

1st Annual Ohio Pharmacy Residency Conference

The logo for the Ohio Pharmacy Residency Conference (OPRC) is displayed within a black rectangular border. The letters 'OPRC' are rendered in a large, bold, black, rounded sans-serif font, centered horizontally and vertically within the rectangle.

OPRC

Residents Abstracts

Health care professionals' self-perceptions regarding care of patients in poverty

Sarah E. Adkins, PharmD, BCACP, Ohio University Heritage College of Osteopathic Medicine

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-101-L04-P

Learning Objectives:

- Define poverty and describe factors which influence poverty culture
- Recognize unique healthcare needs of persons in poverty

Purpose: With approximately 15% of the nation living below the poverty level, acknowledging and understanding the healthcare needs of impoverished patients is necessary to provide patient-centered care. Our study will investigate health care providers' perceived competence in treating persons living in poverty, before and after a formal education program; and explore the relationship between provider demographics and attitudes toward these patients.

Methods: This study is an exploratory, pre-post intervention investigating health care providers' perceived competence in treating persons living in generational and/or situational poverty. A convenience sample of up to 30 self-selected health care providers and health professions students from medicine, nursing, and pharmacy will be included. Participants must be ≥ 18 years of age. All subjects will complete a self-administered questionnaire both prior to and after receiving education via an established program, "Bridges into Health," designed to address cultural aspects of caring for populations impacted by socioeconomic instability. The educational program consists of two, 6 hour live sessions delivered 1 month apart with additional participant assignments. The original questionnaire assesses provider beliefs/attitudes towards poverty culture and experience in healthcare interactions; a standardized post-workshop evaluation will be administered. Participant demographics will also be collected.

Results/Discussion: Results from the pre- and post-education questionnaire will be compared; the post-workshop evaluation will also be summarized and analyzed.

Conclusion: Programs like 'Bridges into Health' may be used to enhance healthcare providers' abilities to meet unique patient needs in disadvantaged populations, and may be meaningfully described by changes in professional attitudes and knowledge of poverty culture. Future research on the impact of affective changes on healthcare practice is also warranted.

Impact of Clinical Pharmacy Service on Clinical Measures in an Underserved Population

Alejandro L. Adorno, PharmD, Northeast Ohio Medical University

Magdi H. Awad, PharmD

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-102-L04-P

Learning objectives:

- Identify most common diseases seen by the clinical pharmacist at ACHRI
- Discuss the challenges associated with the patient population seen at a FQHC

Purpose: The purpose of this study is to assess the impact of clinical pharmacy services delivered from January 2011 to December 2012 on the clinical and economic outcomes for patients with hypertension, dyslipidemia, or diabetes at the Akron Community Health Resources Inc. (ACHRI), which is a Federally Qualified Health Center (FQHC) that serves about 20,000 patients every year. ACHRI serves uninsured patients (60% of patient base) through a sliding scale fee based on the patient poverty level. ACHRI has collaborated with Northeast Ohio Medical University (NEOMED) College of Pharmacy since August 2010 to implement a pharmacist position at the clinic.

According to the 2010 National Healthcare Disparities Report, patients with low income received worse care than high-income individuals. Uninsured people were less likely to get recommended care for disease prevention and for disease management, such as diabetes care management. FQHCs have the chance to play a significant role in providing quality health care to millions of uninsured Americans in underserved urban and rural communities.

Methods: The study is a retrospective study with pre and post comparisons. All patients with a diagnosis of hypertension, dyslipidemia, or diabetes who were referred to pharmacy services during the period from January 2011 to December 13, 2012, regardless of their baseline control, will be included. Clinical measures and patient demographics/characteristics will be extracted from the electronic medical record (E Clinical Works®) used at ACHRI. Data will be extracted into Microsoft Excel®. Data will include change in blood pressure, cholesterol parameters, and blood sugar control since visit.

Results: Research is in-progress.

Conclusion: Our hypothesis is that the clinical pharmacy services should significantly reduce the proportion of adults with uncontrolled hypertension, dyslipidemia, and diabetes and significantly increase the proportion of patients who are taking appropriate medications according to national guidelines to manage these conditions at ACHRI.

Dexmedetomidine for sedation in mechanically ventilated neonates

Nerissa J. Alday, PharmD, Nationwide Children's Hospital

Julie C. Miller, PharmD

Jacqueline Magers, PharmD, BCPS

Lindsay Schray, PharmD

Han Yin, MS, PhD

Kimberly J. Novak, PharmD, BCPS

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-103-L04-P

Learning Objectives:

- Describe challenges of providing appropriate analgesia and sedation for neonates
- Discuss the potential use of dexmedetomidine for sedation in the neonate

Purpose: Dexmedetomidine is a centrally acting alpha-2 adrenergic receptor agonist with sedative-anxiolytic and analgesic properties. It has a favorable adverse effect profile, with minimal effects on respiratory drive and gastrointestinal motility, and potential positive immunomodulatory and neuroprotective effects. It has been associated with a reduction in duration of mechanical ventilation and time to reach full enteral feeds. Although dexmedetomidine is not FDA-approved for pediatric use, there are several studies evaluating the use of dexmedetomidine in several pediatric populations. To date, there is a paucity of evidence for use of dexmedetomidine in mechanically ventilated neonates, particularly clinical outcomes such as duration of mechanical ventilation, length of stay, and mortality. The purpose of this study is to evaluate the efficacy and safety of dexmedetomidine for continuous sedation in mechanically ventilated neonates.

Methods: This is a retrospective, single-center study comparing outcomes in mechanically ventilated neonates who received either dexmedetomidine or midazolam intravenous continuous infusions for sedation. Patients with major congenital anomalies incompatible with life and not amenable to intervention and history of maternal substance abuse will be excluded. The primary efficacy outcome will be requirement for adjunctive sedative and analgesic exposure. Secondary outcomes include complications and adverse effects, including incidence of intraventricular hemorrhage (Grade 3-4) and/or periventricular leukomalacia, sepsis, necrotizing enterocolitis, feeding intolerance, withdrawal, hemodynamic instability, duration of mechanical ventilation, intensive care unit and hospital length of stay, and in-hospital all-cause mortality. Propensity score matching will be used to adjust for baseline differences between groups. Continuous data will be evaluated with the Student's t-test or Wilcoxon rank sum test, while categorical data will be assessed with χ^2 tests or Fisher's exact tests as appropriate. Statistical significance will be established at $p < 0.05$.

Results: Data collection and analysis are currently being conducted; results and conclusions will be presented at the 2013 Ohio Pharmacy Resident Conference.

Comparison of chronic kidney disease management in a patient-centered medical home with pharmacists versus a standard primary care setting

Kelli D. Barnes, PharmD, The Ohio State University College of Pharmacy

Neeraj Tayal, MD, The Ohio State University Division of General Internal

Amy Lehman, MAS, The Ohio State University Center for Biostatistics

Stuart J. Beatty, PharmD, BCPS, CDE, The Ohio State University College of Pharmacy and Division of General Internal Medicine

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-104-L01-P

Learning Objectives:

- Describe how population management improves patient outcomes
- Outline the recommended laboratory tests and cardiovascular prevention for patients with stage 3, 4, or 5 chronic kidney disease

Purpose: The purpose of this study was to use the electronic medical record (EMR) and pharmacist intervention to improve care for patients with stage 3, 4, or 5 chronic kidney disease (CKD) within a patient-centered medical home. Objectives of the study were to identify patients with chronic kidney disease (CKD) and (1) increase compliance with Kidney Disease Outcomes Quality Initiative (KDOQI) guidelines for laboratory monitoring of CKD, (2) increase compliance with KDOQI recommendations for cardiovascular prevention and (3) ensure all medications prescribed to patients with CKD were dosed appropriately based on renal function and identify.

Methods: Patients scheduled for a clinic visit were reviewed for estimated glomerular filtration rate (eGFR) less than 60 mL/in/1.73m². A pharmacist review of the EMR was completed to confirm stage 3, 4, or 5 CKD, to ensure all KDOQI laboratory and cardiovascular recommendations were completed, and to ensure all medications were dosed appropriately per renal dosing recommendations. Any care recommendations identified were communicated with the physician prior to the patient's clinic visit. A second EMR review was completed 30 days following the patient's clinic visit to determine the percentage of recommendations accepted by the physician. These results were compared to a control group who did not receive the intervention to characterize the impact of pharmacist's intervention in a patient-centered medical home.

Results: Results are pending. Number of pharmacist recommendations communicated with physicians will be reported. Increased compliance with KDOQI guidelines will be reported as the proportions of patients with each recommendation for laboratory monitoring or cardiovascular prevention ordered during patient's office visit in both the intervention and control groups. Improvements in medication dosing based on patient renal function will be reported as the number of medication dose changes during the office visit in the intervention and control group.

Conclusions: NA (research in progress)

Discharge Medication Counseling and its Correlation with Reducing Readmissions for patients with Chronic Obstructive Pulmonary Disease Exacerbations

Emily Bennett, PharmD, Grandview Medical Center

Melody Hartzler, PharmD,

Matthew Kauflin, PharmD, BCPS

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-105-L04-P

Learning Objectives:

- Describe the Affordable Care Act and its implications on current healthcare and practice.
- Discuss the impact of pharmacist provided discharge medication counseling services on patient care and outcomes.
- Identify future directions for pharmacist-provided medication discharge counseling services.

Background: Hospital readmissions and emergency department (ED) visits shortly after patients are discharged from the hospital constitute a significant healthcare expenditure that is believed to be largely preventable. Nearly one-fifth (19.6%) of Medicare beneficiaries in the United States are readmitted within 30 days following discharge, and 34.0% are readmitted within 90 days following discharge. Based on the high prevalence, significant cost, and largely preventable nature of hospital readmissions, strategies and interventions aimed at reducing readmissions are of great value to the healthcare system. Pharmacists are equipped with a unique set of medication knowledge that often is underutilized and may be beneficial in reducing readmissions in patients by providing medication counseling and increasing patient education. Objectives: The primary objective of this study is to determine if pharmacist-provided discharge medication counseling results in a reduced 30-day hospital readmissions and ED visits in patients diagnosed with a chronic obstructive pulmonary disease (COPD) exacerbation. Secondary objectives of the study include examining the number of ED visits and re-hospitalization at 90-days post discharge and determining whether patients who feel more prepared for discharge are less likely to be readmitted.

Methods: This study will compare data from a retrospective chart review (control group) with data from a prospective study group to evaluate the impact of discharge medication counseling by pharmacists on reducing readmissions and ED visits in patients hospitalized for COPD exacerbation. Patients in the prospective group will be interviewed by a pharmacist upon admission to gather basic information from the patient, explain and enroll the patient in the study (if desired), and present the patient with the "Your Discharge Planning Checklist to self-complete throughout their hospital stay. At discharge, the pharmacist will review and assist in completing any unfinished portions of the patient's checklist, conduct discharge medication counseling, and administer the Readiness for Hospital Discharge Scale (RHDS.) The RHDS will be used to assess the patient's self-reported preparedness for hospital discharge. A follow-up phone interview will be conducted by a pharmacist 3-5 days post-discharge to review any medication-related problems the patient may be experiencing. Charts will be reviewed at 30 and 90 days post discharge to determine rates of readmission and ED visits. Data will be analyzed using IBM SPSS v. 20.0 for Windows (Armonk, New York). Descriptive statistics will be used to examine demographic data as well as readmission rates. Differences in readmission rates using a Chi-squared test or a Kruskal-Wallis test, as appropriate. The association between patient readiness for discharge and readmission rates will be calculated using a Spearman correlation.

Comparative Analysis of Treatment Outcomes in Veteran Patients Receiving Medication Therapy Management by Clinical Pharmacists With Or Without Telehealth Monitoring

Lisa A. Berni, PharmD, Huntington Veteran's Health Administration Medical Center

Mark A. Hall, PharmD, BCACP

Derek L. Grimm, PharmD, BCPS

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-106-L04-P

Learning objectives:

- Describe the benefits of telehealth monitoring.
- Identify barriers to the initiation of a care coordination home telehealth program.

Purpose: Since the implementation of the Patient Centered Medical Home model of care, the Veterans Health Administration has made efforts to improve patient access to the multidisciplinary team. One way in which this endeavor has been made possible is through the Care Coordination Home Telehealth program, a system through which healthcare providers can increase monitoring of chronic disease states by supplying home telemonitoring devices for their patients. Although the ability to monitor more frequently and make interventions more frequently may suggest an improvement in patient outcomes, few studies have evaluated this hypothesis. Furthermore, studies examining the outcomes of telehealth in chronic disease state management have shown varied results.

Methods: A retrospective chart review will be performed on all patients being followed by Clinical Pharmacy between the dates of January 1, 2011 and June 30, 2012 who have a diagnosis of diabetes and/or hypertension and who are not being followed by endocrinology. Using a multivariate regression model for analysis, patient medical records of those being aggressively monitored through Care Coordination Home Telehealth will be compared to those who are not to determine what percentage of each group reached target A1C and/or blood pressure goals, and if there is a difference in how much time elapsed before the achievement of those goals. On further analysis, percent change from baseline in A1C and/or blood pressure, number of medication interventions completed, number of medications prescribed, number of emergency department visits that occurred, and number of contacts with patient made will also be compared. Confounders which will be mathematically controlled for include A1C at initial clinical pharmacy appointment, age at initial diagnosis, time since diagnosis, body mass index, and serum creatinine > 1.5mg/dL.

Results: Data is currently being collected and analyzed. Results and conclusions will be presented at the Ohio Pharmacy Residency Conference

An Observational Trial Using Procalcitonin to De-Escalate Antimicrobial Therapy in Patients with Sepsis and Pneumonia in the Intensive Care Unit

Bryan Bishop, PharmD, Summa Health System Akron City Hospital

John Bon, PharmD

Tamara Trienski, PharmD

Timothy Pasquale, PharmD

Bradley Martin, MD

Thomas File, MD

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-107-L04-P

Learning Objectives:

- Define procalcitonin and its role in diagnosing serious infections.
- Outline how procalcitonin could be used by antimicrobial stewardship to decrease antibiotic exposure.

Background: Antimicrobial resistance has a deleterious effect on mortality and health care expenditures in the United States. To combat this, antimicrobial stewardship programs have emerged. Antimicrobial stewardship utilizes tools such as formulary restriction/pre-authorization, evidence based protocols, dose optimization, and de-escalation to improve antimicrobial utilization. Procalcitonin has demonstrated the ability to distinguish, in critically ill patients, system inflammatory response syndrome of non-infectious origin from sepsis and has a good positive predictive value for severe bacterial infections.

Purpose: To assess antibiotic use for initial infection as measured by days of therapy for initial antibiotic exposure and defined daily dose.

Methodology: A retrospective, observational study involving patients admitted to the intensive care unit (ICU) with sepsis and/or pneumonia that have procalcitonin levels ordered at least 48 hours apart. The antimicrobial stewardship service may make a recommendation on continued antimicrobial use based on the procalcitonin level trend as well as additional clinical decision making tools.

Baseline characteristics and outcome data will be collected retrospectively and will only be recorded when the patient first meets inclusion/exclusion criteria. Information will also be collected to calculate Acute Physiology and Chronic Health II (APACHE II) scores at baseline as well as clinical pulmonary infection scores and the predisposition, infection, response, organ failure staging system scores in pneumonia and sepsis patients respectively at baseline and at the time of the second procalcitonin level.

50 patients will be enrolled in each group. This sample size is based on an assumed 3 day decrease in therapy of initial antibiotics with the expected standard deviation of 5 days and a confidence interval of 95% and a power of 90%. The cohorts will be matched on APACHE II score, age, gender, and primary admitting diagnosis.

Results and Conclusions: Will be presented at the Ohio Pharmacy Resident Conference.

Impact of pharmacist-led interventions on reducing heart failure exacerbations

Stephanie T. Brey, PharmD, Ohio Northern University/ Blanchard Valley Medical Associates

Karen L. Kier, BS, RPh, MS, BCPS, BCACP, PhD

Emily P. Nemire, PharmD

Mary Ann Tucker, PharmD, BCPS

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-108-L04-P

Learning objectives:

- Discuss the possibilities for pharmacists to help manage patients diagnosed with heart failure.
- List the medication classes that will decrease morbidity and mortality in patients with heart failure.

Purpose: Heart failure (HF) is a cardiovascular disease associated with high rates of morbidity and mortality, along with rising healthcare costs. Pharmacists possess knowledge and understanding about medication management and treatment options, allowing them to play a vital role in managing HF. Few studies have looked at outpatient pharmacists' responsibilities as a part of a multidisciplinary team in treating HF. The objective of this study is to assess the effect that ambulatory care pharmacists have in reducing HF exacerbations and hospitalizations by providing education, post-discharge follow-up, and medication management to patients diagnosed with HF.

Methods: This non-randomized, case-controlled study has been approved by the Ohio Northern University Institutional Review Board. Subjects will have a diagnosis of HF with a recent hospitalized exacerbation and will be excluded if they are less than 18 years old, do not speak English, or are unable to come into the office for an appointment. Patients will be referred to the pharmacist-run HF clinic within two to four weeks of hospital discharge for verbal and written education and medication management for a minimum of three visits. Clinical measurements will include: HF symptoms, weight, medications, fluid and salt intake, blood pressure, heart rate, alcohol and tobacco use, laboratory tests, and quality of life. Medication adjustments will be based on the pharmacist's assessment and after consultation with the patient's referring physician. HF-related hospital admissions and emergency department visits will be compared six months before and six weeks after pharmacist interventions. Analysis will be conducted using the chi-square test for categorical variables and the Mann-Whitney U test for non-parametric data.

Results: This study is still ongoing; therefore, final results have not been obtained.

Conclusion: It is hypothesized that results will demonstrate the positive effect pharmacists have in decreasing HF exacerbations and hospitalizations.

Effect of optimal medication therapy on hospital readmission in chronic heart failure

Kellie Buschor, PharmD, University of Toledo Medical Center
Vincent Mauro, PharmD, FCCP

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPEUAN: 0048-0000-13-109-L04-P

Learning Objectives:

- Identify properly optimized heart failure therapy, including proper medication choice and target dosing.
- Explain the importance of each component of heart failure therapy, differentiating between medications that improve survival versus those that improve quality of life.

Background: Heart failure is a chronic, progressive weakening of the cardiac muscle affecting 5.7 million Americans with 670,000 newly diagnosed patients annually¹. As heart failure advances, the heart's ability to pump efficiently is lessened. Treatment of heart failure is made up of a combination of medications targeted at symptom relief and enhanced survival. Drugs proven to enhance survival are beta blockers, vasodilators and spironolactone/eplerenone^{2,3,4}. Optimal dose titration of beta blockers and vasodilators is an important aspect of treatment and is often less than aggressive or overlooked. The purpose of this study is to evaluate the effects of optimal medication management on hospital readmission.

