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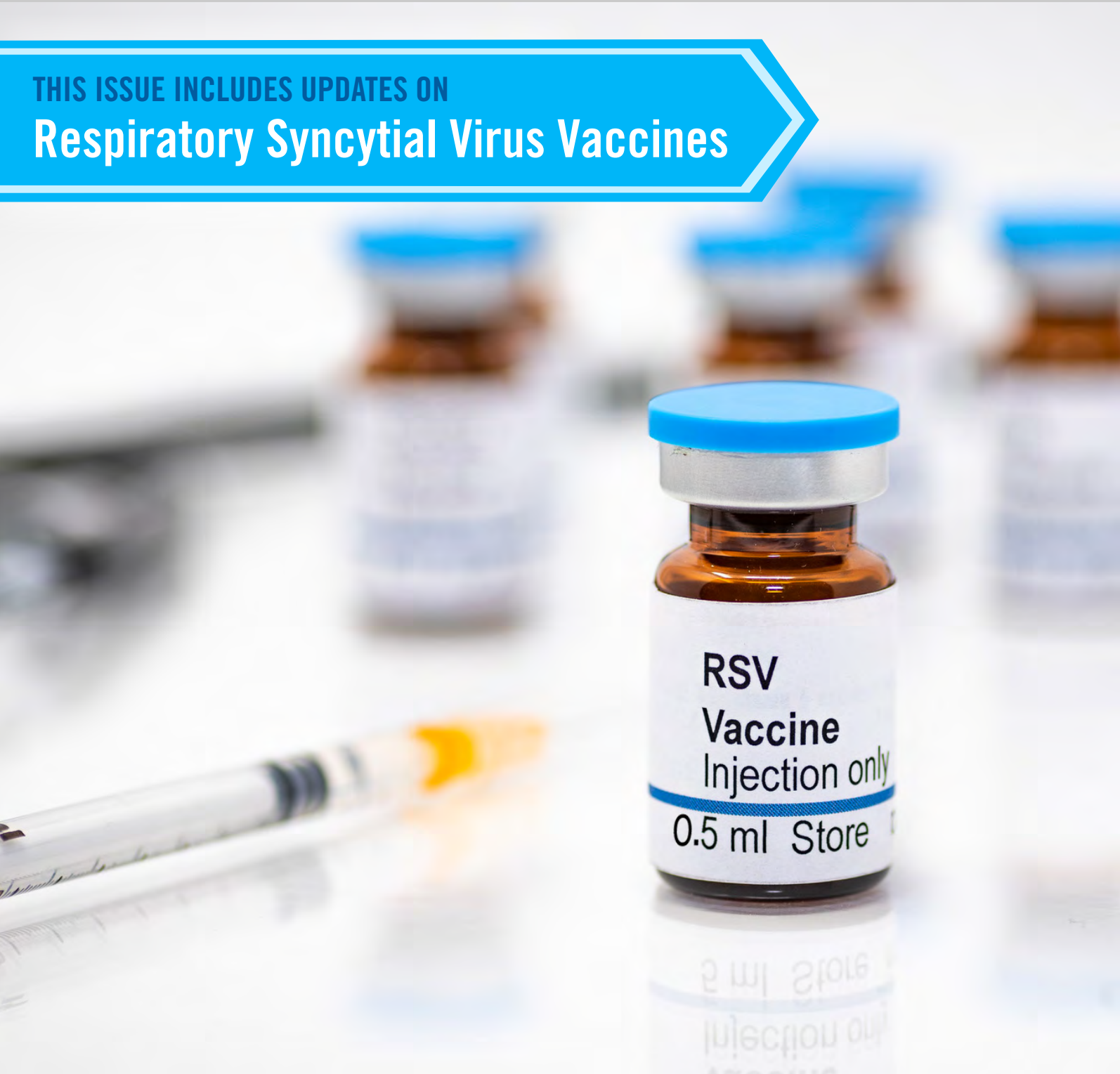
The Journal

of the Pharmacy Society of Wisconsin

THIS ISSUE INCLUDES UPDATES ON

Respiratory Syncytial Virus Vaccines



September/October 2023

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The Journal
of the Pharmacy Society of Wisconsin

The Journal of the Pharmacy Society of Wisconsin is a professional publication for original research, review, experience, and opinion articles that link science with contemporary pharmacy practice to improve patient care. Together we can inspire each other to advance our profession with the single purpose of enhancing the lives of our patients.

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Features

UpFront: One Voice. One Vision. Our PSW.

by Sarah Sorum, PharmD, CAE

As we kicked off the Pharmacy Society of Wisconsin Annual Meeting last week, we convened more than 70 of our 150 active PSW committee volunteers in an assembly. That gathering had me reflecting on where "Our PSW" is today, built upon the servant leadership of years past and leveraging today's contributions of pharmacists, technicians, residents, and students across Wisconsin in all types of practice settings.

Sixteen years ago, I attended my first PSW Annual Meeting as a staff member. I had been on the job for five weeks, having just moved from Iowa to take a position on Chris Decker's staff as Director of Professional & Educational Affairs. I was Sarah Boyce then—I wouldn't get engaged to my now-husband Matt for another couple of months, and my now-11-year-old daughter, Emily (who just started middle school!), wasn't even a twinkle in our eyes yet…

I had a phone that could very slowly text, not the iPhone that I now often use for Teams calls. I listened to CDs in my car on the way to the conference, not the PSW podcast. Conference attendees mostly found out about the conference through a mailed brochure, not my LinkedIn posts.

Pharmacies were just two years in to helping patients navigate Part D. Vaccination in pharmacies was a specialized service provided by leading innovators. The Wisconsin Pharmacy Quality Collaborative (WPQC) was just kicking off. Specialty pharmacy, PBM regulation, and pharmacists' right to refuse dispensing were hot topics discussed at the PSW Board Retreat.

Sixteen years ago, PSW was just starting its first advisory committee made up of hospital pharmacy leaders from individual institutions; we didn't have the robust opportunities to get involved in PSW as we do today!

The PSW of today has a vibrant committee structure that advances the PSW strategic plan and engages hundreds of members. It's members sharing their individual and collective contributions at their practice sites and within PSW engagement opportunities that builds the value we have to offer as an association.

In bringing together PSW leaders of the past, present, and future, PSW serves as a catalyst that inspires and connects individuals around our common professional passion. At PSW, we believe we are difference makers. All of you are difference makers.

Many issues remain the same, but—WOW—we've come a long way as a profession and as an organization! We've built "Our PSW" from the vision of those who led before us. I believe that there is no greater way to inspire the future of PSW than to build upon the success of our past, moving from great to greater. We are doing that together through moments that matter and dreaming big for the future: a future that we will work towards together.

Sarah Sorum is the Executive Vice President & CEO at the Pharmacy Society of Wisconsin in Madison, WI.

