Resident Research
2015–16

PittPharmacy

Mission

The School of Pharmacy is committed
to improving health through
excellence, innovation, and leadership
in education of pharmacists and pharmaceutical scientists,
in research and scholarship,
in care of patients,
and in service to our communities.

Values

Integrity guides our daily work. We foster:
Passion, commitment, and diligence;
Creativity and personal growth;
Collaboration and teamwork;
A culture of respect for the individual.

Message from the Dean

Patricia D. Kroboth, PhD

Dear Members of the Resident Class of 2016,

Each and every one of you has distinguished yourself among pharmacy practitioners by completing a residency program. I congratulate you on completing this intensive year of learning—gaining pharmacy expertise and mastering elements of teaching and research that triangulate to better prepare you for your careers. As residents, you have enjoyed the best of the academic and practice worlds have to offer through the collaborations between the School of Pharmacy and its partners— The UPMC hospitals including Presbyterian, Shadyside, Western Psychiatric Institute and Clinic, Magee-Womens, St. Margaret, McKeesport, Mercy, Hamot, and Childrens' Hospital of Pittsburgh, UPMC Health Plan, Rite Aid, Giant Eagle, Gatti Pharmacy, CVS Caremark, and the University Pharmacy of the University of Pittsburgh.

You also have another distinction: as a class of residents, you made a commitment to learning clinical research skills through the Pharmacy Residency Research Program. During your career, you will be faced again and again with clinically important questions. The skills you learned created a foundation on which to build answers—and to become tomorrow's leaders in pharmacy.

We celebrate your distinction as a pharmacist who is completing your residency in one of the largest and finest programs in the country. Because of that, your personal experience has been enriched by your peers from California, Colorado, Georgia, Indiana, Maryland, Massachusetts, Michigan, New York, North Carolina, Ohio, Oregon, Pennsylvania, Rhode Island, Tennessee, and West Virginia.

You have earned one more distinction! You each have just become an alumnus of our University of Pittsburgh School of Pharmacy Residency Program and will forever be a part of our community. It is my sincere hope that you carry with you fondly, the rich experiences of this past year as you launch the next phase of your career. There has never been a better time for pharmacy.

Congratulations, good luck, and keep in touch!

Let the Pitt Residents Roar!

Patricia D. Kroboth, PhD

Valuing Our Partners

The University Pittsburgh School of Pharmacy values our partnerships with the University of Pittsburgh Medical Center (UPMC), the UPMC Health Plan, Rite Aid, Giant Eagle, and CVS Caremark. It is through these partnerships that the Residency Program has grown in national reputation.

The University of Pittsburgh Medical Center is ranked among the top 10 of "America's Best Hospitals" according to the 2013 *U.S. News and World Report* rankings and is one of the leading integrated health care delivery systems in Western Pennsylvania. UPMC Presbyterian, UPMC Shadyside, UPMC Mercy, UPMC St. Margaret, UPMC McKeesport, Childrens' Hospital of Pittsburgh of UPMC, and Western Psychiatric Institute and Clinic of UPMC participate in our residency programs.

UPMC Health Plan, the second-largest health insurer in western Pennsylvania, is owned by UPMC, an integrated global health enterprise. The integrated partner companies of the UPMC Insurance Services Division — which includes UPMC Health Plan, UPMC WorkPartners, LifeSolutions (EAP), UPMC for You (Medical Assistance), and Community Care Behavioral Health — offer a full range of group health insurance, Medicare, Special Needs, CHIP, Medical Assistance, behavioral health, employee assistance, and workers' compensation products and services to nearly 2.5 million members.

Rite Aid Corporation is one of the nation's leading drugstore chains with nearly 4,800 stores in 31 states and the District of Columbia, with a strong presence on both the East Coast and West Coast, and 97,000 associates. Rite Aid is the largest drugstore chain on the East Coast and the third- largest drugstore chain in the United States.

Giant Eagle Pharmacy is a leading regional pharmacy with departments in 216 Giant Eagle locations across four states. Customers with qualifying prescriptions benefit from programs including the Giant Eagle $4/$10 generic prescription program, free prenatal vitamins, and high-quality service from expertly trained pharmacists. Additional unique services include Specialty Pharmacy offerings, in-store immunizations, and more.

CVS Caremark is the nation's premier integrated pharmacy services provider, combining one of the nation's leading pharmaceutical services companies with the country's largest pharmacy chain. CVS Caremark drives value for pharmacy services customers by effectively managing pharmaceutical costs and improving health care outcomes through its retail stores, pharmacy benefit management division, and mail service and specialty pharmacy division.

Gatti Pharmacy, located in Indiana, PA, is an innovative community pharmacy providing excellent patient care, including comprehensive medication reviews, extensive immunization services, travel medicine consults, medication synchronization and specialty packaging as well as traditional dispensing services.

University Pharmacy, located in Nordenberg Hall, is available to all University of Pittsburgh students, faculty and staff, their dependents, and the public at large. The pharmacist team offers a wide variety of patient care services including: medication therapy management, preventive and wellness care, specialized OTC selection, medication education programs in collaboration with practitioners at the Student Health Services Clinic and Counseling Center.

Pharmacy Residency Research Program

Sandra L. Kane-Gill, PharmD, MSc, FCCM, FCCP
Director, Resident Research Series

The Residency Research Program at the University of Pittsburgh School of Pharmacy incorporates a structured educational series with longitudinal research working groups. This approach provides a foundation for performing research, gives appropriate mentorship, fosters interactive discussions, allows peer critiques, and individual accountability for each resident project. Within the framework of the Residency Research Program, residents are responsible for the completion of all aspects of their project, from conceptualization to final manuscript preparation, with emphasis on personal accountability for the progress of their projects. Many of the projects completed this year focused on optimizing medication use including antibiotic stewardship, anticoagulation optimization, pain management and health services research. Our residents responded in outstanding fashion, demonstrating a true sense of personal ownership in their work.

The Residency Research Program requires residents to be certified in research fundamentals through the University of Pittsburgh, participate in valuable interactive lectures geared toward the scientific development and management of their projects, and learn to effectively communicate their project in both verbal and written formats. Overall, our Residency Research Program contributes to the diversity of residency training at the University of Pittsburgh Medical Center in collaboration with the University of Pittsburgh School of Pharmacy, which ultimately results in well-rounded candidates eligible for a wide range of career opportunities.

Our program is highly successful with publication rates for our residents exceeding the national average by at least three-fold. The success of this program is a result of the efforts of the working group facilitators and other major contributors: Stephanie Ballard, Lauren Beam, Kim Coley, Jim Coons, Brad Cooper, Amy Donihi, Tanya Fabian, Elizabeth Ferguson, Steve Ganchuk, Deanne Hall, Jerad Heintz, Jamie Holowka, Heather Johnson, Trish Klatt, Sarah Moffet, Louise-Marie Oleksiuk, Rachel Ours, Heather Sakely, Robert Simonelli, Melissa Somma McGivney, and Laura Wilson. The efforts of the program directors and research mentors are greatly appreciated. Amy Seybert, chair of the Department of Pharmacy and Therapeutics, must also be recognized for her dedication to the program. We greatly appreciate the continued support of Dean Patricia D. Kroboth and Senior Associate Dean Randall Smith. We would be remiss not to mention the fine administrative support of Matthew Freidhoff and Kathy Woodburn. Most importantly, this program is successful because of the commitment of our outstanding residents.

Identifying perceptions of access to health care services and chronic disease prevention and management among sub-Saharan African immigrants in the United States.

Assefa F, Jonkman L, Connor S

PURPOSE

Over the past decade, the number of sub-Saharan African immigrants has increased 8-fold in the United States. When African immigrants arrive in the U.S. their overall health status and health beliefs are rarely evaluated as a separate group of people from other black populations; this is even more important as research suggests that African immigrants may have worse health outcomes than African Americans. The goal of this research is to identify common perceptions regarding access to health care services and chronic disease prevention and management among African immigrants in the United States.

METHODS

Data for this study was obtained through in-depth semi-structured interviews. Questions were designed to address the following domains: perceived barriers to gaining access to health care, perceived strategies for managing health, and perceived strategies to increase health engagement. Participants were recruited from local health clinics and through word of mouth. All interviews were audio recorded and transcribed verbatim. Codes will be developed from the raw data using a conceptual framework from health behavior theory to identify patterns. The data analysis will focus on identifying themes from the interviews that will provide insight into common thoughts and beliefs in this population.

RESULTS

Sixteen in-depth semi-structured interviews were conducted. Participants represented Guinea, Ghana, Nigeria, Ethiopia, Kenya, Sudan, and Zambia. Over half (68.8%) were male. Average age was 43.5 years old (range 30-61 years). Average time in the U.S. was 8.8 years (range 1-26 years). All participants immigrated to the U.S. either for school, work, or to join family member.

CONCLUSION

It is anticipated that this study will identify key health regarding access to health care, disease state management, and preventive care. The outcomes from this study will help identify and suggest interventions in managing chronic diseases as well as identify avenues to promote the value of preventive care among sub-Saharan immigrants.

Ferealem Assefa, PharmD

Fray was born in Ethiopia and moved to Northern Virginia in 2002. She received her PharmD from Wingate University School of Pharmacy in 2014, and completed a PGY1 pharmacy residency at Centra-Lynchburg General Hospital. Her areas of interest include working with the underserved population both locally and globally, training pharmacy students and residents, and raising awareness about HIV/AIDS. Following completion of the residency program, Fray plans to obtain a faculty position that will allow her to facilitate global health experience to students and residents.

Mentor(s): Lauren Jonkman, PharmD, MPH, BCPS; Sharon Connor, PharmD

Evaluating the Impact of a Free Medication Program on Continuity of Care at Three Patient-Centered Medical Homes in Pittsburgh, PA

Bondar A, Koenig ME, Farrah RM, Klatt PM, D'Amico F, Han JK

PURPOSE

The UPMC St. Margaret Free Medication Program is available at its three Patient-Centered Medical Homes, where many of the patients are underserved. The purpose of this research was to determine the impact of the Affordable Care Act on utilization of the Program and to determine the impact of the Program on continuity of care.

METHODS

This was a quantitative study approved by the University of Pittsburgh Quality Improvement Committee and conducted via retrospective chart review of patients in the Free Medication Program in 2013 and 2015. The inclusion criteria were adults who had at least one chronic prescription filled between January and June of 2013 and 2015.

RESULTS

There was no significant change in utilization of the Program between 2013 and 2015 (316 vs. 307 patients, p=0.5). Of the 316 patients utilizing the Program in 2013, 60 patients continued accessing the Program in 2015. Insurance status was not significantly different between 2013 and 2015 (p=1.0). Two of the clinics saw a significant change in the proportion of patients enrolled in the Program ($p < 0.01$). There were no differences between 2013 and 2015 in the rates of follow-up with providers, (p=0.38), but few patients saw a clinic pharmacist.

CONCLUSION

Data suggests that patients are utilizing the Free Medication Program as a temporary bridge to full medical coverage. Lack of significant changes in insurance between 2013 and 2015 are explained by the time it takes for health care reform to reach individuals. While most patients had physician visits, a small percentage of patients had pharmacist visits. This is an opportunity for improvement, since the health center pharmacist resource may optimize use of the Program and be instrumental in finding cost-effective therapies for patients. In the future, strategies to improve consulting the health center pharmacist will target work flow, provider education and health record documentation.

To be presented at the 49th Annual Society of Teachers of Family Medicine Spring Conference, Minneapolis, MN, May 2016

Anna Bondar, PharmD

Anna received her PharmD from the University of Pittsburgh School of Pharmacy in 2015 and is completing a PGY1 pharmacy residency at UPMC St. Margaret. Upon completion of a PGY1 residency, she plans to complete a PGY2 ambulatory care/family medicine pharmacy residency at UPMC St. Margaret.

Mentor(s): Marianne Koenig, PharmD, BCPS

Evaluation of vancomycin Dosing for Empiric Treatment of *Staphylococcus aureus* Infections in Intravenous Drug Abusers

Brown EJ, Ganchuk SR, Wilson LM, Koval A.

PURPOSE

According to The International Collaboration on Endocarditis-Prospective Cohort study from 2009, *Staphylococcus aureus* is the most common cause of infective endocarditis (IE) worldwide and accounted for 68% of IE in intravenous drug abusers (IVDAs) studied. Rybak, et al performed a pharmacokinetic study of vancomycin which is commonly used to treat IE that showed increased renal clearance of vancomycin in 14 IVDAs compared to 10 control patients, although results did not reach statistical significance. The objective of this study is to determine need for alteration of vancomycin dosing nomograms to account for increased dosing requirements to reach the same trough goals in IVDAs.

METHODS

This study was approved by the University of Pittsburgh Institutional Review Board. A retrospective chart review was completed to analyze patients receiving IV vancomycin from January 1, 2010 to September 15, 2015. Patients were separated into two groups: those who had documented active IV drug abuse and those who denied the recent use of IV drugs. Patients from the IVDA group were matched to control patients based on similar age, gender, and renal function. The total daily vancomycin dose that the IVDA was receiving when the first therapeutic steady state trough level was obtained was compared to the hospital dosing nomogram and the dosing required for a matched member of the control group. The need for dose adjustments to reach goal trough and the number of patients in each group who developed acute kidney injury (0.5mg/dL increase in creatinine over 24 hours during therapy) were also compared.

RESULTS

Results are pending at this time.

CONCLUSIONS

Evaluations are pending at this time.

Presented at the 50th Annual ASHP Midyear Clinical Meeting, New Orleans, LA, 2015.

Emily Brown, PharmD

Emily received her PharmD from Ohio Northern University Raabe College of Pharmacy in 2015 and is currently completing her PGY-1 pharmacy practice residency at UPMC Mercy. She will be completing a PGY-2 Critical Care residency at Akron General Medical Center.