Objectives: To evaluate the effect of optimal medication therapy on time to hospital readmission in patients with chronic heart failure

Methodology: Prior to commencement, IRB approval was obtained. The study is being conducted within the University of Toledo Medical Center (UTMC) and affiliated cardiovascular clinics. Electronic medical record and chart reviews of patients 18 years or older are retrospectively reviewed. Included are patients admitted to UTMC for an acute exacerbation of heart failure from January 1, 2007 to June 30, 2012 who were then seen for follow up at a UTMC cardiovascular clinic. Charts are reviewed for medication history, dose titration of beta blocker and/or vasodilator, ejection fraction, heart rate, blood pressure, serum potassium, renal function, asthma/COPD, geographic location, hospital readmissions and time to hospital readmission. Primary outcome will be time to hospital readmission. The study will also evaluate heart failure patients not receiving beta blocker or vasodilator therapy and any documented reason for this exclusion. Data will be used to evaluate correlation between use and dose of drug therapy and hospital readmission rates as well as other correlating factors.

Results: At the time of abstract submission, sufficient data had not been collected to determine preliminary results.

Implementation and evaluation of pharmacist led medication therapy management services in primary care physician offices

Emma E Chermely, PharmD, Riverside Methodist Hospital

Tara E Schreck, PharmD

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-110-L04-P

Learning objectives:

- Discuss the prevalence and impact of medication non-adherence
- Review the required elements of medication therapy management appointments

Purpose: The purpose of this study is to measure change in medication adherence after pharmacist led medication therapy management services (MTM) integrated in physician offices. Exit surveys will also be distributed to patients and participating physicians to gauge satisfaction.

Methods: This study has been approved by the Institutional Review Board of Riverside Methodist Hospital. Patients will be eligible for inclusion if they are 18 years or older, have at least 6 chronic prescriptions, and are patients of participating prescribers. Initial MTM appointments will be scheduled for 60 minutes immediately following physician appointments; a complete medication review will be conducted at this time. During the appointment, patient medication adherence will be evaluated, pharmacist recommendations will be communicated to the physician, and a patient medication record (PMR) and medication-related action plan (MAP) will be distributed to the patient. A follow-up appointment will be scheduled, at which time a 30 minute MTM will be conducted and adherence will be reassessed. Voluntary anonymous exit surveys will be distributed to participating patients and physicians to assess satisfaction.

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

The Impact of Bedside Prescription Delivery and Discharge Counseling on Patient Outcomes and Satisfaction

Jordan J. Counts, PharmD, BCPS, Riverside Methodist Hospital

Charles F. McCluskey III, PharmD, MBA, RPh

Scott H. Tekancic, RPh

Jay M. Mirtallo, MS, RPh, BCNSP, FASHP

Milap C. Nahata, PharmD, MS

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-111-L04-P

Learning Objectives:

- Discuss findings of published literature regarding pharmacist's impact on value-base purchasing measures.
- Identify the specific criteria that are evaluated by patients within the medication domain of the HCAHPS survey.

Purpose: Transitions of care are highly variable events that play an important role in preparing patients to achieve optimal medication therapy outcomes. With governmental healthcare reform, patient outcomes and satisfaction with their care is becoming increasingly relevant to health-system leaders. Pharmacy interventions during these transitions of care have proven beneficial in improving readmission rates and HCAHPS results, both of which are publicly reported national quality indicators. The objectives of this study are to validate resource-sparing efforts providing patient education using pharmacist-provided discharge counseling and to determine the effect of bedside outpatient medication delivery on readmission rates and patient satisfaction.

Methods: Prior to commencement, this study will be submitted to the Institutional Review Board for approval. This evaluation will take place on the hospital's cardiac telemetry unit. Study groups will be comprised of a control group (patients discharge without intervention) and an intervention group (patients who receive bedside prescription delivery). Optional bedside delivery of new outpatient prescriptions and discharge counseling will be provided by the hospital's outpatient pharmacy. Pharmacist-provided discharge education will be performed using mobile videoconferencing technology. Patients younger than 18 years of age will be excluded from this study. Confidentiality of all patient data will be maintained. The following data will be collected: index admission date and diagnosis, readmission date and diagnosis, and number of discharge prescriptions, percentage of patients choosing bedside delivery and/or discharge counseling, counseling time, and processing time for outpatient prescriptions. Publicly reported hospital data will be retrospectively reviewed to compare readmission rates and medication domain HCAHPS results for patients in each of the study groups. An electronic survey will capture patient opinions related to the value and efficiency of the bedside delivery and discharge counseling processes.

Results/Conclusions: Data collection is in process with conclusions to be presented at the Ohio Pharmacy Resident Conference.

Descriptive analysis of pharmacist involvement in the palliative care clinic

Emily E Davies, PharmD, Summa Health System

Pamela Moore, PharmD, BCPS, CPE

Teresa Albanese, PhD

Steven Radwany, MD, FACP, FAAHPM

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-112-L04-P

Learning Objectives:

- Define the role of the pharmacist in an outpatient palliative care clinic setting at Summa Health System
- List the most common patient interventions the pharmacist made to the interdisciplinary care team

Objectives: To describe the role of the clinical pharmacist in an interdisciplinary outpatient palliative care clinic (OPPCC), at Summa Health System, serving an oncologic and non-oncologic patient population, through documentation of the pharmacist's functions and interventions during clinic over a 12 month period.

Methods: A retrospective analysis of the contribution of the clinical pharmacist in the OPPCC is being conducted. All records of patients seen in the OPPCC between July 2012 and June 2013 are included in the study for review by the pharmacist. Records of patients greater than 100 and younger than 18 years old will be excluded. The pharmacist's responsibilities in the clinic include reviewing patient records for any recent uncontrolled symptoms, running reports using Ohio's prescription monitoring program (PMP), and investigating any recent hospitalizations. The clinical pharmacist focuses face-to-face visits on new patients, patients with a hospitalization in the last 30 days, and patients who have a recent telephone encounter involving a symptom complaint. During the visit, the pharmacist conducts medication reconciliation and assesses pain and any other symptoms by using a modified Edmonton Symptom Assessment System. The pharmacist makes recommendations for medication changes to the physician and educates the patient as necessary. Pharmacist interventions are documented in an intervention tracking system, with interventions including, but not limited to: medication reconciliation, discrepancies in the PMP report, drug interactions, adverse effects, patient education, and recommendations involving medication calculations, and the discontinuation, initiation, taper, or titration of medications. Descriptive statistics will be calculated for conclusions related to the activities of the pharmacist in the clinic.

Results: Data collection is on-going with preliminary results including pharmacist involvement with 48 patients, totaling 105 visits. Billable pharmacist visits total 34 visits, or 33% of total patient visits. There have been 243 interventions during the 105 visits, averaging 2.3 interventions per patient visit.

Retrospective analysis of pharmacist interventions and re-hospitalizations for patient's in an ambulatory care multidisciplinary CHF clinic

Brianna J. Davis, PharmD, Huntington Veteran's Health Administration Medical Center

Robin L. Henderson, PharmD

Derek Grimm, PharmD, BCPS

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-113-L04-P

Learning Objectives:

- Review the current guidelines on the management of heart failure concerning the recommended target doses of various antihypertensive medications.
- Discuss the mechanisms of various agents that can potentially exacerbate heart failure.

Purpose: Despite the current development of guidelines for the management of heart failure, it remains the most frequent cause of hospitalization in patients >65 years of age with a re-hospitalization rate as high as 50% within six months of discharge. In the management of heart failure it is recommended to titrate certain medications to a recommended target dose to decrease cardiac remodeling and re-hospitalizations. However, titration of heart failure medications is often difficult and limited by medication side effects. Recently at HVAMC a pharmacist has been incorporated into the ambulatory care heart failure clinic to reconcile heart failure medications and make recommendations on dose adjustments, as well as, identifying medications that could potentially exacerbate heart failure. The purpose of this research is to determine the percentage of accepted pharmacist recommendations in various categories and the effect of acceptance of these recommendations on the rates of hospitalizations and/or emergency room visits. In addition, the amount of health-system dollars avoided due to reduction in hospitalizations and/or emergency room visits will also be examined.

Methods: A retrospective chart review was performed on pharmacist progress notes from all initial patient visits to HVAMC's ambulatory care CHF clinic from April 1st 2011 to June 30th 2012. Progress notes were assessed for number of recommendations made and percentage of accepted pharmacist recommendations in several categories. Ninety day hospitalization and/or emergency room visits were assessed from the time of initial patient visit with a pharmacist, and compared to the number of accepted pharmacist recommendations. Furthermore, reduction in hospitalizations and/or emergency room visits within 90 days of initial CHF appointment and health-system dollars avoided were compared with number of pharmacist interventions to determine any type of relationship.

Results: Data is currently being collected and analyzed. Results and conclusions will be presented at the Ohio Pharmacy Residency Conference.

Review of the impact of the 2011 FDA citalopram dosing drug safety communication on psychiatric outcomes at a Veterans Affairs Medical Center

Kelly A. Earls, PharmD, Huntington Veteran's Health Administration Medical Center

Jessica E. Hall, PharmD, CGP

Derek L. Grimm, PharmD, BCPS

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-114-L04-P

Learning objectives:

- Discuss citalopram dosing recommendations per the 2011/2012 FDA citalopram drug safety communications.
- Describe adverse events that may occur after reduction in citalopram dosage after the 2011/2012 FDA citalopram drug safety communications.

Purpose: In August 2011, both the FDA and drug manufacturer of citalopram released a warning which stated that patients should not take citalopram doses greater than 40mg/day or greater than 20mg/day if 60 years of age or older due to increased risk of QTc interval prolongation and Torsades de Pointes. Nationwide, many health care providers and health-systems made dose adjustments necessary to adhere to this warning. Since the Huntington Veterans Affairs Medical center adopted this practice, this project will help assess what impact this dosage reduction has had on our patients, and describe the optimal monitoring of patients after a dosage reduction of a mental health related medication secondary to regulatory communication.

Methods: A retrospective chart review was performed on patients seen at the Huntington VAMC who received greater than citalopram 20mg on an outpatient basis before the initial citalopram FDA mandate came out in August 2011. Patients were stratified per the following criteria: patients under the age of 60 years who were receiving greater than citalopram 40mg daily and patients 60 years of age or older who were receiving greater than citalopram 20mg daily. Each stratum was examined for adverse events after dosage reduction. Such adverse events included hospitalization due to psychiatric causes, change from citalopram to a different SSRI, change from citalopram to a different antidepressant class, and/or addition of another antidepressant in conjunction with decreased citalopram dosage. QTc interval before citalopram dosage reduction was also compared to QTc interval after dosage reduction when available through the electronic record system.

Results: Data is currently being collected and analyzed. Results and conclusions will be presented at the Ohio Pharmacy Residency Conference.

Management of asymptomatic bacteriuria in catheterized patients

Jessica L. Elefritz, PharmD, The Ohio State University Wexner Medical Center

Meredith Deutscher, MD

Kurt B. Stevenson, MD

Jeremy Taylor, PharmD, BCPS

Erica E. Reed, PharmD, BCPS

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-115-L04-P

Learning Objectives:

- Review appropriate management of patients with asymptomatic bacteriuria.
- Discuss factors that may contribute to inappropriate management of patients with asymptomatic bacteriuria.

Previous studies suggest that 32-64% of patients with asymptomatic bacteriuria (AB) are prescribed antibiotics inappropriately despite published guidelines recommending against treatment of AB in adults with the exception of pregnant women and individuals undergoing urologic procedures. The purpose of this study was to evaluate the management of AB in catheterized general medicine and surgery patients at our institution and identify differences between patients who were inappropriately prescribed antibiotics and those who were appropriately managed.

We conducted a retrospective review of catheterized patients admitted to general medicine and surgery services between November 1, 2011 and November 31, 2012 with a urine culture containing greater than 10^4 cfu/mL bacteria. Symptomatic patients were excluded based on documentation of urinary tract infection symptoms. Asymptomatic patients were divided into two groups: (1) those with AB who were appropriately not administered antibiotics and (2) those with AB who were prescribed an antibiotic. Statistical analysis was performed to compare select characteristics between groups and determine factors potentially contributing to the decision to unnecessarily prescribe antibiotics to asymptomatic patients.

Thirty four patients met study inclusion criteria. Among these, twenty two patients (65%) received an antibiotic and were considered to be inappropriately managed. There were no statistically significant differences noted between groups; patient age ($P=0.64$), quantity of bacteria in urine culture ($P=0.76$), peripheral WBC on day of culture obtainment ($P=0.62$), presence of bacteria on urinalysis ($P=0.08$), pyuria on urinalysis ($P=0.91$), and selected co-morbidities.

Catheterized patients with AB are frequently prescribed antibiotics unnecessarily at our institution. This study was not adequately powered to detect statistically significant differences between patients who were inappropriately prescribed antibiotics and those who were appropriately managed. Additional studies are needed to further explore factors influencing inappropriate antibiotic prescribing. Future directions include medical staff education and prospective Antimicrobial Stewardship Program interventions.

Assessment of clinical outcomes in pneumonia patients treated with enteral antibiotics in the surgical intensive care unit

Kathryn A. Eloffson, PharmD, The Ohio State University Wexner Medical Center

Anthony T. Gerlach, PharmD, BCPS, FCCM

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-116-L04-P

Learning Objectives:

- Describe the clinical diagnosis of pneumonia, including the utilization of CPIS.
- Recognize criteria used for appropriate transition to enteral antibiotics.

In the United States, pneumonia affects approximately 1.1 million people annually and accounts for more than 50,000 mortalities (16.5 deaths per 100,000). It is the leading cause of infection-related mortality worldwide. The average hospital length of stay is 5.2 days and 3.4% of all hospital inpatient deaths are attributed to pneumonia.

At present time there are no published data assessing the efficacy of enteral antibiotic therapy for critically ill patients with bacterial pneumonia. The primary objective of this study is to assess the clinical cure rates in patients who are initiated on or transitioned to enteral antibiotics compared to those who solely receive intravenous antibiotic therapy for treatment of bacterial pneumonia in a Surgical Intensive Care Unit (SICU). The primary endpoint of this study is clinical cure of bacterial pneumonia as evidenced by resolution of leukocytosis, hemodynamic stability, adequate oxygen saturation, improvement in Clinical Pulmonary Infection Score (CPIS), resolution of chest x-ray (CXR) and/or microbiologic cure.

This retrospective cohort study was conducted on patients with a positive bronchoalveolar lavage (BAL) treated for bacterial pneumonia in the Surgical Intensive Care Unit between 1/1/09 and 3/31/11. Two distinct patient groups were identified. The first group included patients treated with intravenous antibiotics for the duration of antimicrobial treatment. The second group included patients either initiated on or transitioned to enteral antibiotics within 4 days of initiation of therapy. Patients less than 18 or greater than 89 years of age, prisoners, and pneumonia due to *Acinetobacter* species and/or Extended Spectrum Betalactamase (ESBL) producing bacteria were excluded. Data collected includes demographics, baseline vitals, CPIS, respiratory culture results, chest x-ray (CXR) results, ventilator status, sputum data, duration and type of antibiotic therapy, total health care cost, infection related cost and clinical outcome data.

Data collection and evaluation are currently being conducted.

Impact of Charitable Pharmacy Services on Patient-Reported Hospital Utilization, Medication Adherence, and Patient Perception of Health Status in an Indigent Patient Population

Holly P. Fahey, PharmD, The Ohio State University College of Pharmacy

Laura E. Hall, PharmD, BCPS

Jennifer L. Seifert, RPh, MS

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-117-L04-P

Learning Objectives:

- Define a drug repository program
- Describe the laws and regulations pertaining to a charitable pharmacy in Ohio
- Illustrate using the practice model of the Charitable Pharmacy of Central Ohio

Purpose: To evaluate the impact that Charitable Pharmacy of Central Ohio (CPCO) has on an indigent patient population. CPCO goals are to increase access to pharmacy services including free medication, health and wellness education, and provide education about free or low cost primary health care clinics. The primary objective is to determine the change in self-reported hospital use pre- and post- CPCO services. Secondary objectives include assessment of ability to fill prescriptions pre- and post- CPCO services and patient perception of health status since receiving CPCO services.

Methods: English speaking patients at least 18 years old who have received services from CPCO for at least 3 months were asked to participate in the survey. This study was an electronic, approximately ten minute survey administered face-to-face to individual CPCO patients via Qualtrics[®], with a goal of enrolling 200 patients. Demographic information was collected. Descriptive statistics were generated for all questions.

Preliminary Results: In the year before using CPCO, patients used the hospital an average of 2.20 (median 2.00) times per year versus 1.38 (median 0.67) times per year after. Fifty one percent of patients decreased hospital use by at least 1 visit per year, 33% did not change, while 15% increased use. Before coming to CPCO, 48% of patients were able to fill *all* prescriptions prescribed to them versus 89% after using CPCO. Greater than 89% of patients felt overall health was better, they had a better understanding of medications, and were more in control of their own health. Sixty nine percent felt they had more access to health care providers.

Implications/Conclusions: The results of this study will help CPCO describe its value to stakeholders, increase awareness to other communities that may be in need of opening a charitable pharmacy, and provide valuable information to guide CPCO prospective development.

Implementation of a 12-week pharmacist lead walking program designed for employees of a private university to increase physical activity and improve overall health of participants

Amy M. Fanous, PharmD, Ohio Northern University Healthwise

Michael J. Rush, PharmD, CDE, BCACP

Karen L. Kier, PhD, BCPS, BCACP

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-118-L04-P

Learning Objectives:

- Explain the amount of physical activity per week that is currently recommended for adults, as well as the number of adults who are currently meeting these goals
- Recognize the benefit of the pharmacist's role in motivating employees to increase physical activity and provide a means to improve health

Purpose: To determine if a pharmacist lead walking program will motivate employees to increase physical activity and provide a means to improve overall health.

Methods: Subjects will participate in a 12-week walking program. Participants will complete a survey to assess current physical activity and overall health. Past medical history, current medication list, point-of-care labs including lipid panel and fasting glucose, and blood pressure will be obtained by a pharmacist or pharmacy student. The participants will be educated and counseled about lab results. Weight, BMI, body composition, and waist-to-hip ratio will be obtained by an exercise physiologist. Participants will report to weekly pedometer checks where steps will be recorded, medications will be reassessed, and questions will be answered. Weight and blood pressure will be rechecked at week 4 and week 8. As an incentive to meet the walking goals, the participants will receive a raffle ticket each week their goal has been achieved. After 12-weeks, all parameters will be reassessed: lipid panel, fasting glucose, blood pressure, weight, BMI, body composition, and waist-to-hip ratio. After data has been collected, it will be analyzed for clinical and statistical significance. All information will be protected according to HIPAA and ONU HealthWise standards based on IRB approved protocol with respect to patient privacy and confidentiality. Any presentation of data will be done in an aggregate, anonymous form.

