-2021-134-L04-P

Learning Objectives:

1. Describe the role of pharmacist-driven transitions of care programs and how they can be utilized to decrease hospital readmissions and costs.
2. Identify key factors that represent patients at high-risk of hospital readmission at Blanchard Valley Hospital.

Purpose:
Current data suggests that implementation of a pharmacist-driven transitions of care (TOC) program may reduce hospital readmission rates. There has been ongoing data collection regarding effectiveness of TOC programs organized by pharmacists, but data is conflicting. The goal of this study is to evaluate and decipher a set of high-risk patients that could benefit from a pharmacist-run TOC program, without overlapping with systems and processes previously established.

Methods:
This study was submitted and approved by the Blanchard Valley Institutional Review Board. A retrospective review was performed on all patients admitted to Blanchard Valley Hospital between January 2019 and January 2020. Patients that were admitted three or more times during the specified time period were noted and then stratified based on factors including, but not limited to, admitting ICD-10 code, number of home medications, number of discharge medications, and condition count. Factors were then ranked by number of occurrences, and the top meaningful factors were then considered to describe the most high-risk patients. Thirty-day readmissions were also tracked. Patients diagnosed with primary problems that already had TOC programs set in place were excluded. Those that remained were considered patients at the highest risk of readmission at Blanchard Valley Hospital. Future plans to incorporate a TOC process in those patients is pending. Only descriptive statistics were used in this project.

Results:
Data collection and analysis are currently being conducted.

Conclusions:
Results and conclusions will be presented at the Ohio Pharmacy Resident Conference.
Implementation of an ambulatory pharmacy service model: processes, challenges, & opportunities

Thanh X. Phan, PharmD - PGY2 Health-System Pharmacy Administration & Leadership Resident, OhioHealth Grant Medical Center
Timothy T. Smith, MS, RPh; Paul P. Higginbotham, RPh; Katherine A. Kelley, PhD; Charles F. McCluskey, PharmD, MBA, BCPS, RPh; Jena N. Merrill, PharmD, RPh; Steven J. Meek, RPh; Bryan A. Strollo, PharmD

UAN: 0048-0000-2021-135-L04-P

Learning Objectives:

1. Understand the perceived value of a Meds-to-Beds (MtB) program to inter-professional stakeholders
2. Recognize the impact of a MtB program on patient outcomes
3. Identify processes, challenges, and opportunities launching a MtB program

Purpose:

Medication nonadherence is a threat to successful healthcare globally and is considered a contributor to increased emergency department visits, hospital readmission rates, and mortality rates. The highest rate of nonadherence occurs with new medications prescribed during hospitalizations. Improving medication use in the transition period post hospital discharge requires effective communication and multidisciplinary collaboration. A Meds-to-Beds (MtB) program can serve as a bridge to improve access and increase adherence to medication therapy post hospitalization.

Healthcare Providers and Systems (HCAHP) scores regarding communication about medicines and discharge education indicate there is frequently a disconnect between patient education efforts and what patients are truly learning. In addition, hospitals nationwide are diligently working to decrease unplanned readmission rates, and the needle has not notably moved. A MtB program has potential to be a significant contributor to decrease medication nonadherence, improve overall statistical HCAHP scores, and enhance overall care of patients. GMC implemented a MtB program in fall of 2020 and this study outlines the processes, challenges, and opportunities.

Methods:

This is a single-center, descriptive study highlighting steps necessary to launch a MtB program. Surveys will be utilized to evaluate stakeholder perceptions prior to and throughout the MtB program implementation process. In addition, patient readmission rates and HCAHPS scores will be utilized to track patient outcomes post implementation.

Results:

Final results will be presented at the Ohio Pharmacy Resident Conference.

Conclusions:

Final results and conclusions will be presented at the Ohio Pharmacy Resident Conference.
Evaluation of apixaban dosing in hemodialysis patients with atrial fibrillation

Julia I. Pinciotti, PharmD - PGY1 Pharmacy Resident, OhioHealth Mansfield Hospital
Caroline Jozefczyk PharmD, BCIDP, Eli Raver, PharmD, BCPS, Marie M. Lockhart, PhD

UAN: 0048-0000-2021-136-L01-P

Learning Objectives:
1. Review the literature of apixaban dosing in hemodialysis patients with atrial fibrillation
2. Identify challenges with current prescribing practices of apixaban in hemodialysis patients with atrial fibrillation

Purpose:
Apixaban is the only direct oral anticoagulant (DOAC) with approval for use in patients with chronic kidney disease (CKD) or end-stage renal disease (ESRD) on hemodialysis (HD). There is currently no definitive apixaban dose recommendation for optimized anticoagulation therapy for patients on HD with atrial fibrillation (AF). The purpose of this study was to compare the occurrence of thromboembolic and major bleeding events in renally insufficient patients on HD taking the 5mg twice a day standard dose versus the 2.5mg twice a day reduced dose of apixaban for AF within 3 months of apixaban initiation.

Methods:
This was a retrospective analysis of electronic medical records between March 2019 and July 2020 at three OhioHealth locations: Grant Medical Center, Mansfield Hospital, and Riverside Methodist Hospital. Inclusion criteria: Age ≥ 18 years, treatment for non-valvular AF, diagnosis of CKD or ESRD, scheduled HD treatment, and therapy monitored by an OhioHealth physician. Exclusion criteria: mechanical or prosthetic heart valves, mitral stenosis, or indications for apixaban in the absence of AF. Patients were grouped based on their starting dose of apixaban with the first dose occurring during the study time period.

Results:
The study included 47 patients total (22 standard dose and 25 reduced dose). There were no statistically significant differences in the occurrence of thromboembolic or major bleeding events between apixaban doses within 3 months of therapy initiation. The reduced dose group was more likely to have a dose adjustment compared to those in the standard dose group (P=0.01).

Conclusions:
This retrospective analysis showed no statistically significant differences between the two dosing groups for thromboembolic and major bleeding events, however the reduced group was more likely to have a dose adjustment. Future studies should include a larger patient population with a longer follow-up time period to determine the optimized apixaban dose for this patient population.
Trazodone for Agitation in Critically Ill Patients

Katherine A. Pinkey, PharmD – PGY2 Critical Care Pharmacy Resident, Detroit Receiving Hospital (Detroit Medical Center)
Mark H. Pangrazzi, PharmD, BCCCP; Dennis Parker Jr, PharmD

UAN: 0048-0000-2021-137-L01-P

Learning Objectives:

1. Discuss the need for sedation in critically ill patients and the impact of agitation and delirium on patient outcomes.
2. Describe the mechanism of action, advantages, and disadvantages of currently available sedation agents.

Purpose:
Sedation is a fundamental component of care for critically ill patients. Agitation occurs in approximately 70% of critically ill patients and sedatives are administered in over 50% of patients admitted to an intensive care unit (ICU) to relieve agitation. The most common agents seen for sedation in the ICU are opioids, propofol, dexmedetomidine, and benzodiazepines. However, these agents are limited by their adverse effects, including hypotension, bradycardia, and reduced respiratory drive. Due to a lack of new agent development for ICU sedation, and the limitations of the agents commonly used, there has been increased interest in repurposing older agents for sedation. Trazodone, a triazolopyridie-derived antidepressant, is an agent of interest as an adjunct sedative in the ICU. Studies with mixed efficacy have been reported in dementia-related agitation, but there are currently no published studies of its use for agitation in the critically ill. The purpose of this study is to describe the prescribing practices of trazodone therapy for agitation in critically ill patients, describe trazodone’s relationship with agitation and delirium, and examine its safety.

Methods:
This retrospective cohort study included patients 18 years or older who were prescribed trazodone in during an ICU admission from July 2015 – July 2020. Patients were excluded if they were taking trazodone prior to admission, used trazodone for insomnia or depression, were pregnant, or mortality within 24 hours of trazodone initiation. The primary endpoint was agitation assessment at trazodone day 3. Secondary endpoints were the presence of delirium on trazodone day 3, analgesic use on trazodone day 3, and change in other sedative/psychoactive medication doses on trazodone day 3. Safety endpoints were incidences of new-onset hyponatremia, prolonged QTc, Torsades de Pointes, serotonin syndrome, and priapism.

Results:
Results will be presented at the Ohio Pharmacy Residency Conference.

Conclusions:
Conclusions will be presented at the Ohio Pharmacy Residency Conference.
Oral beta-lactams versus fluoroquinolones for the treatment of uncomplicated Enterobacterales-associated bloodstream infections

Geoff Pucci, PharmD - PGY1 Pharmacy Resident at Beaumont Hospital, Royal Oak
Christine N Yost, PharmD, BCIDP, Veena Rajanna PharmD, MS, BCPS, BCPPS

UAN: 0048-0000-2021-138-L01-P

Learning Objectives:

1. Discuss advantages of using oral beta-lactams over oral fluoroquinolones in the treatment of uncomplicated Enterobacterales-bloodstream infections.
2. Describe outcomes for patients treated with oral beta-lactams compared to oral fluoroquinolones for uncomplicated Enterobacterales-bloodstream infections.

Purpose:
Uncomplicated Enterobacterales-associated bloodstream infections (E-BSI) are a major cause of hospitalizations in the United States and are typically treated with fluoroquinolones (FQ) as oral step-down therapy (OST) because of their high bioavailability. Due to increased resistance and adverse reactions with FQ therapy, beta-lactams (BL) offer advantages for OST in uncomplicated E-BSI. The purpose of this study is to assess composite 30-day clinical failure rates in patients with uncomplicated E-BSI treated with either a BL or FQ.

Methods:
This was a retrospective study of adult patients admitted with E-BSI to Beaumont Grosse Pointe, Royal Oak, or Troy between January 1, 2014, and July 31, 2020. Patients were included if an active antibiotic regimen was started within 24 hours of the index blood culture and the patient was transitioned to OST prior to day five of treatment. The composite 30-day clinical failure rate was defined as all-cause mortality or recurrent E-BSI with the same organism. Secondary outcomes included documented adverse drug events or a Clostridiodes difficile diagnosis.

Results:
Of the 1,507 patients screened, 903 were included (384 BL; 519 FQ). The genitourinary tract was the most common infection source (70.6% BL; 78.4% FQ) and E. coli was the most common isolate (73.4% BL; 78.4% FQ). There were no statistically significant differences between the groups for 30-day all-cause mortality (1.3% BL; 1.5% FL), recurrent bacteremia (3.1% BL; 1.9% FQ; p=0.25), or the composite clinical failure rate (4.4% BL; 3.5% FQ; p=0.67). Reported adverse reactions (2.7% BL; 3.7% FQ) and Clostridiodes difficile rates (3.1% BL; 1.7% FQ) were also similar.

Conclusions:
Patients with uncomplicated E-BSI treated with BL for OST did not have a significant difference in 30-day all-cause mortality or recurrence compared to FQ patients. Reported adverse reactions and C. difficile rates were also low. Therefore BL may be considered an alternative to FQ for this population.
Preventability Analysis of Hospital-Acquired Venous Thromboembolism

Morgan Ragsdale, PharmD - Beaumont Hospital Royal Oak
Amanda M Fodera, Annelise V Jongekrijg, John M Koerber, Janet L Hoffman, Maureen A Smythe

UAN: 0048-0000-2021-139-L01-P

Learning Objectives:

1. Review the existing literature regarding antithrombotic stewardship programs.
2. Discuss the opportunity for standardization of patient education documents in the setting of refusal of VTE prophylaxis.

Purpose:
National Patient Safety Goal 03.05.01 requires hospitals to regularly evaluate and improve anticoagulation practices. This study evaluated cases of hospital-acquired venous thromboembolism (HA-VTE) to assess potential preventability factors and identify areas for improvement.

Methods:
This retrospective cohort study included 50 patients (25 medical and 25 surgical) between January and August 2019 with an ICD-10 code for VTE not present on admission. We limited, a priori, the number of patients who only received mechanical prophylaxis to 5. Extracted patient information included baseline characteristics, pharmacologic and mechanical prophylaxis, adherence, and VTE risk factors upon admission. A preventability checklist was created to assess each event. Descriptive statistics were used.

Results:
Ninety patients were screened to reach the pre-specified 50 patients. Patients were predominantly male (n=30) with a median age of 66 years (IQR 65-71). Thirty-seven patients received heparin as VTE prophylaxis. The median BMI of study patients was 27.2 (IQR 23.6-31.6) and 17 patients had a BMI &gt;30 kg/m². Fourteen patients with BMI &gt;30 kg/m² received standard dose parenteral prophylaxis. Thirty-four patients were initiated on pharmacologic prophylaxis.