SAVE THE DATE - 2024 PSW CONFERENCES

PSW Legislative Day
Wednesday, February 21, 2024
Monona Terrace Convention Center, Madison

PSW Educational Conference
Tuesday-Wednesday, April 16-17, 2024
Monona Terrace Convention Center, Madison

Wisconsin Pharmacy Residency Conference
Tuesday-Wednesday, April 16-17, 2024
Monona Terrace Convention Center, Madison

Christopher Decker Scholarship Golf Outing
Thursday, June 13, 2024
Wild Rock Golf Club, Wisconsin Dells

Leadership Conference
Thursday-Saturday, August 1-3, 2024
Eagle Ridge Inn & Resort, Galena, IL

PSW Annual Meeting
Thursday-Saturday, August 22-24, 2024
Kalahari Resort & Convention Center, Wisconsin Dells

2022 Recipients of the "Bowl of Hygeia" Award


Ronnie E. Opolka Sr.
Alabama


Kyla Newland
Alaska


John Saliba
Arizona


Brenda Dickerson McCrady
Arkansas


Maria Lopez
California


Joseph Saseen
Colorado


Sean M. Jeffery
Connecticut


Heidi Lueking
Delaware


Edwin M. Brown
Florida


Tommy Whitworth
Georgia


Timothy Lehan
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Louisiana


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Neil Leikach
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Richard L. Lucarotti
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Todd Lemke
Minnesota


Julie Jackman
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South Dakota

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Tennessee

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Texas

Elizabeth W. Young
Utah

Jeffrey Firlik
Vermont

Catherine Herbert Cary
Virginia

Cynthia A. Clegg
Washington

Ginger G. Scott
West Virginia

Jeanine Krueger
Wisconsin

William (Bill) Wenke
Wyoming

Photo Not Available
William Moore
Oklahoma

The Bowl of Hygeia award program was originally developed by the A. H. Robins Company to recognize pharmacists across the nation for outstanding service to their communities. Selected through their respective professional pharmacy associations, each of these dedicated individuals has made uniquely personal contributions to a strong, healthy community. We offer our congratulations and thanks for their high example. The American Pharmacists Association Foundation, the National Alliance of State Pharmacy Associations and the state pharmacy associations have assumed responsibility for continuing this prestigious recognition program. All former recipients are encouraged to maintain their linkage to the Bowl of Hygeia by emailing current contact information to awards@naspa.us. The Bowl of Hygeia is on display in the APhA History Hall located in Washington, DC.

PHARMACIST CE:

Pathways to Pain Stewardship

by Lauren Benedict, 2025 PharmD Candidate, Kelby Drogemuller, 2025 PharmD Candidate, Mara Gosch, 2025 PharmD Candidate, Hanna Helling, 2026 PharmD Candidate, Sydney McKersie, 2025 PharmD Candidate

CE FOR **PHARMACISTS**

COMPLETE ARTICLE AND CE EXAM AVAILABLE ONLINE: **WWW.PSWI.ORG**

Learning Objectives

- Compare and contrast newly published and previous clinical practice guidance for the prescribing of opioids for pain.
- Identify unique considerations when managing pain in special patient populations.
- Recognize current health disparities in pain management and describe how pharmacists can help address them.
- Identify opportunities for pharmacists to practice pain stewardship.

Pain is a universal experience that often carries significant burdens of physical limitations, distraction from everyday life, depression, and anxiety. The percentage of people in pain has trended upward from 26.3% in 2009 to 32.1% in 2021, highlighting a need for pharmaceutical and other nonpharmacologic therapy interventions.[1] These interventions take many forms: non-opioid medications, opioids, and nonpharmacologic methods like physical therapy and acupuncture. All find a unique place in pain treatment based upon a patient's individual needs and expectations. Pain stewardship programs use an interprofessional team to enhance clinical pain management outcomes via personalized treatment modalities. They minimize opioid use, reduce healthcare costs, and increase the visibility of patients in need of additional management without adversely impacting quality of care.[2]

Pharmacists play a crucial role within these programs as the medication experts, bridging the gap between pharmaceutical knowledge and clinical care. They monitor prescriptions and over-the-counter medications, analyze drug interactions and adverse reactions, educate on best medication and lifestyle practices, and advocate for their patients. This paper reviews the Clinical Practice Guideline for Prescribing Opioids for Pain published by the Centers for Disease Control and Prevention (CDC); pain management in special populations; health disparities; and the pharmacist's role in pain stewardship programs. As a complex condition, pain is often difficult to successfully manage in the long term, exemplifying the need for pharmacy-led pain stewardship programs. Although this is not an all-encompassing guide to how pharmacists aid in pain stewardship programs, it articulates the current state of these programs and where pharmacists could uniquely fill gaps in patient care.

Clinical Guideline Update

In November 2022, the CDC published their Clinical Practice Guideline for Prescribing Opioids for Pain, updating their 2016 Guideline for Prescribing Opioids for Chronic Pain. This update expands its scope by outlining the differences in management among acute, subacute, and chronic pain.[3] Consequently, the updated guideline clearly outlines recommendations that apply to opioid-naïve patients versus patients receiving ongoing opioid therapy.

Emergent evidence on the safety and efficacy of opioid and nonopioid pain treatment since the publication of the 2016 guideline supported the recent update. Through systematic review, the CDC concluded that noninvasive nonpharmacologic interventions, as well as nonopioid pharmacotherapy, are associated with improvements in pain and function that are at least as effective or better than those seen with opioid therapy.[4] The new recommendations encourage providers to maximize nonopioid therapy first before considering opioid therapy. Additionally, evidence of increased risk of serious harm resulting from long-term opioid use prompted the inclusion of detailed risk mitigation strategies.

The updated guideline provides recommendations in four main areas: 1) determining whether or not to initiate opioids, 2) selecting opioids and determining dosages, 3) deciding duration of initial opioid prescription and when to follow up, and 4) assessing risk and addressing harms of opioid use.[3] The 2016 and 2022 guidelines are compared in Table 1, in which novel recommendations at the time of publication are noted.[3,5]

These recommendations apply to the settings of outpatient opioid prescribing, including clinician offices, clinics, urgent care centers, and hospital discharge.[3] The

recommendations do not apply to patients who are closely monitored and observed, such as while inpatient or in the emergency room, where institutional policies likely guide treatment decisions. Current best practices for the treatment of pain in specific populations and disease states are outlined in the Special Populations section. However, providers are encouraged to refer to disease-specific guidelines or institutional policies to aid therapy selection. Finally, the CDC expanded the 2016 guideline's audience of primary care physicians to all providers who can prescribe opioids, reflecting the wider availability of nonphysician providers with DEA licensure. While pain specialists may find the recommendations relevant, these providers have extensive experience and expertise in managing pain conditions and fall outside the guideline's intended audience.

Recommendations included in the guideline should not be considered standards of care across all patient populations, but rather should support patient-centered care and serve as flexible starting points during the clinical decision-making process.[3,5] Misinterpretation of the 2016 guideline resulting in cases of rapid opioid tapers, abrupt discontinuation, rigid dosage thresholds, and patient abandonment caused unintended patient harm.[6] Updated language reflecting the flexibility of these recommendations will hopefully help mitigate these harms in the future. Publication of the new guideline urges institutions to evaluate their existing pain stewardship practices and may inform the drafting of new policies to ensure their patients have equitable access to safe and effective pain therapies.

While opioids retain their important role in the management of pain, risk mitigation strategies to reduce patient harm and should be woven into the treatment plan. With the changing landscape of today's healthcare in mind, appropriate pain management is achieved through an integrated, team-based, and multimodal approach. Of note, the updated guideline includes few pharmacist authors. However, pharmacists can support pain stewardship initiatives through assisting providers in selecting safe and effective pharmacotherapy and educating patients on how they can minimize risks associated with opioid use.

TABLE 1. Comparison of the Scope, Patient Population, Intended Audience, Main Recommendation Areas, Novel Recommendations at the Time of Publishing, and Publishing Goals Between the CDC Guideline for Prescribing Opioids for Chronic Pain – United States, 2016 and the CDC Clinical Practice Guideline for Prescribing Opioids for Pain – United States, 2022.

CDC Guideline for Prescribing Opioids for Chronic Pain — United States, 2016	*CDC Clinical Practice Guideline for Prescribing Opioids for Pain — United States, 2022*
Scope: The treatment of chronic pain, outside of cancer pain, palliative care, or end-of-life care	**Scope:** The treatment of acute, subacute, and chronic pain, outside of cancer pain, palliative care, or end-of-life care
Population: Outpatient adults	**Population:** Outpatient adults
Audience: Primary care clinicians	**Audience:** All clinicians whose scope of practice includes prescribing opioids
Three Main Areas: 1. Determining when to initiate or continue opioids for chronic pain. 2. Opioid selection, dosage, duration, follow-up, and discontinuation. 3. Assessing risk and addressing harms of opioid use.	**Four Main Areas:** 1. Determining whether or not to initiate opioids for pain. 2. Selecting opioids and determining dosages. 3. Deciding duration of initial opioid prescription and conducting follow-up. 4. Assessing risk and addressing potential harms of opioid use.
Notable Recommendations: • Nonopioid and nonpharmacologic therapy are preferred over opioid therapy • Three days of therapy or less is appropriate for acute pain that requires treatment with opioids • Opioids should not be prescribed with benzodiazepines • Clinicians should order urine drug testing before initiating opioid therapy and annually for patients receiving ongoing therapy • Clinicians should arrange medication-assisted therapy for patients with OUD	**Notable Recommendations:** • Nonopioid and nonpharmacologic therapy are at least as effective as opioids and should be optimized before initiating opioids • Opioid-naive patients should take no more than 5 to 10 MME in a single dose or 50 MME in one day • Opioids should not be prescribed with benzodiazepines or other central nervous system depressants • Toxicology should not be used punitively but rather in conjunction with clinical information to improve therapy • Clinicians should arrange evidence-based treatment for patients with OUD and detoxification alone is harmful • The lowest effective dose is appropriate when initiating opioids for acute, subacute, and chronic pain • Naloxone should be offered to all patients prescribed opioids
Goal: Bring attention to high-risk opioid prescribing and outline appropriate opioid prescribing for primary care clinicians treating chronic pain.	**Goal:** Assist patients and providers in selecting evidence-based safe and effective pain treatment, improve pain and function patient outcomes, and reduce adverse events and risks associated with opioid therapy.

MME = morphine milligram equivalents; OUD = opioid use disorder

Pain Stewardship in Special Populations

Pharmacists are essential members of the healthcare team in evaluating the potential risks and benefits of pain management in each of these unique populations. Outlined below are specific recommendations for various patient populations. Although not comprehensive, this provides a foundation for pharmacist management of more complex patients requiring critical monitoring and evaluation.

Opioid Use Disorder

Patients with active, untreated opioid use disorder (OUD) in the outpatient setting with mild to moderate pain should be advised to optimize non-opioid analgesics with opioids being the last resort. However, undertreated pain is a risk factor for opioid

abuse and should be treated appropriately.[7] Depending on pain intensity, a short course of opioids with concurrent prescription of naloxone should be dispensed along with education on its use provided by a pharmacist.[8] The use of opioid contracts and establishing realistic expectations of treatment are essential to reduce risk in these patients.[9]

Medications for opioid use disorder (MOUD) should be initiated in a setting that allows for close patient monitoring due to risks of withdrawal.[10] The goal for these patients, in addition to pain management, is to prevent withdrawal, and pharmacists can promote early detection through counseling. Due to tolerance variability, it is important to coordinate care with pharmacists, prescribers, or addiction specialists before changing therapy. If additional analgesia is needed for patients currently on MOUD, a dose increase should be encouraged before the addition of other therapies.[11] Pharmacists can look out for inappropriate or abrupt discontinuation of MOUD and suggest tapering or alternative strategies.[12] If opioids are provided, pharmacists should assess current tolerance status and are an important resource in providing psychosocial support.

Cancer-Related Pain

Opioid therapy is the first line treatment for moderate to severe chronic pain in patients with active cancer.[13] Opioid rotation can be used in long-term pain management of these patients to overcome the tolerance resulting from long durations of high-dose use or intolerable side effects.[14] Pharmacists have an important role in evaluating dose conversions, along with other patient-specific factors, as well as educating patients on changes to their pain management plan.

Although opioids are first line, the World Health Organization (WHO) recommends a step-therapy approach to pain management in cancer patients.[15] For mild pain, non-opioids, specifically acetaminophen and non-steroidal anti-inflammatory agents (NSAIDs), are recommended with or without adjuvant therapy, while opioids are reserved for moderate to severe pain.[15] It is still essential for pharmacists to formulate individualized care plans and evaluate patient-specific risks and benefits of NSAID or acetaminophen use due to the generalization of these guidelines.[16] The use of non-opioids as monotherapy has an established role in cancer pain, and their use in conjunction with opioids has the potential to provide additional analgesia.[17,18]

Adjuvants, while often not first-line, are medications indicated for uses other than pain that may also have analgesic effects and are used in conjunction with opioids when patients experience insufficient analgesia. Pharmacists may recommend medications such as antidepressants, anticonvulsants, and alpha-2-adrenergic agonists in addition to opioids for patients with treatment-resistant pain; the type of pain will inform medication selection.[19,20]

Rehabilitative and integrative therapies target the complex relationship of pain to all aspects of life: psychological, cognitive, physical, social, and spiritual.[21] Rehabilitative interventions focus on functional improvement and symptom control while integrative therapies are more holistic in nature and are often initiated based upon a patient's perception of their own pain and healing process.[22,21] These strategies are used sooner in patients with cancer-related pain than the general population and are important for pharmacists to consider when providing a holistic approach to care. Pharmacists may be an especially valuable resource for caregivers in this patient population.

Pediatric

Lack of high-quality evidence and ethical concerns for studying pediatric pain management act as barriers for opioid prescribing guidance and pain stewardship in the pediatric population. Non-pharmacologic therapies play a large role in reducing pain-related stress and anxiety, while plans for treating mild to moderate pain include acetaminophen, ibuprofen, and short-term steroids in the case of some outpatient procedures.[23] Although concerns for opioid misuse in pediatric and adolescent patients in the last decade led to more conservative opioid prescribing practices, withholding analgesia when clearly indicated is both unethical and harmful.[24]

In most post-surgical cases, opioids are just one tool in the toolbox for parents to manage their children's pain and may provide peace of mind in the recovery phase. While their safety risks are real, they are also manageable with careful education and safe disposal practices. Education should focus on reinforcing the multimodal treatment plan, and advising that acetaminophen and ibuprofen should be used for mild to moderate pain, while reserving opioids for when parents perceive more intense pain. Education should also include recognizing signs of respiratory depression, encouraging the storage of opioids in locked spaces, and identifying where to safely dispose of opioids in the community when they are no longer needed. While much of the available literature on pain management in the pediatric population includes expert opinion, pharmacists can observe prescribing trends and work with the care team to collect anecdotal data that can be brought to providers and may inform safer opioid prescribing practices.

Geriatric

This population is typically at higher risk of experiencing adverse effects related to a variety of medications, and those used for pain management are no exception. It is important for pharmacists to keep in mind the increased significance of side effects such as dizziness, drowsiness, and imbalance in this population as they relate to falls risk.[25] Side effect profiles of adjunctive therapies, such as antidepressants and anti-seizure medications, will likely inform decisions in this population. Individualized care is critical in this population, because there are many considerations that come with aging, including the risk for respiratory depression, immunosenescence, and low tolerability.

Patients with dementia are significantly impacted by cognitive impairment especially as it relates to medication organization and administration. Persistent pain in these patients is at risk of undertreatment due to the potential lack of ability to verbalize their perception of pain. It is important not to directly ask patients if they are in pain without the presentation of outward signs, because they may agree with you simply because you are their provider.[26] Pharmacists have an important role in this population with adequately educating caregivers about signs to look for related to facial expression, body movements, changes in mood, and vocal or verbal cues such as grimacing, tension, irritability, and groaning, for example.[27] This can reduce the need for

unnecessary medications as well as ensure that patients experiencing pain do not go untreated.

Reducing Health Inequities in Pain Management

Pharmacists can address significant health disparities related to pain management through educating their health professional peers on ways to reduce these disparities, and through patient advocacy. At the provider level, the assessment component of the pain care process can lead to racial and ethnic disparities in patient care.[28-30] Professionals frequently disagree with and rate patient pain levels lower than patients' individual pain ratings, with a greater degree of underestimation in racial and ethnic minorities.[30,31] Racial and ethnic minority patients with pain are also vulnerable to undertreatment.[28-31] The most observed disparity in pain management across patients and treatment locations is in the prescribing of less effective analgesics to racial and ethnic minority patients.[31] Providers more readily prescribe NSAIDs over opioid analgesics or prescribe opioids at lower doses to Black, Hispanic, and Asian patients in comparison to non-Hispanic White patients.

Inadequate bias training and education of healthcare providers present barriers to equitable pain management. Providers lack sufficient knowledge and confidence in their ability to provide culturally competent pain care to the increasingly diverse population.[29] The subjective nature of pain and reliance on pain scales for assessment also contribute to inequities, making clinical judgment vulnerable to the influence of implicit stereotypes that disadvantage minority groups.[28] Implicit bias likely also plays a role in creating inequities.[28,30,32]

A study in which medical students and residents were asked to make pain ratings and treatment recommendations for a Black and White patient in two mock medical cases found that racial bias in pain has consequences for accurate treatment recommendations for Black patients and not for White patients.[32] Participants who endorsed more false beliefs held perceptions that Black patients felt less pain and suggested less accurate treatment recommendations 15% of the time, while participants that endorsed fewer or no false beliefs held perceptions that the White patient felt less pain but still suggested an accurate treatment recommendation.

Larger social inequities at the systemic level also prevent minority patients from having adequate access to quality pain management and resources. Low health literacy disproportionately impacts minority patients and can cause fragmented patient-provider communication that can lead to poor assessment and treatment adherence.[28,30,33] Also, minority patients are more likely to be uninsured or underinsured, which limits their access to optimal evaluation and treatment of pain.[29] Furthermore, minority patients face barriers to obtaining prescribed pain medications and opioids, as their local pharmacies are less likely than pharmacies in predominantly-White neighborhoods to have adequate opioid medications available.[34,35] Surveyed pharmacies in minority communities cited low demand as the main reason for their insufficient opioid supplies; however, their low supply presents a significant barrier to the patients who do have opioid prescriptions.

Multidisciplinary pain management teams, including pharmacists, have shown improvements in pain scores and appropriate use of analgesics associated with a reduction of pain intensity.[36,37] Pharmacists may take advantage of opportunities to educate and train other healthcare professionals on culturally informed pain management with attention to the social determinants of health.[29,36] Pharmacists practicing in minority neighborhoods can emphasize engagement with pain patients to learn ways they can best support their patients, either through growing their opioid supply if needed or through other non-opioid measures.

Reducing health disparities in pain management starts with advocacy. With its wide scope, the opportunity to advocate exists within a platform as large as the public stage, all the way down to the microcosm of our individual interactions. Student pharmacists are poised to carry a public health perspective into the workforce by developing their understanding of the social determinants of health. Advocating for your patients and for your profession begins in the classroom. To address the contributions of healthcare professionals to growing health disparities, the Accreditation Council for Pharmacy Education (ACPE) requires pharmacy graduates to recognize the social determinants of health and the value of their incorporation into culturally informed patient care.[37]

Students should reflect upon and challenge their personal biases, share their experiences with local policymakers, and familiarize themselves with the unique needs of marginalized groups through local community engagement. Pharmacy educators can support this development through didactic and experiential coursework, as well as through community-based projects or interventions to reduce local disparities. Practicing pharmacists should continue to advocate for the value pharmacists bring to the interprofessional team in providing individualized and accessible pain management. Voicing concerns for marginalized groups during pain stewardship program planning and institutional policy making supports distributive justice throughout the drafting, implementation, and evaluation processes. Through all of these actions, pharmacists have the opportunity to significantly reduce health care disparities while practicing pain stewardship.

A Pharmacist's Role in Pain Stewardship

Pharmacists have a large capacity for impact in improving pain-related outcomes through the interprofessional team and individual support of patients with pain. They can assist patients using evidence discussed in the updated CDC guideline, and in many additional ways that are unaccounted for within the guideline. Pain stewardship programs utilize policies developed through interprofessional engagement to provide evidence-based pain management and minimize associated patient risks.[38]

To address these risks, pharmacists can leverage data collection to generate reports on opioid prescribing and dispensing practices. Specific monitoring strategies apply to patients using opioids and other high-risk medications.[3] Detailing the prescribing of opioids from multiple providers, concurrent prescribing associated with high interaction potential, and the Prescription Drug Monitoring Program (PDMP) dispensing patterns will inform

pain stewardship program policies.[39] Continuing education and professional engagement is key to developing appropriate and equitable pain stewardship policies. By reviewing up-to-date literature on pain management, challenging their own biases, and improving patient-provider communication, pharmacists support these objectives.[40] More data and literature is required to support these activities, for which pain stewardship programs could fill this gap by sharing their successes, failures, and best practices with others.

When approaching pain management, one size does not fit all. Pharmacists help patients develop individualized pain treatment plans through expectation management and goal setting.[41] Pharmacists are trained to carefully review a medication regimen, especially in patients who see multiple providers for multiple disease states.[42] The American Pain Society recommends tailored education, documentation of treatment goals, counseling of proper instruction for pain medications, and an evaluation of psychiatric and medical comorbidities of patients receiving pain treatment.[39] Pharmacists are specifically prepared to assist in these pain stewardship practices.

Pharmacists are an accessible resource for assessing opioid taper schedule adherence and addressing potential issues that present during the process. The CDC guideline emphasizes the importance of evaluating taper appropriateness, and details safe and effective tapering strategies. Care plans that incorporate pharmacists result in more active opioid tapers.[43] Pain stewardship programs allow pharmacists to increase time allocated to medication management, through follow-up calls to document changes to pain levels, non-pharmacologic strategies, safety concerns, and other aspects that allow for a more individualized approach.[40] Pharmacists' monitoring support lowers the burden on physicians, allowing physicians to focus their attention on other areas of practice.[44]

Collaborative pharmacy practice agreements (CPAs) between pharmacists and prescribers increase access to naloxone without legislative changes. In Wisconsin, pharmacists are allowed to prescribe and dispense naloxone via a standing order or third-party prescribing. A standing order uses a provider's authorization to allow pharmacists to dispense naloxone to patients at risk for an overdose. Third-party prescribing allows naloxone to be prescribed and dispensed by pharmacists to individuals who would be in a position to assist a person experiencing an overdose, whether or not they are the person administering the naloxone. This does not require a prescriber-patient relationship, while the standing order does. These legal innovations can lower prescriber burden and increase access to naloxone, especially for patients who do not have the time or transportation to access a provider.[45] In March 2023, the FDA approved Narcan®, naloxone nasal spray, for over-the-counter, nonprescription use in an effort to reduce the affordability barrier and increase access.[46]

Naloxone is highly relevant to pain stewardship for all patients, but especially for those with a history of overdose, higher opioid tolerance, and those at risk of respiratory depression.[3] The pharmacist is last to see the patient before they take their pain medication home and should ensure that they spend time on adequately educating the patient on the availability and use of naloxone. It is essential to emphasize the universal recommendation of naloxone to all patients as a safety measure to combat stereotypes regarding opioid use and destigmatize the use of pain medications.

A pain stewardship program allows pharmacists to expand on education to patients and caregivers regarding pain medications. They can also educate patients and providers on social determinants impacting opioid use with the intention to decrease stigma around pain medications and eliminate discrimination against patients using opioids for pain.[47] Pharmacists are some of the most accessible healthcare providers and trusted medication experts, with a unique skill set to optimize a multimodal pain approach, minimize risks, and engage patients and their caregivers in their care plan through the use of accommodating language.

Conclusion

The implementation of pain stewardship programs shows a promising new area for pharmacists to utilize their drug expertise on an interprofessional team. This publication serves as a reference point for the implementation process by highlighting guidelines as an easily accessible resource for the outpatient setting, additional considerations for the management of special populations, barriers faced by racial and ethnic minorities when accessing care for pain, and the pharmacist's unique role in managing pain medications.

Barriers to the implementation of pain stewardship programs include lack of resources in the form of established practice models and time, lack of infrastructure to collect and monitor patient data, and lack of community support.[38] Additional barriers prevent the pharmacist's incorporation into these programs due to lack of trust from other healthcare professionals, limited reimbursement, and a shortage of pain experts. Pharmacists hold a key role in addressing these barriers through their leadership, innovation, and medication expertise. Ultimately, health systems should consider the implementation of pain stewardship programs with an interprofessional team, to optimize patients' pain regimens and improve their overall health outcomes.

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PR *This article has been peer-reviewed. The contribution in reviewing is greatly appreciated!*

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Assessment Questions

1. Which of the following recommendations is included in the 2022 CDC's Clinical Practice Guideline for Prescribing Opioids for Pain — United States but not the 2016 guideline?
   a. Nonopioid and nonpharmacologic therapies are not as effective as opioids for chronic pain treatment.
   b. Naloxone should be offered to all patients prescribed opioids.
   c. Clinicians should order urine drug testing before initiating opioid therapy.
   d. The lowest effective dose is appropriate when initiating opioids for acute or subacute pain, but not chronic pain.

2. **True or False:** The intended audience of the CDC's Clinical Practice Guideline for Prescribing Opioids for Pain — United States, 2022 is the same as the 2016 guideline and includes only primary care physicians.
   a. True
   b. False

3. Which of the following is true regarding unique considerations made towards managing pain in special patient populations?
   a. Opioid contracts do not contribute to risk reduction for patients with opioid use disorder.
   b. Adjuvants along with rehabilitative and integrative therapies are used first line in cancer-related pain management.
   c. Variable drug metabolism is an important consideration in pediatric patients.
   d. For patients with dementia, it is preferred to directly ask about their pain rather than observing non-verbal cues.

4. **True or False:** It is important to assess current opioid tolerance status when considering therapy options for patients with opioid use disorder or cancer-related pain.
   a. True
   b. False

5. What is a factor that presents a barrier to equitable pain management?
   a. Pretest-Posttest
   b. Randomized controlled trials
   c. Interrupted time series
   d. Cohort with propensity score matching

6. **True or False:** Pharmacists can help address health disparities in pain management by educating other healthcare professionals and through professional advocacy.
   a. True
   b. False

7. What is a benefit of pharmacist involvement in a pain stewardship program?
   a. Increases time physicians have to focus their attention on pain management
   b. Increases time allocated to medication management through follow up calls to document changes in pain levels
   c. Decreases accessibility for patients to discuss their medications and pain management goals
   d. Decreases collaboration among healthcare professionals to improve pain-related outcomes

8. **True or False:** In Wisconsin, pharmacists are able to dispense naloxone through a collaborative pharmacy practice agreement.
   a. True
   b. False

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PRECEPTING SERIES:

Adapting to Advanced Learners: Strategies for Precepting and Overcoming Challenges with Pharmacy Residents

by Jessica Bergsbaken, PharmD, BCPPS, Alexis Mowry, PharmD

Pharmacy students' learning needs change as they transition out of pharmacy school and into residency programs. With that transition, preceptors need to adjust their teaching to accommodate the progression of the higher-level learning that takes place with pharmacy residents. That adjustment comes with its own unique challenges. The purpose of this article is to review precepting strategies that support pharmacy residents, as well as how to identify and mitigate common pitfalls when teaching resident learners.

Challenges with Precepting Pharmacy Residents

The American Society of Health System Pharmacists (ASHP) requires pharmacy residents in accredited programs to develop precepting skills and gain experience using the four preceptor roles (Table 1) under the guidance of qualified preceptors.[1-3] However, not all preceptors have the requisite experience or confidence to provide the necessary support for pharmacy residents to meet ASHP's precepting standards. Furthermore, lack of time poses a significant obstacle to effectively precepting pharmacy residents.[4]

TABLE 1. Four Preceptor Roles[5]

Role	*Definition*
Direct Instruction	• Preceptor provides foundational knowledge to the learner • May include assigning readings or giving mini-lectures
Modeling	• Preceptor performs ("models") desired behavior or skill • Learner observes preceptor and asks questions for clarification
Coaching	• Learner performs desired behavior or skill while preceptor provides real-time feedback ("coaching")
Facilitating	• Learner independently performs desired behavior or skill • Preceptor provides support indirectly (non-real-time)

Additionally, pharmacy residents differ from pharmacy students in that they are expected to develop a great deal of autonomy on rotations. Traditional teaching methods and philosophies may not be as effective for training these learners due to this high degree of autonomy. Preceptors may fail to meet the needs of these autonomous learners if they are unable to adapt their teaching style or are unfamiliar with common challenges when precepting this type of learner.

How to Support Resident Learners

Despite the challenges with precepting pharmacy residents, there are strategies preceptors can implement to support resident learners.

1. **Create an organized and structured rotation**
Investing time to carefully plan and thoughtfully organize a learner's rotation before it starts can lay a solid foundation for the overall experience. Planning may include determining how learning objectives will be met, the anticipated progression of the learner through the rotation, and project opportunities. Additionally, it can be helpful to set up an orientation meeting with the learner to provide a rotation calendar, outline responsibilities and determine major due dates for projects. Residents may be able to help with structuring their own rotation, which could be discussed at the orientation meeting. Can the learner select their own topics

for discussions? Can the learner take responsibility for setting up project meetings? The preceptor may not need to micromanage the scheduling or completion of tasks for residents in the same way that they might for students. This can simplify rotation planning and allows the resident to take an active role in their learning.

2. **Set clear expectations**
   Discussing expectations at the start of the rotation sets the stage for the learning experience and provides learners with a clear understanding of what is expected in terms of their responsibilities, performance, and behavior. What are the specific responsibilities and expectations for the resident? Which responsibilities will the preceptor maintain? Outlining expectations of the preceptor and learner reduces ambiguity and allows for greater efficiency of tasks. It also provides autonomy and enhances accountability of the resident learner. Lastly, it is easier to facilitate feedback for both parties when clear expectations have been set.

3. **Match teaching to the level of the learner**
   Tailoring teaching to the level of the learner, also known as "differentiated instruction," is essential when precepting resident learners.[6] Residents may feel unchallenged, or students may be given unrealistic expectations if teaching is not adjusted. Differentiated instruction creates a positive learning experience by tailoring teaching to the learner, ensuring it is neither too challenging nor too simple.

   Differentiated instruction should be applied not only to the level of the learner (e.g., resident or student), but also to the individual. Even if precepting multiple residents, not all residents will be at the same skill level, and preceptors should adapt their teaching to fit the individual learner's needs. To effectively do so, preceptors will need to gain a better understanding of the individual. What are the learner's strengths and weaknesses? What are the learner's interests? What is the learner's readiness to learn? A preceptor can then use information gathered about the learner to create educational activities that are more effective and appropriate for both the level and the experience of the learner.

4. **Implement a layered learning practice model (LLPM)**
   The LLPM is a teaching strategy in which a seasoned pharmacist oversees multiple "layers" of learners, including both students and residents.[7] This model of layered learning provides numerous benefits to resident learners, including the opportunity to directly practice the four preceptor roles, fulfill precepting requirements, and focus on more advanced clinical skills.[5,8,9] There are also many benefits for the preceptor and site. In a previous preceptor development series article, Barnes and Haskell outlined several benefits of LLPM for preceptors, including the ability to host more learners, and increased opportunities to assess resident precepting performance independently of clinical skills.[10]

5. **Meet independently with residents**
   Residents should feel supported on their rotation, even if functioning independently. Meeting with residents separately without students can ensure that their goals and needs are being met. Time alone with the resident can be used for informal or formal feedback, topic discussions without distractions, or professional development planning. It is also an opportune time to check in with and solicit feedback from the resident learner – how is the rotation going? What needs to be adjusted? Do they feel they have the appropriate amount of autonomy? What support do they need? Are their personal goals for the rotation being met?

6. **Provide timely feedback**
   Although resident learners are often given more autonomy, it's important that preceptors still provide timely and effective feedback. Timely feedback promotes a culture of continuous learning and improvement while fostering learners' confidence, motivation, and engagement in their training. Whether it's "Feedback Friday" or the One-Minute Preceptor,[11] find a feedback strategy that can be integrated into daily workflows so residents can frequently gain insight into their strengths and areas for improvement.

7. **Evaluate precepting skills separately from clinical skills**
   When resident learners are evaluated on their ability to precept, it can be helpful to separate assessment of precepting skills and clinical skills, as those skill sets may not match. For example, a resident who is very strong clinically may have difficulty explaining concepts in a way that a student can understand. Conversely, a resident who is less strong clinically may be effective at delegating responsibilities and engaging students while teaching. Evaluating precepting skills separately from clinical skills can ensure that the precepting skills are not being overlooked during the evaluation process. For residents who have little experience with teaching and precepting, preceptors may need to begin with direct instruction or modeling to teach precepting skills with slower advancement through the four preceptor roles.

8. **Preceptor self-reflection**
   It can be helpful for preceptors to reflect on their own teaching and use of the four preceptor roles. What teaching strategies are used and are they successful? Is a specific preceptor role avoided or overlooked? What meaningful feedback has been received from learners that could be incorporated? Preceptors should consider areas for growth in their own precepting to improve the experience for residents and other learners.

Navigating Pitfalls of Precepting Residents

Even with providing sufficient support for residents, there are still unique challenges that preceptors face. Less experienced preceptors may give residents too much independence, or conversely, not enough autonomy. Teaching may not be adjusted to fit the depth and breadth of a resident's experience, or greater emphasis may be placed on teaching students rather than the resident in a LLPM. Whether a new or seasoned preceptor, self-reflecting on common pitfalls that may occur with residents and identifying ways to overcome identified pitfalls can be beneficial in further developing one's own precepting abilities (Table 2).

TABLE 2. Navigating Pitfalls of Precepting Resident Learners[5,7,12]

Precepting Pitfall	*Strategies to Overcome Pitfall*
Reluctance to give resident autonomy as rotation progresses	• Communicate with resident to understand their perspective on desired autonomy • Explore own reasons for control • Model the desired behavior • Observe resident completing the desired behavior • Have resident demonstrate competency of four preceptor roles • Collaborate to identify areas of ownership • Start small and add more autonomy as rotation progresses
Resident provided too much independence based on knowledge base or experience	• Assess resident's clinical knowledge, skills, and experience • Identify the most appropriate preceptor role to employ based on resident's clinical knowledge, skills, and experience • Reserve resident precepting responsibilities to repeated rotations
Teaching not adjusted to fit the level of the learner	• Communicate with resident to understand their perspective of knowledge gained • Assess resident's competency in four preceptor roles • Adjust teaching style to align with level of the learner • Seek mentorship or observe more experienced preceptors
Decreased learning for the resident • Too much focus on preceptorship duties • Greater attention spent on student(s)	• Encourage resident to communicate challenges with their learning • Create time map of current workload • Identify top "must-do," meaningful priorities and tasks • Provide resources and strategies to improve efficiency • Divide and conquer responsibilities • Set aside dedicated time for resident-focused teaching and feedback
Suboptimal time management	• Prepare rotation materials in advance • Utilize training opportunities outside of rotations (e.g., webinars, teaching workshops) • Collaborate with other preceptors and learners • Collaborate with other teaching/precepting programs • Divide and conquer responsibilities

Conclusion

Teaching pharmacy residents can be challenging – from meeting ASHP precepting standards and tailoring the rotation to the level of the learner to navigating challenges that come with greater autonomy. Applying the strategies and being mindful of the pitfalls outlined in this article can help preceptors become more confident and comfortable when precepting pharmacy residents.

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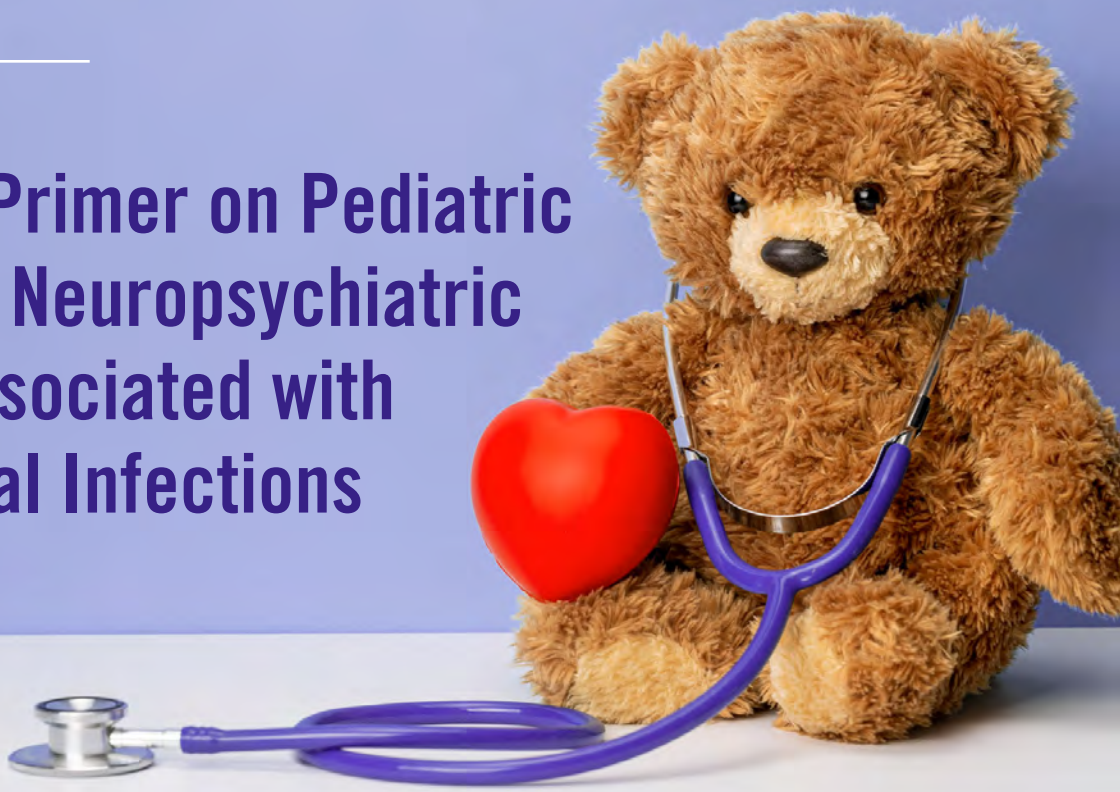
ID CORNER

Pharmacist Primer on Pediatric Autoimmune Neuropsychiatric Disorders Associated with Streptococcal Infections (PANDAS)



by Taylor Easey, PharmD

Streptococcal infections among the pediatric population are common. Group A Streptococcus (GAS), otherwise known as *Streptococcus pyogenes*, is the number one cause of bacterial sore throat for pediatric patients and accounts for up to 30% of sore throats in children.[1] Possible physiological complications of these infections, such as scarlet or rheumatic fever, are well known, but neuropsychiatric complications may also present. First described in the 1990s, pediatric autoimmune neuropsychiatric disorders associated with streptococcal infections (PANDAS) is a reaction to streptococcal infections that produces alterations to an individual's mood and behavior.[2] Symptoms of PANDAS are consistent with symptoms of obsessive-compulsive disorder (OCD) and tic disorders that develop suddenly following GAS exposure and infection. More recently, PANDAS has been recategorized as a sub-type of pediatric acute-onset neuropsychiatric syndrome (PANS).[3] PANS is the abrupt onset of OCD and tic disorder symptoms in pediatric patients and is non-specific in regard to origin.

Our understanding of the pathophysiology of PANDAS has evolved significantly over the past three decades, but some aspects are still hotly contested. Similar to the Sydenham chorea that can occur with rheumatic fever, PANDAS is generally believed to be the result of autoimmune activity following a response to GAS infection. Specifically, it is thought that anti-GAS antibodies cross-target areas of the basal ganglia, a region of the brain where dysfunction has been implicated in the pathophysiology of OCD and tic disorders. Investigations have found antibody activity at neuronal targets such as lysoganglioside, tubulin, and D1 and D2 receptors.[4] A 2018 study found that children with clinically confirmed PANDAS possessed IgG antibodies with higher binding affinity to cholinergic interneurons compared to the binding affinity in matched healthy subjects.[5] Additionally, the authors of this study observed an improvement in PANDAS symptoms following administration of intravenous immunoglobulin (IVIG). Children in particular are believed to be prone to the disorder due to their frequent exposure to streptococcal bacteria and their robust immune responses to them.

The first study to characterize the disease also provided five working diagnostic criteria that are still used today. Those criteria are: presence of OCD or tic disorder, onset of age of between 3 and 12 years old, rapid onset of symptoms and an episodic pattern, temporal association with GAS infection, and presence of neurological abnormalities.[2] The abrupt onset is often the most striking feature and what many patients and parents will note most. Some of the most common symptoms are irritability; obsessive-compulsive thoughts and behaviors such as frequent hand washing; difficulty sleeping; and abnormal or involuntary motor movements. Although not exclusive to this patient population, many PANDAS patients have pre-existing psychiatric conditions, which can be exacerbated as a result of their PANDAS. Other common comorbid symptoms include depression, difficulty sleeping, and ADHD-like symptoms. As far as the timing of onset is concerned, research has found that most patients will become symptomatic within 7 to 14 days following the beginning of infection. Although overlap of PANDAS symptoms and active infection is the typical presentation, there remains the possibility for patients to develop neuropsychiatric symptoms after clearing the infection.[6] It is also possible for patients to have otherwise asymptomatic infections, in which case, anti-streptococcal titers can be useful to aid diagnosis. Symptoms of PANDAS appear suddenly, over 24 to 48 hours, and slowly subside over the course of weeks to months.

Recurrences are common and follow the same pattern as the initial episode, with subsequent GAS infections being associated with new recurrences.[7] Early patient characterization of PANDAS reported that the frequency of tic disorder symptoms appeared to equal the frequency of OCD symptoms, but more recent literature has suggested that OCD-like symptoms may be more prevalent.[2,8] The demographics seen with PANDAS are similar to what would be found in patients with more common OCD and tic disorders, including a predominance in males and age averaging 6 to 7 years old upon presentation.

Optimal treatment of PANDAS remains to be determined, but numerous interventions have been investigated with varying levels of success. The clearest recommendation is that patients with GAS infections receive appropriate antibiotic therapy. There are no randomized controlled trials regarding antibiotic selection for PANDAS, but prospective descriptive research has shown that standard antistreptococcal antibiotics are effective at resolving neuropsychiatric symptoms.[6] Preferred antibiotics are penicillin and amoxicillin, but in the case of a penicillin allergy, a cephalosporin or azithromycin can be used.[9] Conventional treatment used for typical OCD and tic disorders, such as cognitive behavioral therapy (CBT) and psychopharmacotherapy, has been shown to be effective. PANDAS-related OCD in particular was found to respond well to CBT.[10] Selective serotonin reuptake inhibitors (SSRIs) can be considered for children with persistent OCD symptoms, but extra care must be given to monitor for paradoxical activation, which may be more common in this population.[11] For this reason, SSRIs should be initiated at low doses and titrated carefully. Alpha-2 adrenergic agonists such as clonidine or guanfacine may be useful in the management of particularly bothersome tics. Use of other treatments, including immunomodulatory agents, non-steroidal anti-inflammatory drugs (NSAIDs), and prophylactic or suppressive antibiotics, remain controversial. As mentioned earlier, IVIG as part of an investigation into PANDAS pathophysiology was found to improve symptoms.[5] However, results from randomized controlled trials are mixed with one early 1999 study showing benefit and a more recent 2016 study showing no advantage over placebo.[12,13] Both of these studies included approximately 30 patients and used the Children's Yale-Brown Obsessive Compulsive Scale and Clinical Global Impressions-Improvement ratings to assess for improvement in OCD and tic related symptoms. Both trials also used the same treatment of 1mg/kg IVIG for two days. Corticosteroids, such as prednisone, and NSAIDs have shown some promise in retrospective studies, but higher-quality, more robust trials are needed.[14,15] There is at least one ongoing clinical trial assessing the effect of naproxen on PANDAS symptoms. Lastly, antibiotic prophylaxis has been proposed, but evidence supporting the use of this treatment modality for the prevention of GAS infections is conflicting.[16,17] One 1999 trial that followed 37 patients for eight months did not find any difference between prophylactic penicillin and placebo but another 2005 trial of 23 patients followed for one year found patients treated with prophylactic penicillin or azithromycin had lower rates of recurrent PANDAS.

Pharmacists have the ability to be important members of the treatment team when managing PANDAS. Given that knowledge of PANDAS is rare, even among healthcare providers, pharmacists can help provide resources or guidance on treatment. Community pharmacists are in the unique position to help parents recognize some of the hallmark signs and symptoms of PANDAS and refer patients for formal work-up and treatment. As mentioned earlier, one of the most remarked upon features by parents is the very abrupt onset of behavioral problems. Picking up on these behavioral changes can help expedite treatment and ultimately lead to resolution of symptoms. Additionally, more and more states are allowing pharmacists to participate in "test and treat," either through direct prescriptive authority provided by the state or through a collaborative practice agreement. This allows for pharmacists to administer point-of-care tests for select infectious diseases and prescribe appropriate antimicrobials.[18] These services can help expand access to care and provide quick treatment for patients in need.

TABLE 1. All About PANDAS

Pathophysiology	• Autoimmune activity in the basal ganglia and other brain regions is activated by streptococcal infection
Characteristics	• Symptoms of PANDAS are most consistent with OCD and tic disorders » Irritability, restlessness, insomnia, and anxiety are also common • Typically begins 7-14 days after onset of streptococcal infection • Recurrence upon reinfection or re-exposure is common
Treatment	• Antibiotics are the standard treatment and have the greatest level of evidence • SSRIs and alpha-2 adrenergic agonists can be useful for OCD and tic specific symptoms • Other treatment modalities, such as NSAIDs, corticosteroids, and IVIG, have had mixed results • Antibiotic prophylaxis is not routinely recommended and supporting evidence is low
Role of the Pharmacist	• Provide guidance and support to patients and parents • Offer test and treat services in allowed states • Spread awareness to other healthcare providers

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Wisconsin Pharmacy Foundation

PSW Funding to Support Equity and Inclusion Efforts within Pharmacy Practices

by Madelyn Fischer, 2024 PharmD Candidate, Sarah Pagenkopf, PharmD, BCPS, Kate Hartkopf, PharmD, BCACP

Through financial support from the Wisconsin Pharmacy Foundation (WPF) Building Our Tomorrow Fund, PSW launched a grant program to inspire innovation in equity and inclusion work among Wisconsin pharmacy practices. In alignment with the PSW Strategic Plan, the program provided funding to empower pharmacists, pharmacy technicians, and pharmacy students to advance equity and inclusion in their workplaces and provide culturally responsive care to patients.

All proposed projects included a collective aim to foster the PSW Organizational Diversity, Equity, and Inclusion (DEI) Statement.

"PSW supports diversity in our mentorship, equity in our opportunities, and inclusiveness in our organization. We embrace our differences, unifying efforts to enhance patient care while advancing our profession. Our patients are diverse, and so are we."

Awardee Spotlights

Here is what our awardees are doing in their workplaces and practices with the support of the WPF Building our Tomorrow grant funds:

Concordia University-Wisconsin School of Pharmacy

Concordia University registered ten faculty members, including resident volunteers, to participate in an online course called "Practical Solutions for Faculty: Creating an Inclusive Classroom Climate and Culture." While still in the process of completing the course, once finished, the newly trained facilitators will provide training and seminar sessions for other faculty members based on the course curriculum. The same ten faculty members are also participating in the free Well-Being Ambassador Program offered by the American Society of Health-System Pharmacists (ASHP) to further advance and support their DEI education. Concordia University continues to actively discuss how the newly trained faculty will continue to support diversity, equity, and meaningful inclusion practices in learning.

Coulee Region Pharmacy Association

The Coulee Region Pharmacy Association, a group of local pharmacists and pharmacy technicians from the La Crosse area, meets monthly to share pharmacy information and updates. Grant funding allowed for expanded focus and the sponsorship of two ACPE-accredited continuing education programs, scheduled for October and November of 2023. The learning opportunity scheduled in October will be provided by The Center: 7 Rivers LGBTQ Connection in La Crosse. The session will focus on LGBTQ+ related healthcare issues, including gender and sexual orientation, proper use of pronouns, and how to become better allies to patients who identify as LGBTQ+. The second session, scheduled in November, will showcase Erin Gutowski, DO, and Heidi Allred, MD, champions and advocates for gender equality from Gundersen Health System. The presentation will focus on hormone therapy, a pharmacotherapy overview, common medications used, and accompanying counseling pearls. The Coulee Region Pharmacy Association is diligently working to share these opportunities for education and expanded understanding to all Coulee Region Pharmacy Association members and to as many healthcare facilities and pharmacies as possible.

Froedtert and the Medical College of Wisconsin

The Froedtert department of pharmacy and their pharmacy research committee developed strategic goals promoting the growth and sophistication of pharmacy research. The 2023 goals were focused on promotion of DEI in study design and the use of inclusive language throughout all projects. Grant funding was used to develop educational curricula for pharmacy investigators focused on health equity. Four didactic lectures were offered in person and online for continuing education. Recordings of these sessions will be included in the training of future Froedtert pharmacy residents. Additionally, the pharmacy research committee plans to track the use of diverse, equitable, and inclusive language in project proposals.

Lakