2022 PSW Educational Conference

Tuesday-Wednesday, April 5-6, 2022
Monona Terrace Convention Center
Madison, WI

Poster Presentation Abstracts

Use of Angiotensin-Converting Enzyme Inhibitors or Angiotensin Receptor Blockers and Control of Blood Pressure in Lupus Nephritis with Proteinuria or Arterial Hypertension

Jose M. Roig, 2022 PharmD Candidate, Danielle Schuyler, 2022 PharmD Candidate, David Gazeley, MD, Teresa Romano, PharmD, Jessica B. Michaud, PharmD

Background: Lupus nephritis (LN) is an immune complex disease that develops as a frequent complication of systemic lupus erythematosus (SLE). Renal disease in SLE ranges from no symptoms to proteinuria or active urinary sediments to more serious proteinuria and acute nephritic syndrome with rapid progression to acute renal failure. Stages of LN are classified from Class I-VI, based on biopsy results. There is evidence that angiotensin-converting enzyme inhibitors (ACEi) and angiotensin receptor blockers (ARB) effectively reduce proteinuria in patients with LN with persistent proteinuria. In 2019, the European League Against Rheumatism and European Renal Association–European Dialysis and Transplant Association (EULAR/ERA-EDTA) LN guidelines recommended ACEi or ARBs for all patients with a urine protein/creatinine ratio (UPCR) >500 mg/g or arterial hypertension. The purpose of this study is to assess if the rheumatology clinics of an academic medical center are adhering to the EULAR/ERA-EDTA recommendations.

Methods: A retrospective chart review of patients with a documented diagnosis of LN treated in any of the rheumatology clinics of an academic medical center was conducted with data from May 1st, 2020, to April 30th, 2021. Eligible patients were those ≥18 years, diagnosed with LN > 6 months before the study period, and proteinuria or arterial hypertension. Those who were pregnant, had a documented hypersensitivity reaction to ACEi or ARB, hyperkalemia, renal artery stenosis, end-stage renal disease on hemodialysis, or received a kidney transplant were excluded.

Preliminary Results: Baseline data of the first 45 patients with LN included showed that 78% were female and 54.2% were Black or African American. Kidney biopsy was the preferred method of diagnosis for LN, with class IV being the most common occurring in 12/59 (20.3%) of subjects. The 45 patients were divided into 3 groups with baseline data: group 1 (15 subjects): patients with a diagnosis of arterial hypertension (HTN) with concomitant proteinuria, group 2 (20 subjects): patients with HTN without or unknown proteinuria, and group 3 (10 subjects): patients with proteinuria only. The rate of ACEi and ARB prescribing were as follows: group 1: 13/15 (86.7%), group 2: 15/20 (75%), and group 3: 5/10 (50%). Of the patients with HTN at baseline, 8/36 (22.9%) had a controlled blood pressure consisting of an average of two readings <130/80 mmHg during the study period. These preliminary findings suggest a 73% adherence to prescribing guidelines between the three groups.

Conclusion: We observed that the rheumatology clinics of the academic medical center studied have 73% adherence to the EULAR/ERA-EDTA LN guideline recommendations regarding overall prescribing of ACEi or ARB for qualifying LN patients.

Creating a Tobacco Cessation Program Through Policy in Froedtert Retail Pharmacies

Melanie J. Engels, PharmD, MBA, Emily A. Mauer, 2022 PharmD Candidate, Jillian M. Kolasinski, 2022 PharmD Candidate

Background: Despite decades of research and public education efforts, tobacco use remains the leading preventable cause of disease, disability, and death in the United States (US).[1] On average, the lifespan of a regular tobacco user is shortened by almost a decade; however, quitting before age forty reduces the risk of death by approximately 90% compared to those who continue smoking.[2] Currently, there are seven Food and Drug Administration (FDA) approved pharmacologic agents for nicotine dependence, including five nicotine replacement therapy (NRT) options and two non-nicotine options: varenicline (Chantix) and bupropion sustained-release (Zyban). Despite available safe and effective treatment options, less than one-third of adults who attempt to quit smoking use evidence-based treatment.[3] With nearly 95% of quit attempts ending in relapse, there is significant room for healthcare provider involvement in aiding tobacco cessation efforts. Through the creation of a Tobacco Cessation Policy approved through the Pharmacy & Therapeutics Committee, Froedtert Retail Pharmacists received authorization to perform therapeutic interchange and prescribe tobacco cessation products. This project's purpose aimed to increase patient accessibility to tobacco cessation products and decrease primary care provider burden in time spent managing tobacco cessation during clinic.

Methods: The project protocol, developed in August 2021, outlined the concept for creating the tobacco cessation program. Once the project protocol received approval, the Tobacco Cessation Policy was developed and reviewed with pharmacist and provider stakeholders and then sent to Pharmacy & Therapeutics Committee. Pre-Surveys were distributed to pharmacists with plans for post-pharmacist survey and customer survey distribution after program implementation. Pharmacist education materials included developing a Standard Operating Procedures (SOP) document and familiarizing staff with the previously system-approved Tobacco Cessation Guideline. Program launch is set to occur February 2022.

Results: The Ambulatory Pharmacy & Therapeutics Committee voted to approve the policy in January 2021. Pre-implementation surveys indicated that pharmacists at the pilot site feel there are adequate supplies of tobacco cessation products in the pharmacy and that these products are convenient to order. Pharmacists indicated that they feel comfortable dispensing tobacco cessation products but have little experience managing a patient's tobacco cessation therapy plan and would like additional materials and resources to provide this service.

Conclusion: With the approval of the Tobacco Cessation Policy, the first phase of this project is complete. The second phase is staff education and implementation, with post-implementation survey to follow.

References:

1. US Preventive Services Task Force, Krist AH, Davidson KW, et al. Interventions for Tobacco Smoking Cessation in Adults, Including Pregnant Persons: US Preventive Services Task Force Recommendation Statement. *JAMA*. 2021;325(3):265-279. doi:10.1001/jama.2020.25019
2. Jha P, Ramasundarahettige C, Landsman V, et al. 21st-century hazards of smoking and benefits of cessation in the United States. *N Engl J Med*. 2013;368(4):341-350. doi:10.1056/NEJMsa1211128
3. United States Public Health Service Office of the Surgeon General; National Center for Chronic Disease Prevention and Health Promotion (US) Office on Smoking and Health. Smoking Cessation: A Report of the Surgeon General. Washington (DC): US Department of Health and Human Services; 2020.

Implementation of Antimicrobial Prescribing Resources in Ambulatory Care Settings

Kayla M. Marchese, PharmD, Evan R. Hurley, PharmD, BCIDP

Background: The Centers for Disease Control and Prevention (CDC) identifies that approximately half of outpatient antibiotic prescribing is inappropriate, as well as unnecessary. Despite these observations, current antimicrobial stewardship practice in ambulatory care settings for common outpatient infections is lacking, suggesting numerous areas of improvement. The implementation of various antimicrobial educational resources, penicillin guidance, and established institution specific antibiotic algorithms can improve antibiotic prescribing without negatively affecting patient outcomes. The purpose of this project is to implement antimicrobial educational resources in seven ambulatory care clinic settings in the Madison, WI area. The main objective of this trial focuses on the adherence to the outpatient antibiotic algorithms and days of therapy per 1000 patient days for second- and third-line therapies.

Methods: Eligible participants were 18 years and older who were seen at the institution's ambulatory care clinics for common outpatient infections (urinary tract infections, skin and soft tissue infections, and diverticulitis). Both in person and virtual visits were included. Patients were excluded who were prescribed antibiotics other than for treatment. Antimicrobial educational resources were implemented addressing the management of penicillin allergies, antimicrobial resistance, and unnecessary antibiotic prescribing. Participants were split into two groups: pre-implementation and post-implementation of educational resources. The primary outcome of this trial is the reduction of days of therapy per 1000 patient days for fluroquinolones and other alternative therapies not supported by current guidelines. The secondary outcome of this trial is adherence to outpatient antibiotic algorithms.

Implementation of the Diabetes Prevention Program in an Independent Community Pharmacy

Rachel Whitesitt, PharmD, MPH, Nicole Schreiner, PharmD, RPh, Eva Vivian, PharmD, MS, PhD, Mara Kieser, MS, RPh

Background: According to the Centers for Disease Control and Prevention (CDC), over 88 million Americans, or one in three people, have prediabetes. People with prediabetes have a higher than normal blood glucose, but not high enough to be diagnosed with type 2 diabetes. More than 80% of people with prediabetes are unaware of their condition. Fortunately, The National Diabetes Prevention Program (DPP) can help people make the necessary lifestyle changes to prevent diabetes and complications associated with the disease.

In 2011, the CDC started the DPP, which is a public-private partnership that aims to offer a year-long lifestyle change course for people with prediabetes in multiple settings across the United States. The program focuses on making lasting lifestyle changes including increasing physical activity, eating healthier, and decreasing stress. The DPP has been shown to be effective in multiple setting such as hospital, clinic, and community centers.

Pharmacies can get involved in the DPP by increasing awareness of the program, referring patients, and offering the program in community pharmacies. Financial feasibility, staffing, space, and customer participation have previously been identified as barriers to implementation of the DPP in community pharmacies. The purpose of this study was to assess the feasibility of implementing the DPP in an independent community pharmacy.

Methods: This is a prospective program evaluation project which does not require IRB review. The DPP was implemented at an independent pharmacy in January 2021. Classes were held in the classroom at the pharmacy. Pharmacy technicians and a pharmacy resident served as lifestyle coaches after completing CDC-approved lifestyle coach training.

Participants: Participants were recruited using social media, email lists, and pharmacist referral. Inclusion criteria are based on participant eligibility required by the CDC, which includes 18 years or older, overweight, and meet one of the following: diagnosed with prediabetes, previously had gestational diabetes, or classified as high risk based on a risk test. Exclusion criteria include a diagnosis of type 1 or type 2 diabetes or currently pregnant. From November 2021 to December 2021, 30 people were screened for eligibility. Ten patients were excluded for not meeting eligibility criteria and 5 people consented to be in the study.

Outcomes: This project was designed to study the feasibility and acceptability of a community pharmacy based DPP program by assessing recruitment and retention of participants. Secondary outcomes included participation satisfaction, changes in body weight and physical activity, and attenuation of the progression to diabetes based on hemoglobin A1c.

Statistics: Surveys about participant satisfaction were created based on previous literature and were completed by participants at months 1, 6, and 12. A1c was collected at baseline and at month 12. Physical activity and weight were collected at each class according to CDC data collection requirements. Qualitative and quantitative data were analyzed by the primary author and reported by descriptive statistics.

Results: Five participants were enrolled in the program. Other results are in progress.

Conclusion: Results from this study will be used to improve the DPP at this pharmacy.

Pharmacist-led Chronic Care Management Service in a Rural Health Clinic

William J. Wall, PharmD, Tiaha E. McGettigan, PharmD, 340B ACE, Edward C. Portillo, PharmD

Background: The purpose of this study is to design and implement chronic care management (CCM) services led by pharmacists in a rural health clinic to improve patient outcomes, reduce hospital visits, and generate revenue. Chronic care management allows patients to gain a better understanding of their chronic conditions and medications and improve quality of life. Rural health clinics (RHCs) offer health care to medically underserved areas of the United States, with about 4,500 operating across the country, serving 60,000,000 rural Americans. RHCs are designated by Medicare and/or Medicaid and offer high-quality care over a large area. The Center for Medicare and Medicaid Services (CMS) strongly recommends CCM services to enhance patient outcomes, and reimburse sites that implement them. RHCs have three major advantages in implementing these services – they can be performed by pharmacists, they are not required to be face-to-face, and RHCs receive additional reimbursement than urban counterparts under the unique billing code G0511. Pharmacist-led CCM programs are associated with greater improvement in patient outcomes compared to nurse/physician-led programs, as well as increased identification of drug-related problems and improved adherence. The primary barrier to implementation at these sites is the lack of a clear system to identify, enroll, and furnish services to patients. A standardized, coordinated referral system between pharmacist and physician was implemented at a RHC in rural Wisconsin by a pharmacy resident to demonstrate the unique benefits of RHCs to starting CCM services.

Methods: Eligible participants include those enrolled in Medicare, have >2 chronic conditions that put them at severe risk of hospitalization, and have visited their PCP in the past year. Identified patients were referred to the pharmacist through an electronic health record referral. Patients enrolled in the program were scheduled by the front desk and contacted by the pharmacist. Laboratory values and medication history was accessed in the electronic health record. Issues identified and recommendations were documented. A questionnaire was administered during the visit to patients to determine confidence and patient goals. Billing information was accessed and documented into the electronic health record and a password-protected spreadsheet. Quantitative and qualitative data was compared as a pre/posttest evaluation. Primary outcomes included laboratory values, patient confidence, and total revenue generated. Secondary outcomes included readmission rates, emergency room visits, and number of medication errors and type of error. Statistical analysis included a two-tailed T-test at a 95% confidence interval to determine effect on primary and secondary outcomes.

Enhancing Clinical Partnership Between Outpatient Pharmacists and On-site Clinics

Jenna D. Dionne, PharmD, Amy Mahlum, PharmD, BCACP, Lauren Putterman, PharmD, BCACP

Background: Pharmacists continue to grow in their profession and are taking on more clinical roles over time. Within Advocate Aurora Health, pharmacists are well-integrated in the healthcare system. Currently, pharmacists staff in the outpatient pharmacies and on-site clinics. However, many clinics still do not have a dedicated pharmacy resource. Pharmacists play a crucial role in collaborative patient care. They have the most extensive education on medications and are invaluable to an interdisciplinary team. Pharmacists can identify drug interactions, optimize medication therapy, and recommend dose adjustments if necessary, which can improve patient outcomes. This project was designed to enhance the clinical partnership between outpatient hospital pharmacists and on-site clinics.