Conclusions:
We identified patient refusal and standard dosing in obesity as potential HA-VTE preventability factors. The results of this study supported the creation of a patient education handout for VTE prophylaxis refusal. An analysis of literature regarding the use of oral anticoagulants for VTE prophylaxis and high-dose parenteral prophylaxis for obese patients is currently being undertaken to assess strategies for identified preventability factors.
Retrospective analysis of step-down oral therapy for Enterobacteriaceae bacteremia

Brent Raley, PharmD - St. Elizabeth Healthcare
Charles Harvey, PharmD, BCPS, Madelyn Batey, PharmD, BCPS, Betty Pierce, PharmD, BCPS - St. Elizabeth Healthcare

UAN: 0048-0000-2021-140-L01-P

Learning Objectives:

1. Identify common Enterobacteriaceae pathogens that cause bloodstream infections
2. Review potential benefits of converting to oral antibiotics in patients with Enterobacteriaceae bacteremia

Purpose:
Bloodstream infections lead to significant morbidity and mortality. Currently, bloodstream infections are the eleventh leading cause of mortality in the United States. Specifically, gram negative bacteria account for almost half of all community-acquired and one-third of all healthcare-associated bacteremias. Currently, the 2009 Infectious Diseases Society of America’s guidelines for diagnosis and management of intravascular catheter-related infections recommend 7 to 14 days of intravenous antibiotic therapy once source control has been achieved. The purpose of this study is to evaluate the safety and efficacy of transitioning to oral therapy in patients diagnosed with Enterobacteriaceae bacteremia.

Methods:
The institutional review board approved this retrospective, non-inferiority study. The electronic medical record system was used to identify patients with Enterobacteriaceae bacteremia at any St. Elizabeth Healthcare facility over the span of two years. Patients at least 18 years old with a confirmed diagnosis of Enterobacteriaceae bacteremia were included in the study. Exclusion criteria included patients who received a total duration of therapy less than 5 days or greater than 16 days, patients who died within first 5 days of treatment, patients with polymicrobial bacteremia, and patients who were transitioned to oral therapy after day 6 of therapy. The following data was collected: demographics, including age, gender, race, and weight; infectious parameters, including white blood cell count, presence of bands, presence of fever, and procalcitonin; absolute neutrophil count; day of oral step-down; antibiotic used for oral step-down; source of bacteremia; antibiotic prescribed at discharge; and total duration of antibiotic treatment. The primary outcome for this study was 30-day mortality rate. Secondary outcomes include length of admission, 30-day readmission rate, and 30-day recurrent bloodstream infection.

Results:
Final results will be presented at the Ohio Pharmacy Resident Conference.

Conclusions:
Conclusions will be presented at the Ohio Pharmacy Resident Conference.
Pharmacist-Led Identification of Patients with Primary Palliative Care Needs

Vineeta Rao, PharmD, BCPS; PGY2 Pain/Palliative Care Resident, Summa Health
Pamela S. Moore, PharmD, BCPS; Rhianna Godios, PharmD, BCACP, CACP; Melissa Soltis, MD

UAN: 0048-0000-2021-141-L04-P

Learning Objectives:

1. Define primary palliative care
2. Identify patient characteristics that might trigger review for primary palliative care services

Purpose:
The number of patients appropriate for palliative care exceeds the capacity of primary care providers (PCP) and specialist palliative providers. Primary palliative care (PPC) is the provision of basic palliative care services by general practitioners and has been proposed as a sustainable solution to the gap in care. This quality improvement project aimed to describe the patient population within Summa Health Medical Group (SHMG) primary care offices that may benefit from PPC.

Methods:
A postgraduate year 2 pain management and palliative care pharmacy resident developed a report using triggers previously utilized for inpatients but applied to patients who had a PCP appointment at three SHMG offices between August 2019 and August 2020. The resident reviewed the electronic medical records to identify the disease driving terminal prognosis; number of hospitalizations in 2020; uncontrolled symptoms; potential medication recommendations, and appropriateness for palliative care or hospice referral.

Results:
The report returned 718 patients, therefore those with 6 or more hospitalizations or any medication triggers were prioritized for review. Of the 72 patients were reviewed, 22 patients were excluded due to death or enrollment with geriatric or palliative services. There were 33 patients who may benefit from PPC, 9 patients not needing PPC at this time, and 8 patients not appropriate for PPC. A potential medication recommendation was identified for 37 patients. There were 23 patients potentially appropriate for outpatient palliative or hospice.

Conclusions:
Patients appropriate for PPC tended to have advanced disease of 2 or more organ systems and at least 2 hospitalizations in the past year. A clinical pharmacist with palliative care training practicing within the primary care setting could identify patients suitable for PPC, optimize medications for symptom control, triage patients appropriate for palliative or hospice referrals, and likely decrease healthcare utilization.
Evaluation of an interprofessional outreach initiative for patients with uncontrolled hypertension in primary care: retrospective cohort study

Pia-Allison E. Roa, PharmD - Pharmacy Resident at Beaumont Hospital Dearborn
Insaf Mohammad, PharmD, BCACP - Clinical Pharmacy Specialist at Beaumont Hospital Dearborn

UAN: 0048-0000-2021-142-L01-P

Learning Objectives:
1. Describe literature surrounding interprofessional initiatives to improve clinical outcomes in primary care.
2. Discuss the outcomes and future directions of an interprofessional outreach initiative for patients with uncontrolled hypertension at a primary care clinic.

Purpose:
In a survey published in the Journal of the American Heart Association, medication initiation and treatment intensification among hypertensive patients occurred in only 26.4% and 16% of visits respectively. Additionally, hypertension (HTN) control is a Centers for Medicare & Medicaid Services (CMS) quality metric. In order to improve blood pressure (BP) management, an outreach initiative was started in August 2020. This study aims to evaluate the implementation of an interprofessional outreach initiative with the pharmacy team for patients with uncontrolled HTN in a primary care clinic.

Methods:
This retrospective cohort study analyzed data from the site’s electronic medical record. Patients were included if they were 18-85 years old, uncontrolled BP or no recorded BP in the past year, and had a telephonic outreach attempt by the clinic pharmacy team. Data was analyzed through March 2021. Patients were excluded using CMS metric exclusion criteria: history of end-stage renal disease, dialysis, renal transplant, or pregnant. Descriptive statistics were used.

Results:
There were 43 patients contacted, 30 appointments arranged, and 31 medication reconciliations completed. There were 24 appointments attended (3 telehealth appointments). Prior to pharmacy team outreach (n=24): the average BP was 150/87 mmHg, 19 patients reported taking HTN medications, and 15 patients were on guideline-directed therapy. At first appointment (i.e. after pharmacy team outreach): the average BP was 136/83 mmHg and pharmacist BP regimen intervention occurred in 14 patients, of which, 9 medications were added, 2 removed, and 5 medication dose increased.

Conclusions:
In patients with uncontrolled HTN, preliminary results indicate the importance of an outreach initiative to re-engage patients in care, ensure guideline-directed pharmacotherapy, and optimize medications for optimal BP control. Limitations of this study include patient hesitation for in-person clinic visits due to the pandemic. Future directions of this study include follow-up to assess change in blood pressure over time.
Evaluation of a Program for Outpatient Sotalol Loading

Chelsea Roberts, PharmD, MBA, BCPS
Maggie Sherry, PharmD, MS; Megan Labreck, PharmD, BCPS, CACP; Donald Sullivan, R.Ph, Ph.D

UAN: 0048-0000-2021-143-L01-P

Learning Objectives:
1. Discuss the barriers of inpatient sotalol loading
2. Understand current literature supporting outpatient sotalol loading

Purpose:
Dose dependent QT prolongation with class III antiarrhythmics mandates close monitoring often in an inpatient setting. Outpatient sotalol loading with the use of a Smartheart monitor provides an alternative to patients that is cost effective and allows preservation of hospital resources during the COVID-19 pandemic.

Methods:
This quality improvement (QI) project focuses on evaluating the safety, feasibility, financial, and patient satisfaction implications of outpatient sotalol loading using the AliveCor Kardia® device with physician and pharmacist collaboration between August 1, 2020 to January 1, 2021. This study is being conducted in the newly established antiarrhythmic clinic at OhioHealth Riverside Methodist Hospital.

Results:
A total of 12 patients completed outpatient sotalol loading, with no patients experiencing QT prolongation or hospital admission due to an adverse event. The highest reported side effects were bradycardia (25%) and fatigue (33.3%).

One patient needed a dose change during the loading phase which was completed successfully. All 12 patients attended the first visit, completed baseline labs, and uploaded ECGs for all three days. One patient did not upload blood pressure readings during the three-day load.

A total of 11 patients were evaluated as a cost comparison for inpatient sotalol loading. On average, outpatient loading cost was $886.30, in comparison to $7,571.76 for inpatient loading (p

Conclusions:
Outpatient sotalol loading has shown to be cost effective and a safe alternative to inpatient sotalol loading. This study showed that pharmacists can serve as physician extenders to continue to provide high quality and safe care to patients.
Evaluation of 4-factor prothrombin complex concentrate dosing strategies in anticoagulation-induced intracranial hemorrhage patients

Austin Roberts, PharmD, MBA, BCPS - PGY2 Critical Care Pharmacy Resident, OhioHealth Riverside Methodist Hospital, Columbus, OH
Annette De Leon, DO; Laura Kline, PharmD, BCPS; Adam Smith, PharmD, BCPS, BCCCP; John Elliott, PhD, MPH

UAN: 0048-0000-2021-144-L01-P

Learning Objectives:

1. Describe different dosing strategies for 4-factor prothrombin complex concentrate in anticoagulation induced intracranial hemorrhage patients
2. Identify potential advantages of utilization of a fixed-dose strategy for 4-factor prothrombin complex concentrate

Purpose:
One of the most detrimental complications of anticoagulant use is intracranial hemorrhage (ICH) which has led to research of reversal agents including 4-factor prothrombin complex concentrate (PCC). There is limited literature describing the optimal dosing of PCC for anticoagulant-induced ICH. The purpose of this study was to evaluate the hemostatic effectiveness of fixed-dose versus weight-based dosing strategies for PCC reversal of warfarin, apixaban, or rivaroxaban in patients with anticoagulation-induced ICH.

Methods:
A multi-center, retrospective chart review was completed for the time period of December 1, 2019 through November 30, 2020 for patients diagnosed with an ICH, received PCC, had documented use of warfarin, apixaban, or rivaroxaban, and were at least 18 years of age.

Results:
A total of 154 patients were included with 77 in the fixed-dose and 77 in the weight-based groups. There were no significant differences between the fixed-dose and weight-based groups for the primary outcome of hematoma stability (88.3% vs. 92.2%, p = 0.588). Secondary outcomes demonstrated a significant difference between the fixed-dose and weight-based groups for PCC dose based on units (1839 vs. 2878; p < 0.001) and units per kilogram (22.5 vs. 36.7; p < 0.001). There were no significant differences between groups for hospital length of stay, additional doses of PCC, vitamin K dosage, fresh frozen plasma administration, INR values, or thrombotic events.

Conclusions:
Patients undergoing a fixed-dose strategy with PCC for anticoagulant-induced ICH had no difference in hematoma stability suggesting that a fixed-dose strategy may be a viable alternative to weight-based dosing for this patient population.
Evaluation of thromboembolic or hemorrhagic readmissions in patients taking an oral direct factor Xa inhibitor

Amanda M. Roberts, PharmD – PGY1 Pharmacy Resident, Beaumont Hospital, Royal Oak
Morgan E. Ragsdale, PharmD; Annelise V. Jongekrijg, PharmD Candidate; Janet L. Hoffman, PharmD; John M. Koerber, PharmD; Maureen A. Smythe, PharmD, FCCP

UAN: 0048-0000-2021-145-L01-P

Learning Objectives:
1. Describe the predisposing characteristics and outcomes of hospitalized patients newly started on apixaban or rivaroxaban and readmitted with a thromboembolic or hemorrhagic event.
2. Discuss the preventability of these readmissions and the identified opportunities for improvement.

Purpose:
National Patient Safety Goal 03.05.01 requires healthcare organizations to evaluate and improve anticoagulation practices. This study evaluated hospitalized patients newly started on apixaban or rivaroxaban and readmitted with a thromboembolic or hemorrhagic event with the goal of identifying readmission preventability factors and opportunities for improvement.

