EDUCATIONAL CONFERENCE

April 16-17, 2024
Monona Terrace Convention Center, Madison

PSW
Pharmacy Society of Wisconsin

2024

Pharmacy Mosaics
Blending Care & Innovation

POSTER PRESENTATION ABSTRACTS

Improving Medication Refill Adherence Through Text Messaging in Community Pharmacy Setting

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Background: Explore strategies to improve medication refill adherence through text message reminders

Methods: Patients aged 18 years and older were identified based on their refill history of chronic medications. Randomized weekly, half of these patients received a text message refill reminder and the other half did not. The study was designed in three phases, each with a variation of the verbiage and method of text message reminder. Fill history of patients was tracked.

Results: Texting reminders in phase 2 and phase 3 significantly increased (p= <.001) medication refill rates. Phase 3 methods were the most effective, improving the odds of a patient refilling by 11.1x compared to 6.4x in phase 2. In phase 3, 40.9% of those receiving the texting reminder refilled their medications compared to only 5.9% of patients with no reminder. The average number of days to refill decreased by each phase among treatment groups (phase 1: 2.9 days, phase 2: 1.8 days, phase 3: 0.9 days). Texting reminders improved refill adherence rates regardless of age, tribal status, sex, or number of medications but refill differences appeared by medication type.

Conclusion: Texting reminders can effectively improve medication refill adherence and be implemented in low cost ways in community settings without automation. Crafting the right message and strategic timing of text message reminders are important in improving refill rates.

Establishing Multi-State Health System Policies and Guidance for Medication Bagging

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Background: Medication bagging is a process by which an administering health care facility is forced to acquire patient-specific medication outside of its typical procurement channels. This arrangement is designed to control payer costs but results in complex, time consuming, and risk prone administering facility pharmacy workflows. White bagging, brown bagging, and clear bagging are specific forms of medication bagging which require external sourcing of a patient's medication. External sources for these medications may include third party or entity-owned retail pharmacies, specialty pharmacies, patient-assistance programs, or drug manufacturers. This contrasts with traditional buy and bill practices where the administering health care facility's pharmacy provides the patient's medication.

Medication bagging increases risks to patient safety and potentiates patient care delays. Considering these risks, a multi-state health system aimed to optimize medication bagging workflows. At baseline medication bagging workflows were variable between system sites, pharmacy teammates expressed frustration at the time-consuming coordination required, and no system policy existed to provide uniform process support. The health system's oncology sector, which receives the highest volume of bagged medications, had already implemented systematic enhancements to this process. Therefore, this project aimed to assess the utility of developing a similar system-based approach for non-oncology medication bagging workflows. Workflow enhancements would include the development of policies and procedures to elevate patient safety, reduce costs, and streamline coordination efforts. This would provide for standard workflows that could be communicated to both site-based pharmacy departments and external stakeholders.

Methods: The project initially required literature review, process understanding, and direction setting. With the direction in mind, and a basic understanding of medication bagging, rigorous site-level process mapping began. This process-mapping across various hospital pharmacy sites helped identify medication-bagging best practices, in addition to comparing site-level process similarities and differences. A fishbone analysis of contributing factors to patient care delays in the medication bagging process was also documented. The process maps, fishbone analysis, and leader feedback on medication bagging challenges were then utilized to identify three alternative proposals. These proposals were presented to a panel of site- and system-level pharmacy leaders for feedback, and a decision on the preferred direction. Policy, procedure, and workflow development and implementation will commence throughout the Spring of 2024. Communication and education will be required across Pharmacy, Social Work, Prior Authorization, and Clinic Teams.

Outcomes of Expanding the Ambulatory Diabetes Outreach Program A1c Criteria from ≥9% to ≥8%

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Background: A service, known as the Ambulatory Diabetes Outreach Program, allows patients with type 2 diabetes (T2DM) with an A1c ≥9% to be enrolled in pharmacist-led diabetes management. This management is established either through patient outreach based on monthly population health reports of A1c results or through referrals from primary care providers (PCP). The volume of patients with an A1c of 8-8.9% that could benefit from these pharmacist-led services is currently unknown within the Froedtert Health network. Additionally, it is of question whether pharmacists can handle the additional volume of patients within their current workload.

At Froedtert, a pilot will be conducted through two primary care clinics to expand the A1c outreach criteria to ≥8% within the Ambulatory Diabetes Outreach Program. Expanding A1c criteria will allow for further pharmacist involvement in managing patients living with diabetes and hopefully lead to better goal-directed clinical outcomes.

Methods: This is a retrospective cohort study of patients with an ambulatory pharmacy referral placed 04/01/2023 through 09/30/2023. Eligible patients include those who are at least 18 years of age and have T2DM with a baseline A1c ≥8%. Patients were excluded if they had type 1 diabetes, were followed by a Froedtert endocrine provider for diabetes management, had a baseline A1c within 0.2% of their goal A1c, were pregnant, were on U-500 insulin, had a non-Froedtert PCP, were not seen by a Froedtert PCP in the last 364 days, had an ambulatory referral placed to reduce the risk of hypoglycemia, or declined a previous ambulatory pharmacy referral within the last 6 months. Productivity levels, a Froedtert ambulatory care pharmacy defined measure, are documented within clinical patient encounters from "brief" (Level 1) to "comprehensive" (Level 5). Levels assigned to each visit depend on medication management, patient assessment and monitoring, education given, care coordination, and data collected. Aggregated productivity, the sum of all productivity levels while working with a clinical pharmacist, will be the main measurement used to determine the primary outcome of the impact incorporating T2DM patients with an A1c of 8-8.9% has on the systems' current workload to manage patients with an A1c ≥9%. Secondary outcomes include both clinical and engagement outcomes to analyze the change in A1c percentage under pharmacist-intervention and determine which patient populations take advantage of this service.

Designing a Database Tool for Evaluating Immunization Rates within an HIV Ambulatory Care Setting

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Background: In recent years, advancements in vaccination have revolutionized public health, significantly reducing the burden of preventable diseases worldwide. However, despite these achievements, there remains a concerning gap in vaccine uptake among specific vulnerable populations. One such group is individuals living with Human Immunodeficiency Virus (HIV), where the immunization uptake continuously falls below desirable rates.[1]

By unraveling the challenges faced by healthcare providers treating this unique patient cohort, we strive to uncover novel insights that will inform targeted vaccine interventions and foster collaborations between providers and their patients living with HIV (PLWH). Together, we endeavor to bridge this immunization gap and safeguard the health and well-being of every individual, including PLWH.

Methods: A database was created through the comparison of Electronic Health Record (EHR) computer programming and various immunization treatment guidelines for PLWH. This database serves to highlight recommendations sources from various guidelines and outlines how the EHR programming interprets this data to determine vaccine treatment gaps unique to each patient. Following the validation of EHR programming and the alignment of vaccine recommendations, a comprehensive real-time tool was developed. This tool operates by collecting EHR data on patient's immunization status, enabling the tracking of vaccination trends over time. Furthermore, these trends can be categorized by clinic location for further analysis.

Results/Conclusion: A comprehensive immunization tool was developed, allowing providers to delve into the rationale behind vaccine recommendations and effectively identify patients within their clinic with unaddressed health maintenance gaps on a population and patient-specific level. By utilizing this two-tiered approach, the tool highlights the gap in vaccine uptake while providing an approach to close this gap in PLWH patient care.

References

1. Crum-Cianflone N, Wallace M. Vaccination in HIV-infected adults. AIDS Patient Care and STDs. 2014;28(8):397-410. doi:10.1089/apc.2014.0121

Campus-based, Community-Accessible Influenza and COVID-19 Vaccine Clinics: A Partnership Between Concordia University School of Pharmacy and Walgreens Pharmacy

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Background: The purpose of this project was to provide access to COVID-19 booster and flu vaccines for the local community in conjunction with a community pharmacy partner while also developing vaccination technique of student pharmacists. Concordia University Wisconsin is located in Mequon, WI in southern Ozaukee County. It serves a wide range of students of different backgrounds, pursuing degrees across multiple undergraduate and graduate disciplines. Amidst the COVID-19 pandemic, the university accumulated vast experience in implementing COVID-19 vaccine clinics, however, the flu vaccine was not previously offered at these same clinics. With the change in availability and billing requirements for the COVID-19 vaccine, an opportunity arose for a partnership between Concordia's School of Pharmacy and Walgreens Pharmacy. Concordia's School of Pharmacy would coordinate clinic sign-up and vaccine administration while Walgreens Pharmacy would supply vaccines and manage billing for the vaccines.

Methods: Similar to COVID-19 vaccine clinics from previous years, a platform was designed for individuals within the university and local communities to sign up for one of four clinic days. Signup also allowed patients to indicate which vaccine(s) they wished to receive: COVID-19 (age-appropriate) and/or regular or high-dose influenza (age-appropriate and patient preferred). A separate platform was designed for students, faculty and staff to sign up as volunteers. All volunteers were assigned specific roles and trained accordingly. After patient numbers were confirmed, Walgreens Pharmacy was notified of the expected volume and they provided the vaccine supply. Each clinic had an average duration of 2 hours and served patients from 3 to 80+ years old from the university and local communities. Concordia faculty, staff, and students served in most clinic roles including vaccinators while two to three staff from the partnering Walgreens Pharmacy were present to document insurance and billing information. All billing occurred at Walgreens Pharmacy after the clinic.