Methods: In order to enhance the clinical partnership between outpatient pharmacists and on-site clinics, it was determined that patients being seen by Internal Medicine providers would be reviewed by outpatient pharmacists prior to their appointment date and time. The patients to be reviewed were selected by focusing on the higher risk patient population which includes them having a high pharmacy risk score and having been diagnosed with diabetes. The Internal Medicine providers were selected based on their current relationship and communication with the pharmacy team. Clinic managers were also involved in the selection process and provided guidance on how the pharmacy team could further benefit the clinic. Baseline data was collected prior to reviewing patients. The data collected was baseline communication data between the pharmacists and Internal Medicine providers, clinic data such as percent of patients with an A1c less than 8%, and prescription capture for the providers involved.

To document the review done by the pharmacy team, a custom note template was created. This was completed and routed to the providers for them to review prior to the patient's appointment. Workflow toolkits were also created to educate the team on the process for reviewing patients and documenting their findings. When pharmacists were completing their review of patients, they reviewed patients' labs, immunization records, medication dispense histories, and assessed their diabetes regimens. Pharmacists also entered intervention notes to document their recommendations for providers which are only accessible to the pharmacy team. The intervention notes allowed the pharmacy team to follow-up on the status of their recommendations. Data being collected post-implementation includes prescription capture, clinic data, recommendation acceptance rate by reviewing intervention notes, and communication data.

Pharmacy Driven Antimicrobial Stewardship of Empiric Antimicrobial Treatment of Uncomplicated Urinary Tract Infections in the Ambulatory Setting

Joshua Wirtz, 2022 PharmD Candidate, Evan Hurley, PharmD, BCIDP, Jennifer George, PharmD

Background: The CDC reports that of all outpatient adult encounters with a provider, roughly 10% of the encounters will end with a prescription for an antibiotic. Unnecessary or inappropriate antimicrobial prescribing could result in adverse events, allergic reactions, and antimicrobial resistance. By having pharmacists provide guidance and education on treatment algorithms, negative outcomes can be minimized. A previous institutional project aimed at the treatment of urinary tract infections (UTI) in the emergency department demonstrated improved prescribing of antimicrobials in line with national and institutional guidelines. This included improved prescribing of appropriate agent, dose, and duration. Currently, our ambulatory clinics have limited guidance towards appropriate UTI treatment. The focus of this project is to evaluate ambulatory antibiotic prescribing for UTIs and assess guideline concordance. The second aim is to create an ambulatory specific UTI algorithm to improve adherence to institutional and national guidelines for UTI treatment at seven of our institution's ambulatory clinics as part of initial efforts in antimicrobial stewardship in the ambulatory setting as required by The Joint Commission performance standards (Standard MM.09.01.03).

Methods: A retrospective chart review identified subjects with a diagnoses of dysuria, polyuria, uncomplicated cystitis (with or without hematuria), or uncomplicated pyelonephritis through ICD10 codes linked to the encounter at the ambulatory setting. Subjects included were female, greater than 18 years old, less than 65 years old, were not pregnant at the time of the encounter and had not reached menopause. To be eligible, they also had an encounter with the primary care clinic between January 2020 and July 2021. Antimicrobial therapy including agent, duration, and dose, indication, infection recurrence, allergies, and cultures were assessed in determining adherence to guidelines. The algorithm for UTI treatment was created using the Infectious Diseases Society of America (IDSA) guidelines and local antibiogram data. A presentation of findings and the UTI algorithm will be offered to educate and improve antibiotic prescribing practices for the treatment of uncomplicated UTIs in nonhospitalized patients. The primary outcome assessed is baseline guideline concordance with respect to empiric agent, dose, and duration of antibiotics prescribed for a suspected UTI.

Creation of a Travel Health Services Hub Within a Community Pharmacy

Hailey A. Thompson, 2022 PharmD Candidate, Andres A. Maldonado Rodriguez, 2022 PharmD Candidate, Melanie J. Engels, PharmD, MBA, Kevin M. Stutt, PharmD, Abby M. Angelroth, PharmD

Background: Create a Travel Health Services Hub within the Froedtert Pharmacy #175 located in the Tosa Health Center in Wauwatosa, Wisconsin. The hub will expand traveler access to pharmacist-provided vaccinations and medications, promoting awareness for travel health services.

Methods: Create a framework for a travel health partnership between the pharmacy and Froedtert's Travel Medicine Clinics to coordinate travel vaccination and medication prescription referrals. Create the necessary materials to provide these additional services. Existing Froedtert Outpatient Pharmacies - Vaccinations Collaborative Practice Agreement (CPA) or provider prescription authorizes pharmacist administration of most travel vaccinations. Medications will be filled following standard pharmacy workflows. Patients aged 18 or over, who have completed consultation for international travel with Froedtert's Travel Medicine Clinics, are eligible to use this service. Medication recommendations and administered vaccinations will be documented in the Electronic Health Record (EHR). Satisfaction surveys will be administered to patients, providers and pharmacists.

Results: Preliminary data for service utilization and satisfaction have not been collected at this time. The framework and necessary materials have been created for implementation of a Travel Health Services Hub. A medication inventory for travel health medications was created and may be provided to Froedtert providers to notify them of products that will be readily available to their patients.

Conclusion: Forging partnerships with Travel Medicine Clinics within Froedtert Health is critical for the formation of a Travel Health Services Pharmacy Hub to increase patient access to travel medications. Promotion of the available community pharmacy travel health services to increase patient awareness and utilization is critical for the success of the program. Further evaluation is needed to assess provider acceptance, patient utilization, and pharmacy costs to determine long-term viability of the services and if service expansion is warranted.

Supporting Transitional Care Management and the Impact on Adherence to Long-Acting Injectable Medications in Behavioral Health Populations

Brendan Lehman, PharmD, Sara Revolinski, PharmD, BCPS, Andrew Hochradel, PharmD, Adrienne Lo, PharmD, Benjamin Pearson, PharmD

Background: Medication nonadherence is a common and costly problem in the United States, with between 30% and 50% of adults being nonadherent to their chronic medications. Nonadherence to a regimen in patients with a behavioral health condition can often be even more challenging, with the prevalence of nonadherence in states of psychosis being as high or higher than nonadherence in other chronic conditions and more frequently associated with hospital/facility admissions. Each time a patient transitions to another setting of care, there is an increased risk of adverse drug events (ADEs) due to possible miscommunication between the outgoing and incoming care settings. Patients with an increased risk of experiencing an ADE during care transitions include individuals with complex behavioral health conditions, cognitive impairment, from lower-income or medically underserved areas, and homeless. Pharmacy-driven transitions of care (TOC) services for psychiatric patients have not been widely studied, possibly contributing to more frequent readmissions, ADEs, and nonadherence in this population. Although TOC initiatives are more common with inpatient pharmacies, implementation of TOC support from an outpatient pharmacy in patients with high-risk conditions may help further reduce readmission rates, reduce occurrence of ADEs, and improve medication adherence. The purpose of this study is to improve the adherence to long-acting injectable (LAI) medications in new intake behavioral health patients that have been recently discharged from a hospital, psychiatric facility, or rehabilitation facility.

Methods: Quasi-experimental study involving retrospective chart review comparing data available before and after the implementation of a transitions of care process. Eligible participants included adults 18 years of age and older, discharged from a facility within 30 days, and prescribed a new LAI medication. A new patient intake form was utilized during the initial encounter with each participant to gather comprehensive information following recent discharge. Pharmacists used the information gathered to identify presence of drug therapy problems, gaps in medication, therapy, barriers to medication use, among others, to make various interventions that are recorded to improve adherence to LAI medications. The primary outcome is the rate of adherence to LAI medications using proportion of days covered. Secondary outcomes are the percentage of appointment attendance following the initial intake appointment and the number and type of pharmacist interventions made in enrolled patients (post-intervention group only).

Impact of a Medication Synchronization Program on Adherence in an Independent Community Pharmacy

Alaura M. Meister, PharmD, Sara Revolinski, PharmD, BCPS, Omar Eliwa, RPh

Background: Medication nonadherence is a persistent challenge for patients with chronic diseases and it has led to billions of dollars in preventable healthcare costs and thousands of preventable deaths each year. Community pharmacies are tackling this issue with the utilization of medication synchronization (Med Sync) programs that align all patient medications to be picked up on the same day each month. The incorporation of Med Sync programs has already shown benefits like improving adherence and subsequently improving pharmacy quality metrics that measure adherence. The purpose of this study is to describe the impact of a newly implemented medication synchronization program on patient adherence in an independent community pharmacy.

Methods: Patients that are enrolled in the pharmacy's medication synchronization (Med Sync) program for at least 3 months and that have at least 2 maintenance medications will be included in this retrospective observational study. Days before a patient's medications are due to be refilled, the electronic health record software will alert a pharmacist to call the patient to confirm each medication to be filled, ask about adherence, address any adherence barriers, and recommend any routine vaccinations. Adherence will be assessed by using patient fill histories to obtain average proportion of days covered (PDC) for patients. An average PDC of $\geq$ 80% is considered adherent and will be used to determine the usefulness of the Med Sync program. Secondary objectives include number of immunizations recommended and percent of recommended immunizations administered as well as number and types of medication adherence barriers identified, and percent of adherence barriers resolved.

Implementation of a Standardized Transitions of Care Protocol Within a Community Pharmacy

Alaura M. Meister, PharmD, Sara Revolinski, PharmD, BCPS, Omar Eliwa, RPh

Background: Good Value Pharmacy MedCare West is an independent, family-owned pharmacy in Kenosha, Wisconsin that specializes in compliance packaging for patients who are self-reliant but require enhanced assistance with adherence to their complex medication regimens due to low health literacy, impaired memory or function, or other reasons that might make managing bottled medications difficult for them. Medication errors occur often in the transition of care (TOC), some even leading to readmission. Pharmacists, both in the hospital and in the community setting, can have an impact on reducing medication errors that occur during the TOC. Our compliance packaged patients at Good Value Pharmacy are at an increased risk for medication related errors during TOC because of limited ability to self-manage medications and because they have pre-packaged medication supplies at their home that may not be in line with medication adjustments made on transitions of care. Assessing and implementing a standardized process for TOC in these patients is essential to reduce medication related errors and to identify TOC processes that are efficient in our pharmacy setting. The purpose of this project is to create, implement and assess a standardized TOC process for compliance packaging patients.

Methods: This retrospective study will assess the implementation of a standardized TOC process for compliance packaged patients recently discharged from local hospitals between February and April 2022. The implementation consists of a standardized TOC documentation form to be completed by pharmacy staff during a transition of care. The form will describe time and date of TOC notification, facility name identifiers, number of errors present, AHRQ categories of identified errors, and time and date the TOC was resolved. A follow-up survey for staff involved will assess the reception of the transitions of care process and potential improvements for the future.

Improving Depression Care Through Pharmacist Follow-up within an Independent Pharmacy

Carter Havican, PharmD, CPhT, Casey Gallimore, PharmD, M.S., Ryan Bender, PharmD, Tony Peterangelo, PharmD, Mary Jackson, B.A.

Background: To pilot a model to assess the knowledge and adherence of new prescriptions for antidepressants.

Methods: Phase I will be designed to screen patients and will be composed of the resident calling to administer a pretest that assesses attitudes towards antidepressant therapy, side effects, and knowledge of the time to effect using a rating scale of 1 to 10. The resident will provide in-depth targeted education, and an adherence assessment. Exclusion criteria will be: Use of an antidepressant for a condition that is not depression, patients who have already been on an antidepressant for more than 3 months, patients under the age of 18.

Adherence will initially be assessed with a 2-question survey that asks about barriers and the frequency of missed doses. Additionally, fill dates from initial encounter until the end of the study will be reviewed monthly to see how adherence changes. The execution and process will be modeled after our MedSync workflow. By utilizing the frequency and duration of a medication synchronization call this will resemble an already integrated component to promote efficiency and sustainability.

Data will be collected via telehealth in the form of Likert rating scale, and the adherence survey.

Based on statistical power calculations, approximately 20-25 patients will be selected. This amount of patients is convenience-based due to time constraints and only one pharmacist involved. A pre-test and post-test at the end of the study will be given where baseline knowledge of antidepressants pertaining to attitudes towards antidepressant therapy, side effects, and time to effect will be assessed. Data collection will occur from October 2021 to February 2022. Correlational statistical analysis will be used to measure the strength of the relationship between the intervention and improvement of adherence and medication knowledge.

A secondary outcome will be Patient Health Questionnaire-9 (PHQ-9), if consented to by the patient. Patients who agree to opt into this new service will receive calls every 4-8 weeks where the pharmacist will provide enhanced education by reviewing the questionnaire with participants, creating treatment goals, and answering questions. A new PHQ-9 assessment will be given during each call as well. Primary outcomes for this project will be changes in knowledge of antidepressants, and adherence, calculated by Proportion of Days Covered (PDC) from the beginning to the end of the study, to assess the usefulness of the pharmacist intervention. Secondary outcomes will include changes in PHQ-9 scores. Adherence will be assessed retroactively among the intervention group and within a group of patients receiving the usual standard of care in community pharmacy. The standard of care for antidepressants is considered as initial education by a pharmacist at the counseling window, and any counseling provided during refills. This project is considered exempt from the UW-Madison Institutional Review Board.

Preliminary Results: Three patients have demonstrated a correlation of improved adherence and understanding of antidepressants.

Conclusion: Pharmacist intervention for new antidepressant starts improves medication adherence and knowledge of antidepressants.