Methods:
This retrospective chart review included adult patients newly started on apixaban or rivaroxaban and readmitted within 90 days between January 1, 2018 and June 30, 2020 with a primary ICD-10 code of thrombosis or hemorrhage. Data collection forms were used to extract demographics, anticoagulant regimen, risk factors, organ function, thrombosis/hemorrhage site, hemorrhage severity, patient education, and discharge instructions. A checklist was developed to assess each readmission as preventable or not preventable. Descriptive statistics were used.

Results:
Sixteen thrombotic and 30 hemorrhagic events were included. Fifty-six percent of patients readmitted with a thrombotic event and 40% with a hemorrhagic event were male with a median age of 57.5 (45.8–71.5) and 73.0 (66.0–84.5) years, respectively. The most common risk factors for patients readmitted with a thrombosis were obesity (n=10) and cancer (n=5). The most common risk factors for patients readmitted with a hemorrhage were history of bleed (n=18) and age >70 years (n=17). Sixty-nine percent of the thrombotic and 33% of the hemorrhagic readmissions were deemed preventable. Four preventability factors were identified: incorrect/unclear anticoagulant regimen transitions from inpatient to outpatient (n=7), incorrect/unclear anticoagulant regimens post-discharge (n=12), inappropriate anticoagulant and antiplatelet combination therapy (n=5), and noncompliance (n=4). While lack of pharmacist education alone was not a preventability factor, 63% of patients were not educated by a pharmacist before discharge.

Conclusions:
This study identified four preventability factors and several areas for improvement. These factors will be used to determine the best discharge prescribing processes for direct Xa inhibitors and to increase patient education through the development of educational videos.
Identification of risk factors for poly(ADP-ribose) polymerase inhibitor toxicities in patients with selected gynecologic cancers

Melissa Royero, PharmD – OhioHealth
Angela Cassner, PharmD; Kara Osborne, PharmD, BCOP; Mark Zangardi, PharmD, BCOP; Aine Clements, MD

UAN: 0048-0000-2021-146-L01-P

Learning Objectives:
1. To describe the current place in therapy of poly(ADP-ribose) polymerase (PARP) inhibitors in the management of gynecologic cancers.
2. To report the toxicity profiles of PARP inhibitors utilized in gynecologic cancers.

Purpose:
Poly(ADP-ribose) polymerase (PARP) inhibitors are commonly used as treatment and maintenance therapy in patients with advanced or recurrent ovarian cancer to reduce the risk of relapse. In a recent meta-analysis, up to 26% of patients experienced serious adverse events over their course of treatment that required dose interruptions, reductions or discontinuation (Shao, 2020). The primary objective of this study was to identify baseline patient characteristics associated with an increased likelihood of dose disruptions due to adverse events from PARP inhibitors. The secondary objective was to characterize adverse events that led to dose disruptions.

Methods:
This was an IRB-approved, retrospective, single-center chart review. Adult patients diagnosed with either ovarian, fallopian tube or primary peritoneal cancer who were initiated on either olaparib, rucaparib or niraparib at the OhioHealth outpatient gynecology oncology clinic between July 1, 2015 and September 30, 2020 were included.

Results:
Sixty-four (66.67%) of the 96 patients experienced a dose disruption due to adverse events. There were no differences demonstrated in the number of previous lines of chemotherapy between patients who did and did not require dose disruptions due to adverse events. When comparing the distribution of each baseline characteristic between both groups, there were no statistically significant differences at the time of PARP inhibitor initiation in terms of age, body mass index, creatinine clearance, initial dose of PARP inhibitor or drug-drug interactions. The most common adverse events leading to dose disruption included fatigue (31.3%), nausea/vomiting (28.1%), anemia (26.6%) and thrombocytopenia (25.0%).

Conclusions:
No baseline characteristics associated with an increased incidence of dose disruption due to adverse events were identified. Fatigue, nausea/vomiting, anemia and thrombocytopenia were identified as the most common adverse events leading to dose disruption. Future research is needed to identify optimal strategies to minimize the incidence of these adverse events causing dose disruptions in gynecologic malignancies.
Analysis of Direct Oral Anticoagulant Use at an Academic Medical Center

Dominic Ruta, PharmD
Julie A. Murphy, PharmD, FASHP, FCCP, BCPS; Rachel E. McLuckie, PharmD, BCPS; Mary C. Smith, PharmD, BCPS

UAN: 0048-0000-2021-147-L01-P

Learning Objectives:
1. Identify an appropriate anticoagulant transition that involves a direct oral anticoagulant.
2. Explain the impact of a pharmacy managed anticoagulant transition procedure and a direct oral anticoagulant electronic order entry form on the appropriateness of inpatient direct oral anticoagulant prescribing.

Purpose:
Anticoagulants are crucial treatment modalities for atrial fibrillation and venous thromboembolism treatment and prevention. For years, the vitamin K antagonist warfarin was the preferred oral anticoagulant. The introduction of newer agents such as the direct oral anticoagulants (DOACs) dabigatran, rivaroxaban, and apixaban provided an alternative treatment option. Anticoagulants are considered high-risk medications and proper management is imperative to ensure therapy efficacy and optimize patient safety. The purpose of this study was to evaluate the change in appropriate DOAC prescribing during the implementation of a pharmacy-managed continuous quality improvement procedure (an anticoagulation transition procedure and an electronic anticoagulation order entry form).

Methods:
In this non-interventional, quasi-experimental study, adult patients admitted to a general medicine ward who received DOAC therapy (dabigatran, rivaroxaban, apixaban) during at least one of three different study time periods were eligible for inclusion. The three study time periods include: pre-pharmacy-managed continuous quality improvement procedure (February 1, 2014-January 31, 2015; phase 1), post-pharmacy-managed continuous quality improvement anticoagulant transition procedure implementation (February 1, 2015-January 31, 2016; phase 2), and post-pharmacy-managed continuous quality improvement anticoagulant transition procedure and electronic order form implementation (September 17, 2019 - September 16, 2020; phase 3). The primary outcome was the prevalence of appropriate DOAC prescribing across all three phases of a pharmacy-managed continuous quality improvement procedure.

Results:
One hundred forty-five patients were identified for inclusion in phase 1, 146 in phase 2, and 145 in phase 3. A total of 51.0%, 64.4%, and 80.0% of patients received an appropriately prescribed DOAC in each of the three groups respectively.

Conclusions:
The implementation of both a pharmacy-managed anticoagulation transition procedure and an electronic anticoagulation order entry form significantly improved the appropriateness of DOAC prescribing.
Implementation of Pharmacist-led Medication Reconciliation Services at Discharge in a Rural Community Medical Center

Halle R. Sattler, PharmD- PGY1 Pharmacy Resident, Firelands Regional Medical Center
Samuel Martin PharmD, Edwin Ruppert PharmD, Blake Troller PharmD, BCPS, Michele Westerman PharmD, Mary Hermes PharmD, Dave Waller RPh, MS

UAN: 0048-0000-2021-148-L04-P

Learning Objectives:
1. Understand the purpose of medication reconciliation services at discharge
2. Discuss the benefit of pharmacist-led medication reconciliation services at discharge

Purpose:
Readmission rates are a significant outcome measure used for determining quality of care in healthcare facilities. Inpatient admissions and other transitions of care offer pharmacists an opportunity to identify medication discrepancies, improve safe medication use, and prevent future readmissions. In several studies, medication reconciliation has been shown to identify and reduce medication discrepancies, prevent adverse events, and decrease overall healthcare costs when conducted at admission and discharge. The purpose of this study is to analyze the value of implementing a pharmacist-led medication reconciliation service at discharge and its effects on 30-day readmission rates in a rural community medical center.

Methods:
During this prospective cohort study, medication reconciliation will be conducted by a clinical pharmacist at the time of discharge for patients admitted on the general medical/surgical floor at Firelands Regional Medical Center. The intervention group will include patients that received medication reconciliation services at discharge during the 90-day study period. The comparator group will consist of a time-matched patient population from prior to implementation of pharmacist-led medication reconciliation services. Prior to this study, medication reconciliation at discharge was conducted by physicians and nurses. Clinical pharmacists will review discharge medication lists and make interventions with respect to the admission medication list, diagnoses, and current pharmacotherapy. Interventions will be communicated to the discharge physician prior to patient discharge and documented within the electronic medical record. The primary outcome being evaluated is 30-day readmission rates of patients that received pharmacist-led medication reconciliation services. Secondary outcomes include the number of emergency department visits 30-days post discharge, readmission rates 90-days post discharge, and the average number of interventions made per medication reconciliation performed.

Results:
Results from this study will be presented at Ohio Pharmacy Residency Showcase at Ohio Northern University in May 2021.

Conclusions:
Conclusions from this study will be presented at Ohio Pharmacy Residency Showcase at Ohio Northern University in May 2021.
Heparin-induced thrombocytopenia management: enforcing a 4Ts score calculation

Rachel L. Schreiber, PharmD - PGY1 Pharmacy Resident, St. Elizabeth Healthcare
Shelbi L. Adams, PharmD, BCPS; Michelle R. Sweet, PharmD, BCPS

UAN: 0048-0000-2021-149-L01-P

Learning Objectives:

1. Discuss the background of heparin-induced thrombocytopenia (HIT)
2. Identify the impact of adding a 4Ts score calculator to a HIT assay on the number of inappropriately ordered HIT assays

Purpose:
Heparin-induced thrombocytopenia (HIT) is a rare adverse reaction to heparin products resulting in thrombocytopenia and hypercoagulability. At St. Elizabeth Healthcare, argatroban is the primary alternative anticoagulant used for suspected HIT and is significantly more expensive in comparison to heparin products. A 4Ts score can be used to calculate a patient’s pre-test probability of HIT. This study will evaluate the appropriate ordering of HIT assays and will determine if enforcing a 4Ts score calculation within the HIT order panel will reduce the number of inappropriately ordered HIT assays and decrease unnecessary argatroban use.

Methods:
The institutional review board approved this retrospective, pre- and post-implementation study. The electronic medical record was used to identify patients who were ≥ 18 years of age, had a HIT assay ordered, and were an inpatient at St. Elizabeth Edgewood, Florence, or Fort Thomas. Two groups of patient charts were reviewed to assess appropriateness of ordered HIT assays and argatroban use. The pre-implementation group included patients from January 19th, 2020 to March 31st, 2020. The post-implementation group included patients from January 19th, 2021 to March 31st, 2021. A 4Ts score calculator was integrated into the HIT assay order panel for providers to be prompted to calculate the score. Pharmacy was automatically consulted to ensure appropriate ordering and ensure alternative anticoagulation was ordered. Data collection included: demographics, calculated 4Ts score, PF4, SRA, alternative anticoagulant, and ordering provider.

Results:
Data collection is currently being conducted. Results will be presented at the Ohio Pharmacy Resident Conference.

Conclusions:
Conclusions will be presented at the Ohio Pharmacy Resident Conference.
Adherence to Recommended Laboratory Monitoring of CDK-4/6 Inhibitors in Patients with Metastatic Breast Cancer

Sydney Schultz PharmD - PGY1 Resident at Grandview Medical Center
Bethany Sibbitt, PharmD, BCOP

UAN: 0048-0000-2021-150-L01-P

Learning Objectives:

1. Review guideline directed treatment for metastatic breast cancer
2. Discuss laboratory monitoring parameters for CDK-4/6 inhibitors

Purpose:
In recent years, several new targeted therapy options have been developed to combat resistance to traditional endocrine therapy for advanced breast cancer including the cyclin-dependent kinase (CDK) 4/6 inhibitors, palbociclib, ribociclib and abemaciclib. Each of these medications have been approved for patients with hormone receptor positive, human epidermal growth factor receptor 2 (HER2) negative advanced breast cancer. Package inserts for each CDK 4/6 inhibitor recommend assessing for neutropenia via a complete blood count (CBC) with differential at baseline, every two weeks for the first two months, monthly for the next two months then as clinically indicated. This project is evaluating provider adherence to these monitoring parameters.

Methods:
This study is a retrospective chart review of patients within the Kettering Health Network with metastatic breast cancer prescribed a CDK-4/6 inhibitor. Included patients are ≥18 years of age with diagnosed hormone receptor positive, human epidermal growth factor receptor 2 (HER2) negative metastatic breast cancer. The primary outcome is to evaluate provider adherence to recommended ANC laboratory monitoring. Secondary outcomes include frequency of dose reduction or interruption, rates of neutropenia, rates of neutropenia stratified by level of pretreatment, and hospital admission due to neutropenia, fever or infection. These results will be assessed to determine if more stringent laboratory monitoring needs to be implemented within Kettering Health Network. This study has been approved through the Institutional Review Board for approval.