Mentor(s): Steven R. Ganchuk, PharmD

Characterization of the Pharmacokinetics of Post-Transplant Cyclophosphamide in Patients Undergoing Peripheral Blood Haploidentical Stem Cell Transplantation

Brown MA, Farah R, Brenner TL, Beumer JH, Natale JJ, Mascara GP, Schmitz JC, Normolle D, Venkataramanan R

PURPOSE

There is a paucity of data available describing the effects of cytokine release syndrome (CRS) observed after T-cell replete, peripheral blood-mobilized, haploidentical stem cell transplantation (haplo-PBSC) on drug metabolism. Recent studies with T-cell replete, haplo-PBSC utilizing post-transplant cyclophosphamide (PT/Cy) have reported that many patients experience fever after stem cell infusion, possibly as a result of cytokine release from proliferating alloreactive T-cells. Other studies have shown that inflammatory states in the body can result in down-regulation of cytochrome P450 (CYP450) enzymes in the liver. Therefore, it is plausible that CRS seen after haplo-PBSC could suppress CYP450-mediated metabolism of certain medications. Cyclophosphamide (Cy) was chosen for this investigation due its bioactivation through the CYP450 enzyme system and for its importance in preventing graft-versus-host disease. The primary objective of this study is to compare the pharmacokinetic bioactivation of pre-transplant Cy to PT/Cy. A secondary objective of this study is to characterize the serum concentrations of various pro-inflammatory cytokines throughout the immediate peri-transplant period and relate those cytokine levels to Cy pharmacokinetics.

METHODS

Patients ≥ 18 years of age with adequate liver and kidney function scheduled to undergo T-cell replete, haplo-PBSC using PT/Cy at UPMC Shadyside Hospital will be screened for inclusion. Blood sampling will be conducted at pre-specified time intervals following Cy infusion in order to measure plasma concentrations of Cy, 4-hydroxycyclophosphamide, and other Cy metabolites. Dose-corrected area-under-the-curve, clearance, volume of distribution, elimination rate constant, half-life, and metabolite/parent ratio will be calculated. Blood samples will also be collected in the immediate peri-transplant period to measure plasma concentrations of pro-inflammatory cytokines known to affect expression of CYP450 enzymes, including IFN-g, IL-1B, IL-2, IL-4, IL-6, IL-8, IL-10, IL-12p70, IL-13, and TNF-a.

RESULTS

Research in progress.

CONCLUSIONS

Research in progress.

Presented at the 12th Annual Hematology/Oncology Pharmacy Association Conference, Atlanta, GA, 2016.

Maxwell A. Brown, PharmD

Maxwell obtained his Doctor of Pharmacy degree in 2014 from Northeastern University School of Pharmacy, and completed his PGY-1 Pharmacy Residency at UPMC Presbyterian. After completion of his residency training, Maxwell will be working as a Clinical Pharmacy Manager in Bone Marrow & Hematopoietic Stem Cell Transplantation at New York Presbyterian/Weill Cornell Medical Center in Manhattan, NY.

Mentor(s): Timothy L. Brenner, PharmD, BCOP

Outcomes of coordinated, pharmacist-led, anticoagulation management of older adults across the levels of care: A mixed methods analysis of the PIVOTS model

AM Campbell, K Coley, J Corbo, M Joseph, T DeLellis, A Higbea, A Haver, L Cox-Vance, V Balestrino, C Thorpe, MS McGivney, PM Klatt, J Zaharoff, H Sakely

PURPOSE

Older adults make frequent transitions through the levels of the healthcare system. Transitions involving high-risk medications (e.g.: anticoagulants) can create the perfect storm for critical drug therapy problems (DTPs). In one novel practice model, four pharmacists are integrated into the interprofessional team in four settings: skilled nursing facility, personal care facility, outpatient offices, and a hospital; allowing them to coordinate anticoagulation through care transitions. The objective of this analysis is to characterize this replicable model by describing 1) physician, staff, and patient perceptions; 2) time spent on anticoagulation activities; and 3) outcomes of this pharmacist-led service.

METHODS

A mixed methods approach was used to integrate the various outcomes assessed. Qualitatively, these include perceptions of stakeholders, including patients aged 65 and older (assessed using surveys); and physicians, nurses, and nursing home staff (assessed using focus groups). Quantitatively, pharmacist time spent was reported through results of a workflow time and motion analysis, and pharmacists' impact was reported reported through an analysis of DTPs addressed over a 15-month period.

RESULTS

At the 15-month analysis, 2,861 anticoagulation encounters were identified for 204 patients. Mean number of medications and conditions per patient were 12.2±4.9 and 7.0±2.6, respectively. In addition to anticoagulation dosing recommendations, pharmacists made 461 interventions on 85 non-warfarin medications, with the most common DTP being dosage too low in the skilled nursing and personal care settings, and dosage too low and adverse drug reaction in the outpatient clinic. Physicians, nurses, and staff participating in focus groups suggested that pharmacists improved healthcare quality by maintaining continuity, improving workflow, and preventing medication errors.

CONCLUSIONS

Physicians, nurses, and staff all suggested that a pharmacist-led approach to anticoagulation coordination prevented medication errors and improved continuity, workflow, and healthcare quality. This is supported by the comprehensive care pharmacists provided through interventions on both anticoagulants and other medications.

Presented at the American Geriatrics Society 2016 Annual Scientific Meeting, Long Beach, California, May 2016, and the 22nd Annual Teaching and Learning in Academic Medicine Conference, Pittsburgh, Pennsylvania, May 2016

Ashley M. Campbell, PharmD, BCPS

Ashley earned her PharmD at the University of North Carolina Eshelman School of Pharmacy in 2014. She completed a PGY1 pharmacy residency at UPMC St. Margaret and is currently a PGY2 in geriatric pharmacy and second year faculty development fellow. Her areas of interest include geriatric medicine, scholarship of teaching and learning, and interprofessional education. Ashley will be joining the faculty at the University of Arizona College of Pharmacy as an assistant professor in the Department of Pharmacy Practice and Science with a joint appointment as an internal medicine pharmacist at Banner – University Medical Center Tucson.

Mentor(s): Heather Sakely, PharmD, BCPS

Impact of Emergency Department Urinalysis on Antimicrobial Stewardship Efforts

Chen X, Moffett SM, Ours RL

PURPOSE

Urinalysis and urine culture testing are commonly performed in patients who present to the emergency department (ED) at UPMC Hamot. A positive urinalysis can often lead to assumption of urinary tract infection (UTI) and subsequent treatment with antimicrobials. This study evaluated the impact of urinalysis on inappropriate treatment of asymptomatic bacteriuria (ASB).

METHODS

A total of 107 patients were identified for study inclusion through the electronic medical record. Patients were included if they were ≥ 18 years old, admitted through the ED, and received antimicrobial therapy for positive urinalysis and associated urine culture during the time period of July 1, 2014 – July 1, 2015. The primary endpoint assessed was the prevalence of inappropriate treatment for ASB. Analyses were conducted via descriptive statistics. The primary and secondary endpoints were recorded as percentages.

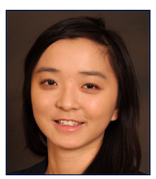
RESULTS

Of the 107 patients included in this study, the primary endpoint occurred in 65 patients (61%). In contrast, 42 of the 107 patients (39%) were appropriately treated for a UTI based on documented specific and nonspecific signs or symptoms. In terms of secondary endpoints, there was a 16.7% rate of inappropriate or not optimal antimicrobial therapy. Of the 16.7%, 12% received inappropriate or not optimal de-escalation following urine culture sensitivities, including de-escalation choice, no de-escalation from empiric therapy, and delayed de-escalation, while 4.7% received inappropriate or not optimal initial antimicrobial therapy based on reported allergy history, excessive coverage, and duplicate coverage with another antimicrobial. The incidence of *C. difficile* diarrhea was 2 of 107 patients.

CONCLUSION

In this analysis regarding the impact of UA performed in the ED and not driven by symptoms, there was a prevalence rate of 61% for the inappropriate treatment of ASB. This finding is similar to other published literature. Future interventions are warranted such as in-services and continued antimicrobial stewardship efforts.

Presented at UPMC Hamot Research Days, Erie, PA, April 20-21, 2016



Nancy Chen, PharmD

Nancy received her PharmD from the University of Michigan in 2015 and completed a pharmacy practice residency at UPMC Hamot in 2016. She will be continuing her career as a pharmacist at Mayo Clinic in Rochester, MN.

Mentor(s): Sarah Moffett, PharmD, BCPS; Rachael Ours, PharmD

Prothrombin complex concentrate use for urgent warfarin reversal compared to historical control

Chen HX, Coons JC

PURPOSE

Bleeding episodes associated with warfarin therapy can lead to significant morbidity and mortality. Agents that may be used to reverse its anticoagulation effect include fresh frozen plasma (FFP), recombinant factor VIIa (rFVIIa), and prothrombin complex concentrates (PCC). PCCs were not available within the UPMC system prior to 2013, and no comparison has yet been made to evaluate differences in outcomes between PCCs and other reversal agents since the formulary change. Additionally, limited data comparing rFVIIa and PCCs is available. The purpose of this study is to compare hemostatic outcomes achieved using these three warfarin reversal strategies.

METHODS

This retrospective cohort study included patients who received PCC between July 1, 2013 and April 30, 2014 (post-approval arm) and patients who received rFVIIa or FFP between October 19, 2010 and September 30, 2012 (historical comparator). All patients taking warfarin were included. For patients who received multiple doses of a reversal agent, each administration was considered a separate instance. The primary outcome was the proportion of instances that achieved an INR £1.3 within 8 hours of administration. Secondary outcomes included average INR reduction following reversal agent administration and the number of red blood cell units transfused.

RESULTS

The historical cohort included approximately 600 instances of FFP administration and 28 instances of rFVIIa administration. The PCC cohort included 102 instances of PCC administration. Preliminary analysis demonstrates that 78.6% of rFVIIa administrations achieved INR £1.3, with an average INR reduction of 1.4. Of the 102 PCC administrations, 47.1% achieved INR £1.3, with an average INR reduction of 1.87. Evaluation of FFP administrations and statistical analyses are in progress.

CONCLUSIONS

Preliminary results suggest that changes in hemostatic markers differ among the warfarin reversal strategies compared, though the clinical significance is unclear at this time. Final conclusions will be drawn pending completion of data analysis.

Sherry Chen, PharmD

Sherry Chen received her PharmD from the University of Maryland School of Pharmacy in Baltimore, and completed a PGY-1 Practice Residency at UPMC Presbyterian. Her professional interests include cardiology and infectious disease, and she will be staying at UPMC Presbyterian next year to complete a PGY-2 in cardiology.

Mentor(s): James Coons, PharmD, BCPS (AQ Cardiology)

Time-and-Motion Study of ICU Bedside Nurse Time Spent on Delirium Prevention Activities

Durie NB, Kane-Gill SL, Campbell S, Alexander S, Seybert A, Kobulinksy L, Smithburger PL

PURPOSE

Up to 80% of patients in intensive care units (ICUs) develop delirium at some time during their hospital stay. Delirium is associated with a higher six month mortality, as well as increased length of hospital stay and time on mechanical ventilation. Non-pharmacologic strategies, aimed to prevent delirium, have been shown to lessen the incidence of delirium. The purpose of this study was to quantify the amount of time Medical Intensive Care Unit (MICU) bedside nurses spend conducting delirium prevention activities.

METHODS

This was a single center, prospective, observational, time and motion study conducted in the MICU. Nurses were recruited for study participation if they were ≥ 18 years old and had been a registered nurse for at least 6 months. Observers utilized the time-and-motion method to observe nurses interacting with patients over a 4-hour time period, 8:00 AM to 12:00 PM, 12:00 PM to 4:00 PM, or 3:00 PM to 7:00 PM.

RESULTS

A total of 18 nurses, caring for 34 patients, were recruited for study participation and observed for this study. Of the 72 observation hours combined, nurses spent a total 68 minutes and 32 seconds or 1.6% of the time observed, performing anti-delirium activities. Nurses spent an average of two minutes per patient conducting delirium prevention activities.

CONCLUSION

This time-and-motion study demonstrates the lack of time dedicated to performing delirium prevention activities. The results of this study suggest the need for additional resources to be employed in ICUs to prevent delirium.

Nicole B. Durie, PharmD

Nicole received her PharmD from Northeastern University in Boston, MA in 2015. Upon completion of her PGY-1 pharmacy residency, she will continue on at UPMC Presbyterian to complete a PGY-2 in cardiology.

Mentor(s): Pamela L. Smithburger, PharmD, MS, BCPS

The effect of multimodal education on medical residents' perceptions of prescribing naloxone

Durigan RC, Koenig M, D'Amico F, Das N, Proddutur S, Han JK

PURPOSE

At the UPMC St. Margaret family health centers (FHCs), a naloxone initiative began last year in response to a local and national opioid abuse and overdose crisis. Physician awareness and rates of prescribing have increased, community awareness of naloxone availability is now evident, and patients have reported successfully reversing overdoses with the naloxone we provided. However, there are disparate rates of naloxone prescribing between health centers among medical residents. The objective of this study was to determine if a formalized educational process affects the disparate naloxone prescribing rates, overall comfort prescribing and counseling, and knowledge of proper naloxone use.

METHODS

A pre- and post-intervention survey was conducted within a Family Medicine residency program among Family Medicine residents, nursing, front desk, and social work staff. The intervention involved a multimodal educational series including an informational video, in-service at each FHC, and formal presentation at the hospital for medical residents. The primary outcome was the degree of change on a Likert scale in medical resident comfort prescribing and counseling about naloxone and opioids and their overall satisfaction as a result. Secondary outcomes included staff knowledge and comfort with naloxone administration and identifying candidates for naloxone, and percent change in rates of naloxone prescriptions.

RESULTS

The majority of residents were uncomfortable prescribing opioids for chronic pain and discussing opioids and naloxone. Also, office staff felt very uncomfortable administering naloxone and talking to patients about it before the intervention. Prescribing rates will be determined upon study completion.

CONCLUSIONS

The preliminary findings of this pre-post study suggest that formalized education can positively affect medical resident and staff comfort and knowledge surrounding naloxone, and possibly increase prescribing rates. A multimodal educational series is a feasible method to increase prescriber and staff comfort and overall awareness of naloxone in an effort to combat the opioid crisis.

Presented at the Teaching and Learning in Academic Medicine Conference at UPMC St. Margaret, Pittsburgh, PA, May 2016.