Results: One hundred forty-four subjects participated in an initial appointment. There were 183 abnormal lab values uncovered in participants who had no prior history: one diagnosis of diabetes, 77 cases of impaired fasting glucose (>100 mg/dL), 36 cases of elevated triglycerides (>150 mg/dL), 49 cases of decreased HDL (<40 mg/dL in men or <50 mg/dL in women), 7 cases of LDL cholesterol above goal (patient specific), and 13 new cases of hypertension (systolic \geq 140 mmHg or diastolic \geq 90 mmHg). Final results are pending.

Conclusion: A pharmacist-directed walking program is a non-threatening approach to screen participants' for unknown health conditions and may be a means to motivate employees to increase activity and improve health.

Utilizing a Medical and Community-Based Approach to Increase Enrollment in a Smoking Cessation Program

Taylor Garber, PharmD, Kroger Pharmacy/University of Cincinnati

Pamela C. Heaton, PhD, RPh

Heidi R. Luder, PharmD, BCACP

Stacey M. Frede, PharmD, BCACP, CDE

Shelly M. Rosser, PharmD

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-119-L04-P

Learning Objectives:

- Identify two methods of smoking cessation, proven to be effective.
- Define common barriers to enrollment in a smoking cessation program.

Objective: The purpose of this study is to partner with physician offices, partner with community organizations and perform systematic pharmacy assessment of smoking status, in order to: 1) increase patient enrollment in an existing smoking cessation program 2) evaluate physician-pharmacist collaboration and 3) assess patient motivation to quit.

Methods: Tobacco use continues to be the number one cause of preventable death in the United States. Although successful smoking cessation programs exist, participation rates are suboptimal; therefore, patient enrollment in these programs remains a vital public health priority. Partnerships with physician offices and community organizations were established to improve patient awareness and increase patient participation in an existing grocery chain, community pharmacy smoking cessation program. The smoking cessation program consists of pharmacist-led small group or individual sessions, completed over ten weeks. Physicians identified tobacco users and referred them to the program for treatment. Community organizations distributed fliers and other promotional materials to their members. Additionally, patients were recruited at the pharmacy. Pharmacy personnel were trained on the “ask-advise-refer” (AAR) method and actively recruited tobacco users. Informational sessions were available for all patients to discuss the benefits of smoking cessation. Patients could also be directly enrolled into the program based on their readiness to quit. The study was evaluated on: involvement of the physician and community partners, patient participation in the informational sessions, patient enrollment in the program, a baseline enrollment survey evaluating reason for enrollment and motivation to quit, percentage of patients completing the program, and coordination of care between physician and pharmacist, evaluated through a previously validated survey.

Results: The pharmacy successfully partnered with a physician office and two community organizations. Preliminary survey results revealed stress to be the major barrier to patient motivation to quit smoking, and that patients lack the self-confidence to quit successfully.

Conclusions: In progress

Guideline compliance for treatment of *Clostridium difficile* infections

Karen T. Grice, PharmD, RPh, Grant Medical Center

Lauren M Flannery, PharmD, RPh, BCPS

Jamie Jenkins II, PhD

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPEUAN: 0048-0000-13-120-L04-P

Learning Objectives:

- Classify severity of disease in patients with *Clostridium difficile* infection
- Select appropriate treatment for patients with *Clostridium difficile* infection

Purpose: The Infectious Diseases Society of America (IDSA) recently published guidelines in 2010 for treatment of *Clostridium difficile* infections (CDI). The purpose of this study is to evaluate compliance with guidelines and effectiveness of a pharmacist-initiated intervention to improve compliance.

Methods: This study is a pre- and post-intervention assessment of guideline compliance for the treatment of CDI. Infection control data will be used to identify patients who had a positive *Clostridium difficile* toxin gene polymerase chain reaction (CDTG-PCR) between April 2012 and February 2013. Patients will be included if they were older than 18 years of age and treated by Hospital Medicine Service (HMS) physicians. Patients will be excluded if they had a reported reaction to vancomycin or metronidazole and could not receive recommended treatment or were receiving treatment for CDI prior to admission. Patient demographic information to be collected includes patient age, gender, and comorbidities. Information to assess severity of disease will include white blood cell count (WBC), serum creatinine, and evidence of complicated disease such as ileus, megacolon, or shock. Risk factors for CDI and outcome data will also be collected. Treatment will be considered guideline-compliant if agent and duration of treatment corresponds to recommended treatment in the current IDSA guidelines according to disease severity. A pharmacist-led education for HMS physicians was completed in November 2012. Adherence to guideline recommendations will be assessed in both pre- and post-education time frames. This study has been approved by the Institutional Review Board.

Results: Data analysis is currently in progress. Results will be presented at the Ohio Pharmacy Resident Conference meeting.

Evaluation of the use of prothrombin complex concentrate for hemostasis in emergent situations outside of intracranial hemorrhage

Alexander Heine, PharmD, Riverside Methodist Hospital, OhioHealth

Angela Harding, PharmD

Tara Fisher, PharmD, BCPS

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-121-L04-P

Learning Objectives:

- Discuss the approved indications for appropriate use of Prothrombin Complex Concentrate (PCC).
- Review the most common reasons for PCC utilization outside of the approved indications.
- Describe the safety and efficacy of PCC use outside of approved indications.

Purpose: Prothrombin Complex Concentrate (PCC) is most commonly used for control of hemorrhagic events associated with hemophilia B, or in patients taking a vitamin K antagonist with intracranial hemorrhage. PCC use outside of these indications is currently based on low levels of evidence. The purpose of this study is to evaluate and describe outcomes in patients that were administered PCC for hemostasis, or control of critical bleeding, outside of traumatic or spontaneous head bleed. These outcomes will then be used to assess the current limited prescribing guidelines as it pertains to the OhioHealth system and make modifications as necessary.

Methods: A retrospective study was performed examining the outcomes of the use of PCC for the attempted reversal of any anticoagulation outside of either Factor IX deficiency due to hemophilia B or CT confirmed intracranial hemorrhage. All hospitalized patients administered PCC at Riverside Methodist Hospital from July 1, 2011 to June 30, 2012 were reviewed. Patients ≥ 18 yo, that were administered PCC for use outside of patients with Factor IX deficiency due to hemophilia B and reversal of traumatic or spontaneous head bleed in patients taking vitamin K antagonists will be included in the study. Data collection included: demographic information, indication for PCC, anticoagulants administered, INR, blood products administered, hemoglobin, blood loss, and mortality. Patients receiving PCC for approved indications within the health system guidelines will be excluded. This data will be analyzed for trends and used to evaluate the current PCC health system prescribing guidelines.

Results/Conclusion: Data collection is in progress. The results of this study will be presented at the Ohio Pharmacy Resident Conference.

Evaluating the impact of a budget neutral pharmacist-led intervention program for high-risk patients in a community hospital emergency department

Chas A Hoffmann, PharmD, Firelands Regional Medical Center

James W Spicer, PharmD, CACP

Joseph E Guidos, PharmD, BCPS

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-122-L04-P

Learning objectives:

- Describe emerging roles for pharmacists within an emergency department
- Identify benefits of having pharmacy services within an emergency department

Purpose:

National debate surrounding pharmacy services in the emergency department (ED) has intensified in recent years. Firelands Regional Medical Center is a community hospital with a 35 bed ED that evaluates and treats over 48,000 patients per year. When examining current literature, it is evident that pharmacy services involve full time positions within the ED. To date, no studies have provided guidance regarding the ability to deliver effective care without staffing at least one full time employee. The purpose of this study was to assess the impact of care provided by a budget neutral pharmacist-led intervention program for high-risk patients in a community hospital ED.

Methods used:

ED pharmacy services were available from December 2012 to February 2013 and were initiated upon identification of a high-risk patient by the triage nurse. The responding ED pharmacist performed a variety of services based on individual patient need. ED physicians and nurses were surveyed using a likert scale prior to and after service implementation. Additionally, patients were surveyed via a similar likert scale after pharmacist intervention. Survey results were blinded to all investigators and compiled by the hospitals quality department.

Results:

Sixty high-risk patients met inclusion criteria for this study. Ninety-two total interventions were completed in this population. Data regarding type of interventions provided; nursing and pharmacy cost savings; and patient savings and satisfaction were compiled. Median and mode analysis from physician, nurse, and patient likert surveys were also completed.

Conclusion:

Impact analysis of a budget neutral pharmacist-led intervention program for high-risk patients in a community hospital ED resulted in significant cost savings, reduced nursing time spent on home and discharge medication reconciliation, and improved staff and patient satisfaction.

Treatment of venous thromboembolism (VTE) with once-daily dosing of enoxaparin in patients with cancer: A retrospective study

Kelly Hoffmann, PharmD, The Arthur G. James Cancer Hospital & Richard J. Solove Research Institute at
The Ohio State University
Aaron Dush, PharmD, CACP
Jessica Duda, PharmD, BCOP
Eric Kraut, MD

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-123-L04-P

Learning objectives:

- Discuss the significance of venous thromboembolism in patients with cancer
- Review the importance of low-molecular weight heparin therapy for venous thromboembolism in patients with cancer

Purpose: Vitamin K antagonists are indicated for treatment of VTE; however, the risk of bleeding is significant compared to low-molecular-weight-heparins (LMWH). The CLOT trial established LMWHs as the standard treatment for VTE in patients with cancer. Although it evaluated dalteparin vs warfarin therapy, the national guidelines (ASCO, NCCN, & CHEST) apply LMWH therapy more generally to the entire class. Once daily dosing of enoxaparin is preferable due to higher compliance rates; however, questions about its safety and efficacy still remain.

Methods: Patients included in the study had a non-hematologic malignancy, were initiated on once-daily enoxaparin for an initial diagnosis of VTE during October 15, 2011 to April 15, 2012. Patients converted to other anticoagulation therapies were excluded. The primary endpoint was recurrence of VTE, confirmed by objective test results. Secondary outcomes include the frequency of major bleeding events. Major bleeding is defined as bleeding at a critical site (intracranial, intraspinal, intraocular, retroperitoneal, pericardial), a drop in hemoglobin of 2 g/dL or more, requiring transfusions of 2 Units of blood or more, requiring discontinuation of therapy, or death.

Results: Enoxaparin was ordered for 472 inpatients and prescribed for 3,729 outpatients. After exclusions, 34 patients remained for data collection. Of the 34 patients, 17.6% (n=6) experienced a recurrent VTE and 14.7% (n=5) experienced a major bleeding event.

Conclusions: A sample size of 200 was needed to reach statistical significance, limiting ability to draw conclusions. The majority of patients (75-80%) were excluded because they were bridged to warfarin, despite the fact that this therapy is not recommended as first line in this patient population. Patient preference for favoring an oral therapy over an injection and the high cost of enoxaparin could warrant this finding.

Characterization of adverse events associated with stress ulcer prophylaxis in the critically ill

Matthew J. Hoover, PharmD, BCPS, Mercy St. Vincent Medical Center

Deidre J. Rohaley, PharmD, BCPS

F. Barry Knotts, MD, PhD, FACS

Laura Perry, PharmD, BCPS

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-124-L04-P

Learning Objectives:

- Explain the rationale behind using stress ulcer prophylaxis in the critically ill.
- Describe the adverse events associated with stress ulcer prophylaxis use.

Purpose: Stress ulcers are a complication encountered in the critically ill, making stress ulcer prophylaxis (SUP) a crucial aspect of care. The American Society of Health-System Pharmacists guidelines on SUP recommend that selection between antacids, histamine-2-receptor antagonists (H₂RAs), and sucralfate be an institution decision. Studies suggest that SUP may increase the risk of hospital acquired pneumonia (HAP), *Clostridium difficile* infections, and thrombocytopenia. The objective of this study is to characterize the adverse events associated with the different SUP agents in critically ill patients at Mercy St. Vincent Medical Center (MSVMC), a 450 bed tertiary care hospital.

Methodology: This retrospective review has received approval from the Institutional Review Board. Patients were identified using MSVMC's electronic health record for admission to the burn, medical, surgical, or cardiovascular intensive care units and ordered an H₂RA, PPI, or sucralfate from January 1, 2012 through July 31, 2012. Patients were included if they received one dose of SUP. Exclusion criteria included: patients who received treatment for a gastrointestinal bleed, received an H₂RA, PPI, or sucralfate prior to admission, or had a previous *Clostridium difficile* infection in the past 3 months. The following data was collected: patient demographics, home medications, SUP received, duration of use, platelet count, temperature, white blood cell count (WBC), cultures, chest radiography (CXR), and risk factors for stress ulcers and thrombocytopenia including concomitant medications. The investigators evaluated patients for the primary outcome of thrombocytopenia (platelet count less than 100,000 per microliter), *Clostridium difficile* infection (positive stool sample), or HAP (positive sputum culture, infiltrates on CXR, temperature greater than 38 degrees Celsius, and WBC greater than 12,000 per microliter occurring greater than 48 hours after admission). Secondary outcomes include: gastrointestinal bleed and appropriateness of SUP.

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

Anticoagulant therapy in atrial fibrillation: trends in use after the approval of two new agents

Carla M Huelskamp, PharmD, ProMedica Toledo Hospital Family Medicine

Steven R Smith, RPh, MS, BCACP

Ashley M Parrott, PharmD, BCPS

Stephen Wanjiki, MS

Megan Brown, MPH

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-125-L04-P

Learning Objectives:

- Describe the role of anticoagulation therapy in atrial fibrillation.
- Identify clinically important differences between warfarin, dabigatran and rivaroxaban.

Purpose: Characterize current prescribing practices for the different anticoagulants used for stroke prophylaxis in patients with atrial fibrillation

Methods: This study is designed as a retrospective analysis of medical and prescription claims data from a large insurer located in Northwest Ohio. All insured members who have a medical claim of atrial fibrillation and at least one prescription claim for warfarin, dabigatran and/or rivaroxaban between November 1, 2009 and October 31, 2012 will be included in the analysis. Once eligible members have been determined, the prescription claims for these members will be reviewed for dates of prescribing of each of the anticoagulants. The data will be evaluated for prescribing trends of the anticoagulants as well as for therapeutic failures (i.e., ischemic stroke) and adverse events (i.e., hemorrhagic complications) using medical claims data. In the event that a member has claims for more than one anticoagulant and a reason for a change in anticoagulant therapy cannot be determined from the database, the patient's physician will be contacted for this information.

Results: Medical and prescription claims data are currently being assessed. Results of the study will be presented at the Ohio Pharmacy Residency Conference in May 2013.

Conclusion: Pending study results

Retrospective Evaluation of a Tool-Guided Approach to Venous Thromboembolism (VTE) Risk Assessment

Zachary N Jenkins, PharmD, Summa Health System / Akron City Hospital

Olga Kuzmin, DO

Lauren Spalding, DO

Dorcas Letting-Mangira, PharmD

Linda Ha, DO, FACP

Jacqueline R Ewald, PharmD, BCPS

Donald A. Noe, BSE

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-126-L04-P

Learning Objectives:

- Recognize the barriers to venous thromboembolism prophylaxis.
- Define the purpose of a venous thromboembolism risk assessment model (RAM).

Purpose: Venous thromboembolism (VTE) is a major clinical and economic burden, affecting both medical and surgical patients. Evidence-based data indicate that appropriate prophylaxis can significantly reduce the risk of VTE and associated morbidity and mortality. However, there have been a number of barriers to decreasing the incidence of VTE. One such barrier has been the lack of validated VTE risk assessment practices. In 2005, Maynard et al developed a tier-based risk assessment model (RAM) for use with an electronic order set. On implementation of their RAM, the percentage of adequately-prophylaxed patients improved significantly. Barbar et al investigated the idea of a standardized RAM in 2010. After examining a point-based RAM, researchers concluded that the tool decreased the incidence of VTE. The authors of the 2012 CHEST guidelines have since adopted this RAM as the preferred method of VTE risk assessment in nonsurgical patients. By comparing these two RAMs to baseline practices, we hope to find a method of VTE risk assessment that is both efficacious and practical for hospital-wide implementation.

Methods: To evaluate current VTE practices and related outcomes for general medical patients at Akron City Hospital, a retrospective chart review of patients with documented VTE events admitted January 1st 2008 through January 1st, 2012 will be conducted. During chart review, each patient will be screened retrospectively by the investigators using two RAMs. A minimum of 25 patient charts will be evaluated to obtain normal statistical distribution of each risk category (as defined by each individual RAM). Charts will continue to be reviewed until enough evaluable data has been collected. The validity of each RAM with respect to baseline practices will be evaluated based on multiple factors, including: detection rate and variability, bleeding event rates, prophylaxis method, adverse events, and patient length of stay.

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

Evaluating the safety of activated recombinant factor seven (rFVIIa)

Shawn Johnson, PharmD, MPH, BCPS, Wexner Medical Center

Danielle Blais, PharmD, BCPS

Erin Reichert, PharmD, BCPS

Pamela Burcham, PharmD, BCPS

Anthony Gerlach, PharmD, BCPS, FCCM

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-127-L04-P

Learning Objectives:

- Review the current FDA approved indications for activated recombinant factor 7 (rFVIIa)
- Explain why rFVIIa was initially used frequently to stop life threatening bleeding
- Discuss the complications seen when using rFVIIa off label
- Explain the results of studies, ours included, to help determine if the complications seen with rFVIIa usage is based on total dosage used

Purpose: Recombinant Factor VIIa (rFVIIa) is used as an agent to stop life-threatening bleeding or emergent reversal of anticoagulation in non-hemophiliacs. Recent studies have demonstrated rFVIIa is associated with development of both arterial and venous thromboembolic complications (TEC) especially in non-hemophiliacs. However, due to the heterogeneity of these studies, it is unknown if higher dosages are associated with increased TECs. Our study investigates rFVIIa usage in non-hemophiliacs to determine if higher total doses results in higher incidences of TECs. Secondary outcomes include thirty day mortality.

Methods: This is a single center, retrospective observational chart review conducted in patients receiving rFVIIa from January 1, 2005 to October 1, 2011 which was granted approval by the institutional review board. Exclusion criteria included subjects less than 18 years of age, age greater than 89, pregnant females, prisoners and hemophiliac patients. Data to be collected includes demographics (age, weight and gender), indication, history of thrombosis, hematologic studies, transfusions, use of hemostatic medications, total dosage used and evidence of ischemia or thromboembolism from radiologic, electrocardiogram, computed tomography (CT), magnetic resonance imaging (MRI), operating and ultrasound results. Thromboembolic complications were defined as acute myocardial ischemia, ischemic bowel, pulmonary embolus, deep vein thrombosis and cerebro-vascular events/transient ischemic attacks. Our null hypothesis is that an increase in total dosage of rFVIIa received will not result in an increased incidence of thromboembolic complications. Data was deidentified to comply with HIPPA requirements and stored in a Microsoft Excel database. Data will be compared and analyzed using a two-sided chi square, Mann-Whitney U and student t-tests as appropriate using SPSS software. A p-value of less than 0.05 will be considered statistically significant.

Results: Data collection is ongoing.

Prospective Evaluation of the Use of Continuous Loop Diuretic Infusions, With and Without Continuous Albumin Infusion in Patients with Acute Kidney Injury

Katherine E Johnson, PharmD, BCPS, The University of Toledo Medical Center

Mariann D. Churchwell, PharmD, BCPS

Sandeep Vetteth, MD

Imran Shafique, MD

Rohini Prashar, MD

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-128-L04-P

Learning objectives:

- Identify patients at risk for acute kidney injury
- Review current standards of care for treatment of acute kidney injury.

Purpose: Acute kidney injury (AKI) is common among hospitalized patients, and may occur in up to 57% of patients admitted to the intensive care unit. Patients with acute kidney injury are at increased risk of fluid imbalance, acid-base, and electrolyte disturbances. Loop diuretics are currently a standard of care to increase urine output in patients with acute kidney injury. The purpose of this project was to determine if administration of loop diuretic boluses, loop diuretic continuous infusions, both with and without albumin caused an increase in urine output in patients with acute kidney injury.

Methods: Patients eighteen years or older admitted to the University of Toledo Medical Center who present with or develop acute kidney injury during their hospital admission will be eligible for inclusion. Patients must also receive loop diuretics as part of treatment to be eligible for inclusion. Exclusion criteria include pregnant women and patients with end-stage renal disease receiving dialysis prior to admission. Data will be collected from both electronic and paper medical records in a prospective fashion. Information to be collected will include patient demographics, past medical history, home medication history, current hospital medications, type and dose of loop diuretics used, patient daily urine output, laboratory values, and need for dialysis.

The primary outcome, the percentage of patients whose urine output returns to normal, will be presented. Secondary outcomes, including percentage of patients whose serum creatinine returns to normal and patients needing long-term dialysis, will be reported.

Community-Based Transition of Care Program for Patients with Managed Medicaid

Sarah E Kelling, PharmD, Kroger Pharmacy/Ohio Northern University

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-129-L04-P

Learning objectives:

- Describe national policy changes impacting transition of care services.
- Discuss barriers identified in providing transition of care services to patients with managed Medicaid in an Ohio supermarket pharmacy.

Statement of purpose: The purpose of this study was to determine if patients who have a face-to-face medication therapy management (MTM) session and appropriate follow-up with a community pharmacist after hospital discharge have different 30-day hospital readmission rates compared to patients who did not have a MTM encounter with a community pharmacist.

Statements of methods used: This was a quasi-experimental study design of patients in a rural community with managed Medicaid insurance. The intervention group consisted of adult Marion County residents who were discharged from a health facility within the past 14 days. Participants were offered a face-to-face session and telephone follow-up with a community pharmacist. The pharmacist conducted a comprehensive medication review, evaluated the treatment strategy for appropriateness based on clinical guidelines, and provided recommendations to the patient and primary care provider. Participants were mailed a copy of their medication review and action plan.

Summary of preliminary results to support conclusion: During the initial 3-month pilot project, a total of 44 patients were referred to the study. Over 40% of patients could not be reached via phone (n=19). Additionally, 20% of contacted patients were identified as not being good candidates for the study (n=5). Of the patients reached, 40% participated in the study (n=10). Significant barriers that were identified included the ability of study pharmacists (1) to contact patients via phone; (2) to identify patients who would most likely benefit from the service; (3) to integrate with health care professionals; and (4) to correctly classify unplanned and planned readmissions.

Conclusions reached: Approximately 50% of contacted patients who were identified as being appropriate candidates for the service were receptive to seeing a pharmacist for a face-to-face medication therapy management session. Further research is needed to identify feasible strategies to overcome barriers in providing integrated care designed to reduce hospital readmission rates in patients with managed Medicaid who have recently been discharged from a health facility.

Comparison of clinical outcomes in sepsis patients following treatment with ketamine or etomidate use in rapid sequence intubation

Audrey M. Kendra, PharmD, St. Elizabeth Health Center, Humility of Mary Health Partners

Paul T. Miller, PharmD

Allison R. Campbell, PharmD, BCPS

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-130-L04-P

Learning Objectives:

- Explain the mechanism by which etomidate inhibits the production of cortisol.
- Describe the pharmacokinetics and pharmacodynamics of etomidate and ketamine.

Purpose: Etomidate is a commonly used agent for facilitation of rapid sequence intubation (RSI) in sepsis patients; however etomidate has become controversial secondary to findings of transient adrenal suppression. At Humility of Mary Health Partners, etomidate continues to be used frequently in sepsis but ketamine use as an alternative has grown. Currently, in sepsis patients there is minimal data comparing etomidate versus ketamine. The purpose of this study is to determine if the use of ketamine, rather than etomidate, during RSI leads to a shorter length of stay and improved clinical outcomes in sepsis patients.

Methods: This study is a case-matched, retrospective chart review of hospitalized sepsis patients treated with either ketamine or etomidate for induction during RSI. Inclusion criteria include age greater than or equal to 18 years, study medication used for emergency intubation, and a diagnosis of sepsis by meeting systemic inflammatory response syndrome (SIRS) criteria plus having a site of infection. Exclusion criteria include contraindication to ketamine or etomidate, and pregnancy. Eligible patients will be matched by age and initial APACHE II score. Information collected will include: patient demographics, dates of admission and discharge, study medication received, dose of the medication, number of doses of study medication, the concomitant paralytic agents used during the RSI, days in the intensive care unit (ICU), ventilator days, use and duration of vasopressors, site of infection, use and duration of hydrocortisone, any reported cortisol levels, as well as mortality. Before the initiation of this study approval of the purpose and methods were obtained from the Institutional Review Board. The primary outcome is the length of ICU stay. Secondary outcomes include total hospital length of stay, days on a ventilator, days on vasopressor therapy, days of hydrocortisone administration, and mortality.

Results: To be presented

Conclusion: To be presented

Predictors of resistance to erythropoietin therapy in chronic kidney disease

Ayesha Khan, PharmD, University of Toledo Medical Center

Mariann Churchwell, PharmD, BCPS

Todd Gundrum, PharmD, BCPS

Deepak Malhotra, MD, PhD

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-131-L04-P

Learning Objectives:

- Discuss current barriers to anemia management in chronic kidney disease.
- Identify factors relating to ESA hyporesponsiveness.

Purpose: In recent years, erythropoietin stimulating agent (ESA) dosing and hemoglobin goals have been modified in response to adverse cardiovascular events such as heart attack, stroke, thrombosis, and death associated with these drugs. These risks are concerning particularly in a subgroup of chronic kidney disease (CKD) patients who may become hyporesponsive to ESAs and require higher doses to maintain hemoglobin goals. The causes of ESA hyporesponsiveness are multifactorial, including hyperparathyroid induced bone marrow fibrosis. Identification and prophylactic correction of these predictors may allow for more optimal anemia management without the need for higher ESA dosing. The purpose of this study is to evaluate the association between parathyroid hormone concentrations and ESA response in patients with CKD Stage 5 receiving hemodialysis.

Methodology: A retrospective chart review will be conducted to identify adult CKD patients who received ESAs over the past five years at the outpatient dialysis clinic. Those with a known condition that may preclude them to ESA hyporesponsiveness including active malignancy, hematologic disorders, chronic inflammation other than CKD-related inflammation, aluminum toxicity, hemoglobinopathies, HIV infection, or pure red cell aplasia will be excluded from the study. The following data will be collected: age, race, gender, CKD stage, dialysis vintage, serum ferritin, transferrin saturation, intact parathyroid hormone, serum calcium, serum phosphorus and alkaline phosphatase. Additionally, ESA and iron dosages over the study period will be collected. All data will be de-identified and maintained confidentially. ESA hyporesponsiveness will be identified using NKF KDOQI guidelines and respective data will be compared to the ESA responders arm (control group). Primary outcomes include (1) degree of hemoglobin response to weekly erythropoietin dose, and (2) parathyroid hormone level in relation to erythropoietin response. Results will be analyzed using statistically appropriate tests.

Results and Conclusions: Final results and conclusions will be presented at the conference.

Interdisciplinary Team Approach to Improve Compliance of Pneumonia Core Measures

Natalie J. Kolehmainen, PharmD, University of Toledo Medical Center

Diane M. Cappelletty, PharmD

Toni Woodley, RN

Jessica J. Mullin, PharmD

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-132-L04-P

Learning objectives:

- Define the CMS pneumonia core measures.
- Identify the appropriate antibiotic regimen used in community acquired pneumonia (CAP).

Purpose: The Centers for Disease Control and Prevention estimates that an average of 1.1 million cases of pneumonia are treated in an inpatient setting each year and causes over 50,000 deaths. The collaboration of The Joint Commission and Centers for Medicare and Medicaid Services has established core measures that provide an evidence-based standard of care to improve clinical outcomes. Compliance with these core measures can reduce morbidity, mortality, readmissions, and will also influence reimbursement rates in the near future. The purpose of this study is to determine if an interdisciplinary team approach with concurrent review of patients help improve compliance of the pneumonia core measures.

Methods: A quality improvement study was conducted consisting of patients admitted from the emergency department at the University of Toledo Medical Center from October 1, 2012 through December 31, 2012. Patients being admitted from the emergency department with a primary or differential diagnosis of pneumonia were included. Patients were excluded if they were immunocompromised, discharged from the emergency department, or failed to meet the data extraction criteria for pneumonia core measures. Data collection included: medical record number, date and time of arrival to the emergency department, location prior to admission, recent antibiotic use, systemic steroids use, allergies, pregnancy status, aspiration pneumonia risk factors, history of pneumonia within the past thirty days, time of blood draws, antibiotics initiated, time to initiation of antibiotics, hospital unit admitted to, interventions made, and the acceptance/rejection of interventions. Primary outcome was the improvement in compliance with the pneumonia core measures. Secondary outcomes included percentage of interventions accepted, the appropriateness of antibiotic selection, and pneumonia readmission rates within thirty days from discharge.

Results/Conclusions: Final results and conclusions will be presented at the conference.

Piloting a Clinical Pharmacy Service in the Emergency Department in a Community Hospital

Jaclyn A Kruse, PharmD, MS, University Hospitals Geauga Medical Center
Mate Soric, PharmD, BCPS

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-133-L04-P

Objectives:

- Describe activities that a clinical pharmacist may perform in the Emergency Department setting.
- Prepare a plan to expand clinical pharmacy services within a small, community hospital emergency department.

Purpose: There is a great need for clinical pharmacy services in emergency departments (ED). There are several reasons cited to support dedicated pharmacy services in the ED: reduction of medication errors, management of patients presenting to the ED because of adverse drug events, and reduction of physician and nursing workload. Attempting to establish such services in a community hospital may be more difficult compared to large, academic settings due to a lack of familiarity with clinical pharmacy services. The purpose of the current study is to characterize the impact a new clinical pharmacy service can have in a small, community hospital.

Methods: A pharmacy resident worked with ED staff to provide interprofessional patient care services at a small, community hospital. Total number of interventions, type of intervention, acceptance rate of interventions, and estimated cost savings were documented over a course of approximately two months.

Results: A total of 336 interventions were made over a course of approximately 67 days. Of the preceding interventions, the top three categories were: 68% (n=227) medication reconciliations, 19% (n=64) drug information, and 8% (n=27) therapeutics. Interventions were accepted at a rate of 95.4% (n=83). Cost avoidance due to interventions averaged \$4255 per month. Medication reconciliation could potentially save 26 hours of nursing time per month (\$832/month cost savings).

Conclusion: In conclusion, clinical pharmacy services in a community hospital emergency department demonstrated much value to improving patient care and departmental workflow. Medication reconciliation and drug information questions are two areas in which new clinical pharmacy services should focus their efforts in the emergency department.

Incidence of sternal wound infections and the application of a topical antibiotic protocol in post cardiothoracic surgery patients

Jennifer Y Lee, PharmD, University of Toledo Medical Center

Vincent F. Mauro, PharmD, FCCP

Todd E. Gundrum, PharmD, BCPS

Mark Bonnell, MD

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-134-L04-P

Learning Objectives:

- Identify the most common organisms associated with sternal wound infections.
- Discuss the risks versus benefits of using an antibiotic paste to prevent sternal wound infections.

Purpose: Mediastinitis, defined as inflammation between the sternum and vertebral column, arises from sternal wound infections and can result in serious complications post cardiothoracic surgery. Prior studies have shown that topical antibiotics are effective in reducing sternal wound infections. However, data are lacking in regards to the use of a topical antibiotic that provides both gram positive and negative coverage. In this retrospective cohort study, we aim to evaluate the incidence of sternal wound infections and the initiation of a topical antibiotic protocol in patients who underwent a cardiothoracic surgery during their hospital admission.

Methods: With the Institutional Review Board approval, ICD-9 codes were used to identify cardiothoracic surgery patients ≥ 18 years of age at University of Toledo Medical Center from January 1 to December 31, 2012. During surgery, patients will have received no topical antibiotic paste, vancomycin plus cefepime paste, or vancomycin plus aztreonam paste. Patients that are allergic to vancomycin or aztreonam or underwent cardiothoracic surgery that did not require opening of the sternum will be excluded. Data collected from patients' medical chart will consist of age, gender, allergies to penicillin or cephalosporins, BMI ≥ 25 , diabetes mellitus, perioperative hyperglycemia, smoking history, immunosuppression, type of cardiothoracic surgery, number of hours on the operation table, IV antibiotic administration pre/post operation, previous cardiothoracic surgery, discharge setting and topical antibiotic administration during surgery. Patients will be followed up to 4 weeks post surgical procedure to collect the following data: readmission, time to readmission, positive diagnosis of sternal wound infection, time to signs and symptoms of infection, microbiology, length of stay and death. Categorical data will be analyzed using a chi-squared test and the student t-test will be performed on continuous variables. Descriptive data will be analyzed by mean and standard deviation.

Results/ Conclusions: Final results and conclusions will be presented at the conference.

Gender differences in virological outcome in HIV-infected patients on Highly Active Antiretroviral Therapy (HAART)

Susan J. Lewis, PharmD, University of Toledo Medical Center

Eric Sahloff, PharmD, AAHIVE

Rose Jung, PharmD, MPH, BCPS

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-135-L04-P

Learning objectives:

- Review when to initiate antiretroviral therapy in current guidelines
- Discuss risk factors associated with incomplete antiretroviral therapy in women.
- Describe the effect of gender influence on virological outcomes from initial antiretroviral therapy

Purpose: The current guideline suggests the same indications to initiate antiretroviral therapy between women and men. However, conflicting data from multiple studies raise questions regarding gender-based differences in clinical responses to antiretroviral therapy. Women have been reported to have greater risk of incomplete antiretroviral therapy. The recent FDA meta-analysis also suggests the need of future investigation to assess the specific HAART regimens which may produce the gender differences in treatment outcome. The objective of this study is to evaluate gender influence on virological success to initial antiretroviral regimens among ART-naïve patients.

Methods: This study used data collected by the center for AIDS Research Network of Integrated Clinical Systems(CNICS). Inclusion criteria are 18 years or older, antiretroviral naïve subjects who initiated treatment since 2003, and had at least one viral load and one CD 4 cell measurement prior to HAART and during follow-up. Pregnant women will be excluded. The data collected include age, gender, ethnicity, risk factors for HIV transmission, date of initial therapy, AIDS-defining illness/event or comorbidities/co-infections, death date, HIV-related cause of death, initial and subsequent antiretroviral medications, start/stop dates, laboratory test results such as viral load, CD4 cell counts, lipid profiles, serum creatinine, liver function tests, reports of self-adherence as available, and substance abuse. The primary outcome will be virological response assessed by the proportion of women and men, achieving viral load < 50 or < 400 copies/ml within 6 to 12 months of initial therapy. Additionally, virological response following the subsequent therapy and change of CD4 cell counts from the baseline after therapy will be evaluated. Continuous data will be evaluated using student t-test, and categorical data using chi-square test. Multivariate logistic regression will be used to identify factors associated with virological success.

Results and Conclusions: Final results and conclusions will be presented at the conference

The community pharmacist's role in transitions of care: a qualitative thematic analysis.

Brigid K. Long, BS, PharmD*; Community Care Pharmacy Practice MS-Resident; The Ohio State University College of Pharmacy and The Kroger Co. Columbus Patient Care Center

Catherine H. Kuhn, PharmD; Community Care Pharmacist; The Kroger Co. Columbus Patient Care Center

Brian Hilligoss, PhD, MSIS, BCA; Assistant Professor, Health Services Management & Policy; The Ohio State University College of Public Health

Kimberly Broedel-Zaugg, RPh, MBA, PhD; Professor and Chair, Pharmacy Practice & Administration; Marshall University School of Pharmacy

Marialice Bennett, RPh, FAPhA; Professor of Clinical Pharmacy, Pharmacy Practice & Administration; The Ohio State University College of Pharmacy

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-136-L04-P

Learning Objectives:

- Explain transitions of care as it relates to a patient throughout the continuum of care.
- Describe current and potential roles of the pharmacist in a patient's transition of care.

Purpose: The purpose of this qualitative study is to determine the perceptions of the community pharmacist's role in a patient's transition of care as perceived by health-system and community pharmacists.

Methods: Three 90-minute focus groups of 8-12 participants will be conducted using a multiple-category design. Groups will consist of exclusively outpatient pharmacists, exclusively inpatient pharmacists, and a combined group of both outpatient and inpatient pharmacists. Purposive sampling of each self-identified group of pharmacists will be applied. Participants will also complete a demographic survey.

Each focus group session will be audio-recorded and reduced to writing by trained transcriptionists. Researchers will independently read and code the transcripts using an inductive, open-ended approach drawing on participant statements. After independent coding, the researchers will collaborate to review, identify, and classify common themes from each session. Participant statements and perspectives from the sessions will then be described and interpreted using thematic analysis.

Preliminary Results: This study is in progress. Results to be collected include pharmacist's overall awareness of care transitions, perceptions of the community pharmacist's role in care transitions from the perspective of both outpatient and inpatient pharmacists, identification of potential gaps in care that may be addressed by community pharmacists, collaboration opportunities between outpatient and inpatient pharmacists, and barriers and opportunities to community pharmacist involvement.

Preliminary Conclusions: By combining results from each focus group, this study will demonstrate the overall perceptions of a community pharmacist's role in transitions of care. Preliminary conclusions indicate that community pharmacists are uniquely positioned to assist with a patient's transition of care due to patient and provider accessibility. Additionally, community pharmacists are prepared and willing to assist patients throughout the continuum of care. Overall conclusions from this study will be used to guide a future care transitions project which will include community pharmacists.

Development of Guidelines for Staffing-Model Related Risk Factors of Medication Errors

Drew D Luder*, PharmD, BCPS, Riverside Methodist Hospital

Cynthia Carnes, PharmD, PhD

Kelly Besco, PharmD, FISMP

Lorrie Burns, PharmD

Charles McCluskey, PharmD, MBA

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-137-L04-P

Learning Objectives:

- Review known staffing-model related risk factors for medication errors.
- Define the quantifiable effect of these risk factors on medication errors, and strategies to mitigate these factors.

Statement of Purpose: Medication errors have been a focus for healthcare quality ever since the Institute of Medicine (IOM) released *To Err is Human* in 1999. Improvement efforts since then have largely been centered around system optimization for error prevention. While staffing and workload related risk factors have been linked to increased incidence of medication errors, no studies have quantified the effect of these risk factors. The purpose of this study is to quantify staffing-model related risk factors, and to provide guidelines for staffing considerations based on the observed outcomes.

Statement of Methods: Study procedures were approved by the Institutional Review Board. Medication errors at the point of transcription were identified using a nurse message system in place at the study center. Currently, nurses perform a double check for every new medication order, and notify pharmacy services of any identified error via the electronic nurse message system. All messages over a three-month time period were screened to determine if a medication error occurred. Medication errors were defined as discrepancies created in the transcription of an order by a Pharmacist from a written physician order to the Pharmacy Information System. Sample size was event driven to 2000 errors. All medication errors had data on associated staffing-model related risk factors collected (shift length and design, order volume per hour, and phone calls per hour). Statistical analysis will occur via case-control design on a 1:1 basis, using randomly selected non-error orders matched by pharmacist. Pharmacists and orders were de-identified and assigned unique study numbers prior to analysis. We anticipate identification of significant risk factors associated with increased risk of medication errors. These risk factors will be used to develop guidelines to optimize the staffing-model with the goal of reducing medication errors.

Results/Conclusion: To be presented at the Ohio Pharmacy Residency Conference.

Incidence of Infusion-site Reactions Associated with Peripheral Intravenous Administration of Fosaprepitant

Jordan Lundberg, PharmD*, The Arthur G. James Cancer Hospital at The Ohio State University

Brooke Sorgen Crawford, PharmD, BCOP

Gary Phillips, MAS

Michael Berger, PharmD, BCOP

Robert Wesolowski, MD

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-138-L04-P

Learning Objectives

- Discuss the current guidelines for the prevention of CINV and define the standard combination regimen used in patients treated with HEC
- Describe the risk factors for patients experiencing infusion-site reactions when treated with fosaprepitant as identified in this study

Despite recent advances in the management of chemotherapy-induced nausea and vomiting (CINV), this problem still remains among the most troubling side-effects of chemotherapy. Consensus guidelines now support the combination of a neurokinin-1 antagonist (aprepitant or its intravenous pro-drug fosaprepitant), a 5HT-3 receptor antagonist and dexamethasone prior to receiving highly emetogenic chemotherapy (HEC). A phase III trial involving patients receiving HEC demonstrated that a single-dose of intravenous (IV) fosaprepitant was non-inferior to the standard 3-day oral aprepitant regimen in terms of complete response rate. The single-dose fosaprepitant regimen may be an attractive treatment option due to its efficacy, convenience and cost. Fosaprepitant is known to cause infusion-site reactions, however there is limited data characterizing these reactions including the effect peripheral venous administration has on the incidence of these reactions. This study will investigate the incidence of infusion-site reactions with single-dose IV fosaprepitant when given through a peripheral line preceding chemotherapy. Risk factors for the development of infusion site reactions with fosaprepitant will also be explored.

A retrospective evaluation of patients who received IV fosaprepitant through a peripheral line between September 2012 and December 2012 will be completed. Data collection will include: gender, age, type and stage of malignancy, location of peripheral line, duration of infusion, total volume and dilution of fosaprepitant, keep vein open rate of maintenance intravenous fluid during infusion of fosaprepitant, whether flushing of IV catheter with maintenance IV solution following fosaprepitant infusion was performed, past and current chemotherapy regimens, past fosaprepitant exposure, whether an infusion-site reaction was experienced by the patient, the timing of the reaction in relation to the fosaprepitant infusion, and the grading of the reaction by the nurse.

IRB approval was obtained and data collection is ongoing. Results and conclusions will be presented pending completion.

Bridge care: transitional primary care services within an interprofessional university employee health care clinic.

Michelle Maguire, PharmD, The Ohio State University College of Pharmacy

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-139-L04-P

Learning Objectives

- Characterize a transitional primary care service, 'bridge care,' within an interprofessional employee health care clinic through results of one-year chart review and individual patient interviews
- Discuss opportunities for pharmacists to collaborate with other healthcare providers to implement a similar transitional primary care service in a variety of practice settings

Statement of Purpose: To describe a transitional primary care service, 'bridge care,' designed to identify, stabilize and transition patients into primary care practices (PCPs).

Methods: This was a two-phase, mixed-methods study. Phase I utilizes quantitative data from chart review (July 2011-July 2012): patient demographics, utilization of bridge care services, and current PCP engagement. Phase II includes qualitative data from 12- to 20- brief semi-structured interviews with former patients selected as representative of the bridge care population. Interviewees will be questioned regarding their perceptions of the quality of care provided and impact of bridge care on uptake of primary care services. Audio-recorded interviews will be transcribed and analyzed using a standard iterative approach to generate themes identifying strengths and opportunities for enhancement and expansion of the service.

Results: 104 charts were reviewed in Phase I. On average, patients were 37 (± 10) years and taking 3.0 (± 1.9) medications at time of first visit. 60% were female. Source of referral included: 39% from the clinic urgent care, 19% for work/school/insurance physicals, and 41% self-referred because no PCP. Two distinct visit utilization patterns emerged: 49% needed 1 visit in bridge care; the remaining 51% needed a median of 64 (range: 7 - 418) days. Overall, patients averaged 2.0 (± 0.8) physician visits with 3.4 (± 1.9) medical issues addressed. Top medical issues included: Acute care, physicals, preventive care (vaccines/screenings), hypertension, and depression/anxiety. Total patient visits with interprofessional team members included: 41 pharmacy, 15 nursing, 13 nutrition, 4 behavioral counseling, and 3 massage. Active PCP engagement was documented for 69% former bridge care patients.

Conclusion: This model represents opportunities for practitioners to engage patients who are in need of primary care services, and to facilitate transition into a primary care practice. Our results may allow others to implement similar transitional services within their own practice settings, and will provide areas for further research.

Evaluation of ICU delirium pharmacotherapy after transition of care

Taylor W. McConnell, PharmD, Riverside Methodist Hospital

Angela M. Harding, PharmD

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-140-L04-P

Learning Objectives

- Discuss the importance of managing anti-delirium medications and the impact of patients transitioning to different levels of care
- Describe anti-delirium medication tapering strategies and when it is appropriate to initiate tapering

Purpose: Delirium, a common manifestation of acute brain dysfunction observed in the intensive care unit, contributes significantly to morbidity and mortality. Data regarding anti-delirium reconciliation following ICU admission is limited, and may be an unrecognized patient care issue. The purpose of this study is to evaluate the rate at which anti-delirium medications are continued following hospital discharge. The impact of a pharmacist-initiated intervention of anti-delirium reconciliation upon ICU discharge on quality, adverse events, and healthcare costs will be evaluated.

Methods: This study has been approved by the Institutional Review Board. Phase one of this project was a retrospective, single-center study conducted at Riverside Methodist Hospital. The primary outcome was to determine the rate of incidence for the continuation of anti-delirium medications following hospital discharge. Secondary outcomes include number of patient readmissions and cost associated with continuation of therapy. Patients included in the study will be 18 years of age or older, admitted to the ICU, and prescribed a scheduled medication for delirium. Medications evaluated include haloperidol, valproic acid, quetiapine, olanzapine, and risperidone. Data was collected using the hospital's electronic medical record, and those patients who were discharged on anti-delirium medications were identified. Phase two of this project involved the implementation of anti-delirium tapering strategies and the impact of a pharmacist-initiated intervention on the rate of anti-delirium medication continuation following hospital discharge. Data on anti-delirium medication reconciliation was collected during the intervention phase and compared to the initial study period in order to assess effectiveness.

Results: Data collection is in progress.

Conclusion: Data collection is in progress.

Using anti-factor Xa activity monitoring to evaluate therapeutic anticoagulation in renally insufficient patients receiving enoxaparin.

Charlie L. McKisson, PharmD*, Riverside Methodist Hospital

Mark Friedman, PharmD

Angie Harding, PharmD

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-141-L04-P

Learning Objectives

- Discuss the appropriateness of using therapeutic enoxaparin in patients with renal insufficiency
- Review the utility of anti-factor Xa activity monitoring in patients receiving therapeutic enoxaparin

Purpose: Therapeutic enoxaparin has various advantages over therapeutic unfractionated heparin including a more predictable anticoagulant effect, linear kinetics, reduced incidence of osteopenia, and lower rates of heparin-induced-thrombocytopenia (HIT) type II. However, renally insufficient patients receiving therapeutic enoxaparin are at risk for bleeding complications if not dose reduced appropriately. The enoxaparin package insert recommends reducing the therapeutic dose of enoxaparin to 1mg/kg once daily in patients with creatinine clearance values <30.0mL/min, but the literature to support this dose adjustment is sparse. Although not routinely performed, anti-factor Xa monitoring can be used to assess anticoagulation in patients receiving therapeutic enoxaparin. The purpose of this research is to determine whether the enoxaparin renal dose adjustment of 1mg/kg once daily for patients with creatinine clearance values <30.0mL/min does in fact yield anti-factor Xa activity levels within the desired range of 0.6-1.0IU/mL.

Methods: This study is a retrospective chart review. To be included, patients must have had creatinine clearance values of <30.0mL/min at initiation of enoxaparin treatment, received enoxaparin 1mg/kg once daily for at least three days, and had an anti-factor Xa monitoring level drawn 3-5 hours after at least the third dose. The exclusion criteria includes patients that received enoxaparin 1mg/kg twice daily or 1.5mg/kg once daily within the previous 5 days, and patients that received enoxaparin 1mg/kg once daily while maintaining creatinine clearance values >30.0mL/min. Data collected includes enoxaparin dose, anti-factor Xa activity levels, serum creatinine, creatinine clearance values, age, body weight, platelets, hemoglobin, concurrent use of antiplatelet agents, and documentation of bleeding or thrombotic events. The primary endpoint is achievement of an anti-factor Xa activity level within 0.6-1.0IU/mL. Additional correlation analyses examine the relationship between anti-factor Xa activity levels, creatinine clearance values, enoxaparin dose, age, and body weight.

Results/Conclusions: Data collection is ongoing. Results and conclusions will be presented at the conference.

Impact of a Health Literacy Training Course on Community Pharmacists' Health Literacy Knowledge and Attitudes

Cleopatra C. Mihalopoulos, Pharm.D.,* PGY-1 Community Pharmacy Resident, The University of Toledo
College of Pharmacy and Pharmaceutical Sciences/Kroger Pharmacy

Mary F. Powers, Ph.D.,

Aaron J. Lengel, Pharm.D.,

Michelle N. Mangan, Pharm.D.

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-142-L04-P

Learning Objectives:

- To define health literacy and to describe appropriate methods to improve communication with patients with low health literacy
- To describe the impact of a health literacy training course on community pharmacists' health literacy knowledge and attitudes

Statement of Purpose: To develop a health literacy training course for community pharmacists and to assess its impact on pharmacists' health literacy knowledge and on their attitudes towards their ability to work with patients with low health literacy in an effort to improve community pharmacists' delivery of patient-care services.

Methodology: According to the 2003 U.S. Department of Education National Assessment of Adult Literacy, 36% of Americans have basic or below basic health literacy. Low health literacy has been shown to lead to worse health outcomes, higher overall medical costs, and patient and provider frustration. Pharmacists employed by a grocery store chain pharmacy were asked to participate in a two hour health literacy training course and to complete an anonymous pre-survey, post-survey, and course evaluation prior to and immediately after attending the training course. The survey consisted of knowledge-based questions (multiple choice and true/false format) and an attitude assessment (five-point Likert scale format). The study was approved by the University of Toledo Social, Behavioral & Educational Institutional Review Board.

Results: Of the 45 pharmacists who were offered to participate in the research study, 44 participated (98%). Pharmacists' average test scores on the health literacy knowledge-based questions increased after participation in the health literacy training course (from 69.9% to 83.8%). Pharmacists' confidence and comfort level towards working with patients with low health literacy improved after participating in the health literacy training course. The majority of participating pharmacists strongly agreed or agreed that the training course provided helpful strategies to better identify patients with low health literacy and helpful methods to improve communication with patients with low health literacy.

Conclusion: Educating community pharmacists about health literacy and about methods to improve their communication skills with patients with low health literacy could improve pharmacists' ability to provide clinical services to such patients.

Evaluation of ceftriaxone for bacteremia due to methicillin-susceptible *Staphylococcus aureus*

*Geoffrey A Mospan, Pharm.D, University of Toledo Medical Center

Rose Jung, Pharm.D.

Eric Sahloff, Pharm.D.

Joan Duggan, MD

Claudiu Georgescu, MD

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-143-L04-P

Learning Objectives:

- Select an antibiotic and dose for MSSA bacteremia given patient characteristics
- Recognize benefits and risks of using ceftriaxone for MSSA bacteremia

Background: Methicillin-susceptible *Staphylococcus aureus* (MSSA) remains a common pathogen causing bacteremia and is associated with high morbidity and mortality. The agents with the most evidence to support their use- cefazolin, nafcillin, or oxacillin- require multiple daily administrations.^{1,2,3} After negative blood cultures, it is common for patients to be discharged on outpatient parenteral antimicrobial therapy given the extended treatment duration that often continues beyond the stay in the hospital.⁴ With comparable in vitro activity against MSSA, ceftriaxone given once daily has potential advantages when prescribed as definitive therapy.

Objective: To compare the clinical cure rates and safety of ceftriaxone to standard of care therapy (nafcillin, oxacillin, or cefazolin) in MSSA bacteremia when used as outpatient parenteral antimicrobial therapy

Methodology: A retrospective chart review for patients with a positive blood culture for MSSA. Inclusion criteria: at least 18 years old, documented clearance of bacteremia, discharged on nafcillin, oxacillin, cefazolin or ceftriaxone, source of infection listed as skin/soft tissue, surgical wound infection, bone or joint, endocarditis, catheter-related, pneumonia, or unknown. Exclusion criteria: pregnancy, treatment requiring surgery, polymicrobial bacteremic infection, and lost to follow-up. Clinical cure definition: absence of symptoms associated with bacteremia (normalization of leukocytes/temperature), repeat negative blood cultures, and no need for further MSSA treatment as it pertains to bacteremia. The following data will be collected: patient age, allergies to antibiotics, gender, place of infection acquisition, hospitalization department, co-morbidities, source of infection, empiric and definitive antimicrobial, time clearance of bacteremia occurred, treatment requiring surgery, number of treatment days for antimicrobial, white blood cell count, temperature, blood cultures, need for further MSSA treatment, adverse effects, and development of metastatic infection. Chi-square or student t-test will be used to compare the two treatment groups. Multivariate logistic regression analysis will be used to evaluate the variables predictive of clinical cure.

Results and Conclusions: To be determined

Evaluation of vancomycin dosing protocols in obese patients

*Michelle E. Munch, PharmD., Mercy St. Vincent Medical Center

Lauryl R. Kristufek, PharmD, BCPS, CACP, Mercy St. Vincent Medical Center

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-144-L04-P

Learning Objectives:

- Recall the highly documented risk factors for nephrotoxicity when administering vancomycin therapy
- Explain the altered vancomycin pharmacokinetics and pharmacodynamics in obese patients

Purpose: Studies looking at the pharmacokinetic parameters of vancomycin in the obese population have shown a statistically significant difference when compared to normal weight individuals. This suggests that obese patients may require more frequent dosing intervals. The primary objective of this study was to evaluate achievement of therapeutic vancomycin trough levels in obese patients through retrospective review of two different vancomycin dosing protocols. The secondary objective was to evaluate the frequency of vancomycin induced nephrotoxicity, defined as a serum creatinine increase of greater than or equal to 0.3 milligrams per deciliter or an increase to 1.5–2 fold from baseline.

Methods: A retrospective chart review of pharmacy to dose vancomycin consults was conducted at Mercy St. Vincent Medical Center and Mercy St. Charles Hospital in Toledo, Ohio. Study investigators reviewed patients from each site who were greater than or equal to 131 kilograms and received pharmacy to dose vancomycin orders between January 1st, 2012 and September 1st, 2012. Patients were excluded if they were on dialysis, greater than 90 or less than 18 years of age, or pregnant. The following data was collected: age, weight, height, baseline and maximum serum creatinine laboratory values while on therapy, vancomycin dose and frequency, evaluable laboratory vancomycin trough levels, and time at which doses were given. The indication for treatment and presence of other nephrotoxic agents was also recorded. The percentage of patients with an evaluable vancomycin trough level between 10 to 20 micrograms per milliliter and percentage of nephrotoxic incidences were reported.

Preliminary Results: Both protocols allowed for rapid obtainment of trough levels between 10 to 20 micrograms per milliliter. Nephrotoxicity was found to be more common among those patients receiving doses greater than or equal to 2 grams.

Results: Results pending and to be presented at the conference.

Evaluation of provider documentation of medication management in a patient centered medical home (PCMH)

Trang T. Nguyen, PharmD, The Ohio State University College of Pharmacy
Bella H. Mehta, PharmD, FAPhA, The Ohio State University College of Pharmacy
Jennifer L. Rodis, PharmD, BCPS, The Ohio State University College of Pharmacy
Kristin A. Casper, PharmD, The Ohio State University College of Pharmacy
Randall K. Wexler, MD, MPH, The Ohio State University Wexner Medical Center

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-145-L04-P

Learning objectives:

- Describe the National Committee for Quality Assurance's (NCQA) role in recognizing patient centered medical homes (PCMHs)
- Explain the role of pharmacists in assisting PCMHs in meeting components of medication management

Purpose: The National Committee for Quality Assurance (NCQA) has standards for recognizing Patient Centered Medical Homes (PCMH). Pharmacists, as part of a multidisciplinary team, can perform medication management activities to assist their sites in achieving higher levels of recognition and reimbursement. Performing medication reconciliation is the minimum task of medication management defined by NCQA; pharmacists may assist sites to meet this and additional components of medication management. The objectives of the study are to identify if providers in a tier 3 PCMH are documenting information to meet NCQA's components of medication management beyond medication reconciliation including: 1) providing information to patients about new prescriptions to >80% of patients; 2) assessing patient understanding of medications for >50% of patients; and 3) assessing patient response and barriers to adherence to medications for >50% of patients.

Methods: A report of physician and pharmacist led patient visits from February 1, 2012 through August 1, 2012 was generated. Patients, 18 to 89 years old, taking at least one medication were included. A retrospective chart review of patient visits was performed to identify if providers documented NCQA components of medication management; type of visit and total number of visits were also recorded. Descriptive statistics were used to analyze data.

Preliminary Results: In comparing 150 physician and 50 pharmacist led patient visits, providing information on new prescriptions was documented in 57% of pharmacist notes vs. 20% of physician notes and assessment of understanding of medications occurred in 24% of pharmacist led visits vs. 2% of physician led visits. Pharmacists met goals for documenting response and adherence to medications, however physicians did not.

Conclusions: Pharmacists documented components of medication management more often than physicians, but both types of providers have opportunities to improve in documentation. Pharmacists can improve a site's ability to meet NCQA's goals for medication management.

Impact of administrative degrees on hiring perceptions and pharmacy administration career paths.

Brad R. Petersen*, PharmD, Grant Medical Center

Timothy T. Smith, MS, RPh

Curtis L. Passafume, MBA, RPh

Maria C. Pruchnicki, PharmD, BCPS, CLS

Jay M. Mirtallo, MS, RPh, BCNSP, FASHP

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-146-L04-P

Learning Objectives:

- Discuss the impact of attaining administrative degrees on career progression within pharmacy administration
- Identify any differences in perceptions of graduates from the described administrative degrees

Purpose: There is need in health-systems pharmacy for formally trained pharmacy administrators, however, the preferred training method or ideal advanced degree is not proscribed. Master's degrees in Business Administration (MBA), Health Administration (MHA), Public Health (MPH), Public Administration (MPA) and Health-Systems Pharmacy Administration (MS) are the main options for administrator didactic training. Previous studies have compared requirements for graduation, but a formal assessment of career progression and perceptions of program graduates is needed. The goal of this research is to describe the career paths of current pharmacy administrators and their perceptions regarding administrative degree graduates.

Methods: This study is a prospective, cross-sectional survey of the American Society of Health-System Pharmacy's (ASHP) section of pharmacy practice managers. The project was introduced via a discussion posting published on ASHP's *Connect's* Section of Pharmacy Practice Managers website. An electronic link was embedded in the discussion thread, with a convenience sample of section members invited to participate. After a description of the study, all section members will have the opportunity to open the research survey and to consent and complete it. Data collected will include participant demographics, current administrative position, self-reported career progression and individual perceptions of the aforementioned administrative degrees. Specifically, subjects will provide any administrative degrees they possess and the timing from degree completion to achieving initial administrative position, current position, and first director position. Size and type of facility served by position are being assessed to correlate career progression with the various advanced degrees. Additional questions focus on the participant's additional experience with master's degrees graduates and their perception of the quality of those interactions. The data will be assessed using Pearson's chi-square test. Statistical significance will be evaluated at the $\alpha=0.05$ level.

Results/Conclusions: Data collection is in process with conclusions to be presented at the Ohio Pharmacy Resident Conference.

Efficacy of “5-Hour Energy”[®], “5-Hour Energy Decaf”[®], and caffeine for perceived energy and wakefulness

Michelle L Piel, PharmD*, The Toledo Hospital and Flower Hospital Family Medicine Residency

Carla M Huelskamp, PharmD

Sanjiv K Josh, MD

Sherry Khurana, MD

Jessica J Shimman, PharmD

Steven R Smith, MS, BCACP

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-147-L04-P

Learning Objectives:

- Identify the effectiveness of a commercially available energy drink, B-vitamins, caffeine alone, and placebo on perceived energy level and wakefulness
- Discuss appropriate lifestyle or supplement interventions for increased levels of energy and wakefulness throughout the day

Purpose: Americans are constantly looking for sources of caffeine or stimulants. The current trend of energy drinks has become popular with their appeal including ease of use, low caloric content, and the absence of sugar to prevent a “crash” later in the day. Energy products do not have to undergo approval by The Food and Drug Administration, thus safety and efficacy are unknown. Recent news reports have highlighted the potential role of these products in deaths possibly associated with excessive intake or consumption with alcohol. The purpose of this study was to assess the efficacy and safety of commercially available energy products on perceived energy and wakefulness levels.

Methods: This double-blind, placebo-controlled, crossover trial included 48 participants age 18 years or older who consume between one and five caffeinated beverages daily. Informed consent was obtained prior to enrollment. Exclusion criteria included pregnancy, the use of stimulant medications, third-shift work, and a diagnosis of anxiety, ADHD, CAD, arrhythmias, CVA, narcolepsy, seizure disorders, and/or uncontrolled hypertension. Baseline data collected included use of caffeinated products, work status, hours of sleep, alcohol intake, and smoking status. Subjects were randomly assigned to variable sequences of four test bottles. Test products included regular “5-hour Energy”[®], “5-Hour Energy Decaf”[®], a flavored compounded caffeine product, and similarly flavored placebo. Subjects were instructed to consume the bottles in the numerical order in which they were given with at least 24 hours in between bottles. Subjects completed a wakefulness survey instrument at one, three, and five hours after each bottle. Safety was evaluated through self-reported adverse events. Each subject completed a second sequence with the same four test products.

Preliminary Results: Forty-eight subjects have been enrolled. Final results will be presented at the Ohio Pharmacy Resident Conference in May 2013.

Accuracy of self-reported medication use amongst geriatric patients in an outpatient clinic: clinic-derived versus in-home inspection

Melissa Ruminski, Pharm.D, University Hospital Geauga

Mate Soric, Pharm.D., BCPS

Jaclyn Kruse, Pharm.D;

Dotti Thompson MOT, OTR/L, CLT.

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-148-L04-P

Learning Objectives:

- Recognize the pharmacokinetic and pharmacodynamic changes in geriatric patients that increase the risk for adverse effects
- Discuss the results of prior studies evaluating discrepancies between self-reported/clinic records and the medications patients take at home

Purpose: Current literature evaluating the accuracy of self-reported medication use by geriatric patients is limited in the United States. Adverse events and therapeutic failures can occur when healthcare providers lack a complete medication list for their geriatric patients. A study by Yang, et al. revealed that, when comparing clinic medication lists to patient's home medications, 48% of patients omitted at least one medication. The intent of this study is to evaluate the occurrence and types of discrepancies between a patient- or caregiver-reported, clinic-derived medication lists and the medications geriatric patients take at home.

Methods: A retrospective chart review of patients in the Senior Adult Assessment Program (SAAP) that have both a clinic and in-home evaluation was performed to collect data on patient age, gender, number of medications, names and types of medications, organization and storage of medications, patient and/or family involvement in medication organization and administration, number of expired medications, and cognitive test scores. The data collected will be used to 1) determine the types and rates of medication discrepancies between a clinic-obtained medication list and an in-home inspection, 2) identify types and predictors of medication discrepancies, 3) determine the frequency of expired medications found during in-home inspections, 4) identify the number of patients with ≥ 1 medication discrepancy, 5) calculate the average number of discrepancies per patient, and 6) determine the frequency of differences between stated and actual medication organization and storage. A medication discrepancy is defined as an undocumented, omitted or expired medication found during the in-home evaluation compared to the clinic-obtained medication list. The primary endpoint will be analyzed using descriptive statistics. Multivariate regression will be used to identify predictors of medication discrepancies.

Results and Conclusions: Data collection is in progress. Results and conclusions will be presented at the Ohio Pharmacy Resident Conference.

Utilizing Quality Measures in a Community Pharmacy to Improve Patient Care

Andrea M. Santoro*, PharmD, Kroger Pharmacy / University of Cincinnati

Rachel L. Bowen, PharmD

Heidi R. Luder, PharmD, BCACP

Stacey M. Frede, PharmD, BCACP, CDE

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-149-L04-P

Learning Objectives:

- Explain the mission of the Pharmacy Quality Alliance
- Identify the performance measures currently endorsed by the Pharmacy Quality Alliance

Purpose: The purpose of this study was to integrate quality measures into a community pharmacy in order to (1) improve patient care and to (2) determine if pharmacist awareness and knowledge of quality measures impacts performance.

Methods: This study was implemented in a large grocery store chain pharmacy in Cincinnati, Ohio. Three Pharmacy Quality Alliance (PQA) performance measures were selected for implementation into pharmacies: 1) Proportion of Days Covered, 2) Diabetes: Appropriate Treatment of Hypertension and 3) Medication Therapy for Persons with Asthma. Baseline performance reports and pharmacy demographics were utilized to determine the selection of three cohorts (two pharmacies each): the control cohort, the knowledge cohort, and the intervention cohort. The knowledge and intervention cohorts received basic education on the quality measures being assessed and performance scores throughout the study. The intervention cohort also received a toolkit to improve performance scores. The control cohort received no intervention and remained blinded to performance scores throughout the study. Prior to implementation of the study, pharmacists and interns in all cohorts completed a baseline survey. Chi-square and Kruskal-Wallis tests were used to analyze baseline performance scores and survey results. Pharmacists and interns in all cohorts completed the same survey at the conclusion of the project. Final performance scores were calculated at the conclusion of the project.

Results/Conclusion: Baseline survey results indicated how many times per day pharmacists and interns counseled patients on medication adherence (median 1.5), recommended a rescue inhaler (median 0) or control inhaler in asthma patients (median 1.5), or recommended an ACE-I or ARB in a patient with diabetes (median 0). No statistically significant differences were found between cohorts and baseline survey results.

Pharmacist monitoring of bisphosphonate use in a patient centered medical home.

Brittany M Schmidt, PharmD*, The Ohio State University College of Pharmacy

Kelli D Barnes, PharmD

Neeraj H Tayal, MD

Jodi M Grandominico, MD

Mahmoud Abdel-Rasoul, MS, MPH

Stuart J Beatty, PharmD, BCPS, CDE

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-150-L04-P

Learning Objectives

- Recognize the World Health Organization diagnostic criteria for osteopenia and osteoporosis
- Identify which patients are appropriate candidates for therapy with bisphosphonates

Purpose: The objectives of this study are to: 1) identify patients on bisphosphonate therapy in whom therapy is appropriate and document within the electronic medical record (EMR) when to reassess therapy; 2) discontinue bisphosphonate therapy when therapy is inappropriate; 3) determine the percentage of recommendations accepted by the patient's primary care physician (PCP); and 4) ensure calcium and/or vitamin D supplementation.

Methods: Using the EMR, a list of all patients prescribed a bisphosphonate is created. A chart review of identified patients is performed by the pharmacist to evaluate therapy. Any recommendations regarding therapy are communicated with the patient's PCP. The patient's PCP can either accept or not accept the recommendation. A second review of the EMR takes place 90 days after the recommendation is made to determine impact of the intervention.

Preliminary Results: Bisphosphonate therapy has been reviewed in 83 patients. Seventy (84.3%) patients are on therapy appropriately while 13 (15.7%) patients are inappropriately on bisphosphonate therapy. Of those whose therapy is inappropriate, 38.5% is due to renal function, 38.5% is due to length of therapy; and 23.0% is due to fracture risk. Prior to pharmacist intervention, only 43 (51.8%) patients had both calcium and vitamin D supplementation listed on the medication list in the EMR. In regards to documentation, prior to pharmacist intervention, 6 (7.1%) patients had a date to stop or reassess bisphosphonate therapy documented within the medical problem list in the EMR. Pharmacists spend an average of 5.9 minutes reviewing each patient for appropriateness of therapy.

Preliminary Conclusions: There are patients who are inappropriately on bisphosphonate therapy. Additionally, there is lack of standard documentation regarding a date to stop or reassess therapy. It is expected creating standardized documentation will enable practitioners to easily identify when to reassess therapy. Pharmacists can evaluate bisphosphonate therapy for appropriateness and work collaboratively with PCPs to decrease inappropriate use.

Evaluating the impact of clinical pharmacy services on depressed patients in a safety-net health center.

Andrew P. Schoof, PharmD*, Health Partners of Western Ohio

Micah Sobota, PharmD

Andrew Hvizdos, PharmD

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-151-L04-P

Learning Objectives:

- Identify 3 barriers to patient care in the indigent mental health population
- Identify symptoms which may lead to mistreatment of bipolar disorder as major depressive disorder

Purpose: Health Partners of Western Ohio currently relies heavily on primary care physicians and certified nurse practitioners to provide psychopharmacotherapy. The purpose of this study is to determine whether pharmacist intervention in Major Depressive Disorder can improve clinical outcomes and adherence.

Methods: Patients were recruited from Health Partners of Western Ohio, a safety-net clinic serving financially disadvantaged and medically underserved patients. Using electronic patient records, eligible patients with an active diagnosis of Major Depressive Disorder over the previous 6 months were identified. PHQ-9 scores for 6 months prior to study initiation were averaged and will be compared to average PHQ-9 scores for the 3 months of pharmacist intervention. Data collected included monthly PHQ-9 scores, number of psychotherapeutic medications, changes in psychotherapy, patient satisfaction, and visits to other primary care providers. For patients who used the in-house pharmacy, records were used to calculate medication-possession ratios for the 3 months prior to study initiation and 3 months following initiation. Data were de-identified prior to analysis and all information was kept confidential. The study also incorporated Pharm.D. students to provide uniform education to patients using materials from the National Institute of Mental Health, and to assist with data compilation and analysis. Students received identical training from the same individual and used a standardized checklist of educational topics.

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

Conclusions: Conclusions will be presented at Ohio Pharmacy Residency Conference.

Health professional students' preparedness for interprofessional practice.

Alexa M. Sevin, PharmD*, The Ohio State University College of Pharmacy

Maria C. Pruchnicki, PharmD, BCPS, CLS

Timothy R. Ulbrich, PharmD

Sarah E. Adkins, PharmD

Michelle A. Maguire, PharmD

Christopher G. Green, PharmD

Nicole V. Arradaza, MS

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-152-L04-P

Learning Objectives:

- Describe multidisciplinary and interprofessional clinic practice settings and highlight key differences
- Discuss IPEC standards and the need for understanding of roles and responsibilities of each member on the health care team

Purpose: To evaluate health professions students' understanding of their own and others' roles in interprofessional teams based on the Interprofessional Education Collaborative (IPEC) core competency; to assess students' perceptions of their preparedness to practice in an interprofessional team and determine differences based on type and philosophy of learning institution.

Methods: This study was a prospective, cross-sectional evaluation of health professional students entering the major experiential components of their training. A survey adapted from published research was distributed online (Qualtrics.com). Participants included: (1) medical/nursing/pharmacy students at a large research-intensive university with an academic medical center, (2) medical/nursing students at a public rural osteopathic university with no pharmacy school, and (3) medical/pharmacy students at an interprofessional public university without a nursing school. The survey was open for 4 weeks with a reminder email sent at the midpoint and final week. Data collected included participant demographics, students' knowledge of roles, perceptions of their preparedness for interprofessional team practice, and prior education in regards to interprofessional practice. Descriptive statistics will be generated and an analysis of variance (ANOVA) test will be used to compare scores from the knowledge test with students' perceived preparedness.

Results: 981 students were invited to participate; 287 completed the survey (29.3% response). Overall, 71.2% of students feel somewhat or very prepared to work on an interprofessional team. The average score on the knowledge test was 80.0%, with averages for nursing, pharmacy, and medical students being 78.0%, 78.3%, and 81.2%, respectively. Data will be further analyzed by discipline, institution and exposure to interprofessional practice.

Implications/Conclusions: The results of this study could influence curriculum development and could identify methods and settings for students to learn interprofessional collaboration, creating opportunities for further study.

Retrospective Evaluation of Melatonin, Zolpidem, Trazodone, and Temazepam on the Incidence of Delirium in Hospitalized Elderly Patients

*Lacey A Shumate, PharmD, Summa Health System

Susan M Fosnight, RPh, CGP, BCPS

Rex Wilford, DO, RPh

David DiNuoscio, MD

Arifa Abid, MD

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-153-L04-P

Learning Objectives:

- Define the association between insomnia and delirium
- Review current evidence on the use of melatonin to prevent insomnia

Background: Delirium, which is an acute and fluctuating disturbance in attention and orientation to the environment, is one of the most common mental disorders in elderly hospitalized patients.¹⁻³ Overall, delirium has been associated with an increased risk of morbidity, mortality, and healthcare costs.¹⁻³ As a result, prevention is extremely important, and approximately 30-40% of delirium cases may be preventable.¹ However, information regarding pharmacologic prevention of delirium is limited. A 2011 randomized controlled trial determined melatonin may be a protective agent against delirium.² Melatonin is a pineal gland hormone, and it is related to the biological regulation of the circadian rhythms and can increase the propensity to sleep, sleep duration and quality.⁴ Since disturbances in sleep and circadian rhythms are seen in patients with delirium, it has been hypothesized there is a possible link between delirium and melatonin.⁴

Purpose: (1) To evaluate the rate of delirium in hospitalized patients receiving melatonin, zolpidem, temazepam, trazodone, or an insomnia order set without medications versus control patients. (2) To compare length of stay and duration of delirium between the patient groups.

Methods: A retrospective chart review will be conducted. Patient charts meeting inclusion criteria will be identified based on medication prescribed (melatonin, trazodone, zolpidem, and temazepam) or presence of the insomnia order set. Patients who were at risk for delirium will be determined by the delirium risk screen and the Six-Item Screener (SIS) score documented on the initial nursing assessment. Development of delirium during admission will be determined by the Nursing Delirium Screening Scale (Nu-DESC) scores. Continuous data will be analyzed using a student t test, or Wilcoxon-signed rank test if the data is not normally distributed, and nominal data will be analyzed using the Chi squared test.

Results and conclusions: To be determined.

Implementation of a multidisciplinary erythropoietin stimulating agent (ESA) protocol in a community hospital hemodialysis population: a focus on anemia management and education

Ashley M. Smith, Pharm.D., Firelands Regional Medical Center

James W. Spicer, Pharm.D., CACP

Joseph E. Guidos, Pharm.D., BCPS

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-154-L04-P

Learning Objectives

- Identify key monitoring parameters in patients receiving erythropoietin stimulating agents
- Describe the obstacles, limitations, and advantages associated with implementing an inpatient erythropoietin stimulating agent protocol

Purpose: The National Kidney Foundation Kidney Disease Outcome Quality Initiative Guidelines (NKF KDOQI) are available to manage anemia in chronic kidney disease patients receiving dialysis; however, several reports have shown that patients frequently do not receive recommended anemia management. These reports have also shown that erythropoietin stimulating agent (ESA) dosing is widely variable. The primary objective of this study was to evaluate the effectiveness of a multidisciplinary ESA protocol in a community hospital for anemia management.

Methods: The hospital's electronic medical record system was used to gather information on chronic kidney disease patients admitted to the hospital from January 2011 through December 2011, when a multidisciplinary protocol was not in place. The following data was collected: age, ethnicity, gender, admission indication, outpatient and inpatient ESA dose, length of stay, labs applicable to monitoring anemia, mortality, number of transfusions, and presence of co-morbidities. Data gathered after a comprehensive protocol was implemented in October 2012 was then compared to data collected prior to protocol implementation.

Results: Eighty-one patient charts were analyzed for retrospective data; however, only 64 met inclusion criteria per the study protocol. During the study time period, 78 hemodialysis patient admissions were analyzed utilizing the multidisciplinary ESA protocol, 71 of which met the inclusion criteria. The pharmacy resident also counseled 20 patients regarding ESAs and other medications.

Conclusions: Implementing a multidisciplinary ESA protocol in a community hospital ensured hemodialysis patients received appropriate doses of ESAs; however, it was difficult to create a protocol that could be applicable to all patients especially those with extended lengths of stay and transfusion recipients.

Retrospective analysis of hospitalizations in the geriatric patients with increased Drug Burden Index (DBI) and Anticholinergic Risk Scale (ARS) scores.

Julia R. Spinner, Pharm.D.*, Huntington VA Medical Center

Sharon Kennedy-Norris, Pharm.D., BCACP, CACP, CGP, FASCP

Derek Grimm, Pharm.D., BCPS

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-155-L04-P

Learning objectives:

- Explain the adverse drug events associated with anticholinergic medications.
- Identify medications that pose potential harm to elderly patients as a result of their anticholinergic properties.

Purpose: Senior patients have increased vulnerability to adverse drug events (ADEs), such as delirium, falls, and fractures. Approximately 30% of seniors taking five or more medications experience ADEs each year and 66% of these patients will require medical attention. Older adults often take multiple medications for multiple disease states, with approximately 50% of senior adults using more than five medications.¹ Older adults may also be more sensitive to the anticholinergic (AC) adverse effects of medications compared with the younger adult population and an estimated 27% of community-dwelling senior adults are taking medications with anticholinergic properties. Drug Burden Index (DBI) and Anticholinergic Risk Scale (ARS) are evidence-based tools used to quantify the cumulative anticholinergic and sedative effects of multiple medications. This analysis will evaluate the utility of DBI/ARS scores in relation to events requiring hospitalizations of senior patients at the Huntington VA Medical Center (HVAMC).

Methods: A retrospective chart review of patients admitted to the HVAMC with medication-related adverse events between January 1st 2009 and June 30th 2012 will be performed. The Drug Burden Index (DBI) and Anticholinergic Risk Scale (ARS) will be used to build a scale applicable to the Huntington VAMC formulary, with scores calculated for each admission. A regression model will be utilized to control for confounding variables. The primary endpoint will be relationship between total DBI/ARS scores and hospital admissions for falls, fractures, delirium, and/or mental status changes. The secondary endpoints will be the relationship between DBI/ARS scores and length of hospital stay and all-cause mortality, in addition to changes made to medication therapy to decrease DBI/ARS scores prior to hospital discharge.

Results: Data is currently being collected and analyzed. Results and conclusions will be presented at the Ohio Pharmacy Residency Conference.

Analysis of Pharmacist-Conducted Telephonic Medication Reconciliation After Patient Discharge From Hospital to Home as an Integral Part of a Transition of Care (TOC) Program.

H. Paige Stewart, PharmD, Kiaser Foundation Health Plan of Ohio

Julie Baron, PharmD, CGP, BCACP

Paul Bandfield, PharmD, GCAS

Amy Kramer, PharmD

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-156-L04-P

Learning Objectives:

- Outline the criteria used to assign a high-risk score as part of KPOH's transition of care program.
- Define the term "medication issues" in the context of the TOC program within KPOH

Purpose: When a patient is discharged from hospital to home, they are given discharge instructions that often times do not coincide with what they are actually taking or what may appear in their electronic medical record. These inconsistencies become an issue if a patient takes their medications incorrectly, and may result in serious adverse events, hospital readmission or potentially death. Discovery of issues associated with medications post discharge can be identified through clinical pharmacist conducted medication reconciliation via the Transition of Care (TOC) program at Kaiser Permanente Foundation Health Plan of Ohio (KPOH). A lack of data currently exists indicating the effectiveness and impact of clinical pharmacist intervention in the TOC program within KPOH. How many and what types of issues clinical pharmacists are addressing is not clearly defined. The primary objective of the study is to describe the average number of medication issues found per patient upon clinical pharmacist medication reconciliation. A secondary objective is to assess whether the issues were resolved.

Methods: Data will be collected via retrospective chart review. Investigators will document number, type and level (patient, provider, system) of medication issues identified by clinical pharmacist, number of medications on patient discharge list, assigned risk score, if issues were resolved, and if patient was readmitted to the hospital within the specified range. Chart review will be conducted on KP members with an Ohio Permanente Medical Group (OPMG) provider discharged from a contracted hospital with a high-risk score ≥ 2 assigned by the inpatient care coordinator registered nurse between May 1, 2012 through July 31, 2012. In addition, an electronic survey will be sent to OPMG providers whose patients participated in KPOH's TOC program to assess physician satisfaction with the TOC program.

Results/Conclusion: Full results and conclusions will be presented at the Ohio Pharmacy Residency Conference.

The evaluation of efficacy and safety of tranexamic acid in orthopedic surgery

Caitlin N. Swann, Grandview Medical Center

Emily J. Quinto

Matthew J. Kauflin

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-157-L04-P

Learning Objectives:

- List the risks associated with orthopedic surgeries requiring transfusion support
- Discuss the mechanism of tranexamic acid and its role in reducing transfusion
- Review the results and conclusions of data collection
- Recognize the future implications of tranexamic acid use in orthopedic surgery

Purpose/Background: Total knee and hip arthroplasties (TKA, THA) are common procedures performed in the United States and varying degrees of blood loss occur peri- and post-operatively, some procedures requiring transfusion. Blood transfusion has inherent consequences and potential complications, including an increased risk for immune related or allergic reactions, volume overload, and transmission of blood-borne infections. Transfusions are also costly and can lead to increased duration of hospitalization. Antifibrinolytic agents such as tranexamic acid (TEA) bind reversibly to plasminogen and prevent the activation of plasmin and the degradation of fibrin, enhancing hemostasis and potentially reducing the blood loss and need for transfusion in patients undergoing orthopedic procedures. The primary objective of this study is to identify patients undergoing total knee or hip replacements at Grandview Medical Center and to determine the efficacy of TEA in decreasing the need for blood transfusions.

Methods: This is a retrospective review of patients undergoing knee arthroplasty and hip arthroplasty surgery at Grandview Medical Center. Patients that have undergone TKA or THA from August 1st 2011 until March 2013 but did not receive tranexamic acid will serve as the control population and will be identified using the ICD-9 codes 81.54 (TKA) and 81.51 (THA). Patients that have received tranexamic acid from August 1st 2011 until March 2013 will serve as the active patient population and will be identified using a list generated to identify patients by use of this drug. Patients will be excluded if they were less than 18 years of age or if they were pregnant. Once the patients are identified, charts will be reviewed and data will be collected. The variables that will be analyzed include gender, age, procedure date, discharge date, doses of TEA received, anticoagulation used, pre and post-op hemoglobin and hematocrit, pre and post-op platelet count, units of blood transfused up to one week post-operatively, symptomatic thromboembolic events occurring up to one month post-operatively, and total length of stay. The efficacy and safety of tranexamic acid will be determined by measuring transfusion requirement and assessing thromboembolic events in the patients who receive tranexamic acid compared to those who do not receive the drug during their hospital stay.

Results/Conclusions: Data collection is ongoing. Results and conclusions will be presented at the Ohio Pharmacy Residency Conference.

Student pharmacists' and recent graduates' perception of and interest in independent pharmacy ownership.

Ashley M. Sweaney*, Pharm.D, The Ohio State University College of Pharmacy

Kristin A. Casper, Pharm.D

Cara D. Hoyt, Pharm.D

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-158-L04-P

Learning Objectives:

- Describe the current state of independent pharmacy and the need for evaluation of future owners
- Identify key perceptions among students and recent graduates regarding pharmacy ownership

Purpose: The objectives of this study are to (1) assess student pharmacists' and recent graduates' interest in independent community pharmacy ownership, (2) compare perceptions of pharmacy ownership among students and recent graduates including: knowledge required prior to ownership, advantages and disadvantages of ownership, and entrepreneurial exposure within the Pharm.D. curriculum and professional environment, and (3) explore personality traits of individuals interested in pharmacy ownership.

Methods: A prospective, anonymous online survey was developed. Surveys were distributed using email addresses obtained from the Ohio State Board of Pharmacy for interns currently licensed in the state, and pharmacists licensed by examination from January 2010 to October 2012. Current pharmacy owners were excluded.

Preliminary Results: Total response rate was 19%, with 200 students and 155 recent graduates fully completing the survey. Overall, 46.2% of responders were interested in pharmacy ownership, including 54% of students and 36.1% of recent graduates. 22.8% of responders reported that it was likely they would own a pharmacy in the future. Top ranked advantages to ownership included professional autonomy (90.1%), development of innovative services (72.7%), and amount of daily time in patient care (51.6%). Top ranked disadvantages were financial risk (95.5%), work-life balance (76.6%), and managerial aspects (59.2%). 90.7% of participants had been exposed to independent pharmacy through various venues such as courses, student organizations, and experiential rotations. However, the majority of participants reported a lack of education in financial planning (81.1%), reimbursement issues (53.5%), and legal and regulatory policies (52.1%).

Preliminary Conclusions: Interest in pharmacy ownership is higher among students versus recent graduates. The majority of students and recent graduates have been exposed to ownership. However, they still feel they need more financial and legal training prior to ownership. Future analyses will look at the influence of gender, personality traits, and previous types of exposure on level of interest.

Healthcare Student Teamwork Simulation

Frank M Szczerba*, PharmD, University of Toledo Medical Center

Michael J Peeters, PharmD MEd BCPS, University of Toledo Medical Center

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-159-L04-P

Learning Objectives:

- Review the important characteristic of effective interprofessional teams
- Evaluate the use of simulation as a method to improve teamwork in interprofessional student teams

Purpose: Simulation has been shown to improve the confidence of attendees when performing the actions practiced in the simulation. Participation in simulations especially with the potential team members helps build confidence in the other members and increase awareness of team roles. Simulation is being explored as a means to increase interprofessional cooperation and team building. Team building is a crucial skill for any team and is especially important in events that require rapid coordinated responses. Simulation is believed to provide opportunities to fine tune the non-technical skills, such as effective communication, collaboration and teamwork, required to operate as part of a team. By beginning interprofessional training prior to receiving credentials, students will be able to form more positive opinions concerning their fellow healthcare professionals without the societal pressures associated with rank. The objective of this study is to assess how simulation affects the perception and performance of healthcare students over the course of a month. This includes their performance on a team and their subjective opinion of interprofessional training.

Methods: Healthcare students will be participating in weekly simulation labs; these will be recorded by the Immersive Interprofessional Simulation Center's system and stored on its internal hard drive. The video recordings will be evaluated using the Agency for Healthcare Research's TeamSTEPPS Team Performance Observation Tool. The tool focuses on qualities found in effective teams including team structure, situation monitoring, mutual support, leadership and communication. It is rated on a scale of 1-5, with space for comments. Participants will also complete a Readiness for Interprofessional Learning Scale. This scale measures students' views on teamwork, positive and negative professional identity, and roles and responsibilities. They will complete the scale prior to each simulation.

Results: Data collection and evaluation are ongoing. Final results will be presented at the conference.

Healthcare practitioners' knowledge and attitudes toward the use of "Vaseline® balls" for the management of constipation in hospice and palliative care patients.

Candice N Tavares, PharmD*, The Ohio State University College of Pharmacy

Jason Kimbrel, PharmD, BCPS

Bridget M Protus, PharmD, MLIS, CGP

Phyllis A Grauer, PharmD, CGP, CPE

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-160-L04-P

Learning Objectives:

- Describe how "Vaseline® Balls" are currently being used in clinical practice
- Identify reasons why some healthcare professionals in hospice and palliative care feel that "Vaseline® balls" are not appropriate for the management of constipation

Abstract: Constipation is a common symptom at the end of life, impacting patient outcomes and healthcare costs. Due to the lack of evidenced based guidelines, hospice and palliative care professionals often use practices based on anecdotal evidence. One such intervention is an oral preparation of petroleum jelly, referred to as "Vaseline® balls." "Vaseline® balls" may be recommended for treatment of constipation with a proposed mechanism similar to mineral oil, with less aspiration risk. This survey was designed to collect information regarding healthcare practitioners' knowledge and attitudes toward use of "Vaseline® balls" for management of constipation in hospice and palliative care patients. Researchers were granted exemption by the Ohio State University Institutional Review Board. A non-randomized online survey was distributed to physicians, nurses, and pharmacists who work with hospice and palliative care patients. At this time 376 healthcare practitioners have completed the survey. A total of 68% (n=220) of responders reported being familiar with the use of "Vaseline® balls". Of the practitioners familiar with "Vaseline® balls", 62% (n=137) reported having recommended them for their patients, 32% (n=71) never had a patient who required "Vaseline® balls" to treat their constipation and 5% (n=12) do not believe "Vaseline® balls" should be used. Proponents of "Vaseline® balls" most commonly recommended them for high impaction (n=100) and hard stool in the rectum (n=75). Of the survey respondents who recommend "Vaseline® balls" 87% reported effective stimulation of a bowel movement within 24 hours of administration. One survey respondent reported many patients have experienced adverse events and four reported at least one patient has experienced an adverse event. Adverse events reported are abdominal colic (n=1), nausea (n=1), and flatulence (n=2). The data collected in this survey indicates that there is a need for further clinical research on the use of "Vaseline® balls" in clinical practice.

Impact of Group Education Classes Utilizing a Conversation Map in Patients with Type 2 Diabetes Mellitus

Kristen Thatcher, PharmD*, Kaiser Foundation Health Plan of Ohio

Monika Brodman, PharmD, BCACP

Mary Ann Dzurec, PharmD

Paul Bandfield, PharmD, GCAS

Amy Kramer, PharmD

Kaiser Foundation Health Plan of Ohio

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

UAN: 0048-0000-13-161-L04-P

Learning Objectives:

- Explain the structure of group diabetes education classes at Kaiser Permanente Ohio
- Discuss the role of the pharmacist in group diabetes education classes

Purpose: Type 2 diabetes mellitus is a complex disease that involves focus on both pharmacologic and non-pharmacologic care for proper management. Group education classes can potentially increase patient knowledge of medication use and lifestyle modification. The purpose of this study is to test the hypothesis that group diabetes education classes utilizing the U.S. Diabetes Conversation Map[®] Program can increase patient knowledge of type 2 diabetes and impact the disease course.

Methods: Patients with a diagnosis of type 2 diabetes mellitus or pre-diabetes have the opportunity to voluntarily enroll in group diabetes education classes as the standard of care. These classes include the *Basic* and *Living Well* series of the U.S. Diabetes Conversation Map[®] program; this study specifically evaluates the *Living Well* series, which consists of pharmacist- and nurse-led sessions. The program includes pretests and posttests incorporated into the class as a tool to compare baseline knowledge to knowledge gained as a result of pharmacist- and nurse-facilitated discussions using a conversation map. A pretest-posttest design using the difference in test scores is used to determine the change in knowledge as a result of the class. A satisfaction survey given at the end of the class is used to evaluate the participants' overall experience. Hemoglobin A1c, weight, and blood pressure at baseline and follow up obtained via chart review will be used to assess clinical effects of the group education class. Additionally, a survey to evaluate impact post-class will be mailed to participants one month after attendance. Statistical analysis will be conducted with paired t-tests for parametric and Wilcoxon matched-pairs signed-ranks test for non-parametric data.

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

Evaluation of Dual Antiplatelet Therapy in Chronic Kidney Disease Patients Following Percutaneous Coronary Intervention

*Erin L. Thompson, Pharm.D., University of Toledo Medical Center
Mariann D. Churchwell, Pharm.D., BCPS, Associate Professor
Rose Jung, Pharm.D, MPH, BCPS, Clinical Associate Professor
The University of Toledo Medical Center

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-162-L04-P

Learning Objectives:

- Describe risk factors that cause chronic kidney disease (CKD) patients to have a higher predisposition to bleeding
- Review *CHEST* guideline recommendations for choice of antiplatelet therapy and treatment duration post-percutaneous coronary intervention

BACKGROUND: Cardiovascular disease is a leading cause of morbidity and mortality in chronic kidney disease (CKD) patients. When percutaneous coronary intervention (PCI) is performed, patients typically receive dual antiplatelet therapy. Patients with CKD are at increased risk of bleeding as a result of their disease state. In addition, rates of restenosis after PCI may be higher in CKD patients due to chronic inflammatory states. Therefore, the use of dual antiplatelet therapy after PCI may predispose CKD patients to a higher risk of bleeding without much benefit. Previous studies that assessed antiplatelet therapy in CKD patients are mainly derived from subgroup analyses of trials that included predominately patients without renal dysfunction. Other studies had methodological flaws that limited their findings, or inconsistent definitions and analyses of bleeding.

PURPOSE: The purpose of this study is to compare the effectiveness and safety of the combination of clopidogrel, in addition to aspirin, in patients with CKD stages 1-2 and CKD stages 3-5, post-PCI.

METHODS: This is a retrospective chart review of patients who received PCI at the University of Toledo Medical Center (UTMC). Patients admitted to UTMC from January 1, 2001 through December 31, 2011 who received percutaneous coronary intervention were included in the study. Controls include patients with CKD stages 1-2, and cases include those with CKD stages 3-5. Patients were included if they were \geq 18 years old, diagnosed with CKD, prescribed clopidogrel and aspirin post-PCI, and had less than a 10% change in serum creatinine 24 hours preceding PCI. Patients were excluded if they had documented coagulopathy, liver failure, sickle cell anemia, leukemia, myelodysplastic syndrome, HIV, cancer, or had received chemotherapy. Patient charts and medical records are evaluated at 3, 6, 9, 12, and 15 months post-PCI to assess primary and secondary outcomes.

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

Using MRSA active surveillance cultures as evidence to de-escalate antibiotic therapy (MACE-DATA)

Zachary J. Tressel**, PharmD, Riverside Methodist Hospital

Erin Meilton, PharmD

Angela Harding, PharmD

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-163-L04-P

Learning objectives:

- Explain how nasal screen cultures may be used as a tool to detect MRSA colonization and potentially streamline antibiotic therapy
- Describe the value of MRSA nasal screen cultures in terms of antimicrobial stewardship, patient outcomes, and cost savings

Purpose: MRSA nasal swab surveillance can be used to rule out colonization of MRSA, and may be an effective tool to encourage discontinuation of anti-MRSA antibiotics in patients diagnosed with pneumonia. Non-critically ill patients without significant respiratory compromise are unlikely to have MRSA pneumonia. Previous studies have shown that MRSA surveillance cultures yield a 96-98% negative predictive value for MRSA being identified as the etiology of the infection. The purpose of this study is to determine whether the MRSA nasal screen culture is an effective tool to use as evidence to de-escalate pneumonia treatment for general medicine patients.

Methods: The primary objective of this study is to determine the discontinuation rate of vancomycin due to negative surveillance cultures. Antimicrobial Stewardship Subcommittee has recently implemented MRSA nasal swab cultures as standard of care in general medicine patients at this institution who have a diagnosis of pneumonia. Phase 1 of this study was education of prescribers, nursing staff, and pharmacy staff about the use and interpretation of MRSA nasal swab cultures. Phase 2 of this study is an investigator-initiated, retrospective chart review of patients for whom a MRSA nasal culture was obtained. Inclusion criteria: >18 years of age; admitted to a general medicine unit with a diagnosis of pneumonia; receiving vancomycin therapy; MRSA nasal swab culture obtained. Data to be collected includes: result of MRSA nasal screen culture, results of other cultures obtained, demographic information, number of pharmacist recommendations to discontinue vancomycin made and accepted, physician discontinuation of vancomycin due to negative culture screen, total days of vancomycin, estimated days of vancomycin saved due to earlier de-escalation, evidence of clinical deterioration, and presence of pneumonia diagnosis at time of discharge.

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

Early experience with fidaxomicin at an academic medical center

Craig A. Vargo, PharmD, The Ohio State University Wexner Medical Center

Debra A. Goff, PharmD, FCCP

Julie E. Mangino, MD

Jessica E. West, MSPH

Karri A. Bauer, PharmD, BCPS

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-164-L04-P

Learning Objectives:

- Identify the challenges in treating CDI
- Recognize the potential role of fidaxomicin in the treatment of CDI

Purpose: *Clostridium difficile* infection (CDI) has become a significant challenge associated with substantial morbidity, mortality, and healthcare costs. The incidence and severity of CDI are increasing. Reduced clinical response and increasing recurrences to commonly used antimicrobials, including metronidazole and oral vancomycin, have led to the need for alternative therapies. Fidaxomicin is more active *in vitro* than metronidazole or vancomycin, is minimally absorbed, concentrates in the stool, and has limited activity against bacterial flora. In two Phase III studies, fidaxomicin demonstrated non-inferiority to oral vancomycin, but clinical post marketing data is limited.

Methods: This is a retrospective single-center case series of all adult inpatients who received fidaxomicin for CDI from September 2011 to December 2012. All patients who were clinically and microbiologically diagnosed with CDI and received at least 4 doses of fidaxomicin were included. The primary outcome is clinical cure. Secondary outcomes include recurrence rate, 30-day all-cause mortality, hospital readmission, safety, and hospital and infection-related costs. Data is presented as no (%) or median (IQR) as appropriate.

Preliminary Results: Sixty-one patients were identified for inclusion: 39.3% male, age 63 yrs (19-85), Charlson score 4 (0-10). Thirty-nine (64%) patients received antibiotics within 30 days of CDI; concomitant antibiotics were given with fidaxomicin in 43 (70.5%) patients. Median duration of fidaxomicin was 10 days. Clinical cure was achieved in 43 (70.5%) patients. Recurrence occurred in 7 (16.7%) patients. All-cause mortality was observed in 17 (27.8%) patients; no patient expired due to CDI. There were 15 (24.5%) patients readmitted within 30 days. Readmission due to CDI occurred in 3 (4.8%) patients.

Conclusions: Our findings show a real-world clinical cure rate for fidaxomicin of 70%. Recurrence rates were similar to previously published studies. Readmissions and mortality due to CDI within 30 days were relatively low. Further studies are warranted.

Comparison of nephrotoxicity between tobramycin and ciprofloxacin utilizing the RIFLE criteria in critically ill patients

Sara Varnado* The Ohio State University Wexner Medical Center

Naeem Ali

Bruce Doepker

Lindsay Ryder

Gary Phillips

Kari Mount

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-165-L04-P

Learning Objectives:

- Define the RIFLE criteria as it pertains to nephrotoxicity
- Identify patients that have risk factors for multidrug resistant organisms

Patients with suspected Healthcare-Associated Pneumonia (HCAP) or sepsis of unknown etiology are initially started on broad-spectrum antibiotics to empirically cover multidrug resistant organisms such as *Pseudomonas aeruginosa*. Current guidelines recommend that initial gram-negative coverage should include an anti-pseudomonal Beta-lactam plus either an anti-pseudomonal fluoroquinolone or an aminoglycoside used for a short duration. For the first half of 2011, our institution utilized tobramycin as the second agent for gram-negative coverage. Based on antibiogram review, our protocol then changed to using ciprofloxacin for the second half of the year. Historical data has shown that aminoglycosides have an increased rate of nephrotoxicity compared to fluoroquinolones. However, the incidence of nephrotoxicity in critically ill patients with current dosing regimens has not been elucidated. This study is a retrospective, single center cohort comparing the incidence of nephrotoxicity as defined by the RIFLE criteria in patients who received tobramycin or ciprofloxacin as part of empiric double gram-negative coverage. All patients admitted to the Surgical Intensive Care Unit or Medical Intensive Care Unit between January 18 and October 1, 2011 who received tobramycin or ciprofloxacin plus either cefepime, piperacillin/tazobactam or doripenem will be included.

The primary outcome will be incidence of nephrotoxicity assessed using RIFLE criteria. RIFLE is a standardized criterion to assess renal dysfunction based on changes in urine output and serum creatinine. It evaluates the degree, duration and reversibility of dysfunction to categorize patients in a graded severity and creates a consistent scale to assess patient's renal function. Secondary outcomes will include length of hospital and ICU stay, length of mechanical ventilation, and ICU and hospital mortality.

Data collection and evaluation are currently being conducted and results will be presented at the conference.

IV Waste Reduction Strategies Facilitated by the A3 Tool

Mike Waldt PharmD*, Grant Medical Center-Ohio Health

Tim Smith, MS, RPh

Curt Passafume Jr. MBA, RPh

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-166-L04-P

Learning Objectives:

- Describe the A3 tool and how it relates to solving complex problems
- Review the waste reduction interventions identified and their potential impact

Purpose: Reducing intravenous (IV) drug waste was identified as a priority by pharmacy leadership within OhioHealth. The purpose of this study is to decrease IV waste through interventions facilitated using the A3 tool.

Methods: The A3 report is a simple tool originally developed by Toyota and is part of Lean methodology used to communicate ongoing work as it relates to a problem. The tool breaks the problem into six sections where 1) background information sets the context, 2) the current condition is described, 3) a root cause analysis is performed, 4) countermeasures are developed, 5) an implementation plan is devised, and 6) the results and follow up plan are presented. This tool was applied to our IV waste reduction initiative to facilitate process improvement. Pre-initiative and post-initiative drug waste costs will be used to categorize interventions based on the total percentage decrease in costs. IV dollar waste that is tracked on a continual basis through an online manual entry system will provide the comparative data.

Results: Using the A3 tool, the following areas of improvement were targeted to reduce drug waste: improving product selection, activating at point of care, centralizing medication delivery, verbally verifying need with a patient's nurse prior to compounding expensive medications, reducing product storage in automated distribution cabinets, and increasing the number of IV batches per day.

Conclusions: Identified interventions are in the process of being implemented. Reduction in drug waste will be used as an indirect measure of the success of using the A3 tool.

Evaluation of clinical outcomes in patients with pneumonia caused by ceftriaxone-resistant *Streptococcus Pneumoniae*

*Eric R. Wenzler, Pharm.D, The Ohio State University Wexner Medical Center

Jose A. Bazan, DO

Debra A. Goff, Pharm.D, FCCP;

Karri A. Bauer, Pharm.D, BCPS

The Ohio State University Wexner Medical Center

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-167-L04-P

Learning Objectives:

- Review appropriate antimicrobial recommendations for patients with *S. pneumoniae* pneumonia.
- Discuss factors contributing to antibiotic resistance to *S. pneumoniae*.

Purpose: Multiple *in vitro* studies have demonstrated *S. pneumoniae* resistance to ceftriaxone, but correlation with clinical outcomes is limited. The purpose of this study was to evaluate clinical outcomes in patients with ceftriaxone-resistant (MIC>1 mcg/mL) *S. pneumoniae* (CRSP) pneumonia compared to those with ceftriaxone-susceptible *S. pneumoniae* (CSSP).

Methods: Adult inpatients with *S. pneumoniae* from a respiratory culture between 1/1/07 and 9/30/12 were compared. Data are presented as *n* (%) or median (IQR) as appropriate.

Results: 10 CRSP and 20 CSSP patients were identified for inclusion. Demographics: 50% male, age 55 (47-65), CURB-65 2, FINE score IV. Among patients with CRSP, no patient had prior ceftriaxone exposure and 5 required a change in empiric therapy. Seven patients achieved a clinical cure in 4 (1-5) days with a length of stay (LOS) and infection-related LOS of 17 (9-23) and 9 (7-13) days, respectively. One CRSP patient died and no patient was readmitted within 30 days. Among the patients with CSSP, no patient required a change in empiric therapy and 14 (70%) patients achieved a clinical cure in 8 (0-9) days. LOS and infection-related LOS were 15 (8-20) and 8 (7-13) days, respectively. Three (15%) patients died and 1 was readmitted within 30 days due to pneumonia.

Conclusions: Our findings demonstrate no significant differences in clinical outcomes between patients with CRSP and CSSP. Interestingly, no patient with CRSP had prior ceftriaxone exposure. More patients in the CRSP group required a change in empiric therapy with no discernible effect on length of stay or mortality. Further studies are needed to determine the clinical impact of CRSP. Infectious disease specialists, pharmacists, and antimicrobial stewardship programs should continue to monitor CRSP to provide appropriate empirical antibiotic recommendations and optimize patient outcomes.

Effect of GLP-1 receptor agonists on lipoprotein subclasses and other cardiovascular biomarkers

Christopher D. Westrick, PharmD*, The Ohio State University Wexner Medical Center

Melissa Snider, PharmD, BCPS, CLS

Nicole Arradaza, MS

Kavita Sharma, MD

The Ohio State University Wexner Medical Center

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-168-L04-P

Learning Objectives:

- Describe the overall effect of glucagon-like peptide-1 receptor agonists on lipids and other cardiovascular biomarkers
- Describe the potential place in therapy for glucagon-like peptide-1 receptor agonists in patients with type 2 diabetes mellitus and dyslipidemia

The objective of this study is to examine the effect of the glucagon-like peptide-1 receptor agonists (GLP-1-RA) on biomarkers of cardiovascular risk for individuals with type 2 diabetes mellitus (T2DM). The primary endpoint will be change in conventional lipid panels and lipoprotein subclasses after initiation of a GLP-1-RA. The secondary endpoints will be effect on other cardiovascular biomarkers and incidence/type of adverse drug events.

Individuals with diabetes have a more than 2-fold increase risk of developing cardiovascular disease (CVD). Control of both dyslipidemia and diabetes lowers risk of CVD. Treatment guidelines for dyslipidemia have identified LDL-C and non-HDL as the standard targets as they are directly correlated with an increased risk of initiation and progression of atherosclerosis. The direct measure of LDL particle number (LDL-P) has been identified as a potentially more accurate method of evaluating this atherogenic risk and is suggested as a target in the 2008 ADA/ACC Consensus Statement. The GLP-1-RA have demonstrated the ability to have a positive effect on lipid levels in a variety of clinical trials and are now considered second-line agents for diabetic control. Considering recent guideline recommendations, the effect of GLP-1-RA on LDL-P has become clinically relevant. This study will further describe the effects of the GLP-1-RA on conventional lipid panels, lipoprotein subclasses, and other biomarkers for cardiovascular risk.

In this retrospective chart review, the charts of individuals seen in a lipid management clinic, who have been prescribed exenatide or liraglutide from April 2005 until September 2012, will be evaluated for the results of their conventional lipid panels and NMR lipoprofiles. The inclusion criteria include diagnosis of T2DM and lipoprofile prior to and post initiation of a GLP-1-RA.

Evaluation of the utility of a point-of-care device to measure International Normalized Ratios in the trauma population

Elise B Weyrauch, PharmD*, Grant Medical Center

Grant M Walliser, PharmD

Jennifer Hartwell, MD

Tim Smith, MS, RPh

Curt Passafume, MBA, RPh

James Jenkins II, PhD

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-169-L04-P

Learning Objectives:

- Explain the need for the timely evaluation of bleeding risk in trauma patients
- Describe the utility of using a point-of-care International Normalized Ratio device in the treatment of trauma patients

Purpose: Point-of-care (POC) International Normalized Ratio (INR) devices are only indicated for use in monitoring outpatient warfarin therapy. The purpose of this study is to validate the use of a POC INR device in acute trauma patients so that future studies may evaluate patient outcomes associated with more rapid availability of INR results in this population.

Methods: This study is a prospective observational cohort study that has been approved by the Institutional Review Board. Study patients are identified as they arrive in the trauma bay, and appropriate laboratory blood draws are completed as soon as possible. Patients are included if they have a laboratory INR ordered and are at increased risk for bleeding, such as those with suspected head injury, patients taking anticoagulants prior to admission, or any patient with unknown history. Patients are excluded if they are under 18 years of age or have received blood products prior to arrival. Demographic information is collected including gender, age, injury severity score, and oral anticoagulant use. A POC INR test is performed by a trained pharmacist with the CoaguChek XS Plus device using venous discard blood from the routine phlebotomy draw. All other healthcare providers are blinded to the POC INR value, and treatment is based on the laboratory INR according to the standard of care. The value and availability time of both the POC INR and the laboratory INR are collected and compared to determine the reliability of the device in this patient population. Per biostatistician calculation, at least 128 patients will be enrolled in the study to determine accuracy of the device based on POC INR equaling the laboratory INR \pm 0.2.

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

Efficacy of vancomycin versus linezolid for the treatment of pulmonary exacerbations in cystic fibrosis patients with methicillin-resistant staphylococcus aureus (MRSA)

Mallary L. Wood, PharmD*, Nationwide Children's Hospital

Kimberly J. Novak, PharmD, BCPS

Jessica L. Tansmore, PharmD

Tiffany L. Turner, MD

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-170-L04-P

Learning objectives

- Identify potential antibiotic therapies for treatment of CF exacerbations in patients with MRSA
- Discuss characteristics to consider in choosing linezolid versus vancomycin for treatment of CF exacerbations in patients with MRSA

Purpose: The incidence of MRSA respiratory tract infections in cystic fibrosis (CF) has been increasing over the last 10 years and has been associated with a more rapid rate of lung function decline and greater risk of death. There are no CF-specific treatment guidelines; however, standard therapy usually includes intravenous vancomycin dosed to achieve target trough concentrations of 15-20 mcg/mL. Linezolid, available for intravenous and oral use, achieves higher pulmonary concentrations compared to vancomycin. Studies comparing linezolid to vancomycin for treatment of hospital acquired pneumonia demonstrated non-inferiority; however, no studies compare the agents in CF. The purpose of this study is to evaluate the efficacy of vancomycin compared to linezolid for treatment of pulmonary exacerbation in CF patients with MRSA.

Methods: A retrospective chart review of approximately 200 CF patients admitted to a free-standing children's hospital will be conducted. Inclusion criteria: hospitalized CF patients ≥ 6 years of age, MRSA on respiratory culture, ≥ 7 days of appropriately-dosed vancomycin or linezolid in addition to dual Gram negative antimicrobial coverage. Exclusion criteria: patients unable to perform or without baseline pulmonary function tests. The primary objective is to compare the return to baseline lung function in patients treated with vancomycin versus linezolid, measured by return to baseline lung function (best documented FEV₁ in previous 12 months). Secondary objectives include evaluating minimum inhibitory concentration (MIC) for MRSA isolates in relation to efficacy and defining adverse events. Baseline demographic data, concomitant respiratory organisms, and number of CF exacerbations in the previous 12 months will also be collected. A survival analysis of the primary endpoint will be conducted. Student's t-test and chi-squared test will be used to evaluate data. An alpha of ≤ 0.05 will be considered statistically significant.

Results and Conclusions: Data collection is ongoing. Results and conclusions will be presented at the Ohio Pharmacy Resident Conference.

Assessment of Pharmacists' Participation in Political Advocacy and Factors Influencing Their Involvement

Justin C. Woods*, PharmD, The Ohio State University College of Pharmacy

Tara R. Green, PharmD

Marialice S. Bennett, RPh, FAPhA

Amy M. Lehman, MAS

This knowledge-based activity is targeted for all pharmacists and is acceptable for 0.5 hour (0.05 CEU) of continuing education credit. This course requires attendance at the entire program and completion of the program evaluation.

ACPE UAN: 0048-0000-13-171-L04-P

Learning Objectives

- Identify the percent of pharmacists involved in political advocacy on an annual basis
- Define barriers and facilitators that pharmacists report influence advocacy efforts

Purpose: As focus on health care legislation increases, political advocacy within the pharmacy profession is crucial to expand the role of the pharmacist and address unmet healthcare needs. The purpose of this study was to (1) identify pharmacists' level of involvement in political advocacy for the pharmacy profession, (2) compare characteristics of pharmacists who actively participate versus those who do not, and (3) evaluate barriers and facilitators that pharmacists encounter regarding political advocacy.

Methods: This cross-sectional, descriptive, web-based survey research was distributed to pharmacists with a valid email address on file with their respective State Board of Pharmacy in Ohio, Kansas, Arizona, Mississippi, and Tennessee. Survey responses were summarized using descriptive statistics and chi-square tests, where appropriate. A total of 2,753 pharmacists completed the survey, yielding a response rate of 9.1%.

Preliminary Results: Preliminary results illustrate that 30% of pharmacists participate in political advocacy at least annually, most commonly writing letters or making phone calls to legislators. Politically active respondents were more involved in professional organizations, had completed specialized training, and had a higher percentage practicing in academia and independent community pharmacy compared to non-active participants. Regardless of advocacy efforts, time and knowledge were listed as the primary barriers to advocacy involvement. Pharmacists involved in political advocacy indicate professional organizations as the predominate factor that influences their participation. However, those who are not political active list pharmacy organizations last when asked about perceived facilitators.

Conclusions: Although results cannot be generalized to the larger pharmacy population, trends seen in our participants may point to possible areas of interest for increasing advocacy participation. Colleges of pharmacy, professional organizations, and employers should implement or improve political advocacy training efforts to minimize barriers. Increasing awareness of the lack of involvement may develop opportunities for future pharmacists to become involved in political advocacy.