Results:
62.8% of providers were non-adherent to recommended ANC laboratory monitoring. Neutropenia related dose reductions occurred in 45% of patients who had adherent laboratory monitoring and 17% of patients who had nonadherent laboratory monitoring (p=0.002). Neutropenia related medication discontinuations occurred in 12% of patients who had adherent laboratory monitoring and 14% of patients who had nonadherent laboratory monitoring (p=0.160). Neutropenia related hospitalization occurred in 26% of patients who had adherent laboratory monitoring and 15% of patients who had nonadherent laboratory monitoring (p=0.163).

Conclusions:
Strict adherence to ANC laboratory monitoring led to increased identification of neutropenia. Implementation of oral chemotherapy treatment plans that include recommended laboratory monitoring intervals may increase adherence. Further data is needed to correlate neutropenia related outcomes with strict laboratory monitoring.
Evaluating the use of poly (ADP-ribose) polymerase inhibitors for ovarian, fallopian tube, and peritoneal cancer for maintenance therapy at University Hospitals

Catherine N Seeco, PharmD - University Hospitals
Allene Naples PharmD MBA CSP; Brett Bushong PharmD BCPS; Danielle Crook PharmD BCPS; Kristen Kissling PharmD CSP

UAN: 0048-0000-2021-151-L01-P

Learning Objectives:

1. Review the place in therapy of poly (ADP-ribose) polymerase inhibitors in ovarian, fallopian tube, and peritoneal cancer for maintenance therapy supported by the National Comprehensive Cancer Network (NCCN) guidelines.
2. Identify package insert recommended lab monitoring for niraparib, olaparib, and rucaparib and how it can be used as a tool to help pharmacists improve services offered to patients.

Purpose:
Poly (ADP-ribose) polymerase inhibitors (PARPi) are approved for maintenance therapy in ovarian, fallopian tube, and peritoneal cancers following platinum based chemotherapy. The purpose of this study is to evaluate the use of PARPi as maintenance therapy according to the National Comprehensive Cancer Network (NCCN) guidelines at University Hospitals.

Methods:
A retrospective medical chart review was conducted on oncology patients eligible for a PARPi (niraparib, olaparib, or rucaparib) from University Hospitals between March 27, 2017 to July 31, 2020. The primary outcome is to assess our health system’s use of PARPi as maintenance therapy per the NCCN guidelines. Secondary outcomes as follows: assess lab monitoring, medication adherence, quality of life (QOL), script capture rates, and safety endpoints.

Results:
Following initial data collection of 405 patients, 139 met inclusion criteria with 35 being on a PARPi. Of the patients who met inclusion criteria, 90.38% received care in alignment with the NCCN guideline recommendations with 9.62% meeting criteria who did not receive treatment with a PARPi. For the secondary outcomes, lab monitoring was followed for niraparib at 56%, olaparib at 100%, and rucaparib at 100%. The median QOL score for patients on a PARPi was 8 (on a scale from 1-10) throughout the duration of therapy. The most common reasons for discontinuation of PARPi therapy were due to progression of disease (34.29%), hematologic toxicity (20%), and treatment associated adverse effects (17.14%).

Conclusions:
As evidenced from the primary outcome, 9.62% of patients eligible for treatment with PARPi did not receive care in alignment with the NCCN guidelines. Moreover, combined with the results seen with the secondary outcomes, we believe there are opportunities for a pharmacist on the interdisciplinary team to manage patients receiving treatment with a PARPi.
Impact of pharmacist-led sepsis management training on antibiotic selection and timing of administration for patients in the emergency department

Amy L. Seither*, PharmD; PGY1 Pharmacy Resident; UC Health - West Chester Hospital
Caitlin E. Pfaff, PharmD, BCPS, BCCCP; Hanna B. Earich, PharmD; Suzanne L. Van Fleet, PharmD, BCCCP

UAN: 0048-0000-2021-152-L01-P

Learning Objectives:

1. Discuss the physiological process of sepsis and outcomes associated with timely administration of broad-spectrum antibiotic therapy.
2. Review current literature regarding the components of the sepsis bundle and pharmacist interventions to optimize sepsis management.

Purpose:
Sepsis is a medical emergency that results from a profound immune response to infection. Available literature regarding the management of sepsis has shown timely antibiotic administration is associated with reduced mortality. This study will evaluate the utility of pharmacist-led sepsis management education to decrease time to antibiotic administration and electronic medication record (EMR) optimization to increase sepsis bundle compliance to improve patient outcomes.

Methods:
This study was an Institutional Review Board approved retrospective study conducted at an academic-affiliated community hospital emergency department (ED). The study intervention consisted of nursing and ED provider education and implementation of an EMR alert to promote blood culture collection prior to antibiotic administration in sepsis. Adult ED patients were included if they presented with sepsis, defined as suspected infection and a quick sepsis-associated organ failure assessment score of two or more. The primary endpoint was receipt of appropriate spectrum antibiotics within three hours of sepsis time zero pre- and post-intervention. Secondary endpoints of this study included collection of blood cultures prior to antibiotic administration, appropriate selection of antibiotics based on suspected infectious source, and compliance with other components of the sepsis bundle such as fluids and lactate measurements.

Results:
This study included 107 patients (57 pre- and 50 post-intervention) with a median age of 76 years [IQR: 59-84]. The study population was predominantly Caucasian (78%) and female (52%). No differences were observed between groups regarding timely administration of antibiotics (27 [47%] vs. 26 [52%], pre- vs. post-intervention; p=0.776). Results of secondary outcomes to be presented at the 2021 Ohio Pharmacy Residency Conference.

Conclusions:
Pharmacist-led education did not result in a significant increase in the number of patients who received appropriate spectrum antibiotics within three hours of sepsis time zero.
Evaluating the safety and efficacy of extending INR check interval to 12 weeks for patients attending the University Hospitals Parma Medical Center Anticoagulation Clinic: a retrospective study

Caitlin Shelar, PharmD, PGY1 Pharmacy Resident, University Hospitals Parma Medical Center
Cara Parrish, PharmD Candidate 2021, Northeast Ohio Medical University; Stefanie Lehmier, PharmD, BCPS

UAN: 0048-0000-2021-153-L01-P

Learning Objectives:
1. Discuss data available supporting 12 week follow up with warfarin INR monitoring.
2. Report the safety and efficacy of extending INR interval follow up for patients attending a pharmacist run anticoagulation clinic.

Purpose:
Current practice guidelines suggest 12 week INR follow up to be safe in patients stable on warfarin therapy defined as at least 3 months of consistent results with no need to adjust warfarin dosing. It’s now recommended based on COVID-19 guidelines, for patients to do self-testing, extended INR check interval at anticoagulation clinic, and drive-through INR checks. A pharmacist ran anticoagulation clinic has a maximum follow up time period of 5 weeks. The objective of the study is to determine the efficacy and safety of extending INR checks to 12 weeks in a pharmacist ran anticoagulation clinic.

Methods:
The study is a retrospective chart review of patients attending a pharmacist ran anticoagulation clinic from December 31st, 2019 to July 31st, 2020. Patients who had a stable INR for 3 visits over 3 months were offered the option of 12 week follow up appointments in an effort to maintain stay at home orders during the COVID-19 pandemic. Those who agreed to extend their INR follow-up were evaluated. The primary and secondary outcomes are looking at the efficacy and safety of extending warfarin INR monitoring to 12 weeks.

Results:
To be presented at the 2021 Ohio Pharmacy Resident Conference.

Conclusions:
To be presented at the 2021 Ohio Pharmacy Resident Conference.
Dolls for Delirium

Lauryn Shiplett, PharmD
Rachel Kerns, PharmD; Jessica Geiger, PharmD

UAN: 0048-0000-2021-154-L01-P

Learning Objectives:

1. Discuss the appropriateness of antipsychotic use for patients presenting with ICU delirium
2. List the benefits of doll- and animal-assisted therapy for hospitalized patients with delirium

Purpose:
Anxiolytic and antipsychotic medications are often used for delirium, but evidence for their use is weak, and they are associated with significant adverse effects. Animal- and doll-assisted therapy may help reduce anxiety and aggression associated with delirium, decreasing the need for anxiolytic/antipsychotic medications. This study aims to evaluate if having a stuffed animal or baby doll affects the frequency of as-needed (PRN) anxiolytic or antipsychotic medication use in hospitalized patients with delirium.

Methods:
OhioHealth Marion General Hospital launched a program in 2018 to provide a stuffed animal or baby doll to hospitalized patients with delirium. A retrospective chart review was conducted to compare the average number of as-needed anxiolytic/antipsychotic doses administered per patient per day before and after implementation of this program. Patients 18 years of age and older with a palliative care consult, documented delirium, and an order for haloperidol, lorazepam, trazodone, and/or quetiapine were included. Patients were only excluded if they refused program participation.

Results:
Significant between-group differences were discovered, as there were more patients diagnosed with Alzheimer’s disease (p = 0.033), and more patients admitted to hospice care (p=0.011) in the post-intervention group. No statistically significant difference was discovered between groups for average as-needed anxiolytic/antipsychotic medication use (p = 0.612).

Conclusions:
Animal- and doll-assisted therapy is a simple, safe, and cheap option for patients with delirium. Although our study did not find a statistically significant difference in the PRN usage between those who were offered a stuffed animal or baby doll and those who were not, patients and providers alike have noted great satisfaction in the program. Additionally, our results may have been affected by the significant between-group differences, which may have increased the post-intervention group’s risk for anxiety and agitation.
Antibiotic use and rates positive bacterial respiratory and blood cultures in patients with COVID-19

Deepika Sivakumar, PharmD - Detroit Receiving Hospital
Shelbye Herbin, PharmD, Raymond Yost, PharmD, Marco R. Scipione, PharmD, BCPS-AQ ID

UAN: 0048-0000-2021-155-L01-P

Learning Objectives:
1. To evaluate the impact of COVID-19 on antimicrobial usage.
2. To determine the rates of positive blood and respiratory cultures in COVID positive patients.

Purpose:
Viral respiratory illnesses may increase the risk for bacterial co-infections but it is still unclear whether co-infections are present in COVID-19. The rate of antibiotic prescribing during the first-wave of the COVID-19 pandemic may have increased due to the similar presentation compared to bacterial pneumonia.

The purpose of this study is to determine the impact of COVID-19 on antimicrobial usage and to determine the rates of positive blood and respiratory cultures.

Methods:
We conducted a retrospective review of patients admitted to Detroit Medical Center. The pre-COVID group included patients admitted between 3/10/19-7/6/19 and the post-COVID group included patients admitted between 3/8/20-7/4/20. The primary outcome is the Mean Sum DOT/1000AdjDays for antibiotics on our hospital pneumonia guidelines. Theradoc was used to extract blood and respiratory culture data on patients who were in the post-COVID group.

Results:
Our results show an increase in the Mean Sum DOT/1000AdjDays (pre vs. post COVID) in tobramycin (6.58 vs. 9.19), doxycycline (277.83 vs. 383.54), meropenem (141.7 vs 185.13), cefepime (306.22 vs. 380.34), linezolid (84.92 vs. 103.20), and ceftriaxone (431.92 vs. 464.43). There was a decrease in the use of aztreonam, vancomycin, piperacillin-tazobactam, azithromycin, ciprofloxacin, and amoxicillin. The total antibiotic use difference between pre- and post-COVID groups was 5.8%. There were 636 positive blood cultures out of 4363 total blood cultures (14.5%) and 491 positive respiratory cultures out of a total of 634 (77%), although the median time to a positive culture was 14 days (IQR 9-20 days).

Conclusions:
Total antibiotic use did not significantly increase between pre- and post-COVID group, however there was a shift in use to broader agents. The majority of blood cultures grew Coagulase-negative Staphylococcus species. Although a large number of respiratory cultures were positive, the median time to a positive culture was long, suggesting the development of hospital acquired pneumonia.
The Impact of Single Vancomycin Trough Concentrations for AUC/MIC Calculations on Dosing and Monitoring in Long Term Care: A Retrospective Study

Snodgrass, Zachary, PharmD - Resident, Omnicare of Northwest Ohio
Sakel, Jeremy, PharmD; Sakel, Katie, MS, MA, PhD Candidate; Lengel, Aaron, PharmD, BCACP

UAN: 0048-0000-2021-156-L01-P

Learning Objectives:
1. Recognize the vancomycin dosing and monitoring ASHP guidelines
2. Understand the importance of appropriate dosing and monitoring of vancomycin

Purpose:
This study focused on retrospective differences in dosing and monitoring vancomycin with trough levels versus area under the curve dosing in order to 1) compare average daily dose of both methods, 2) compare the average estimated area under the curve, and 3) summarize the occurrence of reported adverse drug events.