R. Christopher Durigan III, PharmD, BCPS

Chris received his PharmD from the University of Rhode Island in 2014 and completed a PGY1 pharmacy residency at UPMC St. Margaret in 2015. He is currently a PGY2 Ambulatory Care pharmacy resident and Faculty Development Fellow at UPMC St. Margaret. Upon completion of his PGY2 residency, Chris hopes to obtain a clinical pharmacist position within a primary care setting with teaching and precepting opportunities.

Mentor(s): Marianne Koenig, PharmD, BCPS

Impact of Pharmacy Intervention on Hospital Consumer Assessment of Healthcare Providers and Systems Medication Scores

Farabaugh N, Wilson L, Sargent A

PURPOSE

The HCAHPS (Hospital Consumer Assessment of Healthcare Providers and Systems) survey is a nationally recognized data collection tool currently used to measure patient satisfaction during a hospital admission. A pharmacist-led pilot program was initiated at the tertiary teaching hospital to improve HCAHPS scores and the quality of care patients receive by increasing patient understanding of indications and side effects of new medications. The objectives of the study are to determine if pharmacist intervention results in an increase in medication-related HCAHPS scores and to create a model for other institutions to increase HCAHPS scores and the quality of care patients receive.

METHODS

This study was accepted at the institution's Quality Improvement Review Board for approval. This is a two-part prospective review of a (1) pharmacy-led discharge counseling service to patients on two similar hospital surgical units and (2) pharmacy-led nursing educational program to two different medicine units. Counseling services to patients included a discussion on indication for new medications and side effects. Nursing education included instruction on proficient medication patient counseling technique and common medications used on the interventional units, emphasizing indications and side effects. Nurses were provided handouts to reference when educating patients on common medications used.

Pre-interventional HCAHPS scores will be compared to post-interventional medication related HCAHPS scores to evaluate the effect of pharmacist education.

RESULTS

in progress

CONCLUSIONS

in progress

Presented at the 50th Annual American Society of Health-System Pharmacists Midyear Clinical Meeting Resident Poster Session in New Orleans, LA. December 2015.

Nicole Farabaugh, PharmD

Nicole received her PharmD from West Virginia University in 2015 and is a current pharmacy practice resident at UPMC Mercy. Upon completion, she plans to practice at Nationwide Children's Hospital in Columbus, OH as a Patient Care Surgery Pharmacist.

Mentor(s): Laura Wilson, PharmD, BCPS

Management of delirium for older adults in the palliative care setting

Felton M, Jarrett J, Sakely H, Hoffmaster R, D'Amico F, Pruskowski J

PURPOSE

Palliative care goal is to improve the quality of life of patients with life-threatening illnesses by managing symptoms like pain and delirium. Delirium is associated with an increase in the healthcare cost, length of stay, and mortality. The objective of this study was to evaluate the management of delirium across nine inpatient University of Pittsburgh Medical Center (UPMC) hospitals of older adults (≥65 years old) with a palliative care consult during admission.

METHODS

A retrospective chart review was conducted to examine data from September 2014-September 2015. Hospitalized patients ≥65 years old with a diagnosis of delirium (defined by ICD-9 codes) during palliative care consults were included (n=319). Patients with alcohol withdrawal-related delirium (defined by ICD-9 code) were excluded. Demographic information was collected: age, sex, race, comorbid conditions, and name, dose, duration of mediation administered to treat delirium. Length of stay after delirium diagnosis was the primary outcome evaluated and delirium symptom length, sedation score 72 hours post-treatment and QTc interval length were secondary outcomes. Parametric statistical analysis including one-way ANOVA testing was used to analyze the results.

RESULTS

Length of stay for haloperidol and non-haloperidol was 8.3 (6.7-9.8) and 6.9 (5.8-7.9); olanzapine and non-olanzapine was 6.6 (4.3-8.9) and 7.5 (6.5-8.4), respectively. Delirium length for haloperidol and non-haloperidol was 6.6 (5.4-7.7) and 6.9 (5.8-7.9); olanzapine and non-olanzapine was 5.3 (3.6-7.1) and 5.9 (5.2-6.6), respectively. Haloperidol group QTc was prolonged (>500 for males or >480 for females) in 14.6% of haloperidol recipients (p=0.09) and 10.9% of olanzapine recipients (p=0.21). A sedation score of 2 or 3 (slightly arousable to unarousable) occurred in 23.5% of the recipients of haloperidol and 7.2% of the recipients of olanzapine (p=0.001).

CONCLUSION

Future research with a larger study population needs to be conducted to compare outcomes surrounding benzodiazepine use versus specific antipsychotic agent use.

Presented at Society of Teachers in Family Medicine Annual Conference, Minneapolis, MN, May 2016.

Maria A. Felton, PharmD

Maria received her PharmD from the University of Pittsburgh School of Pharmacy in 2015 and is a current first year pharmacy resident at UPMC St. Margaret. She will continue her training as a second year geriatric pharmacy resident at UPMC St. Margaret. Upon completion of her PGY2 in geriatrics, she plans to practice in an outpatient geriatric-focused setting with a component of teaching in her practice.

Mentor(s): Jennifer Pruskowski, PharmD, BCPS, CGP, CPE

Evaluation of a pain management guideline for patients with acute on chronic gastrointestinal pain exacerbations

Gao AL, Pruskowski JA, Krueger DW, Brown MA, Burke AM, Rack LL, and McNeil MA

PURPOSE

The pathophysiology for acute on chronic gastrointestinal pain is not clearly understood, and there is a lack of published literature regarding ideal treatment regimens. To help standardize and improve care, a protocol was developed to transition a patient's home opioid regimen to a PCA for management of the acute exacerbation. The purpose of this study was to evaluate the impact of this protocol on physician, nursing, and patient satisfaction.

METHODS

Pre- and post-surveys were electronically administered to general medicine physicians and nurses to evaluate overall satisfaction before and 5 months after guideline implementation. The pre-survey was comprised of 9 statements graded on a Likert scale relating to care of this patient population and the use of opioids for pain management. The post-survey included 2 additional questions specific to the guideline. To evaluate patient satisfaction regarding pain control, the number of patient complaints reported through the hospital's Condition "H" (Help) mechanism during the 6 months preceding and during the first 5 months of the pilot period were compared.

RESULTS

Comparative analyses of the pre- and post-survey results evaluating physician and nurse satisfaction are pending. During the pilot period, there were 42 admissions for acute on chronic gastrointestinal pain; for 37 (82%) of these, patients did not qualify to use the protocol because they were not taking both long- and short-acting opioid medications at home. The guideline was attempted for 4 of the 5 eligible patients. Of the 40 Condition "H"s reported in the 6 months prior to the guideline, 16 (40%) were from patients with acute on chronic gastrointestinal; in comparison, 19 (61%) of 31 calls were made during guideline implementation (p=0.08).

CONCLUSIONS

A standardized pain protocol is anticipated to improve physician, nursing, and patient satisfaction regarding management of acute on chronic gastrointestinal pain. Future implementation will include reaching a broader patient population.

Arlene Gao, PharmD

Arlene received her PharmD from the University of Maryland School of Pharmacy in 2015. Upon finishing this year as a PGY1 pharmacy practice resident at UPMC Presbyterian, she will be completing a PGY2 in oncology at UPMC Shadyside.

Mentor(s): Jennifer Pruskowski, PharmD, BCPS, CGP, CPE

Oral Antibiotic Dosing for Pediatric Cystic Fibrosis Exacerbations in the Outpatient Setting

Giddens SM, Ferguson ED

PURPOSE

In the outpatient setting, cystic fibrosis (CF) exacerbations are commonly treated with oral antibiotics based on recent and prior cultures with sensitivities. Optimizing the dosing of oral antibiotics is essential to treat exacerbations and ensure antibiotic lung penetration. The purpose of the study is to assess the appropriateness of oral antibiotic dosing prescribed for CF exacerbations in the outpatient clinics and secondarily to characterize and evaluate for escalations in care.

METHODS

A retrospective chart review was conducted to compare oral antibiotic dosing to current literature recommendations. Patients were identified through the CF Patient Registry based on clinic visits over a 3-month period. Inclusion criteria consisted of patients ≤18 years of age with a CF diagnosis prescribed an oral antibiotic for a CF exacerbation in the outpatient setting. Dosing was reviewed for optimal weight-based dose, interval, and dosage form. This study was approved by the UPMC Quality Improvement Review Board.

RESULTS

During the 3-month study period, 236 patient clinic visits identified 70 patients with 79 oral antibiotic prescriptions meeting inclusion criteria. The mean best FEV_1 per year was 97.4% (55 -136%). The majority (61%) of the 31 total amoxicillin/clavulanic acid prescriptions were prescribed as the optimal formulation and of those with suboptimal formulation there was no difference in escalation in care. The review identified 48 non-amoxicillin/clavulanic acid prescriptions. Non-amoxicillin/clavulanic acid prescriptions were dosed appropriately 66% of the time. Of those on suboptimal doses, 9 of 16 required an escalation in care, compared to 8 out of 32 on optimal doses. The most common escalation in care for suboptimal prescriptions was antibiotic course extension (n=8). Six patients required admission for intravenous antibiotics including 4 with suboptimal prescriptions.

CONCLUSIONS

Suboptimal oral antibiotic therapy is more likely to result in an escalation of care for patients treated for an outpatient CF exacerbation.

Presented at the 25th annual Pediatric Pharmacy Advocacy Group (PPAG) in Atlanta, GA on April 30, 2016.

Shannon Giddens, PharmD

Shannon received her PharmD at Mercer University in Atlanta, GA in 2015 and is completing her PGY-1 Pharmacy Practice Residency at Children's Hospital of Pittsburgh of UPMC with an emphasis on pediatrics. Her practice interests include pediatric infectious disease and neonatology. Following her PGY-1, she will be pursuing a PGY-2 Pediatric residency at Yale-New Haven Children's Hospital. Ultimately, she plans to practice as a pediatric clinical specialist at an academic medical center.

Mentor(s): Dr. Elizabeth Ferguson

Systemic Steroid Prescribing for COPD Exacerbations: Perception versus Reality

Giruzzi NR, Jarrett JB, Campbell R, Kloet MA, D'Amico F, Synan M

PURPOSE

Context: The GOLD guidelines recommend oral prednisone 40mg daily for 5 days for patients experiencing a COPD exacerbation. Despite these recommendations, patients admitted to UPMC St. Margaret for a COPD exacerbation receive high dose intravenous (IV) steroids for >5 days.
Objective: To compare providers' perceptions of how steroids are prescribed for COPD exacerbations (dose, route, and duration) and actual practice in the inpatient setting.

METHODS

Design: Retrospective chart review of patient data compared with a 13-question anonymous survey of providers examining their steroid prescribing practice
Setting: 249-bed community teaching hospital
Participants: Inclusion: ≥18 years old admitted with ICD-9/10 code for a COPD exacerbation between October 30, 2014 to October 30, 2015. Exclusion: patients with severe COPD exacerbations (ICU admission, BiPAP or CPAP, intubation), confirmed asthma, current steroid use, not a COPD exacerbation determined by review of clinical patient notes.
Main Outcome Measure: Primary: determine if differences exist between providers' perception and actual steroid prescribing patterns for COPD exacerbations. Secondary: To determine if patient characteristics change prescribing patterns.

RESULTS

Results: 436 patient charts reviewed, 235 patients included. 136 providers surveyed generating 46 responses (34% response rate). Results are reported as chart review versus (vs.) survey results, respectively. **Day 1 of hospitalization:** IV administration of steroids: 85% vs. 82.6%; total daily prednisone equivalence >100mg/day: 56.5% vs. 28.3%. **Day 3 of hospitalization:** IV administration: 56.4% vs. 19.6%; total daily prednisone equivalence >100mg/day: 28.5% vs. 0%. Steroid dosing tapers prescribed: 53.5% vs. 45.7%; total duration of steroids ≤5 days: 19.5% vs. 47.8%. 6/13 free-response answers indicated "insurance companies" as an additional challenge in regards to steroid prescribing for COPD exacerbations.

CONCLUSIONS

Conclusions: Prescriber perception of steroid prescribing adheres to the GOLD guideline recommendations more commonly than actual practice, potentially due to insurance admission requirements. These results generate further research needs to understand high-dose and extended duration steroid prescribing along with potential adverse patient outcomes and cost-savings opportunities.

Presented at Society of Teachers of Family Medicine in Minneapolis, Minnesota on in May 2016

Nicholas R. Giruzzi, PharmD

Nick received his PharmD from Albany College of Pharmacy and Health Sciences in 2015 and is currently a PGY-1 Pharmacy Resident at UPMC St. Margaret in 2016. Upon completion of PGY-1, Nick will continue as a PGY-2 at UPMC St. Margaret focus in Ambulatory Care/Family Medicine.

Mentor(s): Jennie Jarrett, PharmD, BCPS

Pharmacists informing a community-based pharmacogenetic education program

Hart KM, Berenbrok LA, McGrath SH, McCullough J, Coley KC, Empey PE, McGivney MS

PURPOSE

Pharmacogenomics (PGx) testing represents the evolution of personalized medicine and has recently entered community pharmacy practice through direct-to-consumer test kits. While continuing PGx education programs and certificates are available to pharmacists, education focusing on the integration of PGx testing into community pharmacy workflow and preferred means to learn workflow adaptation remain largely unknown. The purpose of this study was to uncover how to best meet the educational needs of community pharmacists to integrate PGx testing into their workflow.

METHODS

Pharmacists employed by Rite Aid in four districts within the Greater Pittsburgh Area were included in the study. Pharmacists who were already defined as high-performing clinically based upon the number of immunizations given and number of submitted medication therapy management (MTM) claims from March 1-December 31, 2015, as well as those practicing within an American Association of Diabetes Educators recognized site, were eligible to participate. Once identified, pharmacists were contacted by the primary investigator to participate in a live, semi-structured, audio-recorded interview at their pharmacy. The co-investigator conducted the interview while the primary investigator stepped into workflow. Interviews were transcribed, and underwent thematic analysis using a grounded-theory approach.