Improving the Accuracy of Unfractionated Heparin (UFH) Lab Monitoring in Patients Concurrently Using Direct Oral Anticoagulants (DOACS)

Ashley Stromich, PharmD, Kellen M. Brush, 2022 PharmD Candidate, Casey J. Davis, 2022 PharmD Candidate, Alison Glienke, PharmD, Benjamin Jung, PharmD

Background: To assess the accuracy with which UFH infusions are appropriately monitored via a partial thromboplastin time (PTT) test in patients that have been administered a DOAC within the last 48 hours, and to implement a Best Practice Alert (BPA) that improves the rate of such patients being appropriately monitored thereafter.

Methods: Eligible patients were those over 18 years of age with a documented DOAC administration within 48 hours of beginning a UFH infusion in the 3W unit of Froedtert Hospital. Electronic health record (EHR) data from the previous year was retrospectively reviewed to assess the proportion of time in which the incorrect lab parameter was ordered and used to determine level of anticoagulation. The retrospective data will be analyzed to justify the implementation of a system-wide BPA. The same inclusion criteria will be applied thereafter to assess the BPA's effect on the rate with which the incorrect lab parameter is ordered and utilized.

Results: Fifty patients were included in the retrospective analysis. Fourteen (28%) of the evaluated patients were administered a UFH infusion protocol that inappropriately monitored therapeutic efficacy via the Anti-Xa assay. Of patients ordered the wrong lab monitoring protocol, 42% had their infusion rate inappropriately adjusted to achieve therapeutic efficacy. Only half of the incorrect protocols were corrected to the appropriate PTT assay. On average, it took 20.2 hours for the inappropriate protocol to be corrected and PTT labs measured in patients originally monitored via the Anti-Xa assay. The intervention currently remains in the process of implementation. Prospective data collection aims to evaluate 50 patients thereafter.

Conclusion: There is a substantial need to improve the accuracy with which patients using DOACs are appropriately monitored via the PTT assay when being administered a UFH infusion at Froedtert Hospital. There exists a knowledge gap amongst providers and pharmacists regarding the necessity of adjusting UFH lab monitoring parameters based on the concurrent use of DOACs. A system-wide BPA possesses the potential to highlight opportunities to monitor the therapeutic efficacy of the UFH infusion in these patients more accurately.

Assessment of Risk Factors for Methicillin-Resistant *Staphylococcus Aureus* and *Pseudomonas Aeruginosa* in Patients with Community Acquired Pneumonia

Nathan J. Bartley, 2022 PharmD Candidate, Andres A. Saavedra, 2022 PharmD Candidate, Kristen L. Bunnell, PharmD, BCCCP, BCIDP, Allison M. Gibble, PharmD, BCIDP, Sandy Her-Cilley, PharmD, Kyle Braithwaite, 2022 PharmD Candidate

Background: The Infectious Diseases Society of America and the American Thoracic Society recently published updated guidelines for the management of community-acquired pneumonia (CAP) that recommend local validation of risk factors to identify patients with CAP who should receive coverage for resistant pathogens, specifically methicillin-resistant *Staphylococcus aureus* (MRSA) and *Pseudomonas aeruginosa* (PsA). The purpose of this study is to identify risk factors associated with the identification of MRSA or PsA as a causative pathogen of CAP in a Milwaukee-area health system.

Methods: This retrospective case-cohort study used data generated from the electronic health record capturing patients hospitalized with CAP in the Froedtert Health system between January 2018 – October 2020. Patients were included if they were at least 18 years old and had a confirmed bacterial CAP pathogen identified by respiratory culture, urine antigen, or nucleic acid amplification test for atypical organisms. Case patients were those with MRSA or PsA as the causative pathogen; the control cohort included randomly selected patients with other bacterial pathogens within the same timeframe. The primary outcomes were the frequency of lifestyle factors, living conditions, comorbid conditions, and recent healthcare exposure in patients hospitalized with MRSA and PsA CAP. Key secondary outcomes included the percentage of patients with positive MRSA or PsA identified on respiratory cultures. Data analysis will be performed using multivariate logistic regression to evaluate the associations between risk factors and infection acquisition.

Assessment of Appropriate Antibiotic Prescribing for Urinary Tract Infections in VA Primary Care Clinics

Abigail L. Jagdfeld, 2022 PharmD Candidate, Kyra K. Verheyen, 2022 PharmD Candidate, Paul F. Lata PharmD, BCPS, Tyler K. Liebenstein, PharmD, BCIDP, AAHIVP, Kristin Tindall, B.S. Pharm

Background: Evaluate outpatient primary care assessment and treatment of urinary tract infections (UTIs) to determine appropriateness of the treatment regimen prescribed.

Methods: Eligible participants are those patients assessed for UTIs by a VA primary care provider during 2021. Information was collected from electronic health record using a data collection tool approved by the antimicrobial stewardship team and primary care physician. Appropriateness of UTI diagnosis was documented, as well as evaluation of antibiotic regimen if decision to treat was made. Assessments were made using national guidelines and the VA decision support tool.

Optimization and Standardization of ICU Pharmacist Practice Across a Large Health System

Kaleb Greener, PharmD, Nathaniel Zook, PharmD, BCCCP, Riley Poe, PharmD, BCCCP

Background: In 2020, the Society of Critical Care Medicine (SCCM) published a position paper detailing 82 recommendations for critical care pharmacy practice.1 A gap analysis was performed within a large, recently merged, multi-state health system of 26 hospitals to determine which recommendations from the SCCM position paper were and were not consistently practiced. A gap closure plan was then created to improve system alignment with SCCM practice recommendations. The intent of this project was to execute the gap closure plan via electronic health record (EHR) optimization and creation of a supplemental critical care pharmacist practice resource that consistently aligns with SCCM recommendations, while simultaneously addressing those identified as gaps.

Methods: EHR optimizations were implemented that consolidate ICU-specific chart information into one customizable dashboard to assist with prioritization and triage. The following ICU-specific variables were created and available to display on patient lists within the EHR: 1) intubated 2) active vasopressors 3) neuromuscular blocker 4) presence of cardiac devices (ECMO, intra-aortic balloon pump, impella) 5) transfer orders to general medicine ward 6) alteplase given 7) recent code 8) continuous infusions 9) antimicrobials. To assess the utility and accuracy of EHR optimizations, a survey was distributed to critical care pharmacists across the system. Respondents could also submit reports of inaccuracy or glitches to identify potential areas of troubleshooting. Results were then compiled and provided to the EHR IT department responsible for fixes. SCCM practice recommendations served as the foundation for the ICU practice resource, titled "ICU RPh Practice Supplement" to ensure alignment with the gap closure plan. The final stage of this project will involve a re-assessment of the gap closure plan to determine, in collaboration with relevant stakeholders, which gaps could be considered closed as a result of the EHR optimizations and practice supplement.

Results: Fourteen critical care pharmacists completed the EHR optimization survey. Intubated and active vasopressors were used most frequently (86%), while antimicrobials were the least used (29%). Intubated and neuromuscular blockers scored the highest in usefulness (90%), while alteplase given scored the lowest (57%). Alteplase given was the most accurate function (100%), while recent code was the least accurate (56%). An ICU practice supplement was created with plans to introduce the document to a system-wide committee of critical care pharmacists to provide input for further development and assistance with re-assessment of the gap closure plan.

Conclusion: We were able to assess the utility and accuracy of EHR optimizations designed specifically to streamline patient care in the ICU. The customizability of the dashboard allows pharmacists to tailor the view in a way that allows them to better identify more acute patients. A practice supplement created for critical care pharmacists to reference will align health-system practice with recommendations by SCCM. A re-assessment of the gap closure plan with involvement of relevant stakeholders will determine the impact of these resources on critical care pharmacy practice within the health system.

Implementation of Modified PACU Order Set and Cognitive Screening to Reduce Perioperative Neurocognitive Disorder in the Geriatric Surgical Population

Hannah A. R. Schulz, PharmD, MPH, Michael S. Nyffeler, PharmD, BCNSP, Heather M. Theisen, PharmD, Carrie A. Bennett, DNP, RN, GCNS-BC, Hasmik Morales, BSN, RN

Background: Perioperative neurocognitive disorder (PND) is a common complication for patients 65 years and older undergoing surgery that results in prolonged hospitalization, discharge disposition complexities, and reduced quality of life and independence. Evidence suggests that pre-existing cognitive impairment and receipt of deliriogenic medications in the immediate postoperative period increase the risk of developing PND. Baseline evaluation of patients aged 65 years and older who underwent inpatient or emergency surgery at a 448-bed Midwest community hospital revealed an incident delirium rate of 7.6%. PND is preventable through the implementation of multimodal interventions in the perioperative setting. The purpose of this project is to reduce the incidence of PND in geriatric surgical patients through the implementation of preoperative cognitive screening and removal or dose reduction of deliriogenic medications in the Post-Anesthesia Care Unit (PACU) order set.

Methods: Surgical nursing staff was provided education on administration and documentation of the cognitive screenings. A multidisciplinary team of nurses, pharmacists, and anesthesiologists developed changes to the PACU order set based on evidence-based guidelines. Between February and May 2022, patients aged 65 years and older undergoing inpatient or emergency surgery with planned inpatient admissions will undergo preoperative cognitive screening and receive medications per the revised PACU order set. The primary outcome is the incidence of PND in the geriatric surgical population exposed to the revised PACU order set compared to the group exposed to the unmodified order set. Secondary outcomes include completion of the preoperative cognitive screening and documentation in the Epic system, number of occurrences of one-time orders of deliriogenic medications that were removed from the order set, length of stay, and medication interventions required for behavioral changes related to PND after surgery.

Effect of Pediatric Pain Management Education on Time to Analgesia in the Emergency Department

Cindy B. May, 2022 PharmD Candidate, Erik Feltz, PharmD, BCPS

Background: Pain is one of the most common reasons for emergency department (ED) visits in the United States. Patients also experience further pain from procedures performed during their visit such as suture repair, venipuncture, and orthopedic manipulations. Compared to adults, pediatric patients often receive significantly less analgesia during their ED visit and are more likely to receive under-dosed pain medications at discharge. This phenomenon likely stems from ED providers' fear of opioids causing severe adverse effects such as respiratory depression, over-sedation, or long-term dependency. Determining accurate pain levels in pediatric patients is another hurdle which can lead to inadequate analgesia. When combined, these barriers often lead to prolonged delays in pediatric patients receiving adequate analgesia in the ED. Education focused on available analgesic options, risk of adverse events, appropriate dosing, and their role in treating painful conditions in pediatric patients can help close this gap in patient care. This study will assess the impact of ED provider education focused on safe and effective analgesic options on time to providing appropriate analgesia. Information provided during the presentation will also be converted to a pocket guide for use by ED providers. The guide will contain recommended analgesic medications, dosage forms, and appropriate weight-based dosing for quick use by ED providers. Time from the start of the visit to receipt of the first analgesic dose will be evaluated prior to and after the presentation and pocket guide are provided.

Methods: Single-center, pre-post study evaluated by electronic health record review of pediatric patients treated at the UnityPoint Health- Meriter Hospital ED and prescribed medications for pain during the visit. The primary outcome is time from the start of the visit to receipt of first analgesic dose before and after provision of the educational materials. Secondary outcomes will include percentage of patients treated with intranasal analgesic medications, and nurse and provider satisfaction with the pain medication resources provided.

Implementation of Pharmacist Antimicrobial Stewardship Intervention at Discharge Medication Reconciliation Review

Amolee R. Patel, PharmD, BCPS, Thomas J. Dilworth, PharmD, BCPS, AQ-ID

Background: Antimicrobial exposure places patients at risk of serious adverse drug events, antimicrobial resistance and *Clostridiodes difficile* infection. Antimicrobial stewardship interventions primarily focus on improving inpatient antimicrobial use, but observational studies demonstrate that patients complete roughly two-thirds of their course of therapy after hospital discharge. The objective of this project is to incorporate a process into the pharmacist discharge medication reconciliation review workflow to ensure that prescribed antibiotic therapy regimens represent an appropriate continuation of the inpatient course and adhere to evidence-based durations of therapy.

Methods: Using a quasi-experimental design, a stewardship intervention will be implemented targeting adult patients discharging on enteral antibiotics from our pilot site: St. Luke's Medical Center; part of Advocate Aurora Health. The intervention consists of a best-practice alert to pharmacists in the electronic health record upon hospital discharge medication reconciliation review that serves to identify appropriate patients and an embedded link to treatment guidelines facilitating pharmacists' review of discharge antibiotic regimens. Data following implementation (January-February 2022; POST) will be compared to retrospective discharge data (August-September 2021; PRE). The primary outcome measure will be deviations from appropriate discharge regimens (agent, dose, and duration of therapy). Secondary outcomes will include treatment failure, 30-day readmissions, and treatment-associated adverse events.

Results: In PRE a total of 132 patient charts were reviewed with 50 (37.9%) patients meeting inclusion criteria. The most common infectious indications were community-acquired pneumonia (CAP; 34%), cystitis (12%), and skin and soft tissue infections (SSTI; 14%). The median duration of therapy was 9 days for CAP, 8 days for cystitis, and 11.5 days for SSTI. The most common deviations from appropriate discharge regimens included extended duration of therapy (62%), inconsistent spectrum of coverage (16%), and fluoroquinolone use not meeting restriction criteria (10%). One patient experienced treatment failure requiring hospital readmission and 5 patients (10%) complained of treatment-associated adverse events.

Conclusion: These preliminary observations suggest that pharmacist medication reconciliation review upon hospital discharge presents an important opportunity for a targeted antimicrobial stewardship intervention.