Methods:
Medical records of 50 long-term care residents that began antibiotic treatment between August 1st and September 30th, 2020 with vancomycin under pharmacy to dose orders were identified. The review of these charts included collecting patient diagnosis, vancomycin recommendations, trough levels, BUN, serum creatinine, height, weight, and age. Collected data were used in VancoPK to calculate a new recommended dose and estimated area under the curve (AUC) based off a single trough. Averages were calculated for both vancomycin daily dose and estimated AUC from VancoPK and GlobalRPh. The averages were compared using two-sided and paired t-tests.

Results:
Average daily dose with GlobalRPh vs VancoPk demonstrated a statistically significant difference with 2,165mg vs 1,946mg (p

Conclusions:
VancoPK has potential for lower daily dosing based on AUC compared to trough goals. Clinical significance has little support since both AUC averages are within normal limits. However, more studies are needed to compare efficacy of AUC dosing from only trough levels versus peak and trough levels.
Retrospective comparison of conservative versus aggressive nursing-driven potassium replacement protocols among hospitalized adult patients with hypokalemia

Libby N. Stabler, PharmD – PGY-1 Resident, Mercy Health St. Rita's Medical Center
Laura J. Schulz, RPh, BCPS; Courtney B. Holtzapple, PharmD, BCPS, BCCCP; Rachel E. Kohls, PharmD Candidate 2021; Jacob A. Reyes, PharmD Candidate 2021

UAN: 0048-0000-2021-157-L01-P

Learning Objectives:

1. Identify potential health complications that may occur among patients with hypokalemia.
2. Discuss the necessity of transitioning to a consistently more aggressive potassium replacement protocol among all patients at Mercy Health St. Rita's Medical Center.

Purpose:
Hypokalemia can lead to potentially serious health problems, including muscle weakness, fatigue, and abnormal heart rhythms. The purpose of this retrospective chart review is to compare the normal, more conservative nursing-driven inpatient potassium replacement protocol to the cardiac, more aggressive nursing-driven potassium replacement protocol at Mercy Health St. Rita's Medical Center. At the conclusion of the study, the necessity of a consistently more aggressive potassium replacement protocol among all patients in the medical center will be assessed.

Methods:
This study was submitted to the Institutional Review Board for approval, and data is being collected using the hospital's electronic medical records. Patients who were hospitalized and placed on the normal, more conservative inpatient potassium replacement protocol or the cardiac, more aggressive potassium replacement protocol were included if they were 18 years of age or older. Patients with a creatinine clearance of less than 30 mL/min, those with a potassium level of 2.5 mEq/L or less on admission, those who underwent open heart surgery during or within 30 days prior to admission, and those with diabetic ketoacidosis on admission were excluded. The primary outcomes of this study will assess the amount of potassium replacement it took for each patient to return to normal potassium range, as well as the proportion of patients on each protocol that required multiple doses of potassium. Along with this, secondary outcomes will evaluate the proportion of patients with a potassium level greater than 5.2 mEq/L following replacement, the proportion of patients with incidence of a cardiac arrhythmia following replacement, and the proportion of patients with an order for scheduled potassium replacement or any additional one-time orders for potassium.

Results:
Results will be presented at the Ohio Pharmacy Resident Conference.

Conclusions:
Conclusions will be presented at the Ohio Pharmacy Resident Conference.
Assessment of Inpatient Pain Scores and Pain Management in Obese Patients

Sean Stockmaster, PharmD - PGY1 Pharmacy Resident at Mercy Health – Lorain Hospital
Sarah Suffel, PharmD, BCPS, CACP, Jenna Mills, PharmD

UAN: 0048-0000-2021-158-L08-P

Learning Objectives:

1. Review pain assessment and management standards in an inpatient setting
2. Discuss the impact of obesity on pain management

Purpose:
Acute pain management is an important focus when treating patients in the hospital setting, as inadequate pain control can cause significant harm. This harm can manifest as prolonged recovery time, unanticipated hospital readmission, and can cause transition to chronic and persistent pain. Treating pain in obese patients can be especially challenging due to a higher prevalence of comorbidities, potential pharmacokinetic differences, and the stigma associated with being overweight. With this information in mind, the purpose of this study is to evaluate if obese and morbidly obese patients are experiencing more pain or not being treated appropriately.

Methods:
This is a retrospective, single-center chart review conducted at Mercy Health - Lorain Hospital reviewing reported pain scores in obese patients compared to patients who are not obese between January 1st, 2019 and December 31st, 2019. The primary objective was to assess if reported inpatient pain scores are significantly different in obese/morbidly obese patients compared to patients who are not obese. Secondary objectives evaluate the number of inpatient pain scores documented, the number inpatient as-needed pain medications ordered, and the number inpatient as-needed pain medications administered in obese patients is compared to those patients who are not obese.

Results:
Final results and conclusions to be presented at the Ohio Pharmacy Resident Conference.

Conclusions:
Final results and conclusions to be presented at the Ohio Pharmacy Resident Conference.
The Impact of Pharmacy Consulting on an Employer Prescription Benefit

Jamie Summerlin, PharmD -- PGY1/MS Health-System Pharmacy Administration and Leadership Resident, OhioHealth Mansfield Hospital
Nicholas Manion, PharmD, MS; Deborah Nagg, PharmD, CDCES

UAN: 0048-0000-2021-159-L04-P

Learning Objectives:

1. Describe the opportunity for pharmacy to have an impact on employer prescription benefit plans
2. Identify the potential savings and return on investment for pharmacy-driven formulary and utilization management strategies

Purpose:
The purpose of this study was to define the impact of pharmacy on an employer prescription benefit plan through formulary and utilization management. These results may inform future operational decisions to leverage pharmacy team skills and provide the most appropriate, safe clinical care that is both affordable and accessible to members.

Methods:
This study analyzed two years of prescription claims data for a single non-profit employer with approximately 40,000 covered lives. The pharmacy team implemented formulary and utilization management strategies where they evaluated growth hormone products and recommended changes that were implemented in January 2019. The data included prescription claims from calendar year 2018 (pre-implementation) and 2019 (post-implementation) for plan members, spouses, and/or dependents with prescription claims for growth hormone products. The three aims of this study were (1) Describe the pharmacy interventions implemented in the pharmacy benefit plan in January 2019, (2) Describe the savings generated for both the prescription benefit plan and the member, and (3) Determine the return on investment (ROI) of pharmacy resources.

Results:
Pharmacy team members used formulary and utilization management strategies to review 17 growth hormone formulations. After thorough review considering clinical effectiveness, current utilization, and overall cost, 16 product formulations were recommended to be removed from formulary. Revisions to the prior authorization criteria were recommended for the remaining product formulation. The overall combined cost savings generated for the plan and the member after implementing these changes was approximately $405,000. The savings for the plan and the member were split 85% and 15% respectively, aligning with their respective cost burden. The return on investment for pharmacy resources resulted in a 21:1 ratio.

Conclusions:
By pharmacists applying their clinical expertise to the formulary, members will receive the most clinically and financially appropriate medications. This will result in both employer and member savings with improved clinical outcomes.
Use of neuromuscular blocking agents as continuous infusions or intermittent boluses during COVID-19

Daria K. Szczepanek, PharmD - PGY1 Pharmacy Resident, Detroit Receiving Hospital
Raymond J. Yost, PharmD; Katherine A. Pinkey, PharmD; Rachel Wein, PharmD, BCPS; Lisa Cayo, PharmD; Mark H. Pangrazzi, PharmD, BCCCP

UAN: 0048-0000-2021-160-L01-P

Learning Objectives:

1. Evaluate the efficacy of NMBAs used as intermittent boluses over continuous infusions for mechanically ventilated patients by assessing NMBA failure.
2. Determine if intermittent bolus dosing of NMBAs is safe for mechanically ventilated patients by describing characteristics of patients treated with NMBAs as intermittent boluses or as a continuous infusion during COVID-19.

Purpose:
Neuromuscular blocking agents (NMBAs) are commonly used in critically ill patients for a variety of indications, including facilitation of mechanical ventilation in patients being proned, patients experiencing ventilator dyssynchrony, and patients with acute respiratory distress syndrome. During the COVID-19 pandemic, NMBAs underwent national shortage while the number of patients who could benefit from NMBA treatment increased. The purpose of this IRB approved retrospective chart review is to determine if intermittent bolus dosing of NMBAs is safe and effective for mechanically ventilated patients by describing characteristics of patients treated with NMBAs as intermittent boluses or as a continuous infusion during COVID-19.

Methods:
Patient inclusion criteria comprises of patients admitted from February 2020 to February 2021 who received at least one dose of one or more of the following NMBAs: cisatracurium, pancuronium, rocuronium, or vecuronium for the facilitation of proning or for the treatment of acute respiratory distress syndrome (ARDS). Both COVID positive and negative patients are included. Patients are excluded if they are less than 18 years of age, only used a NMBA for rapid sequence intubation, used a NMBA for a non-respiratory indication, died within 24 hours of admission, or if they were pregnant. The overall outcome is NMBA failure determined based on the use of rescue NMBA, reintubation, and ventilator compliance. Descriptive outcome data parameters to be collected include admission data, ICU and hospital length of stay, baseline demographics, total NMBA dose and predominant route, total sedation dose, and total analgesic dose given over course of admission, any steroid use, hydroxychloroquine use, remdesivir use, or tocilizumab use, ventilator-free days, qSOFA score, and mortality. Descriptive statistics will be computed for all study variables. Categorical variables will be presented as frequencies and percentages. Continuous variables will be presented as means and standard deviations or medians and interquartile ranges for non-normalized data. A multivariate regression will be done to identify factors correlating to NMBA failure and side effects.

Results:
Results currently in process and will be presented at the 2021 Ohio Pharmacy Resident Conference

Conclusions:
N/A (research in process)
Pharmacist implementation and pilot study of penicillin allergy testing in hematologic malignancy patients at a community teaching hospital

Kelsey Thomas, PharmD
Michael J. Bradley, PharmD, BCOP and Katherine T. Voorhees, MSN, APRN, AGACNP-BC

UAN: 0048-0000-2021-161-L01-P

Learning Objectives:

1. Recall the process of an IgE-mediated allergic reaction and discuss implications associated with having a penicillin allergy.
2. Describe the penicillin allergy testing protocol and the steps to implementation in an outpatient setting.

Purpose:
Penicillins are one of the most commonly reported drug allergies with around 10% of the U.S. population reporting the allergy while studies show up to 95% of patients could tolerate a penicillin. This highly misdiagnosed allergy results in increased broad-spectrum and second-line antibiotic use subsequently putting patients at risk for increased adverse effects. Hematologic malignancy patients are highly impacted by this, as immunocompromised patients are at increased risk for infection, and penicillin allergy is associated with worse outcomes including increased mortality. Penicillin allergy testing (PAT) in this patient population could allow for future beta-lactam utilization.

Methods:
This pilot study included hematologic malignancy patients with an IgE-mediated penicillin allergy who were identified by hematology team members and contacted regarding PAT through the Jewish Hospital Outpatient Infusion Center. Background was collected on the allergy using a standardized allergy reconciliation questionnaire. Patients meeting inclusion criteria were subsequently scheduled for penicillin allergy testing. Patients were administered scratch testing utilizing the minor determinant Penicillin G potassium and the major determinant Benzylpenicilloyl polylysine (PRE-PEN) with histamine (positive control) and normal saline (negative control). Patients with overall negative scratch testing results then proceeded to the intradermal testing with Penicillin G potassium, Benzylpenicilloyl polylysine (PRE-PEN), and normal saline (negative control). If negative results again, patients were administered a 450 mg oral challenge of Amoxicillin. The primary outcome was the number of overall negative PAT results. Secondary outcomes included the adverse reactions observed during the testing, number of patients taking immunosuppressive therapies that received negative histamine (positive control) results, number of patients taking immunosuppressive therapies that received overall negative PAT results, and the number of patients with additional antibiotic allergies that received overall negative PAT results.

Results:
Participants are still being recruited and data is being collected.