Results: Across all four clinic dates, a total of 361 unique patients received 511 vaccines. Of those 511, 185 (36.2%) were COVID-19 (12 years old and up), 40 (7.8%) were COVID-19 (under 12), 252 (49.3%) were regular dose influenza, and 34 (6.7%) were high-dose influenza vaccines. In the clinics, 150 patients (41.6%) received both COVID-19 and influenza vaccines in the same appointment. In early clinics when student vaccinators were training, the ratio of faculty vaccinators to student vaccinators was 5:9. This ratio dropped to 2:5 in the last clinic as the student vaccinators gained experience and confidence.

Conclusion: Through Concordia University School of Pharmacy's partnership with Walgreens, it was possible to successfully run campus-based, community-accessible vaccine clinics where students administered most vaccines. This ultimately provided strong access to vaccines within the local community, while also granting students the chance to build skills in vaccine administration and patient care. Subsequent clinics that capitalize on this partnership could be sought with pharmacy, nursing, and other health disciplines to further reach out to communities.

Creation of a New Time-Critical Medication List in a Multi-State Hospital Health System

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Background: Time-critical medications are defined as medications that may have a significant, negative effect on a patient if given earlier or later than 30 minutes from the scheduled time. The Centers for Medicare & Medicaid Services (CMS) requires that hospitals and health systems establish policies regarding the timing of medication administration and identify medications that require exact or precise timing for administration. The Institute for Safe Medication Practices (ISMP) provides inclusion/exclusion criteria to help hospital systems create time-critical medication lists. The purpose of this project is to update a list of time-critical medications for a multi-state hospital health system based on assessment of risk and published criteria.

Methods: A list of potential time-critical meds was collected based on published literature, health-system historical policy, and input from current health system committees. Medications were evaluated based on ISMP inclusion/exclusion criteria and operational considerations such as routine use, mealtime dosing, and dependence on the dosing of another medication. A risk assessment was created based on frequency of use and the likelihood of causing subtherapeutic effects or toxicity if given late or early respectively. The medications that met criteria were evaluated based on this risk assessment. The proposed medications will be brought to pharmacy and interdisciplinary practice councils for approval. The final approved list of medications will be incorporated into the updated health system policy and will be added to a dashboard to monitor compliance within a one-hour window. The electronic health record will be updated to draw attention to the time-critical medications. Education will be provided to pharmacy and nursing staff to create an awareness of the new list.

Evaluation of Oral Anticoagulation Non-use in Patients with Atrial Fibrillation/Flutter at ZVAMC with a Focus on Health Disparities

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Background: Despite options for safer, easier-to-use oral anticoagulants, a significant proportion of patients with atrial fibrillation/flutter (AFF) and an indication for oral anticoagulation (OAC) do not receive it. Furthermore, health disparities based on age, gender, and race/ethnicity have been tied to oral anticoagulation non-use. The purpose of this project is to investigate potential reasons for OAC non-use at Zablocki VA Medical Center (ZVAMC), investigate how health disparities may contribute to OAC non-use, and identify opportunities to intervene in the untreated population.

Methods: Patients with a diagnosis of AFF at ZVAMC and a non-sex CHA2DS2-VASc score of ≥2 were eligible for inclusion in this project. Chart reviews were performed utilizing a screening algorithm to identify rationale of anticoagulation non-use and patients who may potentially benefit from pharmacologic (e.g. OAC) or nonpharmacologic interventions (e.g. left atrial appendage occlusion device). Chart reviews were conducted sorting by disparate groups starting with females, followed by racial/ethnic minorities, then age > 85, which were then sorted by CHA2DS2-VASc score. A progress note incorporating health factors was used to alert providers to recommendations as well as document and register data points.

Evaluation of Agents Used for Invasive Candidiasis in an Intensive Care Unit Setting Within the Zablocki VA Medical Center: A Retrospective Medication Use Evaluation

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Background: In recent years, the Zablocki Veterans Affairs Medical Center (ZVAMC) intensive care unit (ICU) has been exhibiting sporadic statistically significantly higher use of agents for invasive candidiasis in the ICU compared to other facilities enrolled in the National Healthcare Safety Network (NHSN) Antimicrobial Use (AU) module. The NHSN utilizes a metric for summarizing AU data known as the Standardized Antimicrobial Administration Ratio (SAAR), which although is not a definitive measure of appropriateness of antimicrobial use, may indicate a need for further investigation into excessive antimicrobial use. The purpose of this evaluation is to identify and assess the appropriateness of antifungal agents used in the ICU at our institution.

Methods: This is a single-center medication use evaluation (MUE) and retrospective chart review of all veterans admitted to the ZVAMC ICU who received antifungal treatment for suspected or confirmed invasive candidiasis during the 2021-2022 fiscal years. Data collection will include demographic information with a primary endpoint assessing for appropriate use of antifungals in the treatment of invasive candidiasis as per the IDSA clinical practice guidelines through a composite review of the secondary endpoints. Secondary endpoints include appropriate selection, dosing, duration, timing, therapeutic indications for antifungal requests, and identification of microbes isolated from microbiologic specimens. Descriptive and qualitative analysis was performed to analyze the results.

Standardization of Pharmacist Evaluation of Guideline-Directed Medical Therapy (GDMT) in Patients with Heart Failure with Reduced Ejection Fraction (HFrEF)

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Background: The 2022 American Heart Association/Americal College of Cardiology/Heart Failure Society of America (AHA/ACC/HFSA) consider GDMT for HFrEF to consist of ACEi/ARB/ARNi, certain beta blockers, mineralocorticoid receptor antagonists (MRA), and sodium-glucose cotransporter-2 inhibitors (SGLT-2i). The initiation and up-titration of these medications have been shown to reduce hospital readmission and all-cause mortality. Despite these well-documented benefits, a 2020 retrospective observational study found 23% of patients with HFrEF to not be on any of the GDMTs and 22% of patients to only receiving one of the four GDMTs within 1 year of being discharged for a hospitalization related to HFrEF.1

Utilization of GDMT at discharge from our 938-bed tertiary care medical center is currently measured with the AHA Get With the Guidelines Heart Failure (GWTG-HF) program. During quarter one of 2023, at the time of discharge from our institution, 85% of eligible patients with HFrEF had a prescription for an ACEI/ARB/ARNI, 100% for a heart failure-specific beta blocker, 55.6% for a SGLT-2i, and 73.7% for a MRA.2

There currently isn't a standardized process for pharmacists at our institution to evaluate the use of GDMT in patients with HFrEF. We hypothesize that creating a standardized evaluation process of GDMT for pharmacists will lead to pharmacist-to-provider recommendations to initiate GDMT, increase the number of patients with HFrEF on GDMT, and decrease hospital readmission rates due to HFrEF. The purpose of this study is to create a standardized process for pharmacist evaluation of GDMT in patients with HFrEF at our institution and to increase the percentage of patients with HFrEF on GDMT while inpatient and at discharge from our institution.

Methods: An algorithmic flowsheet will be triggered within our electronic health record (EHR) for all patients with HFrEF not on GDMT. This flowsheet will require pharmacist evaluation of the patient and their HFrEF medications. This flowsheet will be implemented at our institution from 1/2024-4/2024. The following outcomes will be measured during this timeframe: Percentage of patients with HFrEF on GDMT at discharge or with documented exclusion to GDMT (primary outcome), number of times a pharmacist made a flowsheet-prompted recommendation to a provider concerning initiation of GDMT, number of times GDMT was started due to a flowsheet-prompted pharmacist recommendation, and pharmacist time spent using flowsheet to assess GDMT. This data will be collected with an EHR report and the GWTG-HF program. The primary outcome will be compared to previous GWTF-HF results for our institution.

Evaluation and Optimization of Streamlined, Scheduled Chemotherapy Admissions at a Tertiary Hospital

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Background: Advocate Health (AH) Midwest Market consists of 27 hospitals with more than 500 sites of care. Within this health system there are many hospital sites that vary in their process of preparing and managing patients admitted for chemotherapy treatment. Hospital admission processes for oncology patients entail many complex steps with the goal of administering chemotherapy in a safe and timely manner. Aurora St. Luke's Medical Center (ASLMC), a site within the AH Midwest Market, continues to grow in its oncology patient load and clinical services offered, requiring further optimization of the chemotherapy admission workflow.

As a result of a 2022-2023 resident year-long project, an electronic health record report was created that provides information on the timing of various chemotherapy admission milestones. Among the many measures the report providers it can calculate key turnaround times including but not limited to admission to orders signed, lab result to orders signed, and orders released to first drug administration. Data provided through the creation of this report provides the opportunity to optimize chemotherapy administration times and improve patient/caregiver satisfaction to ultimately decrease length of stay through process improvement strategies.

The objective of this project is to evaluate current scheduled chemotherapy admissions and implement process improvement tools in order to improve time to administration for inpatient oncology admissions for patients receiving chemotherapy and admitted to the Hematology Service Line at Aurora St. Luke's Medical Center.

Methods: Retrospective data was collected from January 1, 2023 to July 31, 2023 to determine baseline characteristics of the patient population. A workgroup including advanced practitioners, inpatient nurses, outpatient nurses, pharmacists, and informatics was created. A problem statement and aim was determined. The workgroup met four times to create current state workflow process diagrams, cause and effect diagrams, discuss pareto charts of baseline data, complete a priority matrix, and discuss potential interventions. Subjective data was collected through anonymous multivoting platforms. Based on discussed solutions, an initial intervention was implemented, and results are upcoming. A second intervention will be implemented.

Assessment of Discharge Opioid Prescribing Appropriateness in Mechanically Ventilated Opioid-Naïve Patients Admitted to the Medical Intensive Care Unit (MICU)

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Background: Patients in the medical intensive care unit (MICU) are subject to various treatments and invasive devices that can cause a great deal of pain, one of the most notable being invasive mechanical ventilation (IMV). The use of intravenous (IV) opioids is commonplace for pain management in the ICU, however, whether use of opioids during IMV translates to appropriate opioid discharge prescribing is unknown. The purpose of this retrospective study is to assess the appropriateness of discharge opioid prescribing in opioid-naïve patients in the MICU receiving IV opioids during invasive mechanical ventilation.

Methods: This was a retrospective study of mechanically ventilated patients admitted to the critical care medicine service at Froedtert Hospital from June 2020 through May 2021. Patients were included if they were opioid-naïve prior to admission and received at least 1 dose of an opioid within the first 12-hours of mechanical ventilation. Patients were excluded if they were less than 18 years old, were intubated for less than 24 hours, received mechanical ventilation within the last year, received continuous ketamine infusions during mechanical ventilation, experienced death during their medical ICU stay, or were discharged on hospice care. For opioid naïve patients discharged from the hospital on opioids, median, minimum, and maximum pain scores 24, 48, and 72 hours prior to discharge, opioid use 24, 48, and 72 hours prior to discharge, and discharge opioid prescribing medication, duration, and frequency was collected. The primary outcome measure was inpatient opioid use per day, measured in morphine milligram equivalents (MME), and whether that was less than, greater than, or equal to MME per day prescribed at discharge. Secondary outcomes included opioid(s) prescribed at discharge, discharge opioid prescription duration, indication(s) for opioid at discharge, non-opioid pain medications prescribed at discharge, mobility outcomes, and opioid adverse events.

Results: A total of 720 consecutive patients admitted to the MICU were screened and 60 opioid-naïve patients met inclusion criteria. Of the patients, 5 (8.3%) were discharged on opioids. All five patients were found to have a discharge opioid prescription (reported in MME/day) greater than median opioid use 24, 48, and 72 hours prior to discharge. Median daily opioid use (in MME/day) 72 hrs, 48hrs, and 24hrs prior to discharge was 6.25, 6.25, and 12.5, respectively. Similarly median maximum pain score (1-10) was 6, 7, and 3, respectively. Median discharge opioid prescription was 37.5 MME/day. A total of 4 of 5 (80%) patients were prescribed oxycodone on discharge. The most common indication noted on the discharge prescription was severe pain (3; 50%). Of the 5 patients, 2 (52.2%) were also prescribed a non-opioid pain medication on discharge.

Conclusion: In opioid-naïve patients discharged on an opioid prescription following mechanical ventilation in the ICU, the discharge opioid prescription was greater than opioid use prior to discharge. Future directions are aimed at analyzing discharge opioid prescribing among different service lines (surgical, cardiac, medical, ect.) and to create guidance for providers of safe opioid prescribing practices in opioid-naïve patients.

Assessing Admission Medication Reconciliation (ADMR) Workflow to Identify Overlap Between Pharmacist Integrated Clinical Services (PICS) and Site Pharmacists to Optimize Transition of Care Operations

Cailynne S. Santos, PharmD, Kelcy Doede, PharmD, Sarah Cullen, PharmD

Background: The project aims to analyze and compare the distinct workflows of on-site pharmacists and remote verification pharmacists in the Admission Med Rec (ADMR) process. Remote verification pharmacists are tasked with verifying medications that a patient was taking at home, and on-site pharmacists are tasked with clinical monitoring and appropriateness of continued medications. By delving into their respective processes, this project seeks to pinpoint areas of workflow overlap and duplication between both pharmacist groups. This investigation will shed light on potential inefficiencies, redundancies, and opportunities for streamlining the pharmacy ADMR operations. Through comprehensive observational research, survey collection, and data analysis of medications not commonly reconciled by providers, the project intends to offer valuable insights into optimizing the overall workflow, enhancing efficiency, and streamlining communication of both on-site pharmacists and remote verification pharmacists -- contributing to a more streamlined and succinct ADMR workflow process.

Methods: 10 admissions were observed over a 4-month period between remote verification pharmacist admission workflow and site pharmacist admission workflow. Each observation was coded for overlapping events. Additionally, a survey was also disseminated system wide for a two-week collection period to gather pharmacist opinions and suggestions on current workflow. Finally, a list of medications most commonly unreconciled by providers were pulled for Aurora St. Luke's Medical Center and Advocate Trinity Hospital over a one-week period. The medications were analyzed and quantified to determine the incidences of non-reconciliation during that week and cross-referenced between sites. Medications of low clinical significance or appearance on admission order sets were flagged for consideration of removal from required provider reconciliation.

Impact of an Enrollment Pharmacist on Specialty Medication Use at an Academic Medical Center

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Background: Specialty pharmacy is a rapidly growing market within the United States healthcare system. Recently, it has become increasingly common for academic medical centers to utilize internal specialty pharmacies for the dispensing of specialty medications. These pharmacies are known as health system specialty pharmacies (HSSP). Unlike many traditional medications, specialty medications often have specific coverage restrictions from insurance companies, as well as more extensive administration, handling, and storage requirements. These additional needs can create gaps in transitions of care that pharmacists are uniquely qualified to address. Specifically, a specialty pharmacist has the necessary skills to enhance patient access to specialty medications, complete comprehensive reviews to assess medication appropriateness, communicate effectively with a care team, and act as a direct patient-provider liaison for specialty medication education. Currently, Froedtert Health Specialty Pharmacy has a robust patient management program in which pharmacists are an integral part of the patient care team. At Froedtert, the enrollment pharmacist will review a patient case and perform a variety of functions to promote optimal patient outcomes. The purpose of this study is to evaluate the impact of a specialty pharmacy enrollment pharmacist at an academic medical center, assessing both clinical and financial outcomes for patients.

Methods: In this IRB-approved retrospective descriptive cohort study, electronic health record (EHR) data was collected from January 1, 2023 to July 1, 2023. Eligible participants were > 18 years old, prescribed a specialty medication within the Froedtert health network, and assessed by an enrollment pharmacist prior to specialty medication dispensing. The primary outcome was time (in days) to treatment initiation of a specialty medication. Secondary outcomes included type(s) of intervention completed, adherence to specialty medication therapy, and total amount (in dollars) of patient assistance or funding obtained.

A Retrospective Review of Bronchodilator Continuation After Extubation in a Medical-Surgical ICU

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Background: Patients admitted to the medical-surgical intensive care unit at UW Hospital and Clinics often need supplemental oxygen support. As a result, many of these patients are put on mechanical ventilation. When a patient is, it is common to prescribe bronchodilator therapy to reduce airway resistance. The aim of this project was to assess the prevalence of inappropriate discharge prescribing of new bronchodilator therapy in patients who were mechanically ventilated in the medical-surgical ICU.

Methods: This was a retrospective chart analysis of patients that were intubated in the medical-surgical ICU at UW-Hospital from January 1, 2023, to May 31, 2023. Exclusion criteria included being on bronchodilator therapy prior to admission, receiving a new diagnosis that required outpatient treatment with bronchodilator therapy, discharge to hospice care, and death while inpatient. The primary outcome was the prescription of a new bronchodilator upon hospital discharge.

Results: Twelve out of 44 of patients (27%) who were not on bronchodilator therapy prior to admission were discharged on a bronchodilator with no indication of use. Of the 12 patients who were continued on the therapy, 6 were male. There was one patient over the age of 65 who continued a bronchodilator; however, 33 of 50 patients over the age of 65 that were intubated were already on bronchodilator therapy due to past diagnoses.

On the outpatient prescription for the bronchodilator, 7 orders listed “bronchospasm” as the indication, and 2 orders listed “asthma” as the indication. One patient had a listed indication of “airway disease” and another had an indication of “respiratory exacerbation.” No patients who were discharged with these orders had a previous or new diagnoses of a chronic respiratory disease in their chart, nor did they have a history of respiratory exacerbations. There was also 1 patient who did not have any indication listed in the bronchodilator order.

The primary medications that were used in patients on mechanical ventilation included Ipratropium-Albuterol and Albuterol Sulfate nebulizers. Eight of the 12 patients who were continued on inappropriate bronchodilator therapy were started on Albuterol Sulfate while they were ventilated.

Conclusion: Inappropriate prescribing of bronchodilators upon discharge is present among this patient population. Inappropriate continuation of these therapies upon discharge can result in both cost and medication burden for patients. Ventilated patients started on bronchodilators in the ICU are at risk of being prescribed medications for outpatient use that do not have a true indication associated with them. To complete a more comprehensive assessment on this topic and define if there are in fact correlations with age or gender, a larger sample size should be used.

Evaluating Success Rates of Two Deprescribing Models of Potentially Inappropriate Medications in the Ambulatory Clinic Setting

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Background: Prioritizing the deprescribing of potentially inappropriate medications (PIMs) has been shown to improve clinical outcomes and reduce costs. It remains unclear at a large academic medical center which route of recommendation – a population health initiative that documents deprescribing recommendations in a patient's chart prior to an appointment with their primary care provider (PCP) or a comprehensive medication review (CMR) via referral by PCP – is more successful. The aim of this study is to compare PCP acceptance rates between the population health-based initiative and the CMR referral pathway for deprescribing PIMs in the ambulatory care setting to assist pharmacy leadership in determining future resource allocation.

Methods: Data collection regarding recommendation outcomes from population health-based initiative gathered prior to this quality improvement project. Electronic medical record (EMR) software was used to identify a list of patients who completed a CMR visit with a primary care clinical pharmacist between June 15, 2018 – December 31, 2020. Patient demographics, medical history, and other relevant data was pulled for both groups. Chart review was completed for remaining data points unable to be pulled by EMR software. Descriptive statistics via Excel functions to be used for data analysis.

Conclusion: Future directions include developing a pharmacist-based clinical service to facilitate deprescribing PIMs with patients under a collaborative practice agreement with parameters for follow-up.

Implementation of a Pharmacist-Led Specialty Medication Monitoring Clinic at the Milwaukee VA

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Background: The VA has prioritized the safe and fiscally responsible use of high-cost and high-risk specialty medications. Specialty pharmacy services have become commonplace in private sector healthcare and have been shown to reduce associated costs while improving patient care. Subsequently, the Centralized Specialty Medication Management (CSMM) clinic was established at the Milwaukee VA with the objective to establish a local pharmacist-led specialty medication monitoring clinic to ensure the safe, effective, and fiscally responsible utilization of these medications.

Methods: Pharmacy leadership met with specialty clinic providers (e.g., rheumatology, dermatology, gastroenterology) and additional stakeholders to discuss implementation of a pharmacist-led specialty medication monitoring clinic, establish close communication, and obtain feedback. Administrative work included building clinic grids, allocating full-time equivalents (FTE) for clinic staffing, and creating collaborative care agreements with included specialty clinics. Initial drug classes targeted for monitoring were determined based on a combination of safety and/or cost considerations. Associated medical record templates to use during patient visits were built for each class of drugs. New-starts on the therapies of interest were auto-enrolled into the clinic starting in December 2023, with patient visits beginning in early January 2024. Additional clinic services and drug classes are expected to be added over time, pending staffing availability and resources. Quality improvement data, including safety, efficacy, and financial parameters, were continuously tracked. Primary outcomes included time on therapy and return on investment. Additional interventions measured include medication and supply ordering, faulty device replacement by the manufacturer, injection site and adverse drug reaction management, and therapy change recommendations. This project was submitted to the VA research department and deemed exempt from the investigational review board (IRB).

Assessing Pharmacist Driven Interventions for Preoperative Antibiotic Use at an Academic Medical Center

Joseph Loredo, 2024 PharmD Candidate, Richard Yang, 2024 PharmD Candidate, David Eberle, PharmD

Background: At Froedtert Hospital, pharmacists are frequently involved with perioperative antimicrobial optimization. In addition to direct consultation regarding appropriate agents and dosing, the operating room (OR) pharmacist reviews and verifies all peri-operative antibiotic orders the business day prior to the scheduled surgery. The most common interventions that are done includes weight based dosing adjustments, performing vancomycin/ gentamicin consults, recommending changes to antibiotic selection based on allergies, and ensuring that gaps in microbial coverage are covered based on cultures and sensitivities. This project assesses the number and type of OR pharmacist interventions related to perioperative antibiotics. This project will quantify total number of cases reviewed, interventions made and missed opportunities for additional interventions.

Methods: The study's design was a prospective cohort analysis that uses patient records at Froedtert Hospital. Daily reports of OR cases were generated through the EPIC Master Daily Schedule over a 4-week period from November 27, 2023, through December 22, 2023. The OR pharmacist will review peri-operative antibiotic orders per established processes and collect a log of recommended interventions. Assessment of missed intervention opportunities will be based on a review of cases which did not have pre-op antibiotics ordered at the time of OR pharmacist review. Eligible participants include surgical patients at Froedtert Hospital who were 18 years of age and older that were receiving perioperative or intra-operative antibiotics. Patients were not considered eligible if the perioperative antibiotics were not indicated or if cases were performed in the Eye institute or Birth Center ORs. Data collected include demographics (Age, sex, body weight, and height), allergies and severity (nausea/vomiting, hives/rash, anaphylaxis), types of surgical procedure, surgical service line, antibiotics administered, antibiotic order time, and pharmacist suggested interventions (type, communication type, accepted/declined). Based on an average of 80 OR cases per day, a sample size of about 1600 patients was predicted to be part of data analysis.

Establishing a Process for the Evaluation of Initial and On-going Inpatient Pharmacist Competency

Paola Sterjo, PharmD, Anne Zechlinski, PharmD, BCPS, Daniel Brusch, PharmD, BCPS, Sarah Crober, PharmD, BCPS, Kristin Bialkowski, PharmD, BCCCP, Brian Schlitt, PharmD, BCPS

Background: Credentialing and privileging is a process supported by The Joint Commission and Centers for Medicare and Medicaid Services that allows clinical pharmacists to practice at the top of their license. Credentialing refers to the process of verifying a clinicians' credential and qualifications to provide patient care. Privileging refers to the process of the healthcare organization reviewing an individual's credentials and finding their care to be satisfactory and allow that person to practice in a scope of different clinical activities including: pharmacokinetics, anticoagulation, and pain management. The American Society of Health-System Pharmacists (ASHP) 2023 standard 5.1.c.3 for postgraduate residency programs states pharmacy leaders need to ensure the competence of pharmacists is validated through an ongoing formalized process. In the ambulatory practice setting, Froedtert Health has established a process for ongoing review of ambulatory clinical competency. The process is driven by peer review, where clinical ambulatory pharmacists participate in the assessment of peers' therapeutic interventions through review of clinical notes. Similarly, with the aim of ensuring safe and effective patient care within our inpatient clinical setting, the purpose of this study is to implement a standardized process, incorporating peer review, for initial and ongoing review of inpatient pharmacist clinical competency and compliance with established practice protocols and guidelines. The focus of this process is the review of clinical decision making that impacts inpatient pharmacist across service lines, will therefore focus our efforts towards the review of pharmacokinetic decision-making.

Methods: This study will establish a peer review process that focuses on inpatient pharmacists' competency evaluation at our two sites with established residency programs: Froedtert Hospital and Froedtert Menomonee Falls Hospital. The peer review process entails the review of vancomycin clinical decision making. The study will utilize previously signed clinical notes, filed between August 1, 2022 and September 30, 2023, by acute care pharmacists across service lines. Evaluated clinicians will be randomly selected from 3 groups: recently graduated pharmacists within the past year, pharmacists on-boarded in the past year, and all other existing pharmacist employees. Each evaluated clinician will have 3 progress notes reviewed by 2 peer reviewers. Reviewer feedback and findings will be shared with clinician. The primary outcome of this study is number of peer reviews completed utilizing 2 separate reviewers per clinician reviewed.

Implementation of a Standardized Buprenorphine/Naloxone Induction Protocol on an Inpatient Psychiatry Unit

Charmaine N. Bernardo, PharmD, Erin E. McAllister, PharmD, BCPP, Michelle K. Harms, PharmD, BCPP

Background: Veterans may be more susceptible to Opioid Use Disorder (OUD) due to need for chronic pain management and comorbid mental health conditions including substance use disorders. Medications for OUD such as buprenorphine/naloxone have been shown to prevent withdrawal symptoms and reduce cravings. It is imperative to establish a standardized buprenorphine/naloxone induction protocol to increase provider confidence and improve OUD treatment quality and consistency in the inpatient psychiatry unit.

Methods: This Quality Improvement project from November 1, 2023 through April 1, 2024 will consist of protocol creation and implementation by utilizing current guidelines and collaborating with project stakeholders: Substance Use Disorder physicians, pharmacy leadership, and inpatient psychiatrists. Education to nurses, physicians, and pharmacists regarding OUD and the initiation of the standardized protocol will also take place. Veterans admitted to the inpatient psychiatry unit for OUD and started on buprenorphine/naloxone pre/post protocol implementation will be included for data collection. Veterans who are continuing previously established outpatient buprenorphine/naloxone or who were prematurely discharged prior to complete induction (discharged before at least 2 days of induction dosing) will be excluded. Pertinent data to be collected include clinical opiate withdrawal scores during induction, use of supportive medications for withdrawal, length of hospital stay, buprenorphine dose at discharge, 30 day adherence, and was outpatient follow-up placed and completed. A pre/post survey will also be sent to inpatient psychiatrists during the project period to assess comfortability initiating buprenorphine/naloxone. Data analysis will be limited to descriptive statistics performed in Excel to examine factors determining induction success and prescribing confidence.

The Potential Impact of Oral Sodium Bicarbonate on Mucosal Barrier Injury Laboratory Confirmed Infections

Sol Atienza, PharmD, BCOP, Renee Aranda, PharmD, BCOP, BCPS, William Morrissey, PharmD

Background: Central line-associated bloodstream infections (CLABSIs) are serious infections that typically prolong a patient's hospital stay and increase the risk of mortality. In 2011, the CDC's Healthcare Infection Control Practices Advisory Committee published guidelines for the prevention of these infections. As central line care bundles become an standard part of patient care, we have seen rates of CLABSIs decrease, with a 46% reduction in hospitals across the country from 2008-2013. While the overall trends for reduction in CLABSIs may seem positive, there are some types that have shown to be unaffected by proper line care and maintenance, including mucosal barrier injury – laboratory confirmed infections (MBI-LCBI). These MBI-LCBIs are a specific subset of CLABSIs that are especially common in oncology patients, in which damage to the mucosal layer of the GI tract from chemotherapy allows for translocation of bacteria into the bloodstream.

One group of patients that sees high rates of MBI-LBCIs is patients receiving high-dose methotrexate (HD MTX). IV sodium bicarbonate is one of the agents often used to alkalinize the urine and promote excretion of methotrexate, but it does not come without its share of disadvantages, including a high cost when compared to oral formulation. IV sodium bicarbonate has intermittently gone on national shortage as recently as 2017.

During that shortage, many institutions used oral sodium bicarbonate as a substitute for the IV formulation in patients receiving HD MTX. Not only is the oral formulation cheaper than its IV counterpart, but it can also be safer to give than IV due to avoiding the use of the patients' IV lines. In addition to the cost and potential safety benefits, oral sodium bicarbonate may potentially help buffer the lining of the GI tract in a similar manner to the bicarbonate-producing mucosal cells injured through treatment with HD MTX. With this study, we plan to examine if the usage of oral sodium bicarbonate was linked to lower rates of MBI-LCBI than rates seen in patients that received IV sodium bicarbonate. This study's coprimary endpoints are CLABSI rates per 1000-line days and MBI-LCBI rates per 1000-line days.

Methods: This study is an observational, single-center, retrospective chart review focused on patients receiving HD MTX (greater than 500 mg/m2) from January 2016 through January 2019 on the oncology unit at Aurora St. Luke's Medical Center. A report was built in our facility electronic medical record to identify eligible patients. Pertinent data, including malignancy, methotrexate dose, sodium bicarbonate dosage route, frequency, and information pertaining to patient's infections will be collected and saved into a data collection sheet. This data will then be deidentified to protect PHI and sent off to our coinvestigator at Texas A&M University. This data will be used to evaluate differences (if any) in rates of oral and IV sodium bicarbonate.

Implementation and Evaluation of a Pharmacist Driven Pilot Penicillin Class Allergy De-Labeling Protocol via an Oral Dose Challenge

Leah A. Leonard-Kandarapally, PharmD, Stacy Harmon, PharmD, BCIDP

Purpose: The purpose of this project was to implement a pilot protocol to de-label patients with no-risk or low-risk penicillin, amoxicillin, amoxicillin-clavulanate, ampicillin, or ampicillin-sulbactam allergies listed in their electronic medical record via a pharmacist driven workflow.

Methods: This study took place at two hospitals within a large healthcare system consisting of 68 sites. The first site was a 938-bed hospital and the second was a 137-bed children's hospital. As a part of this study, a formalized workflow was introduced at the pilot sites for prospective pharmacist identification of adult and pediatric patients with no-risk or low-risk penicillin allergies. Following identification, an oral amoxicillin dose challenge was administered. The patient was subsequently assessed for allergic reaction following the dose administration and should no reaction occur, the patient's allergy was removed from their medical chart. This workflow included the development of new electronic medical record implementations, including patient flagging, integrated flowsheets to aid with decision making, and order panel builds. Following the go-live of this process, data was retrospectively assessed for the number of patients who flagged as eligible for the process, the number of patients who subsequently met inclusion criteria, the number of patients who underwent amoxicillin challenge, the number of patients who were de-labeled, and the number of patients who had a positive reaction to the dose challenge.

Research Interest and Opportunities Among PharmD Students

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Background: Research during pharmacy school is a valuable experience to students pursuing a Doctor of Pharmacy degree, especially for those who pursue post-graduate training such as a residency or fellowship. The University of Wisconsin-Madison School of Pharmacy is dedicated to continually assess student academic experiences, which includes the provision of ample research opportunities for all students. The primary objective of this evaluation was to determine the level of interest for research experience among PharmD students. A secondary objective was to identify barriers to research experiences during the PharmD curriculum.

Methods: The graduating class of 2023 completed an optional survey during the midpoint of their Advanced Pharmacy Practice Experiences to reflect on their interest in research opportunities throughout the program and whether they were able to gain research experience. The survey included up to 28 questions using branching logic. Multiple choice and open response questions covered interest in research, current research experience, past research experience, type of research experience, and barriers to participating in research.

Results: Of the 126 students, 96 (76%) responded. Fifty-six (58%) students reported that they were interested in research during pharmacy school and of those, 16 (29%) reported they were unable to obtain a research opportunity due to several barriers. Barriers to participating in research included a lack of time, commitment to extracurriculars, awareness and networking, and COVID. A total of 31 (32%) students were currently conducting research or had plans to conduct research, and 27 (28%) reported that they already completed research since starting pharmacy school.

Conclusion: While nearly two-thirds of interested students in the class of 2023 were able to participate in research, approximately one-third were not able to due to perceived barriers. Currently a platform to connect students to research opportunities is being explored to minimize barriers to student participation in research.

Older Adult Drug-Age and Drug-Drug Misuse of Over-the-Counter Medications: Benefits of a Novel Pharmacy-Based Intervention

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Background: The inappropriate use of over-the-counter (OTC) medications for older adults (people > 65 years old) is prevalent and particularly risky. OTC misuse comprises drug-age misuse (medication risks due to advanced age) and drug-drug misuse (medication interactions). Since pharmacies are ubiquitous sources of OTC accessibility and medication safety expertise, a pharmacy-based intervention was considered important to address OTC medication misuse. A structural redesign of pharmacy OTC aisles (i.e., Senior SafeTM) was conceptualized for the purpose of reducing OTC misuse for older adults by increasing their awareness of the risks associated with certain OTCs while also encouraging their interactions with pharmacists around these products. A central feature of Senior Safe is the use of Stop Signs for high-risk OTCs and Behind-the-Counter (BTC) Signs for particularly high-risk OTCs, including chlorpheniramine, diphenhydramine, and doxylamine. The Stop Signs instruct older adults to consider safer products, while BTC signage encourages them to talk to pharmacists for more informed OTC use decisions. Given the practical importance of the signage, this study's principal aim was to determine whether Senior Safe reduced misuse of Stop Sign/BTC OTC medications.

Methods: Twenty pharmacies from a mid-Western healthcare system were matched and randomly allocated to either control or intervention groups, from which 288 older adults were recruited (ages 65-91). All study participants chose one hypothetical symptom scenario (pain, sleep, or cough/cold/allergy), selected one or more OTCs for treatment, and then described how they would use those OTCs at symptom onset. Participants' reported OTC use was evaluated for both drug-age and drug-drug misuse. Misuse occurrences between control and intervention sites were compared for each misuse type using multivariate modeling, Generalized Linear Mixed Model (GLMM) analyses.

Results: Drug-age misuse was identified in 6.8% of cases. The frequency of such misuse was significantly lower in intervention sites (coef.=-1.012, p=.004). Drug-drug misuse, representing the highest frequency of occurrences (20.7%), had the same effects profile as drug-age misuse, with intervention sites being less associated with misuse (coef.=-1.702, p=.004). It is also noteworthy that adults aged 85+ had the greatest likelihood of both misuse types.

Conclusion: These findings showcase the first multi-pharmacy intervention to demonstrate effectiveness at reducing the occurrence of two types of OTC misuse for older adults. Senior Safe shows substantial benefit for reducing high-risk OTC misuse, which is particularly important for vulnerable adults ages 85 to 91. The results also highlight the complexity of this problem, as older adults are experiencing multiple types of misuse. While there is the perception that risks are only associated with long-term OTC use, our results demonstrate that older adults misuse these medications even at symptom onset. Future research should document intervention mechanisms contributing to lower older adult OTC misuse.

DiveRxsity Dialogues: Leading the Conversation on Inclusion

Amy Bowles, 2025 PharmD Candidate, Mara Gosch, 2025 PharmD Candidate, Yoonsoo Kim, 2025 PharmD Candidate, Sierra Szymanski, 2025 PharmD Candidate, Delilah Velez, 2025 PharmD Candidate

Background: By taking the Oath of a Pharmacist, pharmacy graduates make a lifelong commitment to "promote inclusion, embrace diversity, and advocate for justice to advance health equity." To help augment diversity, equity, and inclusion (DEI) practices covered in pharmacy curriculum, student pharmacists from three student organizations were awarded national grant funding to collaborate on an interactive event that would foster a safe environment for the discussion of DEI topics. This project aimed to assess the event's impact on participants' perceptions, knowledge acquisition, and readiness to deliver more equitable care. It also strived to inspire future educational strategies for incorporating DEI initiatives in pharmacy curriculum, workplace training, continuing professional development, and more.

Methods: Five student grant writers, along with eight additional student pharmacists hosted 'DiveRxsity Dialogues', a 2.5 hour-long interactive event for students, staff, and faculty members at the UW-Madison School of Pharmacy which included a keynote address and interactive small group discussion series. Keynote speaker, Dr. Sally Arif, spoke on the importance of cultivating belonging in pharmacy by increasing awareness of implicit bias and using more inclusive language. Participants then attended a roundtable discussion series where local healthcare providers shared their experiences caring for diverse patient populations. Key takeaways and reflections were shared during the debrief session at the end of the event. Participant feedback and event outcomes were collected via an anonymous survey.

Results: Thirty-eight students (84.2%), staff (2.6%), and faculty (13.2%) members attended the event. Sixteen survey responses were included in the event outcomes analysis. Greater than 80% of participants reported that event content enhanced or reinforced their knowledge and provided new ideas they expected to use to identify and examine personal biases and their effect on daily interactions. Greater than 75% of participants reported that event content enhanced or reinforced their knowledge and provided new ideas they expected to use to recognize and amend exclusive language. Greater than 75% of participants reported that event content enhanced or reinforced their knowledge and provided new ideas they expected to use to increase awareness of health disparities that influence the care received by underrepresented individuals. Greater than 70% of participants reported that event content enhanced or reinforced their knowledge and provided new ideas they expected to use to advocate for themselves, their peers, and their current or future patients. All participants reported feeling motivated to make changes in their personal or professional lives as a result of attending the event, and 87.5% of participants reported they were very committed to making these changes (Likert scale 1 to 5, 1=not at all committed, 5=very committed).

Conclusion: We received overwhelmingly positive feedback to hosting 'DiveRxsity Dialogues' and participants expressed a strong desire for similar learning opportunities. Our findings demonstrate the value of student-led initiatives in inspiring growth mindsets that promote inclusion and well-being. We believe there is potential to expand the impact of this initiative through creation of a longitudinal event series to support ongoing commitment to diversity and inclusion at our school.

Development of an Inpatient Pharmacy Dashboard

Hanna R. Ebel, PharmD, Connor L. Birkel, PharmD, Adam E. Gregg, PharmD, BCPS

Background: Increasingly, inpatient hospital pharmacies have been asked to demonstrate their effectiveness and efficiency by measuring a set of metrics that is then reported to hospital leadership. In an effort to both capture these metrics as well as create transparency amongst staff, our goal is to create a pharmacy dashboard specifically for the inpatient hospital pharmacy department staff at Gundersen. This dashboard will contain concise information that, when analyzed, can demonstrate the efficiency and efficacy of the department as a whole, as well as identify potential areas of improvement within specific subgroups of the department directing future projects in quality improvement.

Methods: A literature search was conducted to explore what has previously been done at other institutions and their process in generating their own dashboards. An anonymous survey was then sent out to all members of the inpatient pharmacy department. This survey asked the respondents to rank 20 potential metrics that could be utilized in the future pharmacy dashboard based on utility. After conferring with Gundersen's Information Technology and Digital Services (ITDS) department to determine which metrics would readily be reportable and in what format that could be available in, the final metrics were chosen based on desirability and feasibility, and a pilot dashboard was created.

Optimization of an Investigational Drug Services Dashboard that Captures Workload Metrics Within a Regional Health System

Megan Hanson, PharmD, Courtney Morris, PharmD, BCPS, Heena Rathod, PharmD, BCOP, Chad Smith, PharmD, MBA, BCPS, BCSCP, Christina Hannon, PharmD, MBA, BCPS

Background: Identify key metrics Investigational Drug Services (IDS) should track and automate data, where possible, from the current IDS dashboard, allowing reports to be downloaded and distributed to key stakeholders.

Methods: A literature search was conducted to determine key performance indicators and metrics that IDS sites collect. The top 5 metrics determined were number of active protocols, dispense volume, number of new and on-going studies, number of active patients on treatment, and volume of clinical studies performed. Site dispense volume was chosen as the primary metric to automate. A data analytic tool was built within the electronic health record (EHR) and incorporated dispense information from all Advocate Health Midwest Region IDS sites. Retrospective data was exported to excel and compared to the manually collected data in the existing dashboard, generated Drug Accountability Record Forms (DARFs) from the IDS electronic accountability system, and site paper DARFs for accuracy. Discrepancies were further investigated by searching the order ID on the EHR.

Results: Dispense data from August, September, and October were evaluated with a median of 40 active studies (range 38-42) in the Midwest Region each month. Over the three-month period, a combined total of 119 studies were performed, and only four discrepancies (3.4%) were identified. All discrepancies were due to label re-prints resulting in a new order number, which appeared as an additional dispense for the same patient.

Conclusion: The accuracy observed with the automated data for the dashboard is promising. The availability of real-time data provides a significant advantage over manual input by increasing efficiency, reducing technician workload, and providing a simplified way to portray data to stakeholders.

The Development and Implementation of UV/Visible Light Spectroscopy for Compounding Quality Assurance and Quality Control

Nathan C. Grimmer, PharmD, James J. Wolff, PharmD

Background: Hospitals frequently compound medications that meet the specific needs of patients. These medications serve an important role, but do not undergo the same safety and quality assurance requirements that manufactured medications undergo. The United States Pharmacopeia requires facilities that compound sterile products to have a quality assurance and quality control program. These ensure specific requirements have been met prior to the release of a compounded preparation. The goal of testing is to determine the adequacy of the compounding process and the quality of the compounded preparation. Gundersen Lutheran Medical Center (GLMC) has acquired a UV/Visible light spectrometer that can be calibrated to identify any number of translucent compounded preparations. The primary objective is to incorporate the use of absorption spectroscopy into the standard quality assurance and quality control processes for compounding.

Methods: Integrating the use of spectroscopy involves three areas; verifying a personnel compounding accuracy, testing batched compounded medications, and identifying a process to verify the composition of a sample. Pharmacy personnel involved with sterile compounding compounded a selected sample medication that tests their compounding abilities. The compounded sample is then analyzed to verify the compounders accuracy based on a reference sample. If the sample passes, the compounder does not have to repeat until the next competency period, however, should a compounder fail, they have one opportunity to remake it. If the second sample fails, they would then receive education by the pharmacy IV specialist. Following initial testing personnel compounding capabilities are to be integrated into their compounding competencies. The next area involves testing batched compounded medications which involves taking a sample from a frequently batched product and testing it against a reference sample. To start, this process involves testing the same batched product monthly. Ideally the testing will be done prior to the product being released for patient use, but this isn't always realistic. The results will be thoroughly documented, and action will only be taken if the sample fails to meet concentration requirements. In such case the batch will be quarantined, an investigation will occur, and it will be documented in an event reporting system if a sample were administered. Based on the precision and previous experience with the spectrometer the pass/fail for both the personnel and batched product will initially be set at ±15% of the expected concentration, this will be reassessed and adjusted following more data points. The final area of integration will involve verifying or identifying the composition of a compound. This is only done per request and involves setting up reference samples of the expected composition in the spectrometer. The following concentrations are added prior to running the sample; the expected concentration, ±25% and ±50% the expected concentration. The results are to be documented and reported as necessary.

Implementation of Tech Scan Check Workflow and Evaluation of Technician Product Verification at a Large Tertiary Hospital in the Midwest

Sean K. La Bodda, PharmD, Imran Shahbuddin, PharmD, BCPS, Michelle Papala, PharmD

Background: Technician medication verification has been utilized by many hospitals on the inpatient setting and shown impact on technician empowerment, streamlining medication verification & delivery, while maintaining or improving patient safety.

Methods: The primary outcome was the difference in mean time required to verify & dispense medications between pre- and post- implementation periods. To evaluate the effect of implementing a technician medication verification workflow on the time required to verify & deliver to unit-based cabinets (UBC) on patient floors, the cumulative time UBC replenishment batches were released, prepared, & distributed between pharmacists and technicians were compared. A secondary safety outcome was the difference in total reported medication safety events related to product verification. To compare internal event reporting data between medications verified by pharmacists and technicians, the total number of events related to verified medications in UBC over 3 months prior to and 3 months post-implementation were compared.

Development of a Standardized Medication Dispensing and Checking Process

Candice Ngo, PharmD, MBA, Stacy Wucherer, RPh, Edward Conlin, PharmD, MBA, Nick Ladell, PharmD, MBA, BCPS, CPEL

Objectives: The primary objective of the project is to develop a standardized medication dispensing and checking process across a multi-state healthcare organization. The secondary objective is to establish a formal minimum standard for checking medications dispensed by central pharmacy using barcode verification technologies.

Background: The American Society of Health-System Pharmacists (ASHP) encourages hospital and health-system pharmacies to incorporate barcode verification into inventory management, dose preparation and packaging, and dispensing of medications.[1] The purpose of scanning is to ensure that medication dispensed are the correct products, are in-date, and have not been recalled. In addition, the use of technologies will enhance patient safety and the quality of care by improving the accuracy of core pharmacy functions and allowing better allocation of pharmacists' knowledge and skills. Reports have suggested that adding bar coding to the pharmacy dispensing process can significantly reduce opportunities for medication errors at the bedside and reduce the occurrence of potential adverse drug reactions.[2-4]

Methods: The current medication checking process and training materials were evaluated to determine if there were gaps that required update. In addition, safety and operational efficiencies with standardization were assess prior to develop a centralized medication-verification model. Then, the manual was created to outline different methods of checking medication with barcode verification, such as BD logistics scanning, dispense preparation, dispense checking, dispense tracking, compounding and repackaging on Epic. Finally, the barcode verification is implemented for inventory management, dose preparation and packaging, and dispensing of medications including IV and non- IV patient-specific doses, bulk packages, cart-fill, Pyxis replenishment.

Results: The manual will provide a uniform minimum standard and instructions for checking medication within inpatient pharmacy using technologies. In addition, the manual will provide appropriate actions to minimize the risk of any potential medication error during the checking process. Once implemented, the manual should be periodically reviewed and updated to reflect the technological changes.

Conclusions: Barcode verification can enhance patient safety and the quality of care. With the goal of having all medications electronically verified, barcode verification when coupled with pharmacists' clinical judgement demonstrated a reduction in the rate of medication errors.

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Creation of Implementation Tools for Pharmacy Digital Signage Displays

Victoria Ellaine D. Dizon, PharmD, Margaret Lundholm, PharmD, MBA, Michael Metz, RPh

Background: The purpose of this project is to create implementation tools for pharmacy digital signage displays in order to optimize pharmacy communications to nursing and pharmacy team members. Current communications utilized include emails, bulletins, posters, job aids, tip sheets, and safety huddles. These current modes of communication may lead to delayed information, increased paper waste, and more tape usage within medication rooms. Digital signage displays are currently implemented in various hospitals within inpatient pharmacies, cafeterias, major hallways, and nursing break rooms. The implementation of digital signage displays within pharmacy departments and medication rooms would allow for more efficient, real-time pharmacy communications, provide better document control, and result in better best practices due to upgraded system technologies.

Methods: Information regarding the digital signage display was gathered through meetings with the company's technology representative. The procurement and installation of the digital signage display was gathered through discussions with experienced digital signage users and the health system's informational technology team. A proposal to a shared governance nursing committee was conducted to assess what pharmacy information should be communicated to nursing team members. Objective surveying was conducted with nursing and pharmacy staff to determine preferred slide timing, font, transitions, and colors. Deliverable documents of this data were presented to the shared governance pharmacy committee for informational sharing.

Results: Useful pharmacy communications to nursing team members per the shared governance nursing committee includes medication safety, shortages, or recalls. Nursing and pharmacy staff noted that best slide standards include 15-20 size front, 1 second transition duration, sliding for top or left transitions, and black text. Deliverable documents were created from these data responses: How to Purchase the Digital Signage Display & Item Costs, How to Install the Digital Signage Display, How to Broadcast Presentations through the Digital Signage Display Application, Presentation Slide Template, Standards Tip Sheet, and Proposal Template to Administration.

Conclusion: Implementation tools were created for pharmacy digital signage displays. Site leaders are able to present these resources to their administration and financial hospital leaders to suggest the optional implementation of these signages in medication rooms. Additionally, pharmacy leaders are able to utilize the implementation tools to add to their pharmacy departments for enhanced pharmacy communication.

Creating a Business Plan for Centralized IV Checking across Midwest Region Sites that Compound Sterile Products

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Background: Intravenous (IV) preparation previously relied on the “pull-back-method" for pharmacists to check products compounded by a technician, which is an inferior method compared to the new practice of utilizing pictures to show stepwise compounding from start to finish, leaving less room for error via assumption.

If a hospital that compounds IV products does not have a dedicated pharmacist to check IV products, other staff pharmacists may be pulled away from their usual patient care activities to check sterile preparations. This is important because some pharmacist patient care activities are not able to be done remotely, resulting in the pharmacist being temporarily unavailable.

Based on the large success of remote order verification team and capabilities with the current state of technology, checking IV products has the potential to be completed remotely and/or centralized. The Advocate Health Midwest Region oncology clinics have recently demonstrated the ability to check IV preparations outside of the ante room, opening the opportunity to expand centralized IV checking to the Midwest Region health system.

Methods: Eligible participants are central pharmacies at Midwest Region sites that compound sterile products and have camera checking capabilities. To start, a search was conducted to assess for similar models in other systems, legal requirements and recommendations were reviewed from United States Pharmacopia and American Society of Healthsystem Pharmacists, and current remote verification practices were discussed with the oncology clinic team.

Retrospective data regarding product volume at Midwest sites was collected from Epic Slicer Dicer to help predict busiest hours and shifting of duties to maintain a net neutral budget. Aurora St. Luke’s Medical Center was used to help predict the average rate a pharmacist can safely and effectively check IV products, due to the large volume of products and dedicated IV checking pharmacist on site

Current workflows were analyzed, and volunteer sites were identified in order to conduct a pilot of a new workflow. The pilot involved a "remote checking” pharmacist at Aurora Sinai Medical Center performing final checks of all non-batch sterile IV compounded products for Aurora Sinai, Aurora St. Luke’s South Shore, and Aurora West Allis Medical Centers. Newly identified barriers were addressed, and participant feedback was incorporated in finalizing the business plan.

Redesigning Pharmacist Documentation within the Electronic Health Record

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Background: At Gundersen Lutheran Medical Center, pharmacists document within the electronic health record for various reasons. Most often, documentation is used to communicate clinical decisions in response to consults. Templates were previously developed to guide documentation. However, these templates are redundant and can take a significant amount of time to complete. The purpose of this project is to streamline the pharmacist documentation process by developing standardized forms that allow for minimal variation and the ability to monitor metrics.

Methods: The content of all pharmacist written notes was evaluated for redundancies and necessary information. A questionnaire was sent to all inpatient pharmacists at Gundersen Lutheran Medical Center to assess time spent documenting along with perceived value within the care team. Forms were then created based on prior protocols and information gathered from the questionnaire.

Results: Twenty-nine pharmacists took the documentation questionnaire. The most common amount of time pharmacists spent documenting during daytime shifts was 30-60 minutes (62% of pharmacists). Twenty-four of 29 pharmacists believed that their notes written in the electronic health record were somewhat valuable to others in the care team. Seventeen of 29 pharmacists reported that writing notes affects their ability to perform other necessary shift obligations some of the time. The adult vancomycin progress note was identified as the most used note, so it was the first to be redesigned.

Assessment of Propofol Medication Handling, Storage, and Security in Procedural Areas Across a Large Multi-site Health Care System in the Midwest

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Background: Complete a risk assessment of propofol handling, storage, and security practices at inpatient and outpatient procedural areas, and make recommendations for propofol workflow to decrease the risk of mishandling. Propofol is a medication that has known abuse potential, and there has been increased interest in recent years in increasing propofol security at other health care systems.

Methods: Pharmacy directors across a large multi-site health care system in the Midwest were surveyed regarding propofol dispensing, storage and security practices at their site's inpatient operating rooms (ORs), outpatient procedural areas and ambulatory surgical areas. Follow up interviews were conducted with pharmacy personnel based on survey trends, and a risk assessment was completed to determine the feasibility of potential solutions.

Results: Twenty-seven pharmacy directors were surveyed regarding propofol handling. Propofol was primarily delivered by the pharmacy technician directly to the procedural area (93%), stored in an automated dispensing cabinet (93%), and dispensed under a patient specific name (85%), though 56% of sites used more than one storage method. The most common waste receptable used in procedural areas was pharmaceutical waste containers with a non-retrievable insert (74%).

Optimizing Pharmacy-Led Medication History Workflows in a Rural Community Hospital Through the Utilization of Undergraduate Students

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Background: Medication histories are a vital part of the hospital admission and transition of care process. Failure to obtain an accurate medication history can lead to significant medication errors during admission that can be perpetuated after discharge. Studies have shown that up to 60% of completed medication histories contain at least one error. Pharmacists, pharmacy technicians, and pharmacy students have been found to complete more accurate medication histories than physicians and nurses, however this task is time-consuming for pharmacy staff. Historically at Fort HealthCare, the medication history process has been a collaborative effort; nursing staff completed the initial history and pharmacists reviewed the medication history to confirm accuracy. Based on internal time studies completed at Fort HealthCare, a clinical pharmacist takes an average of 22 minutes to complete a medication history. The goal of this project was to optimize the medication history process as a pharmacy-led workflow that improved pharmacy and nursing time. A New position was created to achieve this goal – the medication history specialist. This role will be filled by a novel and untapped market, undergraduate students, by partnering with a local undergraduate university through an independent study course. While working as medication history specialists, the students will gain undergraduate credit and valuable healthcare experience while simultaneously helping to improve the medication history process at Fort HealthCare.

Methods: The Fort HealthCare inpatient pharmacy partnered with pre-health advisors from a local undergraduate university, University of Wisconsin – Whitewater, to create an independent study course where undergraduate students interested in healthcare could gain firsthand experience with medication use processes at a rural community hospital. A new medication history workflow was designed, and pharmacist-led training was developed to teach students how to obtain the best possible medication history (BPMH) from patients. Competency exams were created as a final step to ensure newly trained students were qualified to independently work with patients to collect medication histories. The impact of this change from the previous collaborative medication history workflow to the new pharmacy-led workflow will be measured through comparison of total pharmacist time spent on medication histories as well as the number of medication list changes made by the pharmacist (categorized into omissions, commissions, and inaccuracies).

Results: Pre-workflow change data showed that clinical pharmacists at Fort HealthCare spent an average of 22 minutes completing a medication history for every patient admitted to the hospital. The average admitted patient had 15 home medications and the pharmacist made 6.2 home medication list changes following nurse medication history completion. These changes consisted of an average of 2.2 omissions, 1.8 commissions, and 2.2 inaccuracies per medication list.

Case Report and Management of Tianeptine Abuse in the Emergency Department

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Background: Tianeptine is an atypical tricyclic antidepressant with a complex pharmacological profile, including mu-opioid agonism. It is approved for the treatment of depression in parts of Europe, Asia, and Latin America, however, in the United States it is not approved and remains largely unregulated. It has become increasingly popular as a drug of abuse due to the ease with which it can be obtained in gas stations, smoke shops, and online. Tianeptine is commonly referred to as "gas station heroin" and common products that contain it are Zaza and Neptune's Fix. There is no consensus on the treatment and management of tianeptine abuse and overdose. A case report of the management of a patient presenting to the Emergency Department (ED) for tianeptine abuse is presented.

Methods: A male with a prior history of alcohol and cannabinoid abuse presented to the ED for paranoia, depression, and fear of harming himself from taking more drugs when home alone. He states that his heart is racing. The patient was calm, in no acute distress, and denied suicide ideation. He admitted to taking tianeptine 350 to 400 mg several times a week for the last 6 months, approximately 30-times the typical daily antidepressant dose of 12.5 to 50 mg. The last dose was taken less than an hour prior to arrival. EKG monitoring was initiated, and the Poison Control Center was consulted. Seizure precautions were taken, and the patient was monitored in the ED.

Results: The patient was held in observation in the ED with telemetry, EKG, and continuous pulse oximetry monitoring. His vital signs were stable, and EKG initially showed sinus tachycardia of 112 beats per minute. Aside from slightly elevated blood glucose and TSH levels, labs were unremarkable. The urine drug screen was positive for cannabinoids and negative for opioids, benzodiazepines, amphetamine, and tricyclic antidepressants. Current medications taken by the patient are buspirone, disulfiram, risperidone, and venlafaxine. The patient purchases tianeptine at a local smoke shop. He feels that he is addicted to tianeptine and describes getting chills and uncontrolled shaking of his arms when he goes a couple days without a dose. The patient is requesting voluntary admission to a substance abuse treatment center. No seizures or acute opioid overdose or withdrawal signs were observed in the ED. After 6 hours of observation, the patient was transported to a substance abuse treatment center.

Conclusion: Tianeptine abuse and overdose cases are challenging to recognize and treat due in part to a lack of consensus literature guidelines. The present case did not present as an acute overdose, however, important management principles were learned. An FDA MedWatch report was filed, and the manufacturer of Neptune's Fix has agreed to a voluntarily recall in the United States.

Assessment of Lecanemab for Addition to Formulary

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Background: There is an unmet need in Alzheimer's disease treatment. Current therapies aim to slow progression and/or address the symptoms associated with Alzheimer's disease, including acetylcholinesterase inhibitors, an N-methyl-D-aspartate receptor antagonist, and most recently anti-amyloid monoclonal antibodies. There is no cure for Alzheimer's disease at this time. Until recently, no medications were available that specifically targeted the beta amyloid plaques associated with the pathophysiology of Alzheimer's disease. Aducanumab received accelerated approval by FDA in June 2021 as the first monoclonal antibody to target the amyloid beta plaques and fill this unmet need. However, aducanumab has not received full FDA approval to date and has not been added to the Froedtert Health formulary. The purpose of this project is to review the primary literature available for lecanemab and assess its appropriateness for addition to the Froedtert Health formulary.

Methods: Multiple databases including PubMed and clinicaltrials.gov were reviewed for safety and efficacy data for lecanemab. Additional information including dosing, administration, monitoring, and pricing was found via other sources which include the European Medicines Agency, Health Canada Drugs and Health Products, Lexicomp, and the package insert. The information was then organized into a drug monograph and a financial and value assessment were completed. Finally, a recommendation was developed based on the collective findings and presented for discussion at multiple committees.

Results: Lecanemab is the only anti-amyloid monoclonal antibody with full FDA approval. Lecanemab was granted accelerated approval by the FDA in January 2023 based on phase 2 clinical trials which demonstrated reduced accumulation of amyloid beta plaque in adults with early stage Alzheimer's disease over 18 months. Lecanemab received full FDA approval in July 2023 following the phase 3 CLARITY AD trial which demonstrated reduced clinical progression via the Clinical Dementia Rating-Sum of Boxes (CDR-SB) score from baseline compared with placebo. Lecanemab contains a Boxed Warning due to the risk of amyloid-related imaging abnormalities (ARIA) and requires frequent magnetic resonance imaging (MRI) monitoring. It also contains a warning for infusion-related reactions. The Centers for Medicare and Medicaid Services' (CMS) National Coverage Determination (NCD) for anti-amyloid therapies for Alzheimer's disease supports reimbursement for lecanemab as long as the patient meets criteria and the provider is enrolled in a qualified registry. Payment for associated testing and imaging is still being determined by CMS. Private payers will vary in coverage policies.

Conclusion: Lecanemab was added to the Froedtert Health formulary with restrictions to outpatient administration and ordering by a provider specializing in memory disorders. A comprehensive team was created to ensure the medication is delivered safely and effectively to patients.

Evaluating the Use of VerifyNow™ for Clopidogrel Resistance in Vascular Surgery Patients within a Large Academic Medical Center

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Background: To determine the impact of VerifyNow™ use on the incidence of all-cause mortality in vascular surgery patients initiated on clopidogrel therapy.

Methods: Eligible participants are adults 18 years or older who were admitted as vascular surgery patients at Froedtert Hospital from January 1st, 2021 to December 31st, 2021. Data was collected and assessed to evaluate the overall benefit of VerifyNow™ utilization on all-cause mortality in vascular surgery patients starting dual anti platelet therapy (DAPT) with clopidogrel and aspirin. Patients were excluded from this trial if poor medication adherence was noted in their chart, if they were pregnant, had antiphospholipid syndrome (APS), or other platelet disorders.

Results: 170 patients were included in the IRB-approved study. Data collection and analysis in process.

Conclusion: Project analysis, results, and conclusion are still in process.

Development and Implementation of a Process for Highlighting Effective Preceptor Strategies and Recognition

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Background: Preceptors work hard to help learners and deserve to be recognized. Published literature indicates that motivating factors for precepting can include meaningful recognition and organizational support. Supporting and developing teammates is a priority in the Advocate Health pharmacy strategic plan.

The objective of this project is to develop a toolkit that encompasses current methods being used to recognize excellent precepting strategies. In addition, develop and implement a system wide process to showcase effective precepting skills and strategies that is shared across the system on a regular basis. A transparent system connects preceptors across the organization and is aligned with the pharmacy department strategic plan. The scope of this project is inclusive of preceptors of all pharmacy learners at Advocate Health-Midwest Region (AH-MW).

Methods: Collect inventory of current methods used at AH-MW pharmacy residency programs, as well as reach out to other institutions to gather what processes they have in place to demonstrate preceptor recognition. Search and create new ideas to recognize preceptors. Create a toolkit of findings that will be shared with all AH-MW sites. Develop a process for highlighting effective preceptors/precepting strategies. Implement and adjust to sustain the process.

Results: The initial results from the information collected confirmed that most AH-MW PGY-1 and PGY-2 residency programs 86.4% (19/22) have no formalized process in place to highlight preceptors. Student learner preceptor recognition is generally limited to awards conferred by partnering schools of pharmacy. These results support the rationale to develop a recognition program (in progress).

Implementation of Emergency Department Discharge Prescription Capture at an Academic Medical Center

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Background: In 2023, the Centers for Medicare and Medicaid Services (CMS) implemented the Final Rule for Electronic Prescribing of Controlled Substances, requiring 70% of Part D beneficiaries receive Schedule II-V controlled substance prescriptions electronically (E). The Froedtert Hospital (FH) Emergency Department (ED) has historically generated approximately 30,000 prescriptions annually. Less than 1% of these prescriptions were filled at Froedtert pharmacies, with around 4% E-prescribed (2017 to 2022), creating an opportunity to increase within-system prescription capture and E-prescription (E-Rx) rates in accordance with new CMS regulations. FH has several retail pharmacies, making it feasible for patients to access pharmacies from virtually anywhere on campus. One such pharmacy, Froedtert Pharmacy #50, located adjacent to the ED, presents a potential solution to increase prescription capture and E-Rx rates, as E-prescribing to third-party pharmacies from the ED is logistically complex. The objective of this project was to implement a process to capture discharge prescriptions from the FH ED to be filled at Froedtert Pharmacy #50 Monday through Friday from 0800 to 1800 (the operating hours of the pharmacy).

Methods: A comprehensive educational intervention was delivered to ED providers February through April 2023, detailing new CMS E-Rx requirements, pharmacy hours, and other logistical and technical details pertinent to successful E-prescribing. Three months of prescribing data before (12/22-3/23) and after (4/23-7/23) the official go-live date (4/3/2023) were obtained and evaluated for prescribing patterns, pharmacy destination, readmission rate, and ED bed turnaround time. The primary outcome was the number and percent of prescriptions generated from the FH ED filled at pharmacy #50.

Results: The number and percent of prescriptions filled at pharmacy #50 changed from 152 (4.9%) to 159 (3.6%) after the educational intervention (percentage decreased as more prescriptions were generated during the post-implementation period, 3133 vs 4429). E-Rx rates did increase from 14% to 16% overall and from 21.5% to 32% at pharmacy #50. There was no difference in readmission rates between pharmacy destinations and no difference in duration of ED visits.

Conclusion: Although some sub-analyses showed more intentional prescribing patterns after the intervention, the primary outcome showed no difference pre- and post-implementation at pharmacy #50. Prescription capture increased at pharmacy #75 (which was not the pharmacy the intervention was designed to promote, but which had just become a 24 hour location) during the post-intervention phase. More prescriptions were directed to the appropriate pharmacy based on the hours of operation of each, which may have been an unintentional benefit from this intervention. The first major barrier to a successful outcome wa a physical barrier between the ED and pharmacy #50, which makes patient access to the pharmacy somewhat inconvenient. The second was operational and workflow complexity preventing implementation of a proposed Epic enhancement, which would default prescriptions from the "print" mode to E-Rx and the default destination to an FH pharmacy. Initiatives are ongoing to modify physician and nurse workflows to successfully implement such an Epic enhancement.

Development and Implementation of Pharmacist Pharmacogenomics Education at Clement J. Zablocki VA Medical Center

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Background: Although great strides have been made with Pharmacogenomics Testing for Veterans (PHASER) program implementation at Clement J. Zablocki VA Medical Center (VAMC), pharmacogenomic testing continues to be utilized sparingly with minimal pharmacist involvement, relative to other providers. The goal of this project is to increase pharmacist involvement in pharmacogenomics-guided pharmacotherapy via educational training and guidance development to improve patient outcomes.

Methods: A 16-item Likert-style and multiple choice pre-test was administered to pharmacists across specialties to determine the current state of clinical pharmacist familiarity and confidence with PHASER testing and pharmacogenomics application to current patient care workflow. After pre-test completion, pharmacists participated in the following in-services: a Clinical Pharmacogenetics Implementation Consortium (CPIC) and The Pharmacogenomics Knowledgebase (PharmGKB) practical guidance walkthrough, specialty-specific presentations for primary care, oncology, and mental health, and a self-guided pharmacogenomics note walkthrough. A 16-item Likert-style and multiple choice post-test was then administered to gauge improvements in pharmacist familiarity and confidence with implementing pharmacogenomics into their clinical practice; results were analyzed using the Wilcoxon-Ranked Test. Paired t-tests were used to compare graded averages of knowledge-based questions. Descriptive statistics were used to determine differences in the quantity of pharmacogenomics orders requested by pharmacists three months before and after in-service education exposure. Specialty-specific in-service lectures were delivered live (virtual); recordings were made available. Practical guidance documents and walkthroughs were provided to pharmacists asynchronously. Inclusion criteria for pre- and post-testing consisted of the following: clinical pharmacists actively employed at Clement J. Zablocki VAMC. Participants were excluded if they were classified as trainees at the institution.