RESULTS

Eleven pharmacist interviews were conducted. Preliminary analysis identified live training outside of dispensing time as essential and should include: an overview of pharmacogenomics, a physical demonstration of the test, and clinical implications from the results. The estimated time for training varied based upon the number of medications being tested for. After the live session, resources developed for the pharmacist as well as for technicians and interns to actively participate in implementation could increase patient engagement and program success.

CONCLUSION

In developing a pharmacogenomics education program, a live training module conducted outside of community pharmacist dispensing time which includes different resources for the pharmacy team should be considered in order to implement PGx testing within workflow.

Presented at the American Pharmacists' Association Annual Meeting for Pharmacists, Residents, and Preceptors, Baltimore, MD, 2016.

Kristin M. Hart, PharmD

Dr. Hart received her PharmD from the University at Buffalo, The State University of New York (SUNY) in 2015 and her Bachelors of Science in Biology from SUNY Geneseo. She is currently finishing a PGY-1 Community Pharmacy Residency with the University of Pittsburgh/Rite Aid. Upon completion, she will be pursuing a PGY-2 in Geriatrics with UPMC Presbyterian/Shadyside.

Mentor(s): Lucas A. Berenbrok, PharmD, Kim C. Coley, PharmD, FCCP, and Melissa Somma McGivney, PharmD, FCCP, FAPhA

Impact of vancomycin utilization on VRE colonization among AML patients undergoing intensive induction chemotherapy

Heisel RW, Oleksiuk LM, Mascara GP, Sutton R, Lim SH, Weber DR.

PURPOSE

Patients with acute myeloid leukemia are at increased risk of colonization and infection with vancomycin-resistant Enterococci (VRE). Infectious Diseases Society of America guidelines recommend judicious use of vancomycin in febrile neutropenia patients to curb the development of bacterial resistance. However, little is known about the effect of vancomycin on the development of VRE in AML patients. This study was conducted to determine if vancomycin utilization is associated with VRE colonization in this patient population.

METHODS

This was a retrospective review of patients admitted for induction chemotherapy with cytarabine and idarubicin between January 2012 and December 2015. Patients were included if they had an initial negative VRE rectal swab and at least one subsequent VRE swab performed during their admission. The primary objective of this study was to determine the impact of vancomycin utilization on time to VRE positivity. The secondary objectives were to identify variables associated with time to VRE positivity, and assess the impact of VRE rectal swab positivity on VRE infection.

RESULTS

Two hundred twenty-nine patients were included. Vancomycin was utilized in 92% (210/229) of patients. VRE colonization developed in 58% (134/229) of patients. Vancomycin use, treated as a time-varying covariate, was not significantly associated with more rapid development of VRE positivity (HR 1.434 (95% CI 0.908-2.264), p=0.122). Variables associated with time to VRE positivity were heme positive stool (HR 3.224 (95%CI 1.502-6.921), p=0.003), male gender (HR 1.412 (95% CI 1.001-1.996), p=0.049) and cephalosporin utilization (HR 1.648 (95% CI 1.062-2.558), p=0.026). VRE infection occurred in 8% (8/103) of patients with a negative VRE rectal swab as compared with 20% (25/126) of patients with positive VRE rectal swabs prior to infection (p=0.010).

CONCLUSIONS

Vancomycin utilization was not significantly associated with faster development of VRE colonization. VRE infection occurred in significantly more patients who had a VRE positive rectal swab prior to infection.

Ronald Heisel, PharmD

Ronald received his PharmD from the University of Pittsburgh School of Pharmacy in 2015 and is completing a pharmacy practice residency at UPMC Shadyside. Upon completion of residency, he plans to practice in a hospital setting.

Mentor(s): Louise-Marie Oleksiuk, PharmD, BCPS and Gerard P. Mascara, PharmD, BCOP.

Clinical Factors Predicting Bleeding and Effectiveness Associated with Direct-Acting Oral Anticoagulants for the Treatment of Deep-Vein Thrombosis (DVT) and Pulmonary Embolism (PE)

Iasella CJ, Coons JC

PURPOSE

The direct-acting oral anticoagulants (DOACs) dabigatran, rivaroxaban, and apixaban are all now utilized as alternatives to warfarin to treat deep-vein thrombosis (DVT) and pulmonary embolism (PE). These agents are particularly appealing because they do not require the testing or frequent dose adjustment that warfarin does. The Phase III studies conducted for approval of the DOACs compared them to warfarin. The purpose of this study was to identify factors predicting safety and effectiveness of these agents for the treatment of DVT or PE.

METHODS

This study is a retrospective cohort analysis of patients treated for DTV or PE in the UPMC Health System. To be included, patients had to be at least 18 years old, have a diagnosis of new DVT or PE by ICD-9 code, and have at least one medication charge for dabigatran, rivaroxaban, or apixaban. The primary endpoint for effectiveness was new thromboembolic event, while a composite bleeding endpoint was evaluated for safety. Parametric and non-parametric comparative tests will be used to evaluate differences in baseline characteristics. Logistic regression and Cox proportional hazards models will be used to evaluate primary effectiveness and safety outcomes.

RESULTS

A total of 33,544 individual patient visits were screened for inclusion. On initial analysis, 2,107 patients met criteria for inclusion in the study cohort. Of these, 1,189 patients had diagnoses of PE, while 918 patients were treated for DVT without PE. Future analyses will compare baseline characteristics of patients taking different DOACs and identify factors which predict treatment failure or bleeding.

CONCLUSIONS

Factors which predict bleeding or thromboembolic events in patients treated with DOACs for DVT and PE may help better guide clinical decision-making surrounding the use of these agents.

Carlo J. Iasella, PharmD

Carlo received his PharmD at the University of Pittsburgh School of Pharmacy. His professional interests include research and academia. Next year, he will be starting a two-year fellowship program in clinical outcomes research at the University of Pittsburgh School of Pharmacy.

Mentor(s): James C. Coons, PharmD, BCPS (AQ-Cardiology)

Relapse rate of complicated urinary tract infections in inpatient rehabilitation patients treated with cefuroxime at a tertiary teaching hospital

Jakubek JO, Beam L, Wilson L.

PURPOSE

Complicated urinary tract infections are common in the rehabilitation population due to the high incidence of neurogenic bladder and the use of urinary catheters. Cefuroxime is recommended as a first line agent at our institution for the treatment of complicated urinary tract infections. The objective of this study is to determine the relapse rate of urinary tract infections treated with cefuroxime in the inpatient rehabilitation population at UPMC Mercy Hospital and assess if cefuroxime should continue to be recommended as a first line agent in treating complicated urinary tract infections in this patient population.

METHODS

Quality improvement project approval will be obtained through the University of Pittsburgh Medical Center. Patients who were assigned a bed on the inpatient rehabilitation floors of UPMC Mercy Hospital and had documented urinary tract infection and cefuroxime use will be identified through the electronic medical record system. Adult patients who meet the Center for Disease Control definitions for catheter or non-catheter related urinary tract infections will be included. Data to be collected from the electronic medical record includes: gender, length of stay in rehab prior to urinary tract infection diagnosis, inpatient rehab designation (general, brain injury, spinal cord injury, or stroke), time to relapsed urinary tract infection, culture results, and duration of treatment with cefuroxime. Antibiotic treatment, selection of agent, and duration of treatment chosen for the relapsed urinary tract infection will also be collected. The rate of relapsed urinary tract infection will be calculated in patients who were treated with cefuroxime. Other variables that may affect cefuroxime efficacy in treating complicated urinary tract infections will also be evaluated.

RESULTS

Pending

CONCLUSIONS

Pending

Presented at the 50th ASHP Midyear Clinical Meeting and Exhibition, December 2015.

Joy Olivia Jakubek, PharmD

Joy received her PharmD from Duquesne University Mylan School of Pharmacy in 2015 and is currently completing a pharmacy practice residency at UPMC Mercy Hospital. Upon completion of her residency, she plans to practice as a clinical pharmacist in a hospital or long term care setting.

Mentor(s): Lauren Beam, PharmD

Surveys of older adults' medication-related adherence and self-efficacy: Pharmacist-led InterVentions On Transitions of Seniors (PIVOTS).

Joseph MP, Higbea A, Coley K, McGivney M, Thorpe C, Klatt P, Schleiden L, Zaharoff J, Corbo J, Cox-Vance L, Balestrino V, Sakely H.

PURPOSE

Medication nonadherence is associated with increased health care spending, hospitalization rates, morbidity, and premature mortality. Targeting behaviors of medication nonadherence is crucial for the management of both acute and chronic diseases, particularly in vulnerable older adults. As medication therapy experts, pharmacists are ideally positioned to take on this role. The Voils' Extent of Nonadherence Survey and the Moriskey Medication Adherence Scale both evaluate a patient's medication adherence while the The Self-Efficacy for Appropriate Medication use Scale (SEAMS) assesses a patient's ability to manage medications. The primary objective is to describe this population's self-reported medication adherence and self-efficacy as well as to examine older adults' perceptions of a pharmacist providing direct patient care as an integrated member of their medical team.

METHODS

A survey tool that combined validated measures and newly developed questionnaires was distributed to patients over the age of 65 during outpatient office appointments at two geriatric practices in Western Pennsylvania. Questions focused on patient's interactions with the pharmacist, patient's medication use, medication adherence, and self-efficacy.

RESULTS

Overall, 74 patients were included in the final analysis. Over 70% of patients were comfortable speaking with a pharmacist, believed that the pharmacist knew their medical history, believed that the pharmacist worked together with their physician, and recognized the importance of a pharmacist on the interprofessional team. Patient's overall adherence and medication self-efficacy will be reported.

CONCLUSION

Older adults have a positive perception of pharmacists involved in their care. The description of patient's perceptions and reported medication adherence and self-efficacy will demonstrate the unique and vital role outpatient pharmacists play in providing direct patient care to older adults within an interprofessional team.

Matthew P. Joseph, PharmD, BCPS

Matthew received his BS in biology from the University of Pittsburgh in 2010, followed by his PharmD from the University of Pittsburgh School of Pharmacy in 2014. Last year, Matthew completed a PGY1 pharmacy residency at UPMC St. Margaret. His professional interests include transitions of care, medication safety, and chronic disease state management in the geriatric population. In the future, he hopes to become a clinical specialist with both precepting and research responsibilities.

Impact of a Bedside Discharge Medication Delivery Service on Unanticipated Hospital Readmissions Following Same-Day Surgery

Knoph K, Miller S, Donihi AC

PURPOSE

Pharmacist-led transitions of care programs have emerged in an effort to improve patient care and reduce hospital readmissions. Prior studies have shown that patients often do not fill their prescriptions on the day of discharge due to cost, transportation, long wait times at pharmacies, and poor understanding of how and why they need to take the medication; however, delays in filling new prescription medications have been linked to hospital readmissions. The objective of this retrospective cohort study was to determine if dispensing discharge medications from the Presby Prescription Shop (PPS) at the time of discharge from the same-day surgery service reduces 30-day hospital readmission rates.

METHODS

All patients discharged from the same-day surgery service between 7/1/2014 and 6/30/2015 were included. The PPS database was queried to identify which of these patients had a medication filled prior to discharge. For patients who were readmitted, the reason and time for readmission, patient outcome, and length of hospital stay were determined through electronic chart review.

RESULTS

Of the 6287 patients discharged from the same-day surgery service, 1479 (24%) had at least one prescription filled by PPS prior to discharge, and 4808 (76%) did not use the service. Overall, 260 (4.1%) of the same-day surgery patients had a readmission within 30 days; 146 were unanticipated hospitalizations, and 114 were scheduled inpatient readmissions. The number of patients with an unanticipated inpatient readmission was lower in the patient group that used PPS (20/1479; 1.35%) compared to the group that did not (126/4808; 2.62%; p=0.005). The primary reason for unanticipated readmission was related to medication access in 3 patients (2%), all of whom did not use PPS.

CONCLUSIONS

Patients that filled their discharge medications at the Presby Prescription Shop after a same-day surgery procedure had lower inpatient hospital readmission rates compared with patients that did not.

Presented at the 3rd annual UPMC Pharmacy Resident Research Day. Pittsburgh, PA 2016.

Kristen Knoph, PharmD

Kristen earned her PharmD from the University of Rhode Island College of Pharmacy in 2015. She completed a PGY1 pharmacy practice residency at UPMC Presbyterian in Pittsburgh, PA and will further her training with a PGY2 Pharmacotherapy residency at the Mayo Clinic in Rochester, MN.

Mentor(s): Amy Donihi, PharmD, BCPS

Long-term outcomes associated with initiating a long-acting injectable antipsychotic during an acute inpatient hospitalization

Kohley L, Ellison J, Brennan J, Crabtree R, Stevenson J, Gopalan K, Sakely K, Fabian T

PURPOSE

Non-adherence to oral antipsychotic medications can be a barrier to recovery for patients with schizophrenia or schizoaffective disorder. Even partial adherence can lead to relapse resulting in hospital readmission and increasing health-care costs. Long-acting injectable antipsychotics (LAIAs) were developed to facilitate medication adherence and help prevent this cycle. Current treatment guidelines support the use of LAIAs; however, consistent evidence proving their benefit over their oral counterparts is lacking. Thus, we aimed to evaluate the impact of LAIAs on unplanned acute healthcare utilization and post-hospitalization follow-up.

METHODS

Inpatients with a psychosis spectrum disorder admitted to Western Psychiatric Institute and Clinic and initiated on an LAIA between July 1, 2013 and June 30, 2014 were included in this retrospective analysis. Data were collected in order to evaluate the patients' number of emergency and crisis visits, hospital readmissions, days hospitalized and number of missed and completed outpatient appointments in the 12 months prior to and 12 months after LAIA initiation. Total costs were estimated using current average billing rates at this hospital and associated clinics.

RESULTS

Overall, there was a significant decrease in unplanned healthcare utilization in the post LAIA period resulting in an estimated healthcare savings of $3.4 million. In addition, there was a 50% increase in completed outpatient behavioral health appointments following LAIA initiation suggesting greater engagement and continuity of care post-discharge.

CONCLUSION

Inpatient initiation of LAIA therapy to facilitate medication adherence in patients with psychosis spectrum disorders resulted in significant decreases in unplanned healthcare utilization and associated healthcare costs. The results of this study underscore the benefits of LAIA therapy for this patient population. LAIA therapy was associated with positive patient outcomes as well as a significant reduction in unplanned healthcare utilization and associated costs to the healthcare system.

Presented at the College of Psychiatric and Neurologic Pharmacists Annual Meeting, Colorado Springs, CO, 2016.

Lauren M. Kohley, PharmD

Lauren received her PharmD from Lake Erie College of Osteopathic Medicine in 2014 and completed a pharmacy practice residency at Millcreek Community Hospital in 2015. Upon completion of a psychiatric pharmacy residency, she plans to practice in the acute care setting.

Mentor(s): Tanya Fabian, PharmD, PhD, BCPP

Pharmacist evaluation of medications known to enhance weight gain in prediabetic patients at three family health centers within a family medicine residency

Nathan Lamberton, Bobbie Farrah, Jennie B. Jarrett, Marianne Koenig, James Pagana, Sandra Sauereissen, Frank D'Amico

PURPOSE

Evidence shows that patients with prediabetes can delay the onset of diabetes by altering lifestyle or by initiating antihyperglycemics such as metformin. Often overlooked, medications can contribute to weight gain and alteration of glucose balance. This project aims to explore medication use in patients with prediabetes at three patient-centered medical homes.

METHODS

This QI project was conducted at three family health centers associated with UPMC St. Margaret. The objectives include investigating the use of medications associated with weight gain/altered glucose balance in patients with prediabetes who are overweight or obese; additionally, to identify the prevalence of metformin use in these patients and identify those who could benefit from its addition. The study population included overweight or obese prediabetic patients with ≥1 documented BMI and A1c reading between January 1, 2015 and December 31, 2015. Systematic education of physicians and medical residents will occur at each health center regarding identified medications. The main outcomes of interest include the prevalence of weight-gaining and glucose-altering medication use and number of patients using metformin/potential candidates for metformin initiation.

RESULTS

428 patients were identified for chart review. 145 (34%) were male and 180 (42%) were between the ages of 51 and 65. 118 (28%) patients do no take weight-gaining or glucose-altering medications. The most common weight-gaining medication classes were antidepressants (38%), anticonvulsants (20%) and cardioselective beta-blockers (14%). The most common glucose-elevating medication classes were diuretics (35%), statins (33%) and cardioselective beta-blockers (14%). 373 (87%) patients have never used metformin; 361 (97%) would be potential candidates for its initiation.

CONCLUSIONS

The studied patients are taking medications known to cause weight gain and increase blood glucose levels. Further interventions regarding these medications will require patient-specific consideration due to the critical needs for certain medications such as statins. With such a high percentage of patients never using metformin, we have an opportunity to target at risk patients to initiate metformin to prevent progression to diabetes.

Presentation: Society of Teachers in Family Medicine Annual Conference in Minneapolis, MN in May 2016.

Nathan Lamberton, PharmD

Nate received his PharmD from the Albany College of Pharmacy and Health Sciences in 2015 and is currently completing his PGY-1 pharmacy practice residency at UPMC St. Margaret. Upon completion of his PGY-1 year, he will continue into the PGY-2 ambulatory care/family medicine residency with UPMC St. Margaret.

Mentor(s): Bobbie Farrah, PharmD, BCPS, BCACP

Retrospective Evaluation of the Prescribing Patterns and Utilization of Diabetes Medications in Adults with Type 2 Diabetes Mellitus Over Time

Mainthia N, Lopata EM, Daw JR

PURPOSE

In 2015, the American Diabetes Association updated guidelines for the treatment of type 2 diabetes (DM2). While metformin remains the recommended first-line treatment, the guidelines do not specify which medication to use after metformin and the choice is left to the prescriber. The purpose of this study was to evaluate the utilization and prescribing patterns of diabetes agents in adults with DM2 over time in a managed care organization.

METHODS

This retrospective review utilizing pharmacy claims and medical data was conducted among members in commercial plans. Members with DM2 were identified by diagnosis of non-insulin dependent diabetes (ICD-9 250.x0, 250.x2) or having at least two fills of diabetes medications over a two-year timeframe. The years compared were 2005, 2008, 2011, and 2014. The percentage of members utilizing diabetes medications was evaluated. New-start members were identified using claims data to evaluate that the first fill of diabetes medication was filled in the studied year. Both the pharmacy cost PMPM for diabetic medications and the medical cost PMPM for diabetes-related events was calculated. This study also evaluated the change in A1c goal attainment by comparing members who had available lab data with an A1c ≤7%, 7-9% and ≥9% in 2011 and 2014.

RESULTS

In 2005, there were 5,391 (73.0% of total DM2 population) DM2 medication utilizers and 10,591 (77.6% of total DM2 population) DM2 medication utilizers in 2014. In both the DM2 utilizer population and the new-start DM2 population, the percent utilization of biguanides was greater than all other individual classes in all four years studied. Diabetes-related pharmacy and medical costs was $46.71 and $26.13 in 2005 respectively and $67.51 and $32.62 in 2014 respectively.

CONCLUSION

The percentage of DM2 medication utilizers increased from 2005 to 2014. Biguanides was the most utilized medication class in the DM2 and new-start DM2 population, consistent with guideline recommendations.

Presented at The AMCP Managed Care & Specialty Pharmacy Annual Meeting, San Francisco, CA, 2016.

Namita Mainthia, PharmD

Namita received her PharmD from Northeastern University in Boston, MA in 2015. Currently, she is the PGY-1 managed care pharmacy resident at UPMC Health Plan. Upon completion of her residency, she plans to pursue a career in a managed care organization.

Mentor(s): Erin Lopata, PharmD

In vitro evaluation of oritavancin against vancomycin-resistant Enterococci (VRE)

Marini RV, Nguyen MH, Press EG, Potoski B, Clancy CJ, Shields RK

PURPOSE

Vancomycin-resistant Enterococci (VRE) are common causes of hospital- acquired infections, for which there are few therapeutic options. Oritavancin is a novel lipoglycopeptide agent with broad spectrum activity against Gram-positive pathogens; however, studies against VRE are limited and susceptibility breakpoints have not been established. The objective of this study was to evaluate the *in vitro* activity of oritavancin against VRE isolates from UPMC.

METHODS

Minimum inhibitory concentrations (MICs) of oritavancin and comparator agents were determined by standard broth microdilution methods. Oritavancin and telavancin were tested with supplementation of 0.002% polysorbate-80, as recommended by the manufacturer. Resistance genes, *VanA* and *VanB,* were detected by polymerase chain reaction.

RESULT

37 *E. faecium* and 3 *E. faecalis* were included. All were vancomycin-resistant (median MIC = 512 µg/mL) and 93% (37/40) harbored *VanA*. No isolates harbored *VanB*. Median (range) oritavancin and telavancin MICs were 0.5 µg/mL (≤0.015 – 8) and 8 µg/mL (0.12 - >16), respectively. By comparison, median (range) MICs were 2 µg/mL (0.25 – 16), 2 µg/mL (1 – 8), 0.06 µg/mL (0.03 – 16), and 0.5 µg/mL (0.25 – 8) for daptomycin, linezolid, tigecycline, and quinupristin/dalfopristin, respectively. The corresponding susceptibility rates were 95% (38/40), 93% (37/40), 90% (36/40), and 98% (39/40). Oritavancin MICs were correlated with vancomycin (r= 0.4949; P= 0.0012) and telavancin (r=0.685; P=<0.001), but not other agents. Median oritavancin MICs were similar among isolates susceptible or resistant to standard agents (daptomycin and linezolid); (P= 0.6464). Twenty percent (8/40), 40% (16/40), and 68% (27/40) of isolates demonstrated oritavancin MICs below putative breakpoints of ≤0.12 µg/mL, 0.25 µg/mL, and 0.5 µg/mL, respectively.

CONCLUSIONS

Oritavancin demonstrates variable activity against *VanA*-positive VRE isolates at UPMC. Importantly, however, oritavancin MICs are correlated with vancomycin and telavancin, suggesting that cross-resistance may occur. Rates of resistance to standard agents, daptomycin and linezolid, are remarkably low and should remain the front-line agents against VRE. Further studies are needed to define the clinical utility and susceptibility breakpoints for oritavancin against VRE.

Rachel Victoria Marini, PharmD

Rachel received her PharmD from Duquesne University School of Pharmacy in 2014 and completed her PGY-1 Pharmacy Residency at UPMC Mercy in 2015. Currently, she is completing her PGY-2 Infectious Diseases Pharmacy Residency at UPMC Presbyterian.

Mentor(s): Ryan Shields, PharmD

Use of telavancin for treatment of MRSA-associated pulmonary exacerbations in cystic fibrosis: a case series

Mayr KR, Oleksiuk LM, Robinson KM, Myerburg MM, Pilewski JM

PURPOSE

Cystic Fibrosis (CF) patients with methicillin-resistant *Staphylococcus aureus* (MRSA) experience a more rapid decline in lung function, increased antibiotic use, increased hospitalization and decreased survival. Current CF Foundation's Pulmonary Therapies Committee does not make specific treatment recommendations for patients experiencing MRSA-associated pulmonary exacerbations. While expert opinion and current prescribing trends favor vancomycin and linezolid, alternative therapies are needed due to drug intolerances and treatment experience. The objective of this study is to describe the use of telavancin for the treatment of CF patients hospitalized for MRSA-associated pulmonary exacerbations.

METHODS

A retrospective electronic chart review of CF patients hospitalized for MRSA-associated pulmonary exacerbations and treated with telavancin was conducted between January 2014 and December 2015. Treatment was considered successful if telavancin was completed as planned and/or did not require a change in anti-MRSA therapy. Response to therapy was defined as recovery of greater than or equal to 90 percent of baseline FEV1 at conclusion of therapy. Safety was evaluated by tolerance of treatment. This study was approved by the local institutional review board.

RESULTS

Eleven patients had a total of 19 different hospitalizations where telavancin was used for treatment of an MRSA-associated pulmonary exacerbation. Telavancin was successfully completed in 13 (68%) of the 19 treatment courses. Response to therapy could be assessed in 9 of the 13 completed courses of therapy, with 6 (67%) meeting the pre-specified definition of response. Overall, adverse events occurred in 8 (42%) of 19 treatment courses, with 2 leading to drug discontinuation. The most comment adverse events were pruritus and acute kidney injury, each occurring in 3 treatment courses.

CONCLUSION

Although more research is needed, telavancin may be a possible treatment alternative when treating CF patients with MRSA-associated pulmonary exacerbations.

Presented at the 50th Annual American Society of Health-System Pharmacists Midyear Clinical Meeting, New Orleans, LA, 2015.

Katrina R. Mayr, PharmD

Katrina received her PharmD from the University of California, San Francisco in 2015 and is completing a pharmacy practice residency at UPMC Presbyterian Shadyside. Upon completion of residency, she plans to practice in a hospital setting.

Mentor(s): Louise-Marie Oleksiuk, PharmD, BCPS

Evaluating the Demographics of Patients Affected with Extended Spectrum Beta-Lactamase Infections

McCleary SR, Cooper BE, Ours RL

PURPOSE

The rise in antimicrobial resistance is a major concern to healthcare facilities around the world. At the forefront of concern are Gram-negative bacteria that produce extended spectrum beta-lactamases (ESBLs) due to their resistance to many commonly used antibiotics. This study looked to identify which specific patient populations are at the highest risk for an infection from an ESBL-producing organism.

METHODS

This study was a retrospective chart review of 85 patients that had a culture yield an identified ESBL-producing bacterium at our facility. Patients had demographic data collected as well as other suspected inpatient and outpatient risk factors. The primary outcome was to identify which patient specific factors may be predictive of infections from ESBL-producing organisms. Secondary outcomes evaluated treatment related factors such as which bacterium was isolated and the inpatient length of stay.

RESULTS

The most common demographics included female gender (71%) and white race (85.9%) with an average age of 62.2 years. The majority of patients had a positive urine culture (82.3%) and *E. coli* (88.2%) was the most frequently seen bacterium. Over half of the patients enrolled were on antibiotics in the past 90 days (57.6%) and of those patients 73.5% had taken a beta-lactam antibiotic. Additionally, less than half of the patients had an indwelling catheter at admission (41.2%) and few patients required intensive care admittance (4.7%).

CONCLUSIONS

In our patient population, infections caused by ESBL-producing organisms occur most frequently amongst white females about 62 years of age who have taken antibiotics within the past 90 days. Since few patients required ICU admission and more than half were treated for one day or less, it is probably not necessary to empirically treat any patients at our facility for an ESBL infection unless the patient is critically ill with previous positive culture results.

Presented at UPMC Hamot Research Days in April 2016

Seth McCleary, PharmD

Seth received his PharmD from the Lake Erie College of Osteopathic Medicine School of Pharmacy in 2015 and is currently a resident at UPMC Hamot. Upon completion of his PGY1 residency, he plans to start as a clinical pharmacist at Geisinger Medical Center in Danville, PA.

Mentor(s): Brad Cooper PharmD, FCCM and Rachael Ours PharmD

Disposition Outcomes in Patients with Intracranial Bleeds Anticoagulated with Warfarin versus the Novel Anticoagulants

Miller S, Saber S

PURPOSE

Since the approval of the novel anticoagulants, warfarin is no longer the only agent considered for prevention and treatment of thromboembolism. Novel anticoagulants available on the market include dabigatran, apixaban, rivaroxaban, and edoxaban. There are limited outcome studies comparing warfarin versus the novel anticoagulants in patients who experience intracranial bleeds. This evaluation was conducted to determine if there is a difference in discharge disposition in patients with intracranial bleeds anticoagulated on warfarin versus the novel anticoagulants.

METHODS

A retrospective review from May 1, 2013 – September 30, 2015 was conducted analyzing patients with intracranial bleeds anticoagulated with warfarin or a novel agent. Two study groups were evaluated, including those with traumatic intracranial hemorrhage and those with spontaneous intracranial hemorrhage. Disposition was defined as being discharged home, to rehab, or to a nursing facility. Length of stay and mortality were also evaluated as secondary outcomes. Patients were excluded if ≤18 years of age, pregnant, or if receiving anticoagulation for valvular atrial fibrillation, or for orthopedic thromboprophylaxis. Demographics, laboratory values, drug interactions and medical history were analyzed for association with disposition. Baseline severity, indication for anticoagulant, and use of reversal agent were also collected.

RESULTS

The study did not detect a statistical difference in disposition with the use of warfarin versus the novel anticoagulants in either the trauma or stroke group. Mortality and length of stay associated with the use of warfarin versus the novel anticoagulants were not statistically significant in either the trauma or stroke group.

CONCLUSION

In patients with traumatic intracranial hemorrhage and with intracranial hemorrhage/hemorrhagic stroke, there was no difference detected in disposition, mortality, or length of stay between warfarin versus the novel anticoagulants. Due to the limited number of patients on novel anticoagulants in both the trauma and stroke groups, adequate power was not achieved in the study.

Presented at UPMC Hamot Research Days, Erie Pa., 2016

Susan Marie Miller, PharmD

Susan received her PharmD from the Duquesne University Mylan School of Pharmacy in 2015 and is currently a pharmacy practice resident at UPMC Hamot. Upon completion of her residency, she plans to practice in the hospital setting as a clinical pharmacist.

Mentor(s): Steve Saber, PharmD, BCPS

Evaluation of Factors Influencing Dosing and Clinical Response to Oral Treprostinil

Modany AD, Coons JC, Miller T, Empey P, Simon M

PURPOSE

Oral treprostinil (TRE) is a novel prostacyclin formulation recently approved for pulmonary arterial hypertension (PAH). Real-world experience with use of oral TRE is limited, particularly when transitioning from inhaled and parenteral prostacyclin therapies. Furthermore, wide inter-individual variability in dosing requirements and treatment response with oral TRE has been observed. Therefore, the purpose of our study was to describe the use of oral TRE at a large PAH referral center and to investigate potential sources of variability in dose requirements and treatment response.

METHODS

This was a two-phase study design: phase one was a retrospective cohort review of patients that received commercial oral TRE at our institution from December 2013 to present; phase two was an exploratory analysis of blood samples from patients with PAH on oral TRE therapy. Pharmacogenomic analysis was performed to evaluate single nucleotide polymorphisms in the genes relevant to oral TRE metabolism. The primary objective of our study was to describe our clinical experience with oral TRE. Our secondary objective was to investigate sources of variability in dose requirements and treatment response. Descriptive statistics will be reported for categorical and continuous data. Regression will be performed to evaluate variables associated with oral TRE dose and treatment response.

RESULTS/CONCLUSIONS

Sixteen patients received oral TRE at UPMC Presbyterian Hospital during the study period. Three patients were prostacyclin naïve, whereas the remaining 13 were transitioned from other TRE formulations. The mean total daily dose achieved in these patients at the most recent clinic follow-up was 19.4 mg ± 14.1 mg. Adverse events were experienced in 14/16 (88%) patients. Types of adverse events encountered were: headache, gastrointestinal-related, flushing, edema, dizziness, and jaw pain. We anticipate that our final results will provide further perspective into the role of oral TRE in the contemporary management of patients with PAH.

Ashley D. Modany, PharmD

Dr. Modany received her PharmD from Duquesne University (Mylan School of Pharmacy in 2014. She completed her PGY1 Acute Care Pharmacy Residency at Allegheny General Hospital and is currently a PGY2 Cardiology Pharmacy Resident at UPMC Presbyterian-Shadyside Hospital. Next year, she will be completing an Advanced Practice Simulation Fellowship at the VA Medical Center.

Mentor(s): James Coons, PharmD, BCPS(AQCardiology)

Physicians' Perspectives on Physician Training and Interprofessional Teams after Involvement in Pharmacy Student Learning

Montgomery JM

PURPOSE

Increasingly, medical fellowship and residency programs have placed an emphasis on precepting learners and many have formal programs for training physicians to be preceptors. While the principles learned in these programs can be applied to precepting other disciplines, formal training on precepting interdisciplinary teams is limited. One such avenue for training may be to serve as standardized colleagues for student learning in other disciplines. From the learner's perspective, standardized patient and standardized colleague activities have been shown to improve overall student performance and have positive effects on students' perceived confidence; however, it is unclear if the activity can also be used to enhance the colleague's learning as well. The purpose of this study is to assess the impact of physician's participation as standardized colleagues in third-year pharmacy student learning on the physicians' perspectives towards physician training and precepting an interdisciplinary healthcare team.

METHODS

Research participants were enrolled after participation in the University of Pittsburgh School of Pharmacy third-year pharmacy student capstone project as standardized colleagues. Individual interviews were conducted using a semi-structured interview with questions mirroring the Interprofessional Education Collaborative (IPEC) Core Competencies for Interprofessional Collaborative Practice. A thematic analysis will be conducted using NVivo software.

RESULTS/CONCLUSIONS

Results and conclusions are currently pending.

James Michael Montgomery, PharmD

James received his PharmD from the University of Pittsburgh School of Pharmacy in 2014. He completed his PGY1 pharmacy residency at the University of North Carolina Eshelman School of Pharmacy and Community Care of North Carolina. His practice interests include primary care, behavioral health, and academia.

Mentor(s): Deanne Hall, with contributions from Susan Meyer and Kristine Schonder

Impact of Prior Authorization Programs on the Utilization of High-Risk Medications

Ni D, Holowka J, Bandfield P, Esper S, Heasley J, Nichols L

PURPOSE

The use of high-risk medications (HRMs), identified by the American Geriatrics Society Beers Criteria, in patients aged 65 years or older has been shown to result in a greater risk of adverse effects and an increased cost of care. To help decrease HRM utilization, a Medicare Part D plan revised its HRM prior authorization (PA) criteria in 2015 to require trial and failure or intolerance to a safer non-HRM alternative. The objective of this study is to evaluate the impact of the revised PA criteria on the utilization of HRMs.

METHODS

A retrospective analysis that examined the impact of revised PA criteria on the utilization of four HRMs—cyclobenzaprine, hydroxyzine hydrochloride (HCl), promethazine, and thioridazine—was completed for a Medicare Part D plan. Members 65 years of age or older who were enrolled in the plan between January 1, 2014 and December 31, 2015 and had a PA request or a claim for one of the four HRMs were included in the study. PA approval rate, number of HRM utilizers (defined as members with ≥ 2 fills of the HRM), and utilization of non-HRM alternatives were compared for 2014 and 2015.

RESULTS

There were statistically significant decreases in the number of members with PA approval and the number of HRM utilizers from 2014 to 2015 for all four HRMs. Comparing 2014 and 2015, members with PA approval decreased 24% for cyclobenzaprine, 26% for hydroxyzine, 28% for promethazine, and 16% for thioridazine. The number of HRM utilizers decreased 0.15% for cyclobenzaprine, 0.11% for hydroxyzine HCl, 0.19% for promethazine, and 0.01% for thioridazine. Utilization of non-HRM alternatives increased for cyclobenzaprine, hydroxyzine HCl, and promethazine.

CONCLUSIONS

The 2015 PA programs were associated with lower approval rate and lower utilization of all four HRMs compared to the 2014 PA programs.

Presented at 28th Annual Academy of Managed Care Pharmacy Meeting & Expo, San Francisco, CA., 2016.

Danfeng Ni, PharmD

Danfeng received her PharmD from Wayne State University Eugene Applebaum College of Pharmacy and Health Sciences in 2015 and is currently completing a PGY-1 managed care pharmacy residency at CVS Caremark. Upon completion, she plans to practice in a managed care organization to help improve care while lowering costs.

Mentor(s): Paul Bandfield, PharmD

Use of a Decision Aid to Assist Pharmacists in Providing Targeted Interventions to Overcome Patients' Barriers to Medication Adherence

Nierste N, Berenbrok LA, Smith Cooney S, McCormick K, Coley K, McGivney MS

OBJECTIVE

The purpose of this study is to evaluate the impact of using a decision aid in an independent pharmacy to guide pharmacists in identifying and resolving common adherence barriers.

METHODS

Patients over 18 years old presenting to a rural independent pharmacy with a prescription were eligible to participate. Patients were screened for five common adherence barriers: understanding, memory issues, dexterity problems, sight impairment, and impaired swallowing using a five-item questionnaire. A decision aid to counsel patients who screened positive for an barrier was developed and utilized. For each barrier, the decision aid provided potential adherence solutions. Patients were then offered the adherence solution(s) in a brief pharmacist encounter. Progress toward resolution of a barrier(s) was assessed by phone 2 and 6 weeks post-intervention. A brief survey was also administered at 2 and 6 weeks to assess patient satisfaction. Participating pharmacists were interviewed at the end of the study period to assess their satisfaction with using the decision aid. Patient surveys were analyzed using descriptive statistics. This study is approved by the University of Pittsburgh IRB.

RESULTS

Thirty five patients (39%) screened positive for at least one barrier to adherence. The most common barrier identified was memory in 28 patients (80%). The majority, 77% of the patients agreed to implement a solution to their barrier after pharmacist counseling. At 2 weeks, 2 patients reported that their barrier to adherence as resolved, and 10 patients reported no change.

CONCLUSIONS

Over one-third of the participants reported a barrier to adherence that could likely inhibit them from taking their medication correctly. The decision aid facilitated meaningful conversations between the pharmacist and patient to resolve adherence barriers.

Presented at APhA Annual Conference 2016 in Baltimore, MD.

Nicole Nierste, PharmD

Nicole received her PharmD from Purdue University College of Pharmacy in 2015. She is currently completing her PGY1 Community Pharmacy with University of Pittsburgh. She will continue her training as a PGY2 in Ambulatory Care resident at St. Vincent in Indianapolis to pursue a career in direct patient care.

Mentor(s): Luke Berenbrok, PharmD

Have you heard about our sensational HPV trial? A family medicine team vaccination effort

Payette NJ, McGaffey, AL, Middleton D, Klatt PM, Siegel JI, Zhao J

PURPOSE

Our urban family health center human papillomavirus (HPV) vaccine series completion rate is about 39% for the 3-dose series. This study tested a pharmacist-championed and family medicine team campaign to improve the HPV bi-weekly (every other week) vaccination rates by 25% compared to last year and to increase vaccine series completion after pharmacist outreach. We focused on rewarding vaccinations and progress.

METHODS

A pharmacist and physician vaccine champion identified eligible patients for HPV vaccination daily, including males ages 9-21 and female patients 9-26. Health center staff trained by the pharmacist-champion joined the goals and methods listed and wore "HPV awareness" T-shirts each Friday. Waiting room entrants voted on best staff-produced HPV contest posters. Identified patients and parent/guardians were counseled on eligibility for vaccination including risks and benefits, and offered blanket consent to complete the vaccine series. Vaccinated patients were offered entry for a bi-weekly raffle (grand prize $50 Target® gift card) and immediate sensory feedback and awareness prizes. Sensory feedback rewards included hitting the "HPV gong" (sound) and choosing a prize item from the sight, smell, taste, touch, or sound drawer. The pharmacist notified patients through their preferred method of contact for due vaccinations, made appointments, and applied our new HPV vaccination standing orders. The pharmacist identified and contacted additional patients for series completion through report and chart review.

RESULTS

Overall, bi-weekly vaccination rates with a champion vaccine effort and rewards reached 46% higher on average year 1 compared with year 2. Pharmacist outreach to complete the HPV series had an additional completion rate 42.4% (43/110) for eligible patients.

CONCLUSIONS

A championed vaccination effort and fun sensory rewards have improved HPV vaccination rates at our family health center and improved patient-provider vaccine counseling.

Presented at the Pennsylvania Academy of Family Physicians Research Day, Pittsburgh, PA, 2016.

Accepted for presentation at All Together Better Health Conference, London, England, September 2016.

Nicole Payette, PharmD, BCPS

Nicole received her PharmD from the Philadelphia College of Pharmacy in 2016 and completed her PGY1 at UPMC St. Margaret. Upon finishing her PGY2 in family medicine/ambulatory care, also at UPMC St. Margaret, Nicole will be heading to Christiana Health System and practicing as a family medicine clinical pharmacy specialist.

Mentor(s): Trish Klatt, PharmD, BCPS

A Retrospective Study to Evaluate the Prescriber's Treatment Response of an Acute Kidney Injury (AKI) Alert in a Hospital System

See M, Kellum JA, DeAlmeida D, Kane-Gill SL

PURPOSE

In 2012, the KDIGO Clinical Practice Guideline on AKI was published and proposed a single definition of AKI for use in practice and research. The guideline recommended that patients of high risk for AKI be identified, monitored, and managed accordingly to susceptibilities and exposures leading to the development of AKI. In line with these recommendations, a clinical alert was implemented in electronic medical record (EMR) at UPMC in May 2013 to detect patients who developed AKI, using changes in serum creatinine over time. The objective of this study was to evaluate if the alert successfully prompted corrective actions by the prescriber with regards to drug therapy and management of patients with AKI.

METHODS

This was an observational, retrospective cohort study that compared patients selected before the implementation of the alert (pre-alert group), with those after the alert was implemented (post-alert group). All patients were reviewed every 24 hours, up to 72 hours after the time of AKI diagnosis, for changes made to their existing drug regimen (dose, frequency, drug stopped, new drug started), and if they received any interventions to treat their AKI (e.g. fluid administration, diuretics or dialysis).

RESULTS (PRELIMINARY)

In the post-alert group of 100 patients, 60% were identified to have Stage 1 AKI, followed by Stage 2 (23%) and Stage 3 (17%) AKI. The major cause of AKI, as documented in the clinical notes, was dehydration (22%). In patients that were prescribed potential nephrotoxic drugs before their AKI episode, 50 (32.5%) out of a total of 154 drugs were stopped within 24 hours of their AKI diagnosis. For the treatment of AKI, administration of fluids (namely crystalloids) accounted for 68% of cases. Other types of treatments given were: dialysis (10%), bicarbonate (9%), diuretics (7%) and vasopressors (5%).

CONCLUSION:

The pre-alert group is under review and conclusions are forthcoming.

Michelle See, PharmD

Michelle is a critical care pharmacist from Singapore. She received her PharmD from the National University of Singapore in 2012 and completed a critical care training program at the University of Pittsburgh, School of Pharmacy in 2016.

Mentor(s): Sandra L. Kane-Gill, PharmD, MS

Characterization of guideline evidence for off-label medication use in the intensive care unit (ICU)

Shoulders BR, Smithburger PL, Tchen S, Kane-Gill SL

PURPOSE

Non FDA or off-label approved medication prescribing occurs commonly in the ICU. Off-label medication use creates a concern for untoward side effects; however, this worry may be alleviated by supportive literature. In fact, off-label medication use is recommended in some clinical practice guidelines. We evaluated the evidence behind off-label medication use by determining the presence of guideline support and compared graded recommendations to an online tertiary resource, DRUGDEX.

METHODS

Off-label medication use was identified prospectively over three months in medical ICUs in three different academic medical centers. Off-label medication use was limited to indications only. A search was conducted in PubMed using the medication or medication class and the off-label indication to identify guidelines or consensus conference summaries. The national guideline clearinghouse website was also searched using the off-label indication.

RESULTS

251 off-label medication indications identified in the prospective study were evaluated for corresponding guideline evidence. Guidelines were identified for 59% (148/251) of indications for a total of 241 guidelines. Eighty-nine indications had one guideline identified, 42 had two guidelines, and 18 had ≥3 guidelines associated with the medication and indication. Of the guidelines available, 90% (217/241) supported the off-label indication.

CONCLUSION

Guideline evidence gradings exist for 59% of off-label medication use in the ICU. With the presence of this supporting evidence, off-label use may not be as concerning as anticipated. Of this supportive evidence, however, a majority is inconsistent with DRUGDEX. With these inconsistencies in mind, providers should consider utilizing guidelines in order to inform strength of evidence for off-label medication use in the ICU.

Bethany Shoulders, PharmD

Bethany received her PharmD from the University of Tennessee College of Pharmacy in 2014 and completed a pharmacy practice residency at The Johns Hopkins Hospital in 2015. Upon completion of the PGY2 critical care residency at UPMC, she plans to practice as a clinical assistant professor at the University of Florida College of Pharmacy.

Mentor(s): Sandra Kane-Gill, PharmD, MS, FCCM, FCCP and Pamela Smithburger, PharmD, MS, BCPS

Implementing pharmacist-led medication education for hospitalized patients with COPD

Skezas NA, D'Antonio NN, Heintz JA.

PURPOSE

To evaluate the impact of pharmacist-led medication education and discharge counseling on COPD patients' post-discharge adherence rates and on the frequency of patients' health care utilization thirty days post-discharge.

METHODS

All patients who were discharged from UPMC McKeesport with prescriptions for the treatment of COPD were separated into two groups determined by whether or not they received supplemental medication education by a pharmacy resident prior to discharge. Both patient groups were subject to education provided by nursing staff on any newly prescribed medications, which is the standard practice at UPMC McKeesport. Patients were not randomized to receive education from the pharmacy resident; supplemental education was offered based on the availability of the resident. Education points discussed by the pharmacy resident included: frequency of use, reason for use, and inhalation techniques. Patients in both groups were called by the pharmacy resident thirty days post-discharge to assess medication compliance and health care utilization.

RESULTS

Two hundred thirty patients participated in this quality improvement project (80 received education from the pharmacy resident, 150 did not). Health care utilization within thirty days post-discharge, including re-admissions and emergency room visits, were 17.4% in the pharmacy resident education (PRE) group and 31.6% in the standard practice (SP) group ($p = 0.22$). Medication adherence was 30% in the PRE group and 45.4% in the SP group ($p = 0.47$).

CONCLUSION

The implementation of pharmacist-led medication education had an inconclusive effect on patients' post-discharge adherence rates and the frequency of patients' health care utilization within 30 days post-discharge. Medication adherence rates and the frequency of patients' health care utilization were both reduced in the PRE group, though the data was not statistically significant.

Nicholas A. Skezas, PharmD

Nicholas earned his PharmD from Duquesne University Mylan School of Pharmacy with a concentration in acute care in 2009. Upon completion of a pharmacy practice residency from UPMC McKeesport, he plans to practice in the hospital setting.

Mentor(s): Jerad A. Heintz, PharmD, MBA

Effects of an Interprofessional Geriatric Medical Service on Outcomes in Older Adults with Hip Fractures

SP Springer, E Cassidy, K Wilhelmy, F D'Amico, P Levy, H Sakely

PURPOSE

Hip fractures result in excess mortality, cost, and loss of independence in older adults. Studies have shown significant differences in length of stay (LOS) with geriatric teams, however, limited data exists for the inclusion of a geriatric pharmacist. UPMC St. Margaret Geriatric Medicine Service (GMS) is an interprofessional team of physician and pharmacy residents, geriatricians and geriatric pharmacists. The goal of this study was to assess the impact of the GMS on outcomes in elderly hip fracture patients admitted to St. Margaret, compared to those who were treated by non-GMS teams.

METHODS

A retrospective chart review was conducted to compare hospital LOS, rates of complications (venous thromboembolism [VTE], delirium), 30-day readmission, and appropriate post-hip fracture medications on discharge between GMS and non-GMS patients. All patients 65 years or older presenting to St. Margaret with a hip fracture between January 2013 and September 2015 were included. Patients were excluded if they experienced in-hospital hip fractures, were admitted under observation, or did not have a surgical intervention. Both parametric (t-test) and non-parametric (chi-square) statistical tests were utilized. All analyses were performed using SAS software.

RESULTS

A total of 188 patients were reviewed: 88 and 100 patients on the GMS and non-GMS, respectively. No significant difference was seen between LOS (p=0.52; 95% CI [-2.38-1.2]), VTE (p=0.55), or 30-day readmission (p=0.07). Documentation of delirium was significantly greater in the GMS (30.7% vs. 18.0%, p=0.04). There were significant differences between rates of prescribing calcium (73.9% vs. 26%, p<0.001), vitamin D (89.8% vs. 47.0%, p<0.001), and bisphosphonates (25.0% vs. 5.0%, p<0.001).

CONCLUSION

The GMS had more appropriate post-hip fracture medications on discharge. This study may indicate that the inclusion of a geriatric-trained pharmacist may improve appropriate prescribing on discharge in geriatric patients who experience a hip fracture.

Presented at the 49th Annual Spring Conference of The Society of Teachers of Family Medicine. Minneapolis, MN 2016

Sydney P. Springer, PharmD

Sydney Springer received her PharmD from the University Of Rhode Island College Of Pharmacy in 2015 and is completing her PGY-1 pharmacy practice residency at UPMC St. Margaret. Upon completion of her PGY-1 year, she will go on to complete a PGY-2 in Geriatrics at UPMC St. Margaret.

Mentor(s): Elizabeth Cassidy, PharmD, BCPS

Evaluation of Adverse Events Associated with Kidney Transplantation and Thymoglobulin Induction Therapy

Strnad K, Kim C, Shimko K, Schonder KS

PURPOSE

At UPMC Presbyterian Hospital, kidney transplant recipients (KTRs) receive anti-thymocyte globulin (rabbit) as an induction therapy to reduce the risk of rejection. Recently, cardiopulmonary adverse events occurred in numerous patients during a perioperative infusion of Thymoglobulin. This study was conducted to describe the incidence of cardiopulmonary adverse events associated with Thymoglobulin and to determine patient-specific factors increasing the risk of these events in KTRs.

METHODS

A retrospective chart review of 200 consecutive KTRs between August 1, 2014 and August 26, 2015 was conducted. An adverse event was categorized as either cardiovascular or pulmonary in nature. Each patient's medical chart was thoroughly reviewed to find his or her ICU admission status and documented hypotension, pulmonary edema, or acute respiratory distress syndrome following the administration of Thymoglobulin. The primary outcome was the number of adverse events. In addition, secondary endpoints, patient-specific characteristics, were compared between the groups with or without adverse events.

RESULTS

A total of 41 (20.5%) patients had adverse events associated with the perioperative administration of Thymoglobulin. Within this subset, 15 (36.6%) patients had cardiovascular events, 18 (43.9%) patients had pulmonary events, and 8 (19.5%) had both. Data analysis of patient-specific factors between the groups with or without adverse events is in process.

CONCLUSIONS

Adverse events associated with Thymoglobulin induction therapy in KTRs may occur more frequently than reported. These patients were admitted to an ICU and likely to require vasoactive agents or mechanical ventilation that prolongs the hospital stay. Further studies are warranted to examine specific risk factors for cardiopulmonary adverse events following Thymoglobulin induction in KTRs.

Presented at the 3rd Annual UPMC Pharmacy Resident Research Day. Pittsburgh, PA. 2016.

Kyle Strnad, PharmD

Kyle received his PharmD from Thomas Jefferson University School of Pharmacy in 2015 and will complete his PGY1 Pharmacy Practice Residency at UPMC Presbyterian Hospital in 2016. He is excited to stay on board next year to complete a PGY2 Critical Care Pharmacy Residency and then ultimately pursue a career in an academic, tertiary teaching hospital.

Mentor(s): Catherine Kim, Kristine Schonder, Kristen Shimko

Retrospective review of patients receiving intravenous acyclovir and the incidence of nephrotoxicity

Szelc A, Andrzejewski C, Freedy H, Wilson LM

PURPOSE

Nephropathy due to crystal formation is a common adverse drug effect of intravenous (IV) acyclovir use, resulting in a reported incidence of 15% to 45%. The objectives of this Quality Improvement study are to investigate the incidence of acyclovir-induced nephrotoxicity in patients at UPMC Mercy, identify patient risk factors contributing to nephrotoxicity, and record any methods used to avoid this adverse drug event. The information obtained will provide our institution with an indication of the frequency and severity of this problem and may be useful in the development of an administration protocol if this appears to be necessary based on the study results.

METHODS

This retrospective study reviewed adult patients hospitalized at UPMC Mercy who received at least two days of IV acyclovir. Inpatients admitted from October 1, 2012 to October 1, 2015 were identified via data extraction software and reviewed for inclusion. Patient demographics, laboratory values, medication orders, and information from provider progress notes were manually abstracted from electronic hospital records. Patients were assessed for rapid rises in serum creatinine and blood urea nitrogen within 12 to 48 hours of intravenous acyclovir administration, and evaluated for acute kidney injury according to KDIGO clinical practice guidelines. Medications orders were reviewed for start and end dates for of IV acyclovir, IV fluid regimens, and concomitant nephrotoxic medications.

RESULTS

In progress

CONCLUSIONS

Pending

Presented at ASHP 2015 Midyear Clinical Conference, New Orleans, LA

Alexa Marie Szelc, PharmD

Alexa received her PharmD from the Duquesne Unversity Mylan School of Pharmacy in 2015. After completion of her residency, Alexa plans to practice in a hospital setting that includes both staffing and clinical responsibilities.

Mentor(s): Christina Andrzejewski, PharmD, BCPS

Are Electronic Cigarettes the New Nicotine Replacement? The Perspective of Primary Care Providers

Tang VW, Ylioja T, Pater KS, Davis E

PURPOSE

Electronic cigarettes (ECs) are tobacco-free, battery-powered, nicotine delivery devices which have been marketed as a safer alternative to tobacco cigarettes. However, there are no studies confirming their long-term safety and efficacy for smoking cessation. Primary care providers (PCPs) are often the first clinicians that patients turn to for smoking cessation counseling but little is known about physician experiences, knowledge, and attitudes on EC use for smoking cessation.

METHODS

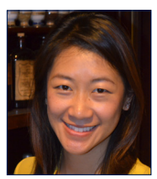
An IRB-approved survey was conducted amongst PCPs at UPMC Presbyterian, Shadyside, McKeesport, and St. Margaret in January 2016. Outcome measures included physician experiences, attitudes, and beliefs on EC use for smoking cessation. Descriptive statistics were generated for all variables. ANOVAs and t-tests were used to compare continuous variables and chi-square tests were used for categorical variables.

RESULTS

A total of 160 surveys were completed. Approximately 73.6% reported having cared for a patient using ECs and 63.9% had been asked about the safety or efficacy of ECs. However, 41.1% were "unsure" if ECs represent a helpful smoking cessation strategy and 50.0% believed that they should not be recommended. Attendings were more likely to recommend EC compared to residents at 30.1% and 9.43%, respectively (p=0.003). Attendings also reported significantly higher levels of confidence compared to residents in their counseling abilities on steps such as assessing willingness to quit, discussing prescription and non-prescription treatment options, motivating patients to quit, and monitoring patients' progress during quit attempts. Physicians who had recommended ECs were also more likely to view themselves as having more knowledge on ECs where 63.4% reported having a "moderate" amount of EC knowledge vs. 27.8% of physicians who had never recommended ECs.

CONCLUSIONS

There is rising patient use and inquiry of ECs amongst PCPs. Most physicians remain unsure on the efficacy of ECs for smoking cessation and would not recommend its use. However, increased years in practice, greater confidence in counseling abilities, and knowledge on ECs appear to increase physician willingness to view ECs as a potential smoking cessation strategy.



Vivian W. Tang, PharmD

Vivian received her PharmD from Oregon State University School of Pharmacy in 2014 and completed a PYG-1 Pharmacy Practice Residency at UPMC Shadyside in 2015. Upon completion of her PGY-2 Ambulatory Care Residency, she will be joining Providence Medical Group in Portland, Oregon as an Ambulatory Care Pharmacist.

Mentor(s): Karen S. Pater, PharmD, BCPS, CDE

Evaluation of Pharmacy Services in the Emergency Department at Magee-Womens Hospital of UPMC

Tokarski R, Burke C

PURPOSE

Based on growing trends, Magee-Womens Hospital of UPMC (MWH), a small teaching and specialty women's hospital, has recently expanded pharmacy services to the emergency department (ED). The purpose of this quality analysis is to evaluate this service by determining if the number and significance of pharmacy interventions improve with increasing hours of clinical pharmacist presence in the ED.

METHODS

A retrospective, observational study design was used to compare the number and significance of ED interventions during three time periods: before implementation of a pharmacy service, after implementation of clinical services for 20 hours per week, and after expansion of service to 40 hours per week. All interventions documented into pharmacy databases during each time period were reviewed and a level of significance was determined by three clinical pharmacists based on a previously published and validated scale. The scale is a six-point Likert scale, with a rating of one considered extremely significant, five considered no significance and six considered adverse significance.

RESULTS

The numbers of interventions during the pre-implementation, post-implementation and expansion time periods were 15, 59 and 343 interventions, respectively. This correlated to a rate of 0.00254 interventions per patient seen in the ED in the pre-implementation period, 0.0103 interventions per patient in the post-implementation period and 0.0518 interventions per patient in the expansion period ($p<0.001$). Average significance was also significant with a pre-implementation average of 3.8, post-implementation average of 3.17 and expansion average of 3.02 ($p<0.001$). Additionally, the number of interventions considered at least "significant" (rating of three or better) was six in the pre-implementation, 42 in the post-implementation, and 323 in the expansion periods ($p<0.001$).

CONCLUSION

Increasing pharmacy services in the ED by increasing the amount of dedicated pharmacist time at MWH led to a significant increase in both the number and significance of pharmacy interventions.

Presented at the 50th ASHP Midyear Clinical Meeting and Exhibition, New Orleans, La., 2015.

Rebecca Tokarski, PharmD

Rebecca received her PharmD from the University of Pittsburgh in 2015 and is currently a PGY-1 Pharmacy Practice Resident at Magee-Womens Hospital of UPMC.

Mentor(s): Clay Burke, PharmD

Rounding Together: Collaborative Learning Between Medical and Pharmacy Residents

Trietley GS, Jarrett JB, Haver AE, Wilson SA, Farrah RM, Macken MN

PURPOSE

Pharmacy residents in American Society of Health-System Pharmacists (ASHP)-accredited residency programs must meet educational outcomes in patient care, practice advancement, leadership and management, and teaching. Similarly, the Accreditation Council of Graduate Medical Education (ACGME) requires that graduating family medicine residents are competent in six core competencies: patient care, medical knowledge, systems-based practice, practice-based learning and improvement, professionalism, and communication. For both, programs are required to provide teaching and learning activities that assist learners in developing these areas. For programs with both family medicine and pharmacy residencies, the opportunity exists for these residents to see patients collaboratively prior to interprofessional rounds in order to develop required competencies for each profession. The purpose of this research is to measure the educational impact of an interprofessional learning activity in which medical and pharmacy residents collaboratively saw patients on two inpatient services.

METHODS

At a 249-bed community teaching hospital, first-year medical residents saw patients with first-year pharmacy residents once weekly. At the rotation's conclusion, a survey was emailed to all participating learners. The survey asked 1) baseline information regarding the learner, including prior interprofessional experiences, 2) Likert scale questions assessing development of competencies, and 3) open-response questions regarding the experience's strengths and weaknesses. The medical resident survey was based on ACGME milestones most likely to be developed through the activity, representing all 6 core competencies. The pharmacy resident survey was based on ASHP-required educational goals most likely to be developed through the activity, representing all 4 outcome areas. Survey responses were assessed with descriptive statistics.

RESULTS

All family medicine residents (n=4) reported development in patient care, practice-based learning and improvement, professionalism, and communication. 75% (3/4) reported development of medical knowledge, and 25% (1/4) reported development of systems-based practice. For pharmacy residents (n=5), the percent who reported development in each educational outcome were as follows: 100% for leadership and management (5/5), 80% for teaching (4/5), 60% for patient care (3/5), and 60% for advancing practice (3/5). Time was reported by participants as a barrier to the learning activity.

CONCLUSIONS

The practice of medical and pharmacy residents seeing patients together may assist programs in the implementation of interprofessional, collaborative learning activities designed to develop resident knowledge in the areas of required competencies.

Presented at the Pennsylvania Academy of Family Physicians CME Conference & UPMC 43rd Refresher Course in Family Medicine. Pittsburgh, PA. March 12, 2016. Works in-progress presentation at the 49th STFM Annual Spring Conference. Minneapolis, MN. May 2, 2016. Accepted for poster presentation at the All Together Better Health VIII Conference. Oxford, UK. September 6-9, 2016.

Gregory Stephen Trietley, PharmD

Gregory S. Trietley, PharmD, BCPS is a PGY2 ambulatory care pharmacy resident at the UPMC St. Margaret Lawrenceville Family Health Center in Pittsburgh, PA. He is a graduate of the University of Pittsburgh School of Pharmacy and completed his PGY1 pharmacy practice residency with UPMC St. Margaret.

Mentor(s): Jennie B. Jarrett, PharmD, BCPS, MMedEd

Efficacy of fosfomycin for the treatment of vancomycin-resistant enterococci urinary tract infections.

Venturella E, Ganchuk S, Wilson L

PURPOSE

Vancomycin-resistant enterococci (VRE) urinary tract infections (UTIs) have become an ever-growing concern for clinicians. Over the past two decades the proportion of enterococci resistant to vancomycin has risen from less than 1% to greater than 28%. The management of VRE UTIs have moved to the forefront of clinicians' prevention, isolation and treatment efforts due to the increasing frequency of VRE combined with the limited treatment options for these infections. Many therapeutic options for the management of VRE UTIs have been explored including ampicillin, amoxicillin, daptomycin, fosfomycin, imipenem-cilastatin, linezolid, nitrofurantoin, quinupristin-dalfopristin, tetracycline and tigecycline. While the utility of fosfomycin has been explored against many different bacteria, only *E.coli* and *E. faecalis* have established Clinical Laboratory Standards Institute (CLSI) susceptibility breakpoints with a fosfomycin MIC less than or equal to 64mcg/mL considered susceptible for the treatment of UTIs.

METHODS

This quality improvement project is a retrospective, observational, single-center cohort study that evaluated adult patients who received fosfomycin for treatment of VRE UTI. Patients were included in the study if they had a urine culture containing greater than or equal to 100,000 colony forming units (CFUs) of ampicillin/vancomycin resistant-*enterococcus* as the sole urinary isolate *and* urinary urgency, frequency, dysuria *or* a urinalysis containing greater than or equal to 10 white blood cells per high-power field. Patients were excluded from the study if they were less than 18 years old, pregnant, febrile or had leukocytosis, flank pain, nephrolithiasis, an indwelling catheter or other urologic devices, exposed to an antibiotic with VRE activity in the preceding 7 days or within a period deemed confounding in accordance with the drugs half-life.

RESULTS

Pending

CONCLUSIONS

Pending

Previously presented at American Society of Health System Pharmacists Midyear Clinical Meeting; December 2015; New Orleans, Louisiana

Evan Venturella, PharmD

Evan is from Pittsburgh where he studied chemistry at the University of Pittsburgh before receiving his PharmD from Jefferson School of Pharmacy in Philadelphia, Pa. His clinical areas of interest include infectious diseases and emergency medicine. Evan plans to complete a PGY2 in infectious diseases after his PGY1 pharmacy residency is complete.

Mentor(s): Laura Wilson and Steve Ganchuk.

Reversal of Cardiac Allograft Vasculopathy with Sirolimus Therapy

Vu A, Althouse AD, Teuteberg JJ, Shullo MA

PURPOSE

Cardiac allograft vasculopathy (CAV) is a significant complication after cardiac transplantation (CTX). The use of sirolimus has been shown to attenuate CAV, but it has not been established whether patients on sirolimus are more likely to have a reversal of angiographic CAV.

METHODS

A retrospective analysis of prospectively collected data for all CTX recipients at a single center from 2008-2015. Patients were included if they had a baseline angiogram with CAV and a follow up angiogram. CAV was defined as 1) ISHLT CAV1 or greater, or 2) 30% or greater stenosis. The primary outcome was CAV reversal, defined as a downgrade of CAV classification or a reduction of ≥30% decrease in stenosis. Cox proportional-hazards models were used to assess rates of CAV reversal in sirolimus versus non-sirolimus patients while accounting for differences in follow-up time.

RESULTS

There were 82 patients included with CAV1 or greater and subsequent catheterization, 28 (34%) patients received sirolimus therapy. There were no differences in baseline characteristics between patients on sirolimus and not on sirolimus: median age 57.2 years, 85% male, 94% Caucasian. There was no difference in follow-up time from CAV diagnosis to last catheterization between both groups (732 days vs 740 days, p=0.62). 10/28 (35.7%) of the sirolimus therapy patients experienced CAV reversal at follow-up catheterization, while 28/54 (51.9%) of the non-sirolimus patients experienced CAV reversal (HR 0.56, p=0.145). Of the 29 patients with a 30% stenosis, 15 (52%) patients received sirolimus therapy. When evaluating CAV reversal based on a ≥30% decrease in stenosis, 10/15 (66.7%) of the sirolimus therapy patients experienced CAV reversal, while 7/14 (50%) of the non-therapy patients experienced CAV reversal (HR 1.14, p=0.793).

CONCLUSION

Patients treated with sirolimus are not more likely to experience angiographic CAV reversal compared to patients not on sirolimus therapy. A more sensitive assessment such as IVUS or OCT is needed to determine the long-term impact of sirolimus on CAV.

Anh Hoang Vu, PharmD

Anh received her PharmD from the University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences in 2014 and completed a pharmacy practice residency at UPMC Presbyterian in 2015. After completion of a solid organ transplant pharmacy residency, she plans to practice in an academic medical center.

Mentor(s): Michael A. Shullo, PharmD

A retrospective analysis of the efficacy of antipsychotics in the treatment of ICU delirium

Weaver CB, Smithburger PL, Kane-Gill SL

PURPOSE

Delirium occurs in over 80% of intensive care unit (ICU) patients and is associated with increased length of stay and mortality. The role of pharmacologic therapy in delirium treatment is poorly defined, but small studies have shown that antipsychotics may be efficacious. The goal of this study was to compare critically ill patient outcomes within a health system who were managed with and without antipsychotics.

METHODS

This retrospective cohort included patients with delirium at any of 12 UPMC ICUs during a 5 week period. Delirium was defined as a score of ≥ 4 using the Intensive Care Delirium Screening Checklist (ICDSC). The primary outcome was the time to first resolution of delirium in patients who were managed with and without antipsychotics. Time to resolution of delirium was defined as the number of hours from the first administration of antipsychotic to the start of the first 24-hour period of consecutive negative delirium screens.

RESULTS

A total of 292 patients were delirious; 79 received antipsychotics. Time to resolution (onset to ICDSC score negative) for first episode of delirium was shorter in the non-antipsychotic group (median: 45 hrs vs. 90 hrs, $p<0.001$). Time to resolution of first delirium episode in the non-antipsychotic group was significantly shorter than time from antipsychotic administration to delirium resolution (median: 45 hrs vs. 94 hrs, $p=0.001$). More patients in the antipsychotic group returned to delirium after resolution [43% (34/79) vs. 32% (67/213)] and 85% (29/34) of these patients returned to delirium while receiving antipsychotics. The most prescribed antipsychotic was haloperidol [43% (34/79)] followed by quetiapine [25% (20/79)]. Nearly 20% (14/79) of patients received combination therapy.

CONCLUSION

Treatment with antipsychotics did not reduce the duration of delirium. These data support practice changes such as discontinuing use of haloperidol for delirium treatment.

Cory B. Weaver, PharmD

Cory received her PharmD with an area of emphasis in research from West Virginia University in 2014. She completed a PGY-1 pharmacy practice residency in 2015 and is currently completing a PGY-2 critical care residency at UPMC Presbyterian. Upon completion of her critical care residency, Cory will continue at UPMC Presbyterian as a unit based clinical pharmacist.

Mentor(s): Pamela Smithburger, PharmD, MS, BCPS and Sandra Kane-Gill, PharmD, MS, FCCP, FCCM

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Pharmacy Residency Programs

Post Graduate Year 1 (PGY1)

Pharmacy at UPMC Presbyterian Shadyside
Director: Heather Johnson, PharmD, BCPS

Pharmacy at UPMC Mercy
Director: Robert Simonelli, PharmD

Pharmacy at UPMC St. Margaret
Director: Jennie Jarrett, PharmD, BCPS
Assistant Director: Patricia Klatt, PharmD, BCPS

Pharmacy at UPMC McKeesport
Director: Jerad Heintz, PharmD, MBA

Pharmacy at UPMC Shadyside
Director: Stephanie Ballard, PharmD, BCPS

Pharmacy at Children's Hospital of Pittsburgh of UPMC
Director: Kelli L. Crowley, PharmD, BCPS

Pharmacy at UPMC Hamot
Director: Brad Cooper, PharmD

Managed Care at UPMC Health Plan
Director: Jessica Daw, PharmD, MBA

Managed Care at CVS Caremark
Director: Jennifer Heasley, PharmD

Community Pharmacy
Gatti Pharmacy, Giant Eagle Pharmacy, Rite Aid Corporation, University Pharmacy
Director: Melissa Somma McGivney, PharmD, FCCP, FAPhA

Post Graduate Year 2 (PGY2)

Ambulatory Care at UPMC Presbyterian Shadyside
Director: Deanne Hall, PharmD, CDE, BCACP

Cardiology at UPMC Presbyterian Shadyside
Director: James Coons, PharmD, BCPS-AQ (CV)

Critical Care at UPMC Presbyterian Shadyside
Director: Pamela Smithburger, PharmD, MS, BCPS

Family Medicine at UPMC St. Margaret
Director: Roberta Farrah, PharmD

Geriatrics at UPMC Presbyterian Shadyside
Director: Christine Ruby-Scelsi, PharmD, BCPS, FASCP

Geriatrics at UPMC St. Margaret
Director: Heather Sakely, PharmD, BCPS

Infectious Diseases at UPMC Presbyterian Shadyside
Director: Brian Potoski, PharmD, BCPS-AQ (ID)

Medication Use Safety at UPMC Presbyterian Shadyside
Director: Sandra Kane-Gill, PharmD, MSc, FCCM, FCCP

Oncology at UPMC Cancer Centers
Director: James Natale, PharmD, BCOP

Pharmacy Residency Programs

Solid Organ Transplantation at UPMC Presbyterian Shadyside
Director: Michael Shullo, PharmD

Underserved Care and Global Health
Director: Sharon Connor, PharmD
Assistant Director: Lauren Jonkman, PharmD, BCPS

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