Conclusions:
Results and conclusions will be presented at the Ohio Pharmacy Residency Conference.
Safety and Efficacy of Direct Oral Anticoagulants in Morbidly Obese Patients
Arlene Thomas, PharmD, PGY2 Pharmacotherapy Resident - Detroit Medical Center - Harper Hutzel Hospital
Zinah Almadrahi, PharmD, Denise Sutter-Long, PharmD, BCPS, Elizabeth Petrovitch, PharmD, BCPS

UAN: 0048-0000-2021-162-L01-P

Learning Objectives:
1. Discuss the impact of obesity on drug pharmacokinetics and potential effects on anticoagulants.
2. Explain the data on the safety and efficacy of direct oral anticoagulant use in morbidly obese patients.

Purpose:
Obesity is associated with altered pharmacokinetics as well as a pro-thrombotic and pro-inflammatory state. These individuals are at an increased risk of thrombotic events. Currently, the International Society on Thrombosis and Haemostasis (ISTH) recommends avoiding using direct oral anticoagulants (DOACs) in patients with a BMI &gt; 40 kg/m² or weight &gt; 120 kg. If DOACs are used, ISTH recommends obtaining drug-specific peak and trough levels in this population. At the Detroit Medical Center (DMC), there is no specific guideline recommendation for use of DOACs in the morbidly obese patient population other than proceeding with caution due to limited clinical evidence. However, prescribers have utilized DOACs such as apixaban and rivaroxaban for treatment in this specific patient population. The study goal is to assess if apixaban or rivaroxaban compared to warfarin is a safe and effective anticoagulant to use in patients with BMI &gt; 40 kg/m² or weight &gt; 120 kg.

Methods:
This study is a multi-center, retrospective chart review composed of patients discharged from Detroit Medical Center hospitals between 2016 and 2019. Adult patients with BMI &gt; 40 kg/m² or weight &gt; 120 kg prescribed oral anticoagulants – apixaban, rivaroxaban, and warfarin – for an FDA labeled indication of non-valvular atrial fibrillation/flutter, venous thromboembolism, coronary artery disease, and/or peripheral arterial disease were included. Primary outcomes are major and nonmajor clinically relevant bleeding events and thrombotic events within 12 months of hospital discharge. Secondary outcomes are all-cause 12-month mortality, 12-month hospital readmission rates, time to bleeding event, and time to a thrombotic event.

Results:
Results will be presented at the Ohio Pharmacy Resident Conference.

Conclusions:
Conclusions will be presented at the Ohio Pharmacy Resident Conference.
Assessing the Effectiveness of a Consultant Pharmacist Led Chronic Obstructive Pulmonary Disease (COPD) Medication Management in Long-Term Care (LTC) Facilities

*Kelly Tomcsanyi, PharmD – PGY1 University of Cincinnati Community Based Program
Casondra Seibert, PharmD, BCBG, Patricia Wigle, PharmD, BCPS, BCACP, Kendra Hall, PharmD

UAN: 0048-0000-2021-163-L04-P

Learning Objectives:
1. Describe the background of COPD management in nursing facilities
2. Outline medication management protocol and methods

Purpose:
In Ohio, 51.5% of patients diagnosed COPD report using at least one COPD medication.1 Elderly patients present challenges to COPD management which include increased number of comorbidities, difficulty in obtaining appropriate diagnosis, changes in physical and cognitive abilities associated with aging, and inappropriate medication administration.2-6 Studies suggest select COPD maintenance therapies are underutilized and key to preventing further COPD exacerbations.7 Preliminary data collection identified 14/41 COPD patients in a LTC setting who received inappropriate therapy per the 2019 COPD GOLD Guidelines, which highlighted opportunities for pharmacist interventions. This prospective study aims to evaluate the impact of a consultant pharmacist directed COPD medication management protocol in reducing future COPD exacerbations. Secondary outcomes include rate of protocol recommendation acceptance and potential cost savings related to readmission rates.

Methods:
A COPD medication management protocol was developed and implemented by consultant pharmacists at multiple LTC facilities. Study patients are identified by active COPD ICD-10 codes and disease severity and therapy appropriateness is evaluated during monthly pharmacist reviews. Standard tools for evaluation include the COPD Assessment Test (CAT) or the Modified Medical Research Council (mMRC) Dyspnea scores available in the electronic medical record. Adjustments in COPD therapy will be based on the current GOLD Guidelines. Patients will be re-evaluated monthly to determine if therapy modifications were effective in reducing COPD symptoms, exacerbation rates, and COPD hospital admission rates. Data collection will include baseline demographics, medications, pharmacist-initiated recommendations, repeat CAT and mMRC scores, inhaler technique, and number of COPD related hospitalizations.

Results:
Since November of 2020, 82 recommendations have been made indicating inappropriate medication therapy related to COPD maintenance therapy. Research and data collection will conclude in May of 2021.

Conclusions:
Research in progress.
Evaluation of Antibiotic Prescribing in an Outpatient Internal Medicine Residency Clinic

Andrea Utley, PharmD, PGY-1 Pharmacy Resident, Summa Health Akron City Hospital
Michelle Cudnik, PharmD, BCACP; Paula Politis, PharmD, BCPS, BCIDP; Thomas M File Jr, MD, MSc, MACP, FIDSA, FCCP;
Joseph P Myers, MD, FACP, FIDSA, FSHEA; Mackenzie Lloyd, PharmD

UAN: 0048-0000-2021-164-L01-P

Learning Objectives:
1. Recognize the impact of antibiotic misuse on antimicrobial resistance
2. Describe the current literature regarding antibiotic prescribing in outpatient settings

Purpose:
Antibiotic resistance leads to an estimated 2.8 million infections and 35,000 deaths annually in the US. Literature suggests a high prevalence of antibiotic misuse in the outpatient setting. A major modifiable risk factor for antibiotic resistance is inappropriate antibiotic prescribing. A 2016 study estimated that as many as 30% of antibiotics prescribed in the outpatient setting may be inappropriate. The objective of this quality improvement (QI) project was to assess need for further AS initiatives within Summa Health’s Internal Medicine Center.

Methods:
426 prescriptions were retrospectively reviewed. Patients who received an antibiotic prescription for either uncomplicated urinary tract infection (UTI), acute upper respiratory infection (URTI), or acute bacterial skin and skin structure infection (ABSSSI) in 2019 were included. Criteria for appropriate use of antibiotics was developed by the investigational team. The primary outcome was percentage of appropriate antibiotic prescriptions.

Results:
The most commonly prescribed antibiotic was sulfamethoxazole-trimethoprim (n=90), followed by amoxicillin-clavulanate (n=80) and doxycycline (n=69). 78.4% of prescriptions (n=334) were for an appropriate agent. 68.1% (n=290) of prescriptions were written for an appropriate duration and 93.2% (n=397) were written for the appropriate dose. Patients were least likely to receive an appropriate antibiotic for URTI (62.6%) compared to UTI (89.5%) and ABSSSI (90.4%). However, URTI had the highest percentage of appropriate duration (76.5%) compared to UTI and ABSSSI (62.9% and 60.6%, respectively). Appropriateness of dose was similar across all indications. Only 49.5% of prescriptions were written for an appropriate antibiotic, at an appropriate dose, and for an appropriate duration.

Conclusions:
The results of this QI project indicate a potential role for expanded AS initiatives in this setting. The biggest areas for improvement are duration of therapy and choice of antibiotic.
The Impact of Pharmacist Presence in Tissue Plasminogen Activator (tPA) Administration Timing in the Emergency Department

Haley Van Ness, PharmD, Kettering Medical Center
Kin Chan, PharmD, BCPS; Aleda Chen, PharmD, M.S., Ph.D; Elizabeth Jacobs, PharmD, BCPS

UAN: 0048-0000-2021-165-L01-P

Learning Objectives:
1. Define safety and outcomes data regarding the administration of tPA
2. Identify the utility of pharmacists at the bedside during the administration of tPA for ischemic stroke
3. Recognize potential risk factors, identified in this original research, for prolonged door to needle times

Purpose:
Several studies have shown that the presence of a pharmacist positively affects many outcomes related to the administration of tissue plasminogen activator (tPA) for stroke patients. However, pharmacists are not staffed in emergency departments in all hospitals 24 hours each day to review dosing and administration of tPA. The purpose of this study is to determine if the presence and assistance of a pharmacist in the coordination and administration of tPA improves the core measure of door to needle time in the emergency department.

Methods:
This study is a retrospective chart review of patients who receive tPA within the emergency department. The electronic medical record will be used to identify patients who received tPA for the treatment of stroke or suspected stroke. The primary outcome for this study is to determine if a pharmacist present and assisting with the administration of tPA improves the core measure of door to needle time in the emergency department. Secondary outcomes of this study aim to determine if a pharmacist present and assisting with the administration of tPA: affects the incidence of the correct dose administered, affects the incidence of tPA administered within 4.5 hours of symptom onset and affects the incidence of the correct inclusion and exclusion criteria followed prior to administration of tPA. Pregnant patients, patients who received tPA for any other indication other than a stroke or suspected stroke and patients who were not tPA candidates upon initial assessment and symptoms subsequently worsened prior to tPA administration will be excluded from the study. Door to needle time will be calculated. Each patient case will be stratified into two groups: treatment team with a pharmacist and treatment team without a pharmacist. The reviewer will determine if each patient included in the study met the door to needle time goal of less than or equal to 60 minutes.

Results:
Of the 133 patients who met inclusion criteria, 53 patients were in the pharmacist present arm and 80 patients were in the no pharmacist present arm. The pharmacist present group had a shorter door to needle time compared to the no pharmacist arm (56.25 minutes vs 66.99 minutes, p=0.018). Identified risks for prolonged door to needle times outside of 60 minutes include need for antihypertensive prior to tPA initiation (p=0.011) and ambulatory arrival to the emergency department (p=0.034).

Conclusions:
Pharmacists participating in the care of ischemic stroke patients who are receiving tPA have significantly shorter door to needle time compared to patients without a pharmacist present. Ambulatory arrival of patients presenting with stroke symptoms and the need for antihypertensive medications prior to initiation of tPA increases the risk of door to needle times outside of 60 minutes. This study aligns with present literature demonstrating the benefit of pharmacists at the bedside in the emergency department setting for the care of ischemic strokes.
Evaluating Impact of Implementing Order Questions on Appropriate Prescribing of Tolvaptan

Ashton VanDyke, PharmD, MSHI - PGY1 Pharmacy Resident Grandview Medical Center
Nicholas E Wolters, PharmD, BCPS, CPEL; Elizabeth G Jacob, PharmD, BCPS

UAN: 0048-0000-2021-166-L01-P

Learning Objectives:

1. Review guideline recommendations for use of tolvaptan in clinically significant hyponatremia.
2. Discuss the impact of implementing order questions on appropriate prescribing of tolvaptan.

Purpose:
Kettering Health Network implemented order questions and dose buttons into Epic in 2019 to drive appropriate use of tolvaptan. The purpose of this study is to take a further look into tolvaptan orders, provider responses, patient level data, and response to therapy since these changes to determine their impact and identify additional opportunities for cost-effective use.

Methods:
This is a retrospective chart review of all patients who had an order for tolvaptan from 7/3/2019 to 10/15/2020. Patients who had an order for tolvaptan that was not administered, or who received tolvaptan for polycystic kidney disease were excluded. The primary objective is to determine the impact of implementing order questions on appropriate use of tolvaptan.

Results:
Use of urea powder or fluid restriction preceded 248/586 (42.3%) tolvaptan administrations and the patient’s sodium level was

Conclusions:
Future opportunity exists to direct more cost-effective use of tolvaptan. Further conclusions will be presented at the Ohio Pharmacy Residency Conference.
Impact on the Standardization of Pharmacy Clinical Intervention Documentation at a Multi-Site Level

Rachel Ward, PharmD, PGY-1 Pharmacy Resident University Hospitals St. John Medical Center
Michael Carlin, RPh, MBA; Rachana Patel, PharmD, BCPS

UAN: 0048-0000-2021-167-L04-P

Learning Objectives:

1. Explain the impact of pharmacists on improving outcomes and reducing medication errors.
2. Discuss the importance of clinical intervention documentation standardization as a way to assess productivity

Purpose:
Pharmacist-led clinical interventions have shown to reduce the risk of adverse drug events, improve patient outcomes, and reduce cost of care. Documentation of these interventions can help drive pharmacist productivity and gauge the workload of healthcare facilities. University Hospitals has access to two intervention reporting platforms: UH Care and Premier Inc.’s TheraDoc®. Currently, there is lack of consistency of documenting throughout University Hospitals’ sites. Reasons for variable documentation include hospital size, specialties offered, and variable pharmacists’ workflow. Training is important to ensure completeness and uniformity. Documenting interventions is a way to evaluate productivity, provide data for budgeting, and analyze pharmacists’ impact on patient outcomes and quality. Productivity workload ratios can be assessed by looking at distributive/labor outputs and clinical activities, measured as a weighted score. The purpose of this study is to implement standardization of pharmacist clinical interventions throughout University Hospitals’ sites in hopes of developing a future model of productivity. One goal upon completion of this project is to derive an internal productivity benchmark.