Optimizing Utilization of EHR for Pharmacy Integrated Clinical Services

Michael K. Akwari, PharmD, Dan Persells, PharmD, Meghan Murphy, PharmD, BCPS

Background: Pharmacy Integrated Clinical Services (PICS) is a team of 165 remote verification pharmacists that verify 95% of all medication orders for hospitals across Advocate Aurora Health. The PICS team has standards for verification turnaround times, including 15 minutes for STAT medication orders and 60 minutes for routine medication orders. The goal of this project is to improve efficiency around PICS workflows through the use of various EHR functionalities and decision support. The post-implementation outcomes of this project will help determine how many resources are needed for PICS to carry out its daily operations and may be used as a gauge to assess the impact of similar EHR modifications in the future.

Methods: A dynamic medication administration record (MAR) message was created to limit the volume of verification requests sent for STAT and routine orders. Reports were generated to ascertain the volume of verification requests sent prior to implementing the communication message. Additionally, order set messages for PICS were standardized and reconfigured to enable decision support and minimize manual manipulation of patient charts. Lastly, system specific resources were updated and imported into the EHR to assist pharmacists during order verification.

Results: Prior to implementing the MAR message, the PICS team received on average 104 verification requests per day for STAT medication orders. Of these requests, 88.1% were for orders signed less than 15 minutes ago. For routine medications, the PICS team received on average 1309 verification requests per day. Of these requests, 56.9% were for orders signed less than 15 minutes ago. After implementation of the communication message, the volume of verification requests will be analyzed to assess its impact. Additionally, the total number of order set messages sent to PICS will be assessed to pre- and post- implementation of the updated order set messages.

Prior to Admission Pharmacy Allergy Review to Improve Preferred GBS Prophylaxis Use in Laboring Patients

Margaret Daleen, PharmD, Sarah E. Gnadt, PharmD, BCPS, Evan Hurley, PharmD, BCIDP

Background: Group B streptococcus (GBS) is the leading cause of neonatal sepsis. After the implementation of guidelines steering appropriate GBS intrapartum antimicrobial prophylaxis (IAP), the incidence of GBS early onset disease (EOD) was drastically reduced. Current guidelines (American College of Obstetrics and Gynecologists, ACOG) for GBS prophylaxis recommend penicillin as first line treatment, cefazolin for low-risk beta-lactam allergies, and vancomycin or clindamycin for severe beta-lactam allergies. Vancomycin and clindamycin, however, are associated with increased adverse effects and increased risk of inadequate prophylaxis coverage. Many patients who have a severe beta-lactam allergy label in their medical record can tolerate penicillin or cefazolin with non-use resulting from inaccuracies with documentation of the allergy or misclassification of the severity of the allergy. The purpose of this project is to design and implement a process to provide an in-depth prospective pharmacist-performed review of allergy history for pregnant patients with documented beta-lactam allergies with intent to increase the proportion of patients who receive penicillin or cefazolin as GBS IAP.

Methods: A beta-lactam allergy risk assessment chart and workflow algorithm was created to help guide GBS IAP and antepartum penicillin skin test recommendations. All pregnant patients preregistered for a labor and delivery admission with documented beta-lactam allergies were eligible for a prior-to-admission comprehensive allergy review by a pharmacist. The recommendations included a description and risk evaluation of the allergy, an account of any previously tolerated beta-lactam antibiotics, GBS IAP recommendations, and a recommendation regarding penicillin skin testing. These findings and recommendations were documented in a progress note in the electronic medical record (EMR) and shared with the patient's obstetrical care provider. The allergy list in the EMR was updated with pertinent findings. All eligible patients received allergy history reviews; however, only patients who delivered vaginally and who were GBS positive were included in the final data analysis. The study group was compared to patients who were GBS positive and had a vaginal delivery between November 2020-April 2021. Primary outcomes are the percentage of the patient population who received penicillin or cefazolin for GBS IAP and neonatal length of stay. Secondary outcomes include the percentage of the patient population with adequate GBS IAP, neonates with GBS early onset disease (EOD), the percentage of patients who had a reaction to a recommended antibiotic, the percentage of allergies adjusted, and the percentage of total recommendations accepted.

Pharmacist-Driven First Dose Education Process to Improve HCAHPS Survey Scores

Alexis T. Mowry PharmD, Karlee A. Kamps PharmD

Background: Design and implement a pharmacist-driven, first dose education process to improve Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) Survey medication-related scores. HCAHPS scores are derived from a patient satisfaction survey that is sent to patients after they discharge from the hospital, and are used to determine hospital reimbursement through Medicare.

Methods: Pharmacists will flag all new medications started in the hospital that patients are expected to continue after discharge. For each flagged medication, pharmacists will provide a consultation emphasizing the purpose, directions for use, and main side effects of the new medication using a patient-friendly, medication-specific handout. The percentage change on four medication-specific HCAHPS Survey questions (overall communication about medicines, how often staff tell patients what new medicines are for, how often staff describe medicine side effects in a patient-friendly way, and how often patients understand the purpose of taking their medicines) will be evaluated monthly from study implementation to conclusion.

Characteristics of a Large Group of Patients That Did Not Need Vancomycin But Got it Anyways

Ryan Feldman, PharmD, BCPS, DABAT, Rawan Oudeh, 2022 PharmD Candidate, Michael Wright, 2022 PharmD Candidate

Background: Vancomycin is routinely prescribed in the emergency department (ED) for empiric, broad spectrum methicillin resistant staphylococcus aureus (MRSA) and gram-positive coverage. Who is a candidate for vancomycin is not clearly defined and vancomycin initially ordered by the ED physician may not always be continued on admission. Those receiving a single dose are exposed to risks of drug therapy without benefit, creating potential patient harm and unnecessary medical costs. The primary objective of this study is to determine the incidence of vancomycin being prescribed in the ED and being discontinued on admission. The secondary objective is to characterize patients' demographics associated with receiving a single dose of vancomycin in the ED.

Methods: This single-center, retrospective study was conducted on adult patients who received vancomycin in the ED in the time period 1/1/2020-3/31/2020. Inclusion criteria was any patient who subsequently had vancomycin discontinued upon admission to the inpatient units. Patients were excluded if they died prior to hospital admission or were discharged directly from the ED. The primary outcome is the incidence of the admitting medical team not continuing vancomycin after it was ordered by an ED provider. Data collection included patient demographics, ED visit characteristics, hospitalization characteristics, and outpatient characteristics for patients that received vancomycin in the ED. Patient demographics, suspected infection source, and sepsis characteristics were collected for patients who received only a single dose of vancomycin in the ED.

Results: There were 246 total orders for vancomycin in the ED during the time frame, of which 138 (56.1%) were not continued upon admission. Of the 138, five were discharged from the ED after receiving vancomycin and two died prior to admission, leaving a total of 131 patients included. Results are in progress, descriptive statistics will be used to analyze the data set. Pneumonia/lower respiratory tract infection was found to be the most selected indication for empiric vancomycin in the ED.

Conclusion: By developing a patient characteristics profile based on patients who do not continue vancomycin treatment, subgroup populations where initial vancomycin prescribing may be unnecessary can be identified. and allow further investigation to decrease use in that population. This would result in cost saving and reduced patient harm associated with unnecessary antibiotics.

Impacts and Practicality of a Two-Level Vancomycin Area Under the Curve Dosing Protocol

Kara Mudd, PharmD, Paul Lata, PharmD, BCPS, Tyler Liebenstein, PharmD, BCIDP, AAHIVP, Susan Joyce, PharmD, BCACP, Katie Willenborg, PharmD, BCPS, BCCP

Background: Evaluate the impacts of implementation of an Area Under the Curve (AUC) vancomycin dosing protocol in select patients with documented *Staphylococcal* infection.

Methods: Nine pharmacists were selected to form a pilot team and trained to perform AUC dosing on selected patients. Patients with a documented *Staphylococcal* infection on vancomycin for a planned duration of at least 3 days and stable renal function were reviewed and selected for AUC dosing by the pilot team. Patients were excluded from the AUC vancomycin protocol if they had a central nervous system infection, were on hemodialysis, peritoneal dialysis, or continuous renal replacement therapy. The AUC target was 400-600 mcg-h/mL for all patients. A qualitative anonymous survey was distributed to involved pharmacists to gather feedback on the protocol. The purpose of this analysis was to evaluate the feasibility and efficacy of AUC vancomycin dosing in select inpatients at the William S. Middleton Memorial Veterans Hospital (Madison VA).

Results: A total of 15 courses of vancomycin therapy between April 24, 2021 and December 16, 2021 were analyzed. After completion of AUC dosing, 40% of patients had a decreased trough goal, 7% had an increased trough goal, 13% had no change, and 40% did not utilize trough-based dosing afterwards. The dose of vancomycin was decreased in 33.3% of patients, the dosing interval was increased in 20% of patients, and 26.7% of patients had a decreased dose and increased interval. Over half of patients (53.3%) were classified as obese with the average BMI of patients being 30.4 kg/m2. The most common indication for vancomycin was osteomyelitis (60%) with bacteremia being the second most common (20%). The most common *Staphylococcus* organisms were methicillin-resistant Staphylococcus aureus and *Staphylococcus epidermidis.* According to the qualitative pharmacist feedback survey, AUC dosing of vancomycin is feasible and appropriate to continue in select patients. The most common concerns included time constraints to perform AUC calculations, confidence in maintaining proficiency with the AUC procedure and calculations, and difficulty with appropriate timing of levels. Additionally, there was concern for potential confusion among pharmacists in determining when the conversion from trough to AUC-based dosing is appropriate in patients that meet the protocol criteria.

Conclusion: The results of this evaluation demonstrated the clinical impact and feasibility of AUC vancomycin dosing in select patients at the Madison VA. AUC vancomycin dosing results in a lower total vancomycin dose and/or an increased dosing interval in most patients. Additionally, AUC dosing of vancomycin is reasonable to continue in select patients. However, more clear guidance is needed for proper procedures when time constraints and difficulty with timing levels appropriately occurs. Future directions include presenting data and gathering feedback from other health care providers and consideration to focus AUC dosing efforts on select inpatient units.

Implementation of a Pharmacist-Led Diabetes Chronic Care Management Program Utilizing Medication Synchronization Calls

Kyle M. Wayner, PharmD, Abbi Linde, PharmD, Beth A. Martin, PhD, MS, RPh, FAPhA

Background: This study will (1) Explore patient knowledge, treatment and access barriers related to their diabetes management; (2) Design a pharmacy workflow and infrastructure to support chronic care management during the pharmacist medication synchronization calls and (3) Pilot the diabetes chronic care management program and determine its technical, operational and economic feasibility.

Methods: This prospective two-phase intervention pilot study will be designed for an outpatient community pharmacy currently offering Diabetes Prevention Program, Diabetes Self-Management Education classes and comprehensive medication reviews (CMRs) for patients currently being treated for diabetes or pre-diabetes. Participants from the educational programs and CMRs (N = 7) participated in a focus group to determine barriers and unmet needs in their diabetes management to inform the diabetes intervention design. After analysis a program will be designed and an implementation framework for chronic care management during medication synchronization calls will be created. The framework will consist of a step-by-step process guide and menu of diabetes-management related education points and areas to develop personal action plans that pharmacists can use during monthly calls. This design will make the service more easily transferable to new disease states. Patients who are enrolled in the pharmacy's medication synchronization program will then be recruited into the intervention pilot program by screening their current medication list for diabetes medications to enroll as well as inviting focus group participants who may not be current service users. Phase 1 will determine average medication synchronization time requirements without chronic disease management discussion as a baseline by measuring the average medication synchronization call length over 4 weeks. Phase 2 will implement the program and framework. Synchronization calls currently occur every four weeks and the diabetes program will target specific aspects of diabetes management with the patient during the 15-minute medication synchronization call through the menu of diabetes-management questions and creating a personal action plan for each participant. To assess the feasibility of the program, the following data will be collected: patient factors such as blood glucose log, activity log, adherence, hypoglycemic events and weight, patient program satisfaction; technical uses and workflow interface; operations factors including time measurements for preparation, patient contacts and calls; and economic potential based on enrollee referrals and billable services. Deliverables will be a feasibility analysis, a platform to build other chronic care management programs during medication synchronization calls, and a training document to train technicians and pharmacists on the process.

Impacts of Implementing a PGY-2 ID Pharmacy Resident Within the Emergency Department

Abigail K. Bonjour, PharmD, Grace C. Mortrude, PharmD, BCIDP

Background: Globally, overprescribing and inappropriate use of antimicrobial therapy has led to increased rates of antimicrobial resistance and antibiotic-associated adverse events. It is estimated that 30% of antibiotic prescriptions written by primary care providers and emergency departments are unnecessary. Implementing an effective antimicrobial stewardship program has led to decreased adverse events, improved susceptibilities of antimicrobial agents, and increased guideline adherence. The Infectious Diseases Society of America (IDSA) recommends expanding antimicrobial stewardship into departments such as the emergency room as this is an area that frequently prescribes antimicrobial agents inappropriately. Currently, there is not an infectious diseases (ID) trained pharmacist located within the emergency department at the Clement J Zablocki VA Medical Center to provide recommendations on antimicrobial agents for IDSA guideline adherence.

Methods: A pre/post quasi-experimental study was performed on patients in the emergency department who received antibiotic prescriptions two weeks before and two weeks after a PGY-2 ID pharmacy resident is present in the Emergency department for a 4-week rotation. Patients were included if they received an antibiotic prescription for common infections seen in the emergency department such as urinary tract infections (UTI)/asymptomatic bacteriuria (ASB), acute respiratory infections (ARI), skin soft tissue infections (SSTI), and community acquired pneumonia (CAP) . Data collected will include demographic information, diagnosis at time of prescribing, vital signs, pertinent labs, antibiotic regimen prescribed, rapid molecular testing utilized, resistance gene identified to determine guideline adherence. The PGY2 infectious diseases pharmacy resident will be present in the emergency department for a four week period to perform antimicrobial stewardship, make recommendations on appropriate antimicrobial prescribing based on IDSA guidelines, and to provide education to the current emergency department staff to increase national and internal guideline adherence. The primary outcomes is percent of appropriate prescriptions defined as accordance with local and national guidelines.

