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Soaring to New Heights

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La Crosse Center, La Crosse

Poster Presentation Abstracts

Assessing Provider Acceptance of Direct-Acting Oral Anticoagulant (DOAC) Conversion in Long-Term Care Patients with Chronic Atrial Fibrillation (AFib)

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Background: Providers in Northeast Wisconsin tend to use vitamin K antagonists (VKA) agents over non-VKA anticoagulants for treatment and prevention of thromboembolism. New data shows that DOACs are at least as safe and effective as warfarin in decreasing the risk of stroke and venous thromboembolic events and are associated with a significantly reduced risk of intracranial hemorrhage.1 Patients in the long-term care setting already have an increased risk of falling based on concomitant medications including antidiabetic agents, antiarrhythmics, diuretics, antipsychotics, and others.

We sought to utilize a population health approach to implement evidence-based guidelines by initiating the conversion to DOACs for eligible long-term care patients on warfarin for Afib.

Methods: Eligible patients were those who have filled warfarin one or more times at the pharmacy, were greater than 18 years old, and had AFib as the primary indication for anticoagulantion. Guidelines for appropriate anticoagulant use in the setting of AFib were used to assess if patients are eligible for DOAC conversion based on patient age, renal function, drug-drug interactions, and contraindications to use. Prior to initiating therapy changes, a test claim was conducted to ensure the medication was covered for eligible patients. For covered claims, the patient or power of attorney was contacted to obtain consent for the therapy change recommendation prior to contacting providers. Providers were contacted using a standardized recommendation form. Prescribers that declined therapy modification were asked to provide documentation on why the therapy change was rejected. The primary objective was to determine prescriber acceptance for guideline driven therapy conversion for patients with AFib in which conversion may be appropriate. Secondary objectives are to assess reasons for which patients are not converted to DOAC therapy and determine if the intervention results in increased profit for the pharmacy.

Results: A total of 44 patients were identified as using warfarin at the pharmacy. Of these 44 patients, 22 (50%) were using warfarin for AFib and were included. Of the 22 eligible patients, 6 declined the intervention for varying reasons (copay, resistant to change, personal factors, etc.). Of the remaining 16 patients, 5 have undergone Eliquis conversion, another 5 are pending conversion at their next INR. For the 16 recommendations made to providers, 62.5% of recommendations were accepted with a new prescription sent. The primary reason for declining our recommendation was previous failure of Eliquis. The cost benefit analysis for the intervention is still in progress.

Conclusion: To date, the interventions have been overall successful which shows that pharmacists can play an important role in promoting evidence-based practice. This project also highlights the importance of involving student pharmacists and pharmacy technicians as they spearheaded this project. This screening process can be developed and applied to other indications for anticoagulation including pulmonary embolism and deep-venous thrombosis prophylaxis.

Applying a Panel Management Approach to Naloxone Distribution in a Veterans Affairs Setting

Jessica L. Haase, 2025 PharmD Candidate, Katherine L. Rothbauer, PharmD

Background: Naloxone is an important harm reduction tool and is becoming increasingly essential to offer to individuals who may be at risk for opioid overdose, including those with opioid prescriptions, use of illicit opioids, or use of other substances that are commonly contaminated with potent opioids. Many veterans remain in a population at high risk for opioid overdose. This project was intended to identify candidates for naloxone prior to their next primary care or mental health appointment through use of a population health dashboard. This would encourage providers to discuss overdose education with the goal to increase access to naloxone for veterans, ultimately resulting in higher rates of naloxone distribution in the community.

Methods: Veterans were deemed eligible if they appeared on the Overdose Education and Naloxone (OEND) Dashboard with an indication for naloxone (based on opioid prescription risk factors or substance use disorder history) and had an appointment with mental health or primary care scheduled in the next week after time of chart review. The veteran's primary care or mental health provider was alerted to a chart review note prior to the appointment including the recommendation to offer naloxone and brief guidance on providing overdose education with the intention for naloxone to be discussed and offered at the appointment. Veterans were excluded if they declined naloxone within the last 6 months, if they failed to show up for the appointment, if the appointment was cancelled for any reason, or if a covering provider handled the appointment and was not alerted to the veteran's naloxone eligibility.

Results: During an eight-week period, 29 veterans deemed eligible for naloxone were included in this data set. In total, 18 veterans were offered naloxone during their respective appointments, representing 62.0% of those identified. Of the eligible patients that were offered naloxone, 15 accepted naloxone (83.3%) and 3 declined for various reasons.

Conclusion: We observed a high rate of veterans accepting naloxone when offered by providers in mental health and primary care appointments. Further exploration of reasons providers did not discuss naloxone in some appointments is needed, though likely include time constraints and prioritization of other issues. This intervention demonstrates that pharmacists can increase naloxone access and reduce provider workload by proactively offering specific recommendations to providers about opioid overdose and naloxone distribution.

Post-Bariatric Surgery Medication Management Process Optimization in Primary Care

Cecelia L. Hickey, 2025 PharmD Candidate, Magdalena M. Siodlak, PharmD, BCACP

Background: Approximately 228,000 people in 2019 underwent a bariatric surgery procedure for weight loss and improvement of obesity-related diseases. Patients require close monitoring post-operatively due to significant changes in gastrointestinal absorption, affecting medication delivery as well as increasing risk of various nutritional deficiencies. Medication management is impacted as well for multiple obesity related co-morbidities post-operatively, such as diabetes, hypertension, dyslipidemia, anticoagulation, heartburn, osteoporosis, oral contraceptives, and more.

Eligible patients at the William S. Middleton Veterans Affairs Hospital may undergo one of two procedures: Roux-en-Y Gastric Bypass surgery or Sleeve Gastrectomy. Post-operatively, patients are longitudinally managed and monitored by their Primary Care team consisting of Primary Care Provider, Nutritionist, and Clinical Pharmacy Practitioner (CPP). While general national guidelines are available, specific procedures and recommendations are variable between sites for post-bariatric surgery nutrient supplementation and disease state medication management. A knowledge gap and lack of clinician-friendly resources was identified by the Primary Care CPP team in caring for patients post-bariatric surgery. The goal of this project is to optimize the post-bariatric surgery patient management process and clinician resources to aid Primary Care CPPs, including reviewing prescribed supplementation, chronic disease state management guidance, and post-operative care follow-up guidance.

Methods: This quality improvement project follows the Plan-Do-Study-Act process. First, a reconciliation was completed of currently prescribed post-bariatric surgery supplements at the Madison VA compared to the 2019 American Society for Metabolic and Bariatric Surgery (ASMBS) Clinical Practice Guidelines for the Perioperative Nutrition, Metabolic, and Nonsurgical Support of Patients Undergoing Bariatric Procedures. Recommendations were made to update supplement order sets and lab monitoring guidance in the electronic health record. Next, streamlined guidance documents were created for Primary Care CPPs to aid in providing optimal patient care, including follow-up timelines for nutritional stores, recommendations for chronic disease state management, comprehensive medication management visit templates, and clinician checklists. Finally, updated resources were presented to the primary care CPP team. A thematic analysis was completed of the feedback received from key stakeholders in refining the clinician tools.

An Evaluation of the Appropriateness of Cefdinir, Ciprofloxacin, Levofloxacin, and Cephalexin Prescribing Based on Renal Function in Oncology Clinic Patients

Joy R. Witto, 2024 PharmD Candidate, Christopher Bohl, PharmD, BCOP

Background: Renal excretion is the primary route of elimination for most antibiotics. Failure to appropriately dose adjust these medications based on renal function can result in further renal injury, exposure to unnecessarily high drug concentrations, and increases risk for adverse drug reactions.[1] The primary objective is to determine if oncology clinic physicians were appropriately dosing cefdinir, ciprofloxacin, levofloxacin, and cephalexin based on patient renal function. Secondary objectives include determining if duration of therapy was appropriate based on antibiotic indication.

Methods: Adult patients at the Froedtert Menomonee Falls Cancer Center, with any cancer diagnosis, who were prescribed these antibiotics by an oncology physician were included. Patients who were prescribed antibiotics by a non-oncology provider or had a creatinine clearance more than 5 days prior to starting antibiotic therapy were excluded. Data collected from an electronic health record, EPIC, report was used. The report consists of pertinent patient information from January 1st, 2022 – August 26th, 2022, and includes patient initials, name of antibiotic prescribed, dose, frequency, duration, prescriber name, indication, and renal function reported as creatinine clearance. Using this information, objectives will be evaluated using Lexicomp[2], Micromedex[3], Froedtert and National Comprehensive Cancer Network[4] (NCCN) guidelines. Dose and duration were deemed appropriate if it coincides with at least one of these resources.

Results: Overall, 93 patients met the inclusion criteria and were included in this study. Of the 93 patients, 37 were prescribed cefdinir, 16 were prescribed cephalexin, 20 were prescribed ciprofloxacin, and 20 were prescribed levofloxacin. Of the 93 patients included in this study, 28 (30%) were prescribed an inappropriate dose of antibiotic that was not adjusted for reduced renal function. Cefdinir was inappropriately dosed in 10 (27%) patients, followed by 7 (44%) patients in the cephalexin group, 6 (30%) patients in the ciprofloxacin group, and 5 (25%) patients in the levofloxacin group. Zero patients were prescribed an inappropriate duration of treatment based on infectious indication. Duration as a secondary objective was unable to be determined for 40 patients, all who received antibiotic therapy for urinary tract infections.

Conclusion: This study identified a substantial number of prescribed antibiotics that were not renally adjusted, which increases the likelihood of adverse drug reactions. This study will be used to educate oncology physicians that renal function needs to be considered when prescribing antibiotics. This study will also be used to evaluate potential changes to antibiotic prescribing workflow such as allowing pharmacists to verify correct dosing before a prescription is sent.

References:

1. Nardiello S, Catapano F, Galanti B. Antibiotics and kidney. National Library of Medicine. 2000;8(2):74-81. 2000. Accessed September 15, 2022. [Antibiotics and kidney] - PubMed (nih.gov)
2. In: Lexicomp. Wolters Kluwer Health Inc.; 2023. Accessed September 15, 2022. Home - Lexicomp (switchinc.org)
3. In: Micromedex. IBM Corporation; 2023. Accessed September 15, 2022. Home - MICROMEDEX (switchinc.org)
4. Baden LR, Swaminathan S, Almyroudis Ng, et al. Prevention and Treatment of Cancer-Related Infections. National Comprehensive Cancer Network. Updated June 28, 2023. Accessed July 7, 2023. Guidelines Detail (nccn.org)

Community Pharmacy Services in Health Professional Shortage Areas Across Wisconsin

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Background: Primary care health professional shortage areas (HPSAs) lack sufficient primary care providers to meet their health care needs, which contributes to worse health outcomes within rural populations. Community pharmacies are commonly located in HPSAs and provide non-dispensing services that can help address unmet health care needs. However, there is limited data on the nature and scope of community pharmacy services.

Methods: A survey tool on pharmacy services, reimbursement, and barriers to service implementation was developed, pilot tested, and administered to all community pharmacies in Wisconsin. Data were collected via mail and online over two waves of survey administration from November 2021 to May 2022. Descriptive analyses were used to compare the prevalence of and reimbursement for services between HPSA and non-HPSA pharmacies. Thematic analysis was used to describe barriers to pharmacy service implementation.

Results: Responses were received from 287 of 774 eligible community pharmacies (37.1%). HPSA pharmacies were significantly more likely to be located in rural areas. Regardless of pharmacy location, community pharmacies reported providing a variety of services but reimbursement for these services was considerably less frequent. Pharmacy staffing, pharmacist time, and financial issues were the most commonly reported barriers to service implementation.

Conclusions: Community pharmacies provide a diverse set of services to meet the health care needs of their patients, but often do so with inadequate staffing or reimbursement. Action is needed to support community pharmacies in meeting the health care needs of their communities and to ensure patient access to medications and pharmacy services.

Centralized Specialty Medication Management (CSMM) Patient Self-Efficacy and Pharmacist Satisfaction

Grayson J. Cooley, 2024 PharmD Candidate, Clara J. Nickel, 2024 PharmD Candidate, Ryan N. Simonet, PharmD, Amanda R. Margolis, PharmD, MS, BCACP

Background: Patients can be intimidated by the complexity of biologics – storage, administration, disposal, cost, and what to do in the case of an adverse reaction. The Centralized Specialty Medication Management (CSMM) service was initiated within the Madison VA in 2020 to assist patients with their biologic injectables. The service consists of an initial consultation and a 2-week, 3-month, and 6-month follow-up which included therapy optimization, side effect management, and care coordination. The aim of this evaluation was to determine patient confidence regarding their ability to use, understand, and monitor their subcutaneous biologic as well as their satisfaction with the CSMM service.

Methods: Veterans recently seen in the CSMM service were contacted via telephone to determine their medication self-efficacy and satisfaction with the CSMM service. A 15-item modified version, specific to the biologic, of the validated PROMIS v1.0 questionnaire self-efficacy for managing chronic conditions - managing medications and treatment was used to assess self-efficacy. This questionnaire uses a 5-item scale with 1 being "I am not at all confident" to 5 being "I am very confident." Additionally, a 10-item CSMM satisfaction survey was used. Six questions used a 5-item scale with 1 being "poor" and 5 being "excellent." There were three yes-no questions inquiring if they would utilize this service again, recommend the service to another Veteran, and ease of access to the service to answer questions. Descriptive statistics were used for analysis.

Results: There were 12 interviews conducted. The average self-efficacy score was 71.55/75 (or 95.4%). The majority of points were lost due to patients not knowing their exact dose of their biologic (i.e., strength in milligrams). In terms of satisfaction, the mean overall satisfaction was 4.92 out of 5 (excellent); all 12 patients would choose to use the CSMM service again, and 11 out of 12 would recommend the service to other Veterans (one "does not tell others what to do"). One CSMM patient described: "[Pharmacist] was very clear on how to administer the injection, he really made sure I understood the medication and how to use it... [The service] makes the patient's life much easier and less stressful." Finally, all 12 patients found it easy to access a pharmacist within the service to answer any questions they had.

Conclusions: Patients who were enrolled in the CSMM service at the Madison VA responded with high confidence and comfortability with their biologic injectable and were fully satisfied with their pharmacist. The CSMM service built-up confidence in patients' care through consultation and consistent follow-up. Future directions include a pre-post quasi-experiment to determine changes in patient-oriented outcomes from this service.

Pharmacist Role in Alirocumab Optimization Through the Centralized Specialty Medication Management Service at the Madison VA

Clara Nickel, 2024 PharmD Candidate, Grayson Cooley, 2024 PharmD Candidate, Tyler Albright, PharmD, Anna White, PharmD, BCPP, Ryan Simonet, PharmD, Amanda Margolis, PharmD, MS

Background: Given the complexity of alirocumab use, clinical pharmacy practitioners through the Centralized Specialty Medication Management (CSMM) service have been involved in regular medication counseling, education, and disease state monitoring. This evaluation aims to determine the impact on low-density lipoprotein cholesterol (LDL-C) of pharmacist intervention for patients taking alirocumab through the CSMM service.

Methods: A retrospective chart review was performed of all new patients starting alirocumab from January 1, 2020, through November 1, 2022, while enrolled in the CSMM service. To be included in the review, patients had to have been seen by the CSMM clinic for at least three months and were subsequently discharged back to primary care. The primary outcome was LDL-C. Secondary outcomes included medication changes/discontinuation, adherence calculated by the medication possession ratio (MPR) and capped at 100%, initial medication teaching, and reported side effects.

Results: A total of 28 patients were included in this review after being seen for an average of 4.75 visits by CSMM pharmacists and all were subsequently discharged from the service. Pharmacists made medication changes for 12 (42.9%) patients. Changes included dose or frequency increases or switching to an alternative agent, evolocumab. For all included patients, the average baseline LDL was 128, and the average LDL at discharge was 62. Among those who required an alirocumab dose increase, the average baseline LDL was 147, LDL prior to the change was 91, and LDL at discharge was 81. The average MPR for all patients was 91%, and initial medication teaches were performed for 26 veterans (92.8%). Twelve of the 28 patients reported a side effect (43%) with the most common being diarrhea (67%); management strategies ranged from altering dosage regimen to recommending anti-diarrheal medications and fiber supplementation.

Conclusion: Pharmacists in the CSMM clinic are well-positioned to assess for therapeutic efficacy of alirocumab through dedicated and regularly scheduled appointments. With the ability to order laboratory tests and interpret results, pharmacists efficiently supported patients in achieving their LDL goal and converted patients to an alternate agent or dose if adequate response was not achieved. Close follow-up by clinical pharmacists resulted in high rates of medication adherence. Given the high incidence of side effects with this medication, clinical pharmacists played a critical role in promoting safe and effective medication use through the early identification and management of serious adverse reactions. Future directions include re-evaluating all veterans currently taking alirocumab to determine if any additional medication changes are warranted based on the 2022 American College of Cardiology (ACC) expert consensus recommendations for LDL-C goals for non-statin therapies in ASCVD.

Hypoxia in the Emergency Department Caused by Concurrent Pulmonary Embolism and Methemoglobinemia

Hope E. Schier, 2024 PharmD Candidate, Diane M. Johnson, PharmD, BCPS

Background: Acute dyspnea with hypoxia is a common chief complaint amongst patients presenting to the emergency department, and the differential can be vast – infection, trauma, pulmonary embolism (PE), anxiety, or toxin-related – with some presentations more frequent than others. We present a case of concurrent pulmonary embolism and methemoglobinemia from dapsone. Dapsone-related methemoglobinemia develops in up to 13% of patients receiving is therapy and accounts for the majority medication-related etiologies of this condition.

Case: A 42-year-old female presented to the emergency department from an outpatient infusion center with a chief complaint of shortness of breath and fatigue following discharge from the hospital two weeks prior for a gastrointestinal bleed. Her past medical history was significant for hypertension, Crohn's disease, asthma, and iron deficiency anemia. On presentation, she had an SpO2 of 88%, which improved to 90% following oxygen via nasal cannula at 2 L/min; she was not cyanotic on appearance. Given the history or anemia, a hemoglobin was measured, and resulted at 8.1 g/dL. A CT angiogram of the chest highlighted an acute pulmonary embolism in the right upper lobe. Anticoagulation with unfractionated heparin was initiated and admission orders were placed. However, the location and size of the pulmonary embolism still did not explain the hypoxia or the lack of clinical response to supplemental oxygen. A detailed medication history identified that the patient was taking dapsone 100 mg orally daily for PCP prophylaxis while taking prednisone for Crohn's disease. A venous blood gas with co-oximetry was obtained: pH 7.44, pO2 58 mmHg, pCO2 40 mmHg, oxyhemoglobin 77.4%, carboxyhemoglobin 0.4%, methemoglobin 11.7%. No intervention for methemoglobinemia was initiated, though methylene blue was available should the patient further decompensate. Atovaquone was initiated in place of dapsone therapy. A glucose-6-phosphate dehydrogenase (G6PD) enzyme activity analysis returned within normal limits. The patient remained on 2L oxygen via nasal cannula for 40 hours and was discharged after three days with an oral anticoagulant.

Conclusion: Concurrent methemoglobinemia in the setting of pulmonary diseases is sparsely reported in the literature. Patients receiving dapsone therapy presenting with hypoxia should be evaluated for the presence of methemoglobinemia regardless of other possible etiologies due to the risk of this adverse drug reaction.

Deprescribing in Long-Term Care Patients with a Focus on Decreasing Falls

Jenna N. Harnish, 2025 PharmD Candidate, Mara A. Kieser, MS, RPh

Background: A quality assurance project to review medication profiles for newly admitted patients of Capitol Lakes Health Center skilled nursing facility. Patient profiles were evaluated and assessed the need for tapering or deprescribing of therapy per predetermined criteria. Targeted medications had a high fall risk and/or potentially inappropriate use in older adults per the 2019 update of the American Geriatrics Society (AGS) Beers Criteria.

Methods: Patients met the criteria for eligibility if they were 65 years of age or older, new admission (<1 week) to the skilled nursing facility and had the greatest number of medications from the weekly profile evaluation of newly admitted patients. Once the weekly patient was selected, individual medications were assessed for fall risk on a scale of 1 (low risk) to 3 (high risk) based on drug class. The AGS Beers Criteria was referenced for potentially inappropriate medication use in older adults and considered high-risk therapy. Targeted taper or deprescribe therapy recommendations were documented in a patient specific drug regimen review (DRR) and submitted to the pharmacist and medical director. Medications recommended to be tapered met criteria of being a level 1 or 2 fall risk and/or on the AGS Beers Criteria. Medications recommended to be deprescribed met criteria of being a level 3 fall risk and on the AGS Beers Criteria.

Results: Forty-four patients were included in the review over the 48-week period. The mean daily medication use was 23 (range 3-38; total 1,002) with a mean scheduled medication use of 16 (range 2-26) and a mean as needed medication use of 7 (range 1-14). The most common target were high fall risk medications with a mean of 6 (range 1-12) per patient whereas the use of potentially inappropriate medications in patients had a mean of 3 (range 0-7). Total daily medication use of all patients included in the project was 1,002 with 330 (33%) targeted for recommendation. The most common drug classes targeted for recommendation included: analgesic, non-opioid (86); antihypertensive (63); antidepressant (34); and analgesic, opioid (31).

Conclusion: It was observed that every patient reviewed was taking at least one medication which put them at a greater risk of falling. Also, on average 10% of patients reviewed were on at least one potentially inappropriate medication per the AGS Beers Criteria. It is well documented that older adults have a higher sensitivity to intended and unintended drug effects at much lower doses compared to a young adult, such as falls and cognitive impairment. Polypharmacy is a major problem faced by the geriatric patient population. Pharmacists have an opportunity to play an increased role in tapering or deprescribing medications.

A Quantitative Assessment of PharmD Pain Control Recommendations

Delilah E. Velez, 2025 PharmD Candidate, Kristen Schmidt, PharmD, Diane Johnson, PharmD, BCPS

Background: Sinatra found that inadequate management of acute pain can negatively impact patients across multiple domains. These encompass diminished quality of life as measured by the Short Form-36 Quality of Life questionnaire, impaired sleep, reduced physical capabilities, financial burdens, and a higher risk of developing chronic pain. Unfortunately, inadequately controlled acute pain during hospitalization is not an uncommon problem. A study conducted by Tawil and colleagues revealed that 15.3% of hospitalized American patients expressed dissatisfaction with the way their pain was managed. This chart review identified the number and type of pain management recommendations made by William S. Middleton Memorial VA Hospital's (Madison VA) inpatient pain management pharmacist from September 30th, 2021, to May 10th, 2023.

Methods: This was a retrospective chart review of electronic medical records. Recommendations were eligible to be counted as an intervention if they were recorded within Madison VA's electronic health record system under the title "Pain Assessment" by the inpatient pain management pharmacist during the period spanning from September 30th, 2021, to May 10th, 2023. A data extractor examined the Pain Assessment notes to identify and categorize the recommendations as one the following types: acetaminophen, anticonvulsant, bowel medication, lab testing, muscle relaxant, non-pharmacologic intervention, nonsteroidal anti-inflammatory (NSAID), opioid, psychiatric medication, psychiatric pain medication, referral, sleep medication, supplement, topical medication, or miscellaneous. Each recommendation was only counted once per patient hospital stay.

Results: The inpatient pain management pharmacist provided a total of 435 recommendations during 213 pain assessments conducted between September 30th, 2021, and May 10th, 2023, for a total of 125 patients. Among the recommendations, there were 46 for acetaminophen, 22 for anticonvulsants, 10 for bowel medications, 4 for lab testing requests, 27 for muscle relaxants, 66 for non-pharmacologic interventions, 37 for NSAIDs, 106 for opioids, 3 for psychiatric medications, 17 for psychiatric pain medications, 32 referrals, 4 for sleep medications, 2 for supplements, 57 for topical medications, and 2 miscellaneous recommendations.

Conclusions: In their study, Poirier and colleagues revealed that the utilization of pharmacy pain management services results in safer opioid use and increased patient satisfaction. This is partly attributed to pharmacist tendency to use co-analgesics and adjunctive therapies. As shown by the results from this chart review, Madison VA's inpatient pain management pharmacist demonstrated comparable behavior. Over the period spanning from September 30th, 2021, to May 10th, 2023, they employed a multimodal approach to pain management, providing more than 15 types of recommendations. Impressively, they provided a total of 435 formal recommendations to the medical team. In summation, the data from this chart review supports the idea that an inpatient pain management pharmacist should be a standard member of any medical team.

Evaluation of Oral Iron Supplementation in Veterans with Heart Failure with Reduced Ejection Fraction

Sierra Szymanski, 2025 PharmD Candidate, Jordan Mattson, PharmD, Magdalena M. Siodlak, PharmD, BCACP

Background: Iron deficiency with and without anemia is a common comorbidity in patients with heart failure with reduced ejection fraction (HFrEF) and is associated with worse outcomes in HF patients. The 2022 American Heart Association/American College of Cardiology/Heart Failure Society of America Guidelines suggest utilizing intravenous (IV) iron supplementation in patients with iron-deficiency to improve functional status, disease severity, and quality of life. Literature suggests that patients with HFrEF have decreased GI absorption of oral iron; however, these studies have utilized two to three times daily oral iron dosing, which has in other populations been shown to also decrease iron absorption. As utilization of IV iron can present barriers to patients such as inconvenience and cost, oral iron remains a popular choice in this population. This project aims to assess the outcomes of oral iron supplementation for a sample of Veterans with HFrEF at the Madison VA.

Methods: Retrospective chart reviews were completed for 100 patients with a diagnosis of heart failure with reduced ejection fraction who were prescribed oral iron between 2021-2022. Patients were excluded if ejection fraction was over 40% or no repeat iron studies were available after starting supplementation. One reviewer gathered the data from patient charts. The primary outcome was the change in hemoglobin and iron studies following oral iron initiation, stratified by iron dosing frequency. Secondary outcomes include time to repeat labs after oral iron supplement initiation, number of patients switched to IV iron, and incidence of heart failure admissions, emergency department visits, and mortality. Data was evaluated with descriptive statistics.

Health Professional Financial Planning Workshop: Development and Implementation of an Interprofessional Event to Expand Student Financial Literacy

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Background: Create an innovative program to support economic success post-graduation for interprofessional health students at the University of Wisconsin-Madison. The workshop was designed by members of Phi Lambda Sigma and operated by student volunteers with support from faculty advisors and the University of Wisconsin-Madison Center for Interprofessional Practice and Education (CIPE).

Methods: Eligible participants were those >18 years old who were current health professional program students at the University of Wisconsin-Madison. Students participated in a 4-hour workshop consisting of a keynote address, their choice of 3 out of 6 breakout session topics, and a budgeting simulation. Participants rated their knowledge and confidence related to various financial planning skills with respect to before and after attending the workshop.

Results: Over 65% of respondents were Pharmacy (PharmD) students. Before the workshop began, 56 of 61 pre-survey respondents (91.8%) had not attended a financial planning workshop previously. Both knowledge and confidence in all six breakout session topics significantly increased after attending the financial planning workshop (p-values ≤ 0.0001). Participants also expressed interest in having longer breakout sessions to dive deeper into subtopics of the respective breakout sessions to allow more time for specific and individualized questions.

Conclusion: Students demonstrated a significant increase in knowledge and confidence following participation in the workshop. Considering verbal feedback and survey responses, we believe the depth and amount of financial education health professional students receive has the capacity for improvement. Greater emphasis on financial well-being is warranted for health professional students.

Parent Perspectives on a Pharmacy-Based Infographic Intervention on Adolescent Vaping and E-Cigarette Use

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Background: The purpose of this study was to understand parents of adolescents' opinions regarding an infographic designed to educate families on health risks and consequences of adolescent vaping, or use of electronic cigarette (e-cigarette) products. This infographic was intended to be implemented in pharmacies and community spaces, aiming to educate parents of adolescents about youth vaping and motivate them to educate their children on the topic. Parents of adolescents often feel undereducated and unprepared in addressing situations involving e-cigarette use, demonstrating the value of this pharmacy-based intervention. As pharmacists are the most accessible healthcare professionals, they can serve a unique role in providing essential education to combat the youth vaping epidemic.

Methods: Pairs of adolescents and their parents were recruited via pharmacy-disseminated recruitment flyers and email newsletters. Eligible participants were adolescents aged 12 to 18 years and one of their parents. Adolescent and parent participants were surveyed and interviewed independently. Each adolescent-parent pair received a $30 Amazon electronic gift card for full participation in the study. Semi-structured interviews with participants were conducted virtually via Zoom, audio-recorded, and transcribed verbatim. This study specifically focused on the interviews with parents on the infographic and its utility. Transcriptions were analyzed by two independent team members for content and thematic analysis using inductive coding methods, utilizing a master codebook to minimize discrepancies in wording.

Results: Thirty-five parents (82.9% female, 91.4% white, 88.6% college-educated, 82.9% married) participated in this study. Preliminary analysis indicated strong participant support for the implementation of this infographic in pharmacies and community settings. Participants reported knowing the health consequences of electronic cigarette use but were seeking further information and recommendations on how to address adolescent vaping in their households and communities. The aspects of the infographic that parents perceived to empower adolescents to make informed decisions regarding e-cigarette use included the statistics on the high prevalence of adolescent vaping in Wisconsin, resources for quitting e-cigarette use, and a QR code link to additional resources. Participants encouraged the implementation of this resource in a variety of settings, such as community centers, pharmacies, other healthcare facilities, as well as social media, to make it accessible to wider audiences of parents and adolescents. Participants viewed pharmacists as a trusted resource who can significantly influence both parents and adolescents. Pharmacists were specifically noted for being knowledgeable about cessation recommendations for nicotine products and disseminating information on the health risks of vaping. Parents of adolescents believed this pharmacy-based infographic to be an effective method to educate families on the risks of adolescent vaping.

Conclusion: Parents found the infographic to contain important information on adolescent vaping and supported the dissemination of this infographic by pharmacists. The infographic allowed pharmacists to provide further education and recommendations to address parent concerns regarding adolescent vaping. Participants believed that many families could benefit from this pharmacy-based infographic on adolescent e-cigarette use, encouraging more informed decisions surrounding the youth vaping epidemic.

Targeted Beta-Lactam Allergy Cross-Reactivity Education and Alert Suppression to Improve Surgical Antibiotic Stewardship

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Background: Allergies to beta-lactam antibiotics (especially penicillins) are very prevalent in the general population. Concern for potential cross-reactivity with other beta-lactam antibiotics can prevent prescribing of first-line therapy, particularly for surgical preoperative antibiotics. This allergic cross-reactivity potential derives from the similarity between beta-lactam side chains, potentially allowing safe prescribing of beta-lactams with dissimilar side chains even in the setting of previous hypersensitivity reactions. In particular, cefazolin does not share any side chain similarity with other commonly prescribed beta-lactam agents and cefotetan does not share any side chain similarity with the penicillins class. This project aims to determine if a focused provider education and drug-allergy alert suppression can increase the utilization of first-line beta-lactam antibiotics in the perioperative setting.

Methods: Focused education on beta-lactam side chains and cross-reactivity was prepared and presented to surgical providers, along with creation of a beta-lactam side chain table to help guide prescribing practices. Drug-allergy alerts between cefazolin and other beta-lactam agents were suppressed in the electronic health record. A retrospective evaluation of preoperative antibiotic prescribing practices for orthopedic and general surgeries was obtained for a one-year period before and after the interventions. Antibiotics assessed included cefazolin, cefotetan, clindamycin, and clindamycin plus levofloxacin. Cefazolin drug-allergy alerts were assessed for a three-month period prior to the intervention.

Results: A total of 2,245 preoperative antibiotics were given pre-intervention and 2,433 preoperative antibiotics post-intervention. After the provider education and alert suppression, the use of non-first-line agents in the perioperative setting decreased from 7.4% to 3.2% (43% relative reduction, $p < 0.0001$). A total of 408 cefazolin drug-allergy alerts appeared to providers in the three-month period pre-intervention.

Conclusion: Focused beta-lactam cross-reactivity education and cefazolin drug-allergy alert suppression led to a statistically significant decrease in non-beta-lactam preoperative antibiotics and is estimated to have reduced over 125 alerts to staff per month. Future direction includes expansion of alert suppression to other beta-lactam agents.

Adolescent Perspectives on a Pharmacy-Based E-Cigarette Educational Tool and Its Potential Impact on Youth Vaping

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Background: Over the past several years, electronic cigarette (e-cigarette) use among the adolescent population has continued to persist and grow. E-cigarette products contain an abundance of dangerous chemicals that can harm the health of vulnerable adolescents undergoing physical and mental development. Inconsistencies among distribution of educational resources available to adolescents are limiting the ability to raise awareness within the community about these dangerous products. Educational tools on e-cigarettes provided by pharmacists can help protect adolescents in the community against vaping. From previous studies, the investigators developed a pharmacy vaping educational tool tailored to adolescents, which is an infographic on the dangers of vaping and linked resources for additional information. This study's goal was to examine the adolescent perspectives on the content and implementation of this pharmacy-based intervention to educate adolescents and the broader community on vaping and e-cigarette use.

Methods: Adolescents were recruited from Wisconsin community pharmacies from January to May 2023 to participate in this study. Eligible participants were adolescents aged 12 to 18 years. Participants assented and had their parent's consent to participate. Study sessions took place virtually via Zoom Video Communications. Adolescents participated in virtual semi-structured interviews with open-ended questions on the vaping educational tool developed by the study team, how the tool could be disseminated by pharmacies, and the role of pharmacists in addressing adolescent vaping. The interviews were recorded, transcribed verbatim, and analyzed with NVivo 14 software. An inductive approach to content and thematic analysis was applied to generate the most prevalent themes from the data.

Results: Thirty-five adolescents (54.3% middle school age, 48.6% female, 74.3% white, 22.9% multiple racial and ethnic identities) were interviewed. The average age of adolescents participating within this study was 14.4 years. Adolescents' infrequent visits to pharmacies and parental personal e-cigarette use were found as barriers to implementing an adolescent-targeted educational pharmacy intervention on e-cigarettes and vaping. Participants perceived the handout to have a dynamic design and valuable information on e-cigarettes that would be beneficial to the adolescent community. Although there are some misconceptions about the false benefits of vaping, the adolescent participants agreed that underage e-cigarette use was dangerous. In terms of content and delivery of the educational tool, the adolescents believed it should be delivered in a digital format and available in various public medical settings, such as pharmacies and doctor's offices.

Conclusion: Integrating educational tools about vaping and e-cigarette use into community pharmacies can help disseminate this important information to the adolescent and their families. Using an educational tool as a pharmacy-based intervention can provide preventative measures for adolescents to access resources about the consequences of e-cigarette use as well as elicit current e-cigarette users to quit using these harmful products.

Student Pharmacist-Driven Assessment of Heart Failure Regimen Appropriateness in Skilled Nursing Facility Residents with Heart Failure: A Quality Assurance Project

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Background: To provide a framework and evaluate the impact of student pharmacists in optimizing heart failure (HF) regimens in hospitalized patients discharged to skilled nursing facilities (SNF) through targeted disease state patient profile reviews.

Methods: Two student pharmacists performed reviews of patient profiles of residents with a confirmed HF diagnosis. Students assessed for guideline-directed medical therapy (GDMT) at the recommended doses and identified medications that may worsen HF. Findings and recommendations were made to a consultant pharmacist utilizing evidence-based guidelines, who later presented these suggestions to nurse practitioners and providers of the SNF during the weekly huddles.

Results: At project conclusion, thirty patient profiles with a confirmed diagnosis of HF (21 HFpEF, 6 HFrEF, 3 unclassified) were reviewed. Eleven patients were on an angiotensin converting enzyme inhibitor (ACEi) or an angiotensin II receptor blockers (ARB), 20 on beta blockers–most commonly metoprolol succinate and carvedilol–, 9 on spironolactone, 2 on empagliflozin, and 27 taking diuretics, majority were furosemide with 2 torsemide. Of the 30 patients, 3 were at target doses of GDMT. The recommendations made included 6 suggestions to discontinue medications, 4 to decrease the dose, 4 to increase the dose, 8 to change the regimen, 1 to initiate a GDMT drug, and 10 warranted no changes. Most common medications that may worsen HF (5 or more occurrences) included albuterol (11), furosemide (11), ondansetron (8), pantoprazole (6), sertraline (5), and trazodone (5). Other less common medications were amiodarone, metformin, tamsulosin, and citalopram, among others.

Conclusion: Student pharmacists completed patient chart reviews in order to optimize HF medication regimens. These assessments demonstrated a positive outcome in regards to incorporating student pharmacists as pharmacy extenders as well as preventing HF readmission and hospitalization rates. Additionally, this quality assurance project adds to the growing body of evidence for student-led targeted disease state interventions and provides a framework for future work, particularly in SNFs.