Methods:
This is a quality improvement study from August 2020 to February 2021. A review was provided to pharmacists at the following UH Medical Centers: St. John, Ahuja, Richmond and Geauga to enhance the standardization of clinical intervention documentation. The interventions were analyzed by the number and type of interventions documented in both UH Care and TheraDoc®. The primary objective is the total number of clinical interventions prior and post pharmacist-led review at select UH Sites. The secondary objective is the total number of interventions completed in UH Care compared to TheraDoc®, including the corresponding clinical categories, prior and post education. The primary objective will be assessed using the Mann-Whitney U test and the secondary objective will be assessed using the Kruskal-Wallis one-way ANOVA test.

Results:
To be determined

Conclusions:
To be determined
Efficacy and Safety of Sodium Glucose 2 Cotransporter (SGLT2) Inhibitor Utilization in Patients with Heart Failure with Reduced Ejection Fraction (HFrEF) with or without Type 2 Diabetes Mellitus (T2DM)

Wasielewski, Anthony, PharmD, PGY1 Pharmacy Practice Resident, MetroHealth System
Valente, Megan, PharmD, BCACP; Wadsworth, Christina, PharmD, MBA, BCPS, BCGP; Monteleone, Dominique, PharmD, BCPS; Murad, Khalil, MD; Gothard, M. Dave, PhD

UAN: 0048-0000-2021-168-L01-P

Learning Objectives:
1. Identify the potential benefits for using an SGLT2 inhibitor in patients with HFrEF.
2. Assess the impact of implementing SGLT2 inhibitor therapy in patients with HFrEF at an urban academic medical center.

Purpose:
Use of sodium glucose 2 cotransporter inhibitors (SGLT2i) for individuals with heart failure with reduced ejection fraction (HFrEF) in addition to current HF therapies was suggested in the updated ACC/AHA and ESC guidelines but is still a new process in current practice. Our study assessed the use of SGLT2i for MetroHealth System patients with HFrEF by comparing the efficacy and safety of these agents to a control group. We believe that this will provide a real-world perspective, as well as investigate SGLT2i in populations that were underrepresented in clinical trials.

Methods:
This study was a retrospective cohort of 110 patients analyzing time to first event for primary composite outcome, cardiovascular death (CVD), and heart failure (HF) hospitalizations. This study compared SGLT2i use in subjects who were 18 years or older, had a left ventricular ejection fraction of 40% or lower, creatinine clearance ≥ 30 ml/min, and systolic blood pressure ≥ 90 mmHg to a control group.

Results:
Baseline demographics were similar; however, more T2DM patients were in the treatment group (46 versus 24; p

Conclusions:
In the current analysis, SGLT2i did not reduce the primary composite outcome, HF hospitalizations, or CVD. Limitations include not meeting power and length of follow up. Prior large randomized, controlled studies found benefit of therapy. Future studies should assess if these results are generalizable to underrepresented populations.
Supporting Medical Providers to Combat Vaccine Hesitancy

Dana Webb, PharmD - AxessPointe Community Health Centers and NEOMED
Magdi Awad, PharmD, MSA, Kenneth Furdich, PharmD, BCACP, and E. Demond Scott, MD, MPH

UAN: 0048-0000-2021-169-L06-P

Learning Objectives:

1. Describe vaccine hesitancy
2. Discuss myths surrounding COVID-19 vaccines
3. Identify ways to overcome COVID-19 vaccine hesitancy and dispel vaccine myths

Purpose:
COVID-19 vaccine hesitancy during the SARS-CoV-2 public health crisis has the potential to significantly increase disease burden throughout the world. Vaccinations currently available have an increasing amount of data to support both their safety and efficacy at preventing disease. However, serious efforts, both educational and logistical, will need to take place to maximize the public’s vaccination uptake.

Polls assessing vaccine hesitancy in the general population have shown hesitancy persisting despite vaccination campaigns being underway. Despite Centers for Disease Control recommendations, healthcare workers are also displaying vaccine hesitancy.

Among the most significant contributors to vaccine hesitancy is the projected misinformation as seen on social media. While much of this information is false, clinicians need to be ready to provide evidence-based facts and recommendations to combat the spread of misinformation.

The purpose of this research is to determine if an academic detailing approach would reduce vaccine hesitancy among medical providers.

Methods:
A small pharmacy in Northeast Ohio used its pharmacy-led academic detailing approach to educate the medical and pharmacy providers about the COVID-19 vaccines. Before and during the educational presentation, questions were sought from the providers and free engagement was promoted to share insights. The academic detailing session also covered common misinformation as well as factual information refuting the erroneous claims. A survey to the medical providers was then circulated to assess comfort in recommending the COVID-19 vaccination to patients (item #1), addressing vaccine hesitancy (item #2), and use of the vaccine in special populations (immune deficient, previous COVID-19 exposure, etc.) (item #3).

Results:
Results from the survey (n=12, 75% response rate) were analyzed using Cohen’s D to evaluate effect size. The analysis revealed the academic detailing session had a medium positive effect on item #1, a large positive effect on item #2, and a very large positive effect on item #3.

Conclusions:
Education and the dissemination of factual data are pathways to reduce vaccine hesitancy. This education empowers providers to educate their patients regarding COVID-19 vaccines and dispel misinformation which could lead to greater public harm. Educational interventions as described above should be considered by clinics and health centers to aid in combatting the SARS-CoV-2 pandemic.
Analysis of Home Anticoagulation Regimens and Their Impact on the Outcome of Patients Admitted to the Hospital with SARS-CoV-2

Irene Wei, PharmD – PGY1 Pharmacy Resident ProMedica Toledo Hospital/Russell J. Ebeid Children’s Hospital
Alicia M Hochanadel, PharmD, BCPS, BCIDP; Kevin Wohlfarth, PharmD, BCPS, BCCCP, BCCP

UAN: 0048-0000-2021-170-L01-P

Learning Objectives:

1. Define the pathophysiologic changes in coagulation function during active SARS-CoV-2 infection
2. Discuss the current literature assessing the impact of anticoagulation in patients admitted with active SARS-CoV-2 infection

Purpose:
The novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) causes a rapidly spreading respiratory illness known as coronavirus disease 2019 (COVID-19). Studies have demonstrated an association with this infection and an increased incidence of thrombotic events. One of the prominent markers noted in COVID-19 patients with thrombotic events is an elevated D-dimer value. The exact mechanism behind the possible hypercoagulable state observed in COVID-19 is unknown. Given this uncertainty, it is unclear whether baseline anticoagulation confers any protective effects in patients admitted to the hospital with COVID-19.

Methods:
This was a retrospective study of adult patients admitted with SARS-CoV-2 infection between March 1, 2020 and November 30, 2020. The objective of this study was to assess the potential protective effect of chronic anticoagulation in active SARS-CoV-2 infection. Results were compared between two groups: patients who were on anticoagulation prior to admission and those who were not.

Results:
Two hundred patients were included in this study (100 on anticoagulation prior to admission, 100 patients not on anticoagulation prior to admission). The median initial D-dimer values were 290 ng/ml (200.5-517 ng/ml) in patients who were on anticoagulation prior to admission and 401.5 ng/ml (219.8-689.3 ng/ml) in patient who were not (p=0.107) and median peak D-dimer values were 386.5 ng/ml (228-679 ng/ml) and 545 ng/ml (299-1934 ng/ml) respectively (p=0.013). There was no significant difference in initial D-dimer, hospital length of stay (LOS), need for intensive care unit (ICU) admission, discharge disposition, and incidences of thromboembolic or major bleeding events.

Conclusions:
No difference was found in initial D-dimer, hospital length of stay, need for ICU admission, discharge disposition, and incidence of thromboembolic or major bleeding events. However, patients on chronic anticoagulation at baseline had significantly lower peak D-dimer values.
Integration of an ambulatory care pharmacist into a university's mental health management program

Makayla L Wells, PharmD, CTTS - PGY1 Pharmacy Resident at Ohio Northern University HealthWise
Karen L Kier, PhD, MSc, BCPS, BCACP, CTTS, FASHP, FCCP and Michael J Rush, PharmD, MBA, BCACP, CDE/CDCES, NCTTP

UAN: 0048-0000-2021-171-L04-P

Learning Objectives:

1. Identify barriers associated with mental health management in young adults.
2. Recognize areas of opportunity for the ambulatory care pharmacist in a university’s mental health management program.

Purpose:
The goal of this initiative is to build upon the services that the pharmacy disease state management clinic offers by expanding the scope of ambulatory care and its role on a college campus. This initiative aims to 1) create synergistic relationships with the university’s on campus counseling center, student health center, and pharmacy, 2) educate university faculty and staff on identification and referral of students with mental illness through the Question, Persuade, Refer program, and 3) enhance mental health management services by providing medication education, in person or virtual follow up appoints, and adherence monitoring.

Methods:
Patients enrolled at the university with diagnosed Major Depressive Disorder or Generalized Anxiety Disorder and prescribed a Selective Serotonin Reuptake Inhibitor, Serotonin Norepinephrine Reuptake Inhibitor, or Bupropion are invited to participate in the initiative. The ambulatory care pharmacist will meet with patients to discuss diagnosis, initial Patient Health Questionnaire-9 (PHQ-9) or Generalized Anxiety Disorder-7 (GAD-7) score, goals of treatment, and counsel on prescription medication. The ambulatory care pharmacist will communicate with patients each time prescription refills are obtained or prior to mailing to discuss mental health management. Additionally, the ambulatory care pharmacist will monitor patients’ medication adherence with the dispensing pharmacist and communicate mental health management progress with the prescribing physician as needed. The ambulatory care pharmacist will meet with patients after month six of the initiative to discuss diagnosis, goals of treatment, medication adherence, and reassess mental health management via PHQ-9 or GAD-7 score. Descriptive statistics will be utilized to report the change in PHQ-9 or GAD-7 score and medication possession ratio. Paired t-tests will be utilized to evaluate the significance of an ambulatory care pharmacist’s role in mental health management.

Results:
Results pending.

Conclusions:
Conclusion pending results.
Learning Objectives:

1. Review the current usage of Best Practice Alerts (BPAs) by pharmacists as end users in OhioHealth
2. Discuss possible modifications of BPAs supported by data collected from end user feedback

Purpose:
Clinical decision support (CDS) is a key component of electronic health records (EHR). Design and implementation of CDS are a complicated and ongoing process; one that involves continued review, editing and feedback to ensure usability and efficacy. In this project, we examine InBasket Best Practice Advisories (BPAs), a CDS which interfaces with pharmacists only, to describe specific design elements of BPA InBasket messages that end users would like to be redesigned, modified, or improved. Additional aims included end user perceptions of BPAs, describing variations of documentation and identifying desirable ways to provide feedback regarding BPA messages.

Methods:
We conducted a voluntary survey with pharmacist end users of InBasket BPA messages across 13 hospital sites and 1 corporate location of OhioHealth. The survey participants included pharmacists employed by OhioHealth as identified by an internal system list, and utilized company-issued email address for participation. Pharmacists working in population health or ambulatory clinic settings or those without access to Epic InBasket messages were excluded. Due to the large number of BPAs currently used, we conducted a preliminary work-group survey for end users to help identify areas of focus. Data from preliminary survey demonstrated that end users desired changes to the comments or notes displayed with each BPA. We examined the full list of BPAs and included alerts with the least amount of supporting information, as well as two alerts with linked documents of supporting information. Overall, we included 25% of active alerts to result in a survey length that would be feasible and promote survey completion.

Results:
Final results will be presented at the Ohio Pharmacy Residency Conference.

Conclusions:
Conclusions will be presented at the Ohio Pharmacy Residency Conference.
Impact of Glycemic Control on Morbidity Outcomes in Diabetic Patients with COVID-19 in the Community Hospital Setting

Cat Wilson, PharmD, PGY-1 Pharmacy Practice Resident, University Hospitals Parma Medical Center
James Reissig, PharmD, MS, BCPS; Eva Szathmary, MD; Caitlin Omoregie, PA-C

UAN: 0048-0000-2021-173-L01-P

Learning Objectives:
1. Explain the mechanisms of morbidity that diabetes exhibits in patients with COVID-19 and how this leads to worsened outcomes.
2. Discuss the role that aggressive glycemic control has in quality-of-life and morbidity outcomes in diabetic patients with COVID-19.

Purpose:
Patients admitted to University Hospitals Parma Medical Center that are being treated for COVID-19 (SARS-CoV-2) and have a diabetes diagnosis consistently appear to have worse morbidity outcomes than patients that do not have diabetes. The novel 2019 coronavirus has rapidly spread since the World Health Organization (WHO) classified it as a pandemic in March of 2020. There has yet to be a dedicated study of COVID-19 patients with diabetes at University Hospitals Parma Medical Center and at other community hospitals within the University Hospitals system. Identifying trends in outcomes that may be associated with ever-changing therapeutic recommendations may be the key to understanding the role of inpatient glycemic control on mortality outcomes. Furthermore, current COVID-19 guidelines recommend administering 6mg of dexamethasone for 10 days or until hospital discharge, analyzing the impact of such regimens on glycemic control (e.g. percentage of blood glucose readings above glycemic goal) is instrumental in developing a full-picture view of diabetic COVID-19 patients within the University Hospitals system.

Methods:
This retrospective chart review focuses on patients with diabetes that underwent inpatient treatment for COVID-19, they will be assessed and divided into groups based on level of glycemic control and presence or absence of steroid use. Patients are included if they are 18 years of age or older, have a diabetes diagnosis, are being treated for an active SARS-CoV-2 infection, and have been diagnosed as COVID-19 positive through a PCR test using a sample collected from a nasopharyngeal swab, throat swab, or fecal testing. Based on the percentage of inpatient blood glucose readings above goal, a patient will be sorted into one of two groups: “adequate glycemic control” or “poor glycemic control” – these groups will be compared to one another. Descriptive statistics will be utilized to analyze the collected data.

Results:
Data collection and analysis is currently in progress. Preliminary results have found that of two possible blood glucose management groups, 64% of patients (n=16) were poorly controlled while 36% (n=9) of patients were adequately controlled. The primary outcome, difference in disposition at discharge, was not found to be statistically significantly different between the two groups.

Completed results will be presented at the Ohio Pharmacy Residency Conference.

Conclusions:
The results of this study will be utilized to determine if aggressive blood glucose control has a role in improving mortality and quality of life for patients with diabetes and an active SARS-CoV-2 infection. This data could potentially serve to guide clinician approaches to the diabetic patient admitted for COVID-19. Conclusions will be finalized upon the completion of data analysis.
Effectiveness of alternative therapy for methicillin resistant Staphylococcus aureus bacteremia compared to vancomycin monotherapy in a single center, community hospital

Kathleen Wilson, PharmD- PGY1 Pharmacy Resident, The Christ Hospital
Angela Haskell, PharmD, BCPS, James Keeler, PharmD, BCPS

UAN: 0048-0000-2021-174-L01-P

Learning Objectives:

1. Review current literature for treatment of MRSA bacteremia including treatment of persistent bacteremia.
2. Discuss the utility of alternative MRSA agents for treatment of MRSA bacteremia.

Purpose:
Methicillin resistant Staphylococcus aureus (MRSA) bacteremia is associated with increased morbidity and mortality despite widely available treatment options. Delayed clearance of blood cultures (persistent bacteremia ≥ 7 days) contributes to worse clinical outcomes and although vancomycin is recommended as a first-line treatment, it is associated with a delay of bacterial clearance upwards of 7 to 9 days. It is not clear whether this delay in clearance is associated with poor outcomes. This study investigated the impact of vancomycin or alternative MRSA regimens on 60-day mortality.

Methods:
This was a retrospective, single center, cohort study of hospitalized patients with MRSA bacteremia. Patients from January 2018 through November 2020 were reviewed. The vancomycin arm included patients treated with ≥ 72 hours of vancomycin. Patients in the alternate therapy arm must have had therapy started within 5 days of index culture and patients must have been treated with ≥ 72 hours of either daptomycin, ceftaroline, or combination therapy. Patients with polymicrobial infections were excluded. Patients that had persistent bacteremia and were re-admitted for suspected sepsis within 3 months of index culture were not considered a new case. The primary outcome was 60-day mortality. Secondary outcomes included hospital length of stay, days of antibiotic therapy, time to clearance, time to vancomycin trough >10 and readmission with suspected sepsis within 3 months of index blood culture.

Results:
A total of 185 patients with MRSA bacteremia were reviewed and 125 were included in the study. The primary outcome occurred in 3 of 42 (7.1%) patients in the alternative therapy group and 9 of 83 (10.8%) patients in the vancomycin group (p=0.51). Secondary outcomes will be reviewed in detail at the Ohio Pharmacy Residency Conference.

Conclusions:
In this study, there was no difference in 60-day mortality between vancomycin and alternative therapy for MRSA bacteremia.
Retrospective review of vancomycin area under the curve dosing protocol implementation on rates of nephrotoxicity in a community health system

Heather N. Wolf, PharmD- PGY1 Pharmacy Resident, St. Elizabeth Healthcare
Mike Turk PharmD, BCPS, AAHIVP, Jennifer G. Wright PharmD, BCPS, Miranda K. Fennig PharmD, BCPS

UAN: 0048-0000-2021-175-L01-P

Learning Objectives:
1. Review current literature recommendations regarding area under the curve vancomycin dosing.
2. Identify potential benefits of area under the curve vancomycin dosing.

Purpose:
Vancomycin is a glycopeptide antibiotic used primarily for treatment of gram-positive bacterial infections. Nephrotoxicity is the most significant adverse effect. Historically, vancomycin regimens were monitored by assessing blood concentrations at steady-state troughs; however, vancomycin follows a kinetic model utilizing a 24-hour area under the curve to minimum inhibitory concentration ratio (AUC:MIC). Recent guidelines recommend area under the curve (AUC) dosing because it more accurately predicts the efficacy of vancomycin.

The purpose of this study is to implement and educate providers on a new protocol for AUC vancomycin dosing and to compare the rates of nephrotoxicity between trough-based and AUC-based dosing. Additionally, this project evaluates the frequency with which the AUC calculator initial dosing regimen results in a therapeutic AUC.

Methods:
The electronic medical record was used to identify all patients admitted to St. Elizabeth Healthcare for whom pharmacy was consulted to dose IV vancomycin. Two groups of patient charts were reviewed to assess nephrotoxicity rates. Study group one included patients treated February 1st through February 29th, 2020, prior to AUC-based dosing protocol implementation. Study group two included patients treated March 15th through April 15th, 2021, after AUC-based dosing protocol implementation. Exclusion criteria included patients with an indication of peripartum prophylaxis; treatment with concomitant vancomycin and piperacillin/tazobactam therapy exceeding 72 hours; renal replacement therapy; indication of CNS infections; and vancomycin not managed by pharmacy.

An AUC dosing calculator was integrated into the electronic medical record to guide practitioners. Serum creatinine and urine output data were collected as surrogate markers to assess rates of nephrotoxicity between study groups one and two.

Results:
Data collection is currently in progress.

Conclusions:
Conclusions will be presented at the Ohio Pharmacy Resident Conference.
Time to Second-Dose Antibiotics in Severe Sepsis and Septic Shock Patients Admitted From the Emergency Department

Adalah Yahia, PharmD – PGY1 Pharmacy Resident, Detroit Receiving Hospital – Detroit Medical Center
Raymond Yost, PharmD, Marco Scipione, PharmD, BCPS-AQ-ID, Tara Orzechowski, PharmD Candidate 2020, Rachel Wein, PharmD, BCPS, Mark Pangrazzi, PharmD, BCCCP

UAN: 0048-0000-2021-176-L01-P

Learning Objectives:
1. Discuss current evidence on the incidence of antibiotic time delay in severe sepsis and septic shock.
2. Evaluate the effect of antibiotic time delay on patient clinical outcomes in severe sepsis and septic shock.

Purpose:
Severe sepsis and septic shock are leading causes associated with hospital morbidity and mortality. Early appropriate antibiotic selections within the first 3 to 6 hours of admission are considered cornerstones to improve these outcomes. While emphasis is placed on time to first dose antibiotics, evidence-based outcomes for subsequent doses remain unclear. Barriers to timely antibiotic administration can contribute to suboptimal pharmacokinetic and pharmacodynamics parameters that result in sub therapeutic concentrations. The purpose of this study is to evaluate the frequency of major delays in second dose antibiotic administration in severe sepsis and septic shock patients admitted from the emergency department.

Methods:
This study will be a retrospective chart review of patients admitted to an intensive care unit from August 1, 2018 to August 1, 2020. Included patients will be at least 18 years old with a confirmed diagnosis of severe sepsis and septic shock (by meeting two or more Systemic Inflammatory Response Syndrome criteria, or by clinical diagnosis from a physician,) who received their first dose antibiotic in the emergency department. Patients who do not fulfill criteria for severe sepsis and septic shock within 24 hours, changed initial empiric antibiotics within the first 24 hours, had antibiotic discontinuation within 72 hours, or who have active malignancy, neutropenic fever, or immunosuppression will be excluded. Baseline demographics of age, sex, renal function, infection source, maximum lactic acid level on day 1, and vasopressor agents used will be collected. The primary outcome will be major delay of receiving second dose antibiotics. This will be defined as greater than 25% of the recommended time interval of maintenance dose initiation for each patient’s renal function, at the time of second dose antibiotic administration. Secondary outcomes will be 28-day mortality, ICU length of stay, hospital length of stay, early appropriate antibiotics, and presence of a clinical pharmacist in the emergency department. Normally distributed quantitative variables will be compared using the t test and categorical variables using chi-square test or Fisher exact test.

Results:
Results and conclusions will be presented at the Ohio Pharmacy Residency Conference.

Conclusions:
Results and conclusions will be presented at the Ohio Pharmacy Residency Conference.
Identifying 30 day sepsis readmission risk factors and assessing pharmacist impact

Michael J. Young, PharmD – PGY1 Pharmacy Practice Resident OhioHealth Riverside Methodist Hospital
Jordan V. DeWitt, PharmD, BCPS, BCCCP; Brian M. Peifer, PharmD, BCPS; Michelle L. Pershing, PhD; John O. Elliot, PhD, MPH

UAN: 0048-0000-2021-177-L01-P

Learning Objectives:
1. Review the Centers for Medicare and Medicaid Service’s (CMS) current unplanned readmission measures.
2. Discuss the literature regarding sepsis readmission rates.

Purpose:
Among Medicare beneficiaries, those initially admitted to the hospital for sepsis have the second highest readmission rates. Readmissions following sepsis have increasingly gained scrutiny by CMS. Limited research exists on factors that contribute to sepsis readmissions and even less for preventative measures. Available literature suggests that demographic factors and certain comorbidities play a role in increased readmission rates, but in-hospital factors and preventative measures are unknown.

Methods:
We describe a multicenter, case-control study analyzing risk and protective factors among those who were and were not readmitted within 30 days following an intensive care unit (ICU) admission at OhioHealth facilities for sepsis and/or septic shock from January 1st 2017 through December 31st 2019. Highlighted primary outcome risk factors revolve around receipt of medications, procedures, infection control and discharge disposition. Secondary outcomes include the impact of pharmacist involvement at transitions of care phases. All variables were comparatively analyzed using regression analysis.

Results:
A total of 253 patients were included in this study, 129 as cases vs 124 as controls. Presence of positive confusion assessment method (CAM) ICU was found to be statistically higher in the control population (p=0.013). All other risk factor variables were not statistically significant (p>0.05). The impact of pharmacist involvement at transitions of care phases was found to be statistically non-significant (p>0.05).

Conclusions:
Positive CAM ICU was statistically higher in patients who were not readmitted within 30 days following an initial sepsis and/or septic shock admission. All other risk factor variables were non-significant. We found that pharmacist intervention didn’t reduce 30 day readmissions in the sepsis population. Clinical limitations including inadequate sample size, use of propensity scoring, external validity and unreliable IVENT documentation may impact these findings. Further research is needed to characterize in-hospital factors that contribute to increased sepsis readmissions, so that targeted interventions may be elucidated.