Pharmacist Driven Step-Up Inhaler Protocol to Reduce Exacerbations in COPD Patients

Sydney VanDorf, PharmD, Kristyn Gawin, PharmD, BCPS

Background: Significant morbidity and mortality are associated with COPD and increased frequency of COPD exacerbations. Many patients at UPH-Meriter who are admitted with COPD exacerbations are discharged home without their home inhaler regimen significantly analyzed. Often times, it may be appropriate for patients to have their inhaler regimen escalated to prevent further exacerbations according to the internationally recognized Global Initiative for Chronic Obstructive Lung Disease (GOLD) Guidelines most recently updated in 2020. Additionally, many patients would benefit from inhaler technique education in the cases where patients are not using home inhalers appropriately. This project will utilize an algorithm for escalation of inhaler therapy or provision of inhaler education by inpatient clinical pharmacists. The focus areas will be in non-ICU areas including general medicine and cardiovascular care units. The objective of this study is to decrease rates of COPD hospitalizations and re-admissions.

Methods: This study was approved by the UnityPoint Health (UPH)-Meriter Hospital Institutional Review Board. The retrospective data collection includes patients aged 18+ admitted to UPH-Meriter between December 1st, 2019 and February 29th, 2020 for COPD exacerbation or COPD with lower respiratory tract infection. The prospective data collection includes the same population characteristics between January 1st, 2022 and March 31st, 2022. The primary outcomes will be readmission within 30 days and all-cause mortality at 30 days. Secondary outcomes will be whether inhaler therapy is escalation, inhaler education is provided, GOLD classification changes from baseline, and CAT or MMRC score changes, if available.

Implementation of Standardized Code Cart Medications & Optimized Training Across a Large Health System

Cameron Cole, PharmD, Ryan Servais, PharmD, BCPS, BCCCP, BCCP, Ryan Van Engel, PharmD, BCCCP, Tyler Guetschow, PharmD, BCCCP

Background: Historically, our individual sites have regulated their own code cart medications to best fulfill their needs. This variability in resources between sites can create confusion for providers that practice at multiple sites. This confusion can lend itself to delayed treatment, increased medication errors, and overall suboptimal patient care.

The aim of this project is to standardize the medications supplied in code carts across a large healthcare system. Once accomplished, the secondary focus will be optimizing team member education to best prepare them with the resources available.

Methods: Current code cart medications were determined from each site and a gap analysis was performed to establish trends among the different sites. Once gathered, guidelines, clinical trials, and surveys were utilized to help standardize medications in site code carts. This list was brought first to our organization's critical care pharmacy council for approval, then to the pharmacy leadership council for logistical feedback. After final approval, educational documents were created for staff pharmacists. These documents served as an update and tool for those not familiar with emergency responses on the common medications used and their role.

Development of Targeted Early Discharge Education for New Anticoagulant Medications at an Academic Medical Center

Stephaney Cheng, 2022 PharmD Candidate, Brianna M. Wallace, 2022 PharmD Candidate, Laura M. Case, PharmD, BCPS, Laurie K. Dworak, PharmD, BCPS

Background: The pharmacist's role during transitions of care for discharge education is essential for reducing adverse drug events, hospital readmission rates, and healthcare costs. Anticoagulation medications are high-risk therapies that require an increased level of understanding to avoid severe adverse events and manage complex disease states. Discharge education is necessary to evaluate patient awareness of changes to their medication regimen, facilitating outpatient adherence to medications and any required laboratory monitoring. Currently, pharmacy staff at Froedtert Hospital provide education at the time of discharge, which can delay discharge times and leave little time for patients to process information and ask questions. The purpose of this study is to standardize the discharge education process for new anticoagulation medications and optimize the time spent with patients on the day of discharge.

Methods: Eligible patients were at least 18 years old and discharging home on a new anticoagulant from one of the 6 medicine units at Froedtert Hospital. Patients were excluded if they were being discharged to a skilled nursing facility or assisted living facility without the capacity to manage their own medications. Documentation was completed by pharmacy learners and staff pharmacists following the completion of early and day of discharge education. The primary outcome was the percentage of patients who received early education compared to the total number of patients eligible to receive early education. Secondary outcomes evaluated the satisfaction of the discharge process and change in total time for education on the day of discharge. A survey was distributed to pharmacy learners and staff pharmacists before and after the intervention period.

Results: Between November 1, 2021 and January 13, 2022, a total of 15 (19.48%) patients received early anticoagulation education, with an average of 8.73 minutes spent on early education. Of those, documentation of day of discharge education was completed for 7 patients with an average of 2.83 minutes. The most significant barrier to early discharge education was timely identification of eligible patients prior to discharge. Of the 11 pharmacists contacted, 3 responded to the pre-intervention survey. All pharmacists strongly disagreed or disagreed that they felt satisfied with the current discharge process on the day of discharge, but strongly agreed or agreed that early education would be beneficial to the patients and could be conducted independently by pharmacy learners.

Conclusion: Pharmacy learners are well-positioned to conduct early anticoagulant education prior to discharge, alleviating the burden pharmacists face and reducing the time spent on the day of discharge. Full integration of this workflow to identify eligible patients is a barrier faced by pharmacists. Additional workflow adjustments and resources may improve capture rates of patients and expand patient understanding.

Improving Broad-Spectrum Antibiotic Selection in the Emergency Department: Impact of ED Pharmacist Intervention & Order Panel Creation

Amanda E. Walter, PharmD, Erik Feltz, PharmD, BCPS, Evan R. Hurley, PharmD, BCIDP

Background: Inappropriate initiation of broad-spectrum antibiotics upon presentation to the emergency department (ED) can lead to antimicrobial resistance. Per the Centers for Disease Control and Prevention (CDC), an ongoing threat facing our emergency departments is antibiotic resistance with more than 2.8 million antibiotic-resistant infections occurring yearly. In 2017, The Joint Commission announced a new Medication Management standard for hospitals addressing antimicrobial stewardship and emphasizes the need to reduce the use of inappropriate antimicrobials in all health care settings due to antimicrobial resistance. This study implemented and evaluated a standardized guide for antimicrobial initiation within the ED for the following indications: unidentified source, septic shock, community acquired pneumonia, urinary tract infection, diabetic foot infection, intraabdominal infection, and febrile neutropenia. The empiric antimicrobial guide included therapy options for methicillin-resistant *Staphylococcus aureus* (MRSA), *Pseudomonas aeruginosa*, and anaerobic bacteria based on risk factors. Alternative pharmacotherapy options for drug allergies, as well as dosing recommendations were also provided. The guide was approved by various hospital committees, and education was provided to ED physicians, providers, pharmacists, and registered nurses (RN). Education was also provided to admitting hospitalists and inpatient pharmacists to ensure appropriate antimicrobials were continued upon inpatient admission. The guide is designed to improve empiric antibiotic selection within the ED by reducing inappropriate antimicrobial prescribing.

Methods: Single center, case control study by electronic health record review of patients who presented to UnityPoint Health- Meriter ED and were initiated on any of the following antibiotics and subsequently admitted to the hospital: cefepime IV, daptomycin IV, meropenem IV, metronidazole IV, piperacillin-tazobactam IV, and/or vancomycin IV. Patients were compared before and after implementation of the empiric antimicrobial guide. Primary outcomes include days of therapy of antipseudomonal, anti-MRSA, and anti-anaerobic agents per 1000 patient days present in the emergency department. Secondary outcomes include empiric "appropriate" antibiotics (pre- vs. post-intervention), percentage of patients meeting criteria for empiric MRSA, P. aeruginosa, and/or anaerobic coverage who received appropriate empiric antimicrobial therapy, percentage of antibiotics continued if started in the ED, percentage of positive MRSA, *P. aeruginosa*, and anaerobic cultures, and percentage of patients not started on anti-MRSA, anti-pseudomonal, and/or anti-anaerobic therapy empirically who needed to be escalated based upon culture results.

Prescriber Adherence to Newly Implemented Institutional Cystitis Guidelines in Ambulatory Clinics

Samuel J. Michels, 2022 PharmD Candidate, Katie M. Fermanich, 2022 PharmD Candidate, Deanna E. Olexia, RPh, Sara L. Revolinski, PharmD, BCPS

Background: Acute cystitis is one of the most common indications in the ambulatory care setting for which antimicrobials are prescribed to patients. There is opportunity to promote antimicrobial stewardship by adhering to Infectious Diseases Society of America (IDSA) guidelines and institutional antibiograms. The goal of our study is to determine prescriber adherence to institutional guidelines for treatment of uncomplicated cystitis based on the antibiotic regimen chosen to treat the infection.

Methods: Institutional treatment guidelines for acute uncomplicated cystitis were implemented in November 2020. In the following month, primary care providers were given education about the new guidelines. The primary objective of this study was to assess prescriber adherence to these guidelines in the primary care setting. The secondary objective was to evaluate regimens chosen by the prescriber for the treatment of acute uncomplicated cystitis. Eligible participants were female, age > 18 and prescribed an antibiotic for acute uncomplicated cystitis at a Froedtert clinic between January and March 2021. Data was collected retrospectively through EPIC chart review.

Results: Evaluation of 100 participants were included in the retrospective review. The percentage of prescribed antibiotic therapy to treat acute cystitis that was guideline adherent was 49%. The primary reason for guideline non-adherence was duration of therapy for the selected antibiotic, which was inappropriate 42% of the time. Nitrofurantoin was the antibiotic selected most frequently (48%) followed by sulfamethoxazole/trimethoprim (35%). Nitrofurantoin would have been appropriate for treatment in 90% of patients, but it was only prescribed 48% of the time. Of the antibiotics prescribed, sulfamethoxazole/trimethoprim was most often prescribed correctly in respect to appropriate dose and duration of therapy prescribed (60%), followed by nitrofurantoin (54%). Recurrent cystitis within 30 days occurred in 11% of patients.

Conclusion: Optimization of antibiotic use in cystitis is an area for improvement as less than 50% of antibiotic regimens were adherent with guideline recommendations. Duration of therapy for antibiotics prescribed should be a focus, as this was the most commonly seen deviation from the guidelines. This study shows that nitrofurantoin may be underutilized for treatment of uncomplicated cystitis as recurrence of cystitis was low after initial treatment. Antimicrobial stewardship efforts to educate providers on their prescribing practices in this setting should remain a point of emphasis in future studies at this institution.

GAP Analysis of Non-Sterile Compounding at Advocate Aurora Health - Aurora St. Luke's Medical Center

Katherine E. Koss, PharmD Candidate 2022, Emily Rabl, PharmD, BCPS

Background: Perform a gap analysis of the non-sterile compounding processes at Aurora St. Luke's Medical Center (ASLMC) against the new Advocate Aurora Health (AAH) Compounded Non-Sterile Product Preparation policy and create a plan for gap closure.

Methods: Gap analysis was completed by shadowing pharmacy technicians preforming non-sterile compounding in central pharmacy at ASLMC. Their actions were compared to the system-wide Compounded Non-Sterile Product Preparation standard operating procedure. After gaps were identified, a gap analysis plan was created, and an action plan was developed to close each operational gap.

Results: All 21 operational gaps within the non-sterile compounding process that were within the scope of this project were closed.

Conclusion: The identified operational gaps at ASLMC, due to the recently updated AAH Compounded Non-Sterile Product Preparation policy, were closed to ensure that both non-sterile compounding environments and personnel work practices continue to stay current with pharmacy practice standards. By closing the identified gaps, patient safety and high-quality patient care will continue to be upheld at ASLMC.

Evaluation of Remdesivir Utilization in Hospitalized COVID-19 Patients in an Academic Medical Center

Stephanie C .Watson, PharmD, Garret Newkirk, PharmD, BCPS

Background: Froedtert Health's COVID-19 medication treatment guideline has recommended the use of remdesivir for the treatment of moderate to severe COVID-19 disease in hospitalized adult and pediatric patients 12 years or older since December 2020. The purpose of this medication utilization evaluation (MUE) is to assess remdesivir use relative to the patient eligibility criteria in the institutional guideline. Eligibility criteria include hospitalized patients requiring low-flow supplemental oxygen, noninvasive ventilation, or high-flow oxygen presenting within 10 days of symptom onset with an eGFR > 30 mL/min/1.73m2 and an ALT < 10 times the upper limit of normal. The primary outcomes are adherence to the institutional guideline and clinical status at day 14 following remdesivir administration. Secondary outcomes include days requiring supplemental oxygen, duration of hospitalization, concomitant administration of dexamethasone, dose of dexamethasone, completion of a 5 day course of remdesivir, and remdesivir administration without supplemental oxygen.

Methods: All patients with a COVID-19 diagnosis who received remdesivir from April 1st through September 20th, 2021 at Froedtert Hospital (FH), Froedtert Menomonee Falls Hospital (FMFH), and Froedtert West Bend Hospital (FWBH) were eligible for inclusion in this MUE. Electronic health record reports were generated to provide a total of 582 unique accounts billed for remdesivir administrations in the selected timeframe. Of these 582 accounts, 317 (54.5%) were from FH, 95 (16.3%) were from FWBH, and 170 (29.2%) were from FMFH. A random number generator was utilized to minimize selection bias, and randomization was performed until a total of 70 accounts and associated patients were identified for MUE inclusion. Of these 70 accounts, 38 (54.3%) were from FH, 11 (15.7%) were from FWBH, and 21 (30%) were from FMFH. Data points included in the primary and secondary outcomes were collected via manual chart review. Patients were further stratified into clinical status groups (groups 1-8; 1 = deceased; 8 = not hospitalized, no limitations of activities) outlined in the remdesivir clinical trials.

Results: Of the 70 patients assessed, 55 patients (78.6%) met all guideline criteria prior to remdesivir administration. Of those who did not meet guideline criteria, 9 (12.9%) had symptoms for more than 10 days prior to remdesivir administration, 4 (5.7%) were not requiring supplemental oxygen and had oxygen saturation > 94%, and 3 (4.3%) were mechanically ventilated. The change in clinical status from baseline to day 14, overall, was a median 3 point improvement. Patients with more severe condition at baseline (groups 2 and 3) did not have as great improvement (median improvement scores 0 and 0.5, respectively) as patients with less severe condition at baseline (groups 4 and 5, median improvement scores 3 and 2, respectively). Sixty-three patients (90%) were treated with dexamethasone while receiving remdesivir.

Conclusion: A majority of patients who received remdesivir for treatment of COVID-19 at Froedtert Health met the institution's internal guideline eligibility criteria. Remdesivir was associated with improvement in clinical status for a majority of patients presenting with a less severe clinical status at baseline.

Implementation of Barcode Verification in the IV Room

Sabyn T. Warrick, PharmD, Joshua Rekoske, PharmD, Donna Kieler, PharmD

Background: Incorrect product selection is one of the most common types of errors that can occur while compounding. Barcode verification prior to compounding improves safety by ensuring the correct product is selected. Currently at our institution, barcode verification is only utilized for compounded chemotherapy products and not for other compounded medications. This project aims to expand barcode verification to all compounded medications in order to reduce the number of errors from incorrect product selection. Barcode verification also allows the pharmacy department to bill for waste, and could be further developed to allow for remote product verification.

Methods: This project was approved by the local Institutional Review Board. Barcode verification was already built into our electronic medical record and staff were familiar with the process and purpose. Education was provided to the staff regarding the expansion of barcode verification for all compounded medications and training was provided as needed. Error rates after implementation were tracked and compared with estimated compounding error rates from the literature. Staff compliance rates were also tracked for all medications compounded in the IV room.

Results: Primary Outcome: Number of medication errors after implementation. Secondary outcomes: Cost savings and staff compliance with the new process.

Optimization of Lipid Lowering Therapies in Patients at Very High Risk for Atherosclerotic Cardiovascular Disease Within a Multistate, Multihospital Integrated Health System

Taylor L. Gorski, PharmD, Jared M. Frost, PharmD, BCCP

Background: Observational data suggests that patients at high risk for atherosclerotic cardiovascular disease (ASCVD) frequently fail to reach goal low-density lipoprotein cholesterol (LDL-C) levels. This is often reflective of failure to prescribe the optimal medication regimen suggested by the most recent multi-society cholesterol management guidelines. The objective of this project is to develop a process to ensure patients at high risk for atherosclerotic cardiovascular events are assessed for opportunities to optimize lipid lowering therapy during their inpatient stay and create resources for providers that are readily accessible following discharge. The implementation of this process and resources is intended to improve adherence to lipid guideline treatment recommendations.

Methods: Physician and pharmacist references were created to facilitate guideline directed lipid lowering medication optimization. Then retrospective data were collected to quantify the number of patients at high risk for ASCVD who are not on guideline directed lipid lowering therapy. A prospective cohort of 60 inpatients that were at high risk for ASCVD was identified to compare to the retrospective data. A pharmacist assessed each patient and provided inpatient and outpatient recommendations for medications regimens along with follow up monitoring parameters. Three months after enrollment, chart review was completed to determine if patients were on guideline directed lipid lowering regimens. The prospective and retrospective results were compared to determine the impact of this pharmacist driven intervention on prescribing of guideline-directed lipid lowering therapies and LDL-C levels.

Evaluation of Discharge Opioid Prescribing in Mechanically Ventilated ICU Patients Based on Prior to Admission Opioid Use

Kaitlin Babula, 2022 PharmD Candidate, Thomas Lofy, 2022 PharmD Candidate, Sarah Peppard, PharmD, BCPS, William Peppard, PharmD, BCPS, FCCM

Background: Opioids are a core component in the multimodal approach to analgesia in critically ill patients who receive invasive mechanical ventilation (IMV). However, the implications of using opioids during the critical care admission on post-discharge opioid use is unknown. This may be an underappreciated contributor to the nationwide opioid crisis. The purpose of this retrospective observational study is to characterize opioid prescribing patterns post-hospital discharge in mechanically ventilated opioid-naive and opioid-user patients.

Methods: This is an IRB-approved retrospective cohort study of mechanically ventilated patients admitted to the critical care medicine service at Froedtert Hospital from June 30, 2020 through May 31, 2021. Patients were included if they received at least 1 dose of opioid within the first 12-hours of mechanical ventilation. Patients were excluded if they were less than 18 years old, with incomplete or missing clinical records, were intubated for less than 24 hours, received mechanical ventilation within the last year, were prescribed methadone or buprenorphine at the time of hospital admission, received continuous ketamine infusions during mechanical ventilation, or experienced death during their medical ICU stay. Patients were characterized as either opioid-naïve or opioid users based upon opioids prescribed prior to ICU admission. The primary outcome was the percentage of patients who were prescribed opioids at discharge from the hospital. Secondary outcomes included the mean morphine milligram equivalents (MME) per day exposure during IMV, amount of opioids received after extubation, incidence of delirium during ICU stay, adjustment of opioid infusion doses based on reported pain scores, duration of IMV, and length of hospital stay.

Results: Two hundred patients were included in the IRB-approved study; preliminary results are reported on 17 patients (9 opioid-naïve patients and 8 opioid-user patients) reviewed thus far. Upon discharge, opioids were prescribed for 11.1% in the opioid-naïve and 50% in the opioid user populations. The mean MME per day exposure during IMV was 165 in opioid naive patients and 202 in opioid users.

Conclusion: We observed a greater incidence of opioid prescriptions at discharge in the opioid user population compared to the opioid-naïve population for the preliminary data. Data collection is ongoing and expected to be completed by March 2022.

Evaluating the Effectiveness of a Pharmacist-Driven MRSA Nasal PCR Protocol for Pneumonia

Lucas S. Grabowski, PharmD, Kelly C. Sylvain, PharmD, Nora K. Krause, PharmD

Background: One of the main roles of the SSM Health Wisconsin Regional Antimicrobial Stewardship (AMS) program is to create antimicrobial stewardship resources to guide provider prescribing and management of antimicrobial therapy for infectious diseases. De-escalation of antimicrobial therapy, when appropriate, is a crucial antimicrobial stewardship practice to minimize the development of antimicrobial resistance. Methicillin resistant Staphylococcus aureus (MRSA) polymerase chain reaction (PCR) nasal swabs. A nasal MRSA PCR has been shown through multiple studies to have a negative predictive value of >98% for ruling out MRSA pneumonia. Given this strong negative predictive value, discontinuation of vancomycin is recommended with a negative nasal swab result when using vancomycin for suspected pneumonia. The objective of this study is to evaluate the effectiveness of a pharmacist-driven MRSA nasal PCR protocol.

Methods: The electronic medical record (EMR) system was used to identify all patients admitted to St. Mary's Hospital during the study period who were started on vancomycin for a respiratory tract infection. Patients will be excluded from this study if they have a positive MRSA PCR result or if they have a different positive MRSA culture (such as a tracheal aspirate, sputum or wound culture). A retrospective chart review will be performed for all patients meeting study inclusion criteria with data analysis according to the primary and secondary outcomes. Patient identifiers and all protected health information (PHI) will be maintained in an encrypted computer database housed within the hospital network system. The primary outcome in this study is time to discontinuation of vancomycin after a negative MRSA PCR result. The secondary outcomes include frequency of appropriate MRSA PCR ordering per protocol, appropriateness of vancomycin empiric therapy, and average total number of days of empiric vancomycin therapy.

Professional Identity Formation in Student Pharmacists

Hailey A. Thompson 2022 PharmD Candidate, Karen J. Kopacek, MS, RPh, Amanda R. Margolis, PharmD, MS, BCACP

Background: To increase first-, second-, and third-year University of Wisconsin-Madison student pharmacists' understanding of professional identity. Design and implement discussions and assignments that empower students to invest in professional identity formation (PIF) to "think, act and feel" like a pharmacist.

Methods: A literature search on professional identity (PI) and PIF was conducted to find and analyze PIF themes in pharmacy and other health profession education as well as activities and assessments. The themes and assessments identified were utilized to create cohort-specific discussions for three distinct classes of pharmacy students. Pre-discussion assignments were designed to enhance students' baseline knowledge of professional identity. Students completed a PI plan post-discussion to increase their commitment to their professional identity development in the Spring semester. The Macleod Clark Professional Identity Survey (MCPIS) was given to assess students' baseline scores and was repeated later in the spring semester to assess growth.

Results: Cohort-specific discussions explaining the PIF process and highlighting completed and upcoming professional events were created and given to each class. In-class activities emphasized that PIF is a process that occurs over time and allowed students to analyze their current PI status. This work is ongoing and the results of the MCPIS scores will be collected.

Conclusion: PIF is an important theme in pharmacy education to facilitate the development of a strong PI in students, prior to entering practice. Socialization and other identity frameworks can be incorporated into existing coursework to encourage PIF throughout each year of pharmacy education.

Pharmacy Students Preference Regarding Synchronous Discussion Within an APPE Seminar

Ariana M. Double, 2023 PharmD Candidate, Amanda R. Margolis, PharmD, MS, BCACP, Denise Walbrandt Pigarelli, PharmD, BC-ADM, Catherine Lea, RPh, BCACP, Claire Lee, PharmD, BCPS, Mara Kieser, MS, RPh, BCGP

Background: Doctor of Pharmacy students at the University of Wisconsin-Madison School of Pharmacy participate in a year-long virtual Advanced Pharmacy Practice Experience (APPE) seminar. In 2020, an evaluation was completed to determine student preference regarding seminar delivery. The evaluation determined that students prefer seminar topics presented asynchronously paired with a synchronous discussion to facilitate further understanding of the seminar topic. Per these findings, blocks 1-3 consisted of two seminar topics presented asynchronously with a synchronous discussion accompanying one seminar topic. The objective of this evaluation was to determine student preferences and engagement regarding synchronous APPE seminar discussions.

Methods: APPE students completed a survey at the end of Block 3 which included questions focused on synchronous discussion engagement, value, and enjoyment. Students were invited via email to complete a 15-question survey; 11 questions used a 4-point Likert scale (1=not at all agree to 4=completely agree). The remaining questions were open ended or multiple choice.

Results: Out of the 128 students surveyed, 113 students responded (88.28%). Students reported feeling more engaged in seminar topics with discussion as opposed to seminar topics without discussion (mean with discussion=3.38, SD=0.76; mean without discussion=3.06, SD= 0.83; Cohen's d comparing inclusion of discussion=0.402 indicating moderate effect size). Students found value in reviewing seminar topics during discussion (mean=3.4, standard deviation=0.72). Students responded that they would like to keep synchronous discussion accompanying APPE seminar topics (total=54.87%; presentation with discussion=30.09%, mixture of formats=24.78%). Qualitative feedback included requesting more cases and access to materials ahead of time. Additionally, some logistic concerns were raised with suggestions to overcome.

Conclusion: Synchronous seminar discussions resulted in more engagement in seminar topics with discussion when compared to seminar topics presented without discussion. Students agreed that seminar topics were helpful and valuable. Future discussions will incorporate more cases. Actionable solutions to logistic barriers will be piloted in blocks 5-8.

Enhancement and Standardization of Inpatient Pharmacy Technician Training Resources

Adam J. Wargolet, 2022 PharmD Candidate, Angie Knutson, PharmD, BCPS

Background: Pharmacy technician trainer checklists provide a written standard for content reviewed with new trainees during initial skill building. Pre-existing system training documents may not have provided strong enough guidance or context to technician trainers with current approaches often differing by location in how skills and knowledge of training topics are imparted to technician learners. Updating and standardizing training resources would minimize this variance and contribute to producing highly capable, qualified staff able to function in any Advocate Aurora inpatient pharmacy.

Methods: System documents for inpatient pharmacy technician trainers were evaluated and modified for updated content, accuracy, and generalizability in the context of a dual-hospital system merger with ongoing system standardization. Changes made were reviewed at a system level by content experts as well as the inpatient pharmacy technician orientation and training committee prior to publication.

Results: Of the 25 inpatient pharmacy technician trainer documents identified for review, 3 were deemed out of scope due to process updates or inability to generalize across the system. The remaining 22 documents were assessed and updated for widespread system adoption.

Pharmacy Preceptors' Process for Teaching APPE Students Interprofessional Teamwork Skills

Maeleigh Tidd, MS, Amanda Margolis, PharmD, MS, Beth Martin, BSPharm, PhD

Background: To explore the process pharmacy preceptors use to identify interprofessional interactions for students on Advanced Pharmacy Practice Experiences (APPEs), prepare students for those interactions, and debrief them following their experiences.

Methods: Virtual focus groups were conducted to explore how pharmacy preceptors identify interprofessional interactions for their students on APPEs. Preceptors who offer required acute or ambulatory care rotations were invited to participate if they had submitted at least four evaluations of the university's interprofessional activity assessment. The focus groups discussed three primary questions: what interprofessional interactions students were having on rotations; how preceptors prepared students for these interactions, and how feedback was provided to students afterwards. The transcripts were analyzed using inductive thematic analysis.

Results: A total of four focus groups were completed; two conducted with acute care pharmacists (n=6) and two with ambulatory care pharmacists (n=9). The following was yielded by analysis.

Identify: Interprofessional interactions were identified when they naturally occurred throughout the day. Students were involved in an array of interprofessional interactions including medication reconciliations, drug therapy recommendations, and identifying best treatment options and adherence plans. These interactions primarily occurred face-to-face, but occasionally students interacted with physicians on phone calls and through electronic health records. Clinical pharmacists were integrated into interprofessional teams, providing students with opportunities to interact with nurses, nurse practitioners, physician assistants, medical residents, dieticians, social workers, and/or respiratory therapists. Outside of the daily interprofessional interactions, pharmacy preceptors found it beneficial to engage the students in complex case discussions.

Prepare: Pharmacy preceptors prepared students for interprofessional interactions by first introducing them to the interprofessional team members and their respective roles. Then preceptors had students observe how they interacted with various team members, to set realistic expectations for interactions. Additionally, some preceptors provided mock interactions so students could practice their planned interactions.

Debrief/Feedback: Preceptors described feedback opportunities that occurred throughout rotations. Following students' interprofessional interactions, preceptors began their debriefs by asking students to reflect on their interaction. Then preceptors provided their feedback on the students' approach to discussions, identifying what went well and what they could do differently next time. Direct student feedback was provided by the preceptor, but sometimes other team members involved in the interactions also provided feedback. Preceptors also asked the interprofessional team members to share reflections on student performance. Formal feedback to students on their interprofessional interactions was provided during the required midpoint and final evaluations.

Conclusion: Pharmacy preceptors find value in providing, preparing, and debriefing their students on interprofessional interactions throughout their acute or ambulatory care rotations. This project identified various ways preceptors create opportunities for students to engage in interprofessional experiences on their rotations. The outcomes from this project will be used to guide other preceptors in the process of preparing student pharmacists to be team-ready via interprofessional interactions.

Utilization of Lean Methodology to Evaluate and Improve Domiciliary Medication Use Process

Cameron Quan, PharmD

Background: The domiciliary is an outpatient mental health facility established by the Veterans Health Administration to provide psychosocial rehabilitation and facilitate community reintegration for veterans with mental illnesses or addictive disorders. Each patient at the domiciliary is categorized to different levels of care based on their ability for self-medication as either "dependent" (Level 1), "semi-dependent" (Level 2), or "independent" (Level 3). From October 1, 2019 – September 30, 2021, there were 41 patient safety reports related to the domiciliary medication use process. Seventeen of these cases (41%) involved level 3 patients. Medication use process comprises of five steps: prescribing, transcribing, dispensing, administering and monitoring. According to the U.S Food and Drug Administration, a breakdown to one of these steps can lead to medication errors. In the pre-intervention data, 33.3% were dissatisfied or somewhat dissatisfied and 23.8% were satisfied or somewhat satisfied with the current process. Hence, the purpose of this project is to design and implement new processes to decrease delays in medication dispensing and administrating while improving workflow inefficiencies with the aim of increasing staff's satisfactions by 30%.

Methods: This project is led by an multidisciplinary team consisting of domiciliary nursing staff, mental health pharmacists and clinical pharmacists, and using LEAN methodology. Prior to the intervention phase, all staff involved with the domiciliary medication use process received Voice of Customer (VoC) questionnaires to establish a baseline of views regarding the existing processes. Moreover, these staff were interviewed to understand variations in the current medication processing. During this interview, the staff would identify barriers or problems within the current process. A process map was created to identify areas of vulnerability through observation. Furthermore, an exhaustive retrospective review of Joint Patient Safety Reporting (JPSR) events involved level 3 patients was conducted. All JPSR events were classified based on severity and frequency utilizing NCC MERP Index and the Veteran's Health Administration Severity Assessment Code (SAC Score), and length of delays. In the next phase, the team will review all barriers , and vote on several interventions they would like to fix. New processes will be introduced with the goal of reducing delays in medication dispensing and administration, decreasing the number of time domiciliary staff come to the pharmacy to pick up medications for level 3 patients, and increasing domiciliary staff's satisfaction rates. At the end of this project, a post-intervention VoC questionnaires will be sent out to determine satisfaction with the new processes. Moreover, an exhaustive chart review will be conducted to evaluate JPSR events post-intervention period for domiciliary level 3 patients to evaluate the severity and frequency of the events, and length of delays. These post-intervention JPSR events will be compared with the pre-intervention to evaluate the impact of the new processes.

Pharmacist-Guided Fluid Stewardship in the Intensive Care Unit

Aijan Urmat, PharmD, Brian Moilien, PharmD, BCCCP

Background: Intravenous fluids (IVFs) are important in the management of critically ill adults. IVFs can help correct intravascular depletion and improve cardiac output. However, like all medications, IVFs do come with serious risks. With persistent use of IVFs, about 25% of patients in the ICU experience fluid overload. Fluid overload can negatively affect multi-end organ function, causing negative outcomes such as pulmonary edema, cerebral edema, acute kidney injury, and hepatic congestion. Fluid overload has also been shown to have an impact on morbidity, causing longer length of stay in the intensive care unit (ICU) and prolonged mechanical ventilation. Although there is no universally accepted definition for fluid overload, many clinical investigations have defined fluid overload as a weight gain of greater than 10% from baseline. Fluid stewardship is the term used to describe daily fluid management based on individual patients' responsiveness. The goal is to avoid negative outcomes of inappropriate fluid therapy use in the ICU. Pharmacists are already involved in assessing appropriateness of all medications at UnityPoint Meriter Hospital and can have an important role in assessing fluid therapy. A study has shown that pharmacist-driven diuresis protocol of volume de-resuscitation had a statistically significantly lower cumulative fluid balance 72 hours after shock.

Methods: This project will be in two phases of observing critically ill adult patients on the intensivists' service. First, we will retrospectively collect patient information regarding fluid overload before pharmacist intervention. After we implement a fluid management treatment algorithm, we will collect patient outcomes involving fluid overload again to determine if pharmacist involvement can decrease rates of fluid overload, defined by a greater than 10% weight gain. We will also observe other secondary outcomes such as length of stay in the ICU, mortality in hospital, ventilator-free days, vasopressor-free days, incidence of hyperchloremia or hypernatremia and incidence of AKI.

Process Map Utilizing Scientific Partner Analytics Support to Expand Breadth of Population Health Quality Improvement Opportunities: An Academic-Industry Partnership

William J. Peppard, PharmD, BCPS, FCCM, Travis Suss, PharmD, BCGP, Nicholas Olson, PharmD, BCACP, AAHIVP, Jon J. Glover, PharmD, Christopher Gillette, PharmD, BCPP, Kathryn Gaudreau, BS, Garret Newkirk, PharmD, BCPS, Chris Schuenke, PharmD, MBA, MIS, Amit Singh, DO, Kristin H. Busse, PharmD, BCPS

Background: The COVID-19 pandemic has imposed significant stress on nearly all aspects of the healthcare system. Informatics technology enhancement such as telehealth, work from home, and novel medical record builds have resulted in reprioritization and resource allocation for many ongoing projects. Froedtert & the Medical College of Wisconsin (FMCW) sought to better understand pain stewardship practices, resource utilization, and outcomes in the ambulatory setting, including patients with osteoarthritis (OA). FMCW had the expertise but were limited in time and resources to devote to this project amongst multiple competing priorities. The Pfizer Medical Outcomes & Analytics team looks for opportunities to collaborate with health systems to improve quality of care and population health in mutually prioritized therapeutic areas and has data analytic capabilities along with tools to support electronic medical record data abstraction and analysis of de-identified data. However, at FMCW there was no precedent for utilizing external partner support for data analytics within quality improvement (QI) initiatives. We sought to describe the process for gaining approval to utilize a third party for data analytics support for a QI project of mutual interest.

Methods: Relevant FMCW stakeholders were identified and included Pain Stewardship, Pharmacy Research Committee (PRC), Pharmacy Informatics, Institutional Review Board (IRB) and legal counsel. Pfizer stakeholders included the Medical Outcomes & Analytics team and legal counsel. FMCW established the scope of the project, including data mapping parameters. The PRC reviewed the project protocol and made the determination it was clinically a QI project, though was ultimately determined to be research because of the need to execute a Data Use Agreement (DUA). Pfizer Medical and Froedtert agreed upon a DUA and the project was submitted to IRB for review. Upon IRB approval, the pharmacy informatics team was authorized to extract the necessary de-identified data from the medical record and share through a secure and encrypted document portal with Pfizer Medical for analysis. Data were analyzed and formal written analysis was presented back to Froedtert.

Results: FMCW initiated this process in February 2021. The project protocol was reviewed by the PRC in April, the DUA was executed in May, and IRB approved in June. Data were transferred in September and preliminary data analysis was prepared in October, with final data summary completed in November. Data analysis was performed on 18,870 unique patients with a diagnosis of OA who were cared for at FMCW from 7/1/2020 through 6/30/2021. Data were stratified by race/ethnicity, and includes analyses of basic demographics and resource utilization for both ambulatory and inpatients. Interpretation of these data are underway with an emphasis on identifying gaps in care, disparities in care by race/ethnicity, and opportunities for improvement. Differences in race/ethnicity, with an emphasis on opioid prescribing, will be compared to system data inclusive of all diagnosis codes. Changes in practice are yet to be determined.

Conclusion: Openness to QI collaborations with external partners within areas of shared interest can expand health systems' abilities to engage in QI initiatives in an environment of limited resources and multiple competing priorities.

Implementing a Technician-Led Workflow to Maintain a Decentralized Medication Distribution Model

Anna Maher, 2022 PharmD Candidate, Jennifer Lester, PharmD

Background: Starting in 2019 through 2021, Aurora St. Luke's Medical Center converted each inpatient care unit to a decentralized medication distribution model in which the goal was to consistently dispense 85% of unit dose medications from the automated dispensing cabinets (ADCs) on the floors. Prior to this conversion, the previously established medication distribution model consisted of 75% of unit dose medications dispensing directly from central pharmacy to a patient-specific medication bin or drawer. The purpose of this project was to create and implement a new pharmacy technician workflow that would reliably maintain the new medication dispensing model in which 85% of medications are dispensed from decentralized ADCs.

Methods: A preliminary literature search was completed in order to explore any previously established workflows at other healthcare systems also implementing a decentralized medication dispensing model. A review of two Aurora St. Luke's Medical Center pharmacy PGY1 year-long projects from the two years prior was also completed to gain a greater understanding of exactly when and how the decentralized medication distribution model came to be. After gaining a greater understanding of where the implementation process was currently, a review of the different ADC and EHR reports available to analyze was completed. This review made clear that the month-to-month electronic health record (EHR) dispensing reports for each inpatient ADC was the most appropriate report to implement into this workflow. A master document was created to be able to process the month-to-month EHR dispensing reports and a page on the document was created for each inpatient unit. Each page in the document was manipulated to calculate from the EHR reports what percent of medications are dispensed from the decentralized ADCs and what percent of medications are dispensed through automation in central pharmacy on each unit. The master document allows the user to see which medications are dispensed most frequently from central pharmacy so that they may be stocked in the decentralized ADCs. Workflow steps were created in order for pharmacy technicians to know how to manage and interpret the master document. The workflow steps also contain standardized par levels based on daily dispensing values in order for an appropriate amount of medication to be stocked in the ADCs if it is suitable to stock. An accountability document was also created for pharmacy technicians to confirm month-to-month which floors were addressed.

Implementation of a Bi-Directional Interface Between Hazardous Intravenous Compounding Robot and Intravenous Workflow Management System

Aimen Naveed, PharmD, Joel P. Frank, PharmD, Michael Hallam, PharmD, Justin Konkol, PharmD, MHA, BCPS, DPLA

Background: Intravenous (IV) automation technologies, including IV robotics, provide safeguards to reduce medication errors and improve operational efficiency within the sterile compounding process. Froedtert Health envisions being the premier institution that paves the way for an autonomous pharmacy framework with the strategic plan to fully automate IV compounding by the year 2025. Efforts to integrate IV robotics began in 2020 with the implementation of APOTECAchemo, an automated robotic system that prepares compounded sterile preparations (CSPs) within a closed system at Froedtert Hospital. APOTECAchemo improves compounding efficiency, enhances medication safety, and minimizes hazardous exposure risk to employees. As the Froedtert Health footprint continues to grow, plans to expand IV robotics within the health system include additions of three APOTECAchemo across the cancer service-line by the end of 2022.

At Froedtert Health, Epic Dispense Prep/Dispense Check is the intravenous workflow management system used that provides functionality to barcode scan the CSPs order components, document waste and capture photos of the preparation process. The APOTECAchemo robot operates on a standalone workflow management system. In current state, manual documentation in Epic Dispense Prep is needed to perform barcode verification of correct order components along with documenting hazardous drug waste before a prep can be started on the robot. The manual process is prone to inconsistencies in waste documentation. Implementing a bi-directional interface will improve robot efficiency, automate robot waste documentation and streamline the flow of data from the robot into Epic.

Methods: The primary objective of this project is to implement the bi-directional interface system that will open up two way communication of information between the robot and Epic. The secondary objectives of the project include; improve the efficiency of robot utilization, improve waste documentation, and quantify the cost savings from increased waste billing capture from improved waste documentation. Efficiency of robot utilization will be assessed using the robot productivity data pre and post implementation of the interface. A cost analysis will be conducted using the waste data pre and post implementation to quantify the cost savings from increased billing capture.

Development of a Pharmacy-Specific Resource to Guide Pharmacy Leader's Response to Annual Safety and Culture Survey at a Large, Tertiary Hospital System

Grace L. Dyke, PharmD, MBA, Kyle Sabol, PharmD, BCPS, Julie L. Kindsfater, PharmD, BCPS

Background: Develop a resource for pharmacy leaders to utilize when reviewing their culture of safety survey results and assist with local changes to improve future culture of safety scores.

Methods: Advocate Aurora Health's (AAH) most recent annual Culture of Safety Survey results for were analyzed and separated using various filters to better understand existing trends. Specific hospital sites that displayed results on either the extreme high or extreme low were identified. Pharmacy leaders and frontline pharmacy employees were contacted to discuss various strategies used at their sites and suggestions for improvement. Key concepts were identified in these discussions and compared to existing AAH safety and high reliability documents. Using the information gathered from discussions and literature, best practice suggestions were developed with a focus on huddle and/or safety huddle utilization at each site. The best practice document was shared with system and site leadership for feedback and incorporation into daily practices.

Utilizing an Opt-Out Process to Improve Transitions of Care and Financials through the Delivery of Discharge Medications and Education at the Hospital Bedside

Benjamin J. Pierce, PharmD, BCPS, Jordan F. Dow, PharmD, MS, FACHE, Richard F. Arndt, PharmD, BCPS, Michele L. Richmond, RPh, Karyn K. Ryba, MBA-HCM

Background: Patient transitions of care at discharge is a significant focus of hospitals. Studies have demonstrated that approximately one-third of patients fail to fill discharge prescriptions after a hospital admission. In response, discharge medication programs have been implemented by a substantial number of hospitals to promote medication compliance, improve transitions of care, and increase prescription filling at onsite pharmacies. Currently, Mayo Clinic Health System (MCHS) – Eau Claire Hospital offers an opt-in style bedside discharge medications and education delivery service. Patients that are eligible for the service must be transitioning to a home or self-care setting from any general medical, progressive care, or intensive care unit during operational hours. An opt-in approach poses the question of participation to eligible patients. If the patient is agreeable, their discharge prescriptions are sent to MCHS – Luther Outpatient Pharmacy and the service is fulfilled. Utilizing an opt-in service, MCHS – Eau Claire Hospital has an average rolling capture rate of approximately 30%. Capture rate is defined as the number of discharge prescriptions prescribed for eligible patients that were filled at any MCHS outpatient pharmacies divided by the total number of discharge prescriptions prescribed for eligible patients. An opt-out style service sends all discharge prescriptions for eligible patients to MCHS – Luther Outpatient Pharmacy where the prescriptions are adjudicated and barriers to medication procurement are resolved. The patient is then contacted, provided copayment information, and asked if they would like to continue filling through the service. If the patient consents, the service is performed. The goal of this project was to pilot an opt-out style bedside discharge medications and education delivery service on a medical surgical unit at MCHS – Eau Claire Hospital, with the long-term intention of hospital-wide implementation. The primary outcome was to increase the capture rate to 60% or greater for the pilot unit. Secondary outcomes included service participation rate and comparison of discharge process times between patients that participated in the service versus those that opted-out as a countermeasure.

Methods: The pilot service occurred from November 8th-20th of 2021. Pilot eligibility included any patients discharging to a home or self-care setting from the medical surgical unit who received discharge prescriptions. Patients discharged outside of service hours or transitioned to other health care or long-term care facilities were excluded. A capture rate of 60% was established as the goal for the primary outcome, which was based on an approximate two-fold increase from the average rolling capture rate. Participation rate was also evaluated. Median and mean discharge process times between patients that participated versus those that opted-out were also compared.

Results: A total of 69 patients were eligible. These eligible patients were discharged with 194 prescriptions. Capture rate for the pilot was 75% with a participation rate of 84%. The median discharge process time for patients that participated versus those that opted-out were 77 and 71 minutes with a mean of 103 and 94 minutes, respectively.

Conclusions: An opt-out style bedside discharge medications and education delivery service can improve capture rates without substantially increasing discharge process times.

Streamlining Code Cart Replenishment Processes in a Large Tertiary Care Medical Center

Thong Lee, 2022 PharmD Candidate, Jennifer Lester, PharmD

Background: The code cart replenishment process at Aurora St. Luke's Medical Center (ASLMC) was previously reviewed, and a need for revision was determined to be necessary. The current replenishment process requires pharmacy technicians to restock two full drawers of medications and fluids every time a code cart is returned to the central pharmacy. Then, a pharmacist checks the newly prepared cart. The current process contains challenges to pharmacy technicians and central pharmacists due to disruption of staff workflow. The purpose of this project was to create a more efficient code cart medication replenishment process through the use of sealed pre-made trays.

Methods: A previous pharmacy department project identified areas for improvement of the code cart process. This project expanded on the work by creating two different workflows depending on if the returning code cart was used or expired. A used code cart would require the preparation of new tray(s), while an expired code cart only requires swapping the expired tray(s). A tour of the central pharmacy was conducted to determine the potential storage area of code cart tray materials. Central pharmacy technicians were shadowed, and crucial pharmacy technician roles pertaining to code cart replenishment were identified. After the analysis, specific pharmacy technician positions were identified on each shift to ensure that there were always at least ten of each type of code cart trays available having at least a 90-day expiration. A job aid with photos and step-by-step process on how to refill a new tray and code cart were created for both central pharmacy technicians and central pharmacists. A medication outdate list and charge sheet were created as a reference to ensure each code cart tray gets fully replenished in an identical layout. All healthcare team members impacted by this change will be notified and provided education in advance of the implementation of the trays. The primary outcome of this project is the reduction of the average time spent refilling and checking a code cart. A pre-time study was conducted, with a post-time study to follow upon completion.

Results: Prior to project implementation, a total of ten observations of pharmacy technicians refilling code carts was conducted. The pharmacy technician's average refilling time was 18 minutes and 50 seconds. Ten observations of a pharmacist checking a code cart before implementation were performed with an average of 4 minutes and 13 seconds. A post-time study will be conducted upon completion of this project.

Standardization of Nursing Automated Dispensing Cabinet Training

Asia I. Mian, PharmD, Nicholas Ladell, PharmD, MBA, BCPS, Emma Hews, PharmD, MBA

Background: Automated dispensing cabinets are a tool that can help provide timely and safe care to patients. Implementation of standardized automated dispensing cabinet training will provide new nursing orientees uniform training throughout the Advocate Aurora Health (AAH) system to successfully utilize a Medication-Dispensing Cabinet. By doing so, this will improve safety throughout the system and better prepare our nurses to accomplish their daily tasks to meet the needs of their patients.

Methods: Meeting with stakeholders including health system nursing leadership and pharmacy leaders was conducted to review existing AAH system nursing orientee automated dispensing cabinet training materials. A proposal was submitted to health system nursing leadership to implement standardized automated dispensing cabinet training for all nursing orientees. Existing AAH training guides and resources were incorporated into modified automated dispensing cabinet guides for ambulatory surgery center, inpatient, and procedural areas and made available on an accessible online platform. A module for training for each new nursing orientee was created and placed into the learning system. The existing nursing orientee checklist was updated to meet the Donna Wright verification competency for medication dispensing cabinet training. Lastly, Just in Time resources were created for posting to the automated dispensing cabinet as a quick reference guide.

Results: There was a lack of standardization with existing automated dispensing cabinet training materials for nursing orientees. A standardized learning approach was approved by health system nursing leadership and made available online for all nursing orientees. Each new nursing orientee will be required to complete the module located in the learning system and new orientee checklist. Additionally, area specific guides and Just in Time resources were made accessible for reference.

Review and Optimization of the Medication Room Inspection Procedure for a Large Integrated Health System

Samantha J. Squires, 2022 PharmD Candidate, Kyle Sabol PharmD, BCPS

Background: DNV, Det Norske Veritas, is a third-party organization that provides safety guidance and risk assessments to a multitude of sectors, including healthcare. Regarding pharmacy, medication management and storage are key components assessed by DNV. Proper medication storage is not only key to DNV accreditation but is also vital for patient safety and care. To ensure proper storage of medications, an inspection form and process based on the most current recommendations must exist.

Advocate Aurora Health currently has a medication room inspection process that is completed quarterly by pharmacy staff. Advocate Aurora Health recently transitioned to DNV accreditation standards and has had multiple internal policy changes. Due to these changes, it was necessary to review and update the medication room inspection process for ideal evaluation. By reviewing current practice standards and updating the medication room inspection procedure, Advocate Aurora Health is ensuring compliance and patient safety. DNV also emphasizes education and employees demonstrating competence. By creating a virtual medication room inspection, employees will demonstrate their understanding of the inspection process in a low stakes environment.

Methods: The vital steps in this project included collecting and reviewing DNV standards and internal policies regarding medication management and storage, creating recommendations for updates to medication room inspection form, receiving approval of recommendations from the Pharmacy Leadership Council, creating the virtual escape room, and distributing the virtual escape room.

Results: Five recommendations will be provided to the Advocate Aurora Health Pharmacy Leadership Council. In addition, a virtual "escape room" was created as a learning module for pharmacy staff completing medication room inspections. Both the recommendations and learning module are currently pending approval.

Standardization of Inpatient Pharmacy Technician Onboarding Across a Multi-Site Health Care System

Thomas R. Bailey, PharmD, Nicholas C. Ladell, PharmD, MBA, BCPS

Background: Advocate Aurora Health's (AAH) System Pharmacy Five-Year Strategic Plan includes an objective to become a destination employer. The goal for this objective is to be a "department that attracts, retains, and continuously develops the best talent." To achieve this goal, a consistent onboarding and training experience across all sites needed to be executed. There were no standardized pharmacy-specific resources for pharmacy leaders that supported a consistent onboarding experience for new inpatient pharmacy technicians. Therefore, the adoption of a standardized onboarding manual across AAH was necessary. A key outcome for this project was to improve inpatient pharmacy technician engagement and safety. In addition, standardizing the onboarding process may increase the quality of onboarding, minimize the onboarding burden for pharmacy leaders, and decrease pharmacy technician turnover rate.

Methods: Meetings with key stakeholders, pharmacy leaders, and human resources were held to learn about the current issues regarding onboarding within AAH. Based on these discussions, key onboarding touchpoints were compiled into five chapters. Each chapter contains current AAH onboarding materials customized for pharmacy leaders, along with newly created resources. The manual was distributed to stakeholders across AAH for review and was appropriately updated based on feedback. A finalized version was introduced to AAH pharmacy leadership with encouragement to use the standardized manual when onboarding future inpatient pharmacy technicians.

Results: After review of current system onboarding materials and discussion with key stakeholders, it was determined that inpatient pharmacy technician onboarding should be standardized across AAH. A standardized onboarding manual was created to accomplish this goal. The manual includes five chapters; Pre-onboarding, Day One Orientation and Week One Onboarding, 30-Day Check-In, 60-Day Check-In, and 90-Day Check-In. Material within those chapters include tip sheets, customizable templates, key policies and procedures, software access guides, and check-in documents to help guide leaders through the onboarding process. All materials are linked directly in the manual and were made available online for pharmacy team members to utilize.

Conclusion: Inpatient pharmacy technician onboarding was standardized within a multi-site health care system. A system onboarding manual was created which allows pharmacy leaders to onboard new inpatient pharmacy technicians consistently.

Implementation of COVID-19 Vaccine Booster Clinics in the Immunocompromised

Sarah M. Steinert, PharmD

Background: The purpose of this project was to develop and implement a COVID-19 immunization booster administration model at cancer center sites across the Froedtert Health system for the immunocompromised. With the Food and Drug Administration (FDA) and the Centers for Disease Control and Prevention (CDC) approval of COVID-19 vaccine boosters for immunocompromised patients in mid-August of 2021, health systems across the country began preparations for another wave of vaccinations for high-risk patient populations.

Methods: Froedtert Health implemented COVID-19 vaccine booster expanded access care models at nine cancer center locations across the network. The three main components of this implementation included staffing and scheduling, supply chain and distribution, and inventory and waste management.

Results: The nine cancer center administration sites were identified through a multidisciplinary leadership team. These locations were specifically chosen to provide a variety of access points for patients. Administrations occurred either through standalone vaccination appointments or during an existing infusion center appointments. Various days and times were finalized based on staffing availability and patient access. Patients were identified through the electronic medical record system, which prompted them to sign up for appointments at the nine locations. Through the utilization of the Froedtert Health's Integrated Services Center (ISC), Pfizer and Moderna vaccine was distributed to five primary pharmacy locations to service the administration sites. At this time, Johnson & Johnson vaccine was not available to this patient population due to COVID-19 vaccine boosters only being approved for Pfizer and Moderna. Necessary vaccine supplies, safety components, and informational vaccine binders were prepared and supplied to each pharmacy location. Safety components such as color-coordinated labels and medication bins were utilized to differentiate Pfizer vaccine and Moderna vaccine. The electronic inventory system was utilized to maintain accurate inventory documentation. At the conclusion of clinic each day, an End-of-Day Report was completed for each pharmacy location to document both number of doses administered and number of doses wasted. This information deposited into a centralized system for transparency of the number of doses administered, number of doses wasted, and number of vials remaining within the health system.

Conclusion: Froedtert Health effectively developed and implemented COVID-19 vaccine booster clinics in less than 72 hours to provide care to immunocompromised patients through an interdisciplinary team. COVID-19 vaccine boosters were offered in this increased capacity for four-weeks to improve access to care for Froedtert Health immunocompromised patients. Over 200 immunocompromised patients received a COVID-19 vaccine booster through the implementation of this expanded access care model. This implementation prepared the health network for future COVID-19 vaccine booster offerings for healthcare workers and eventually the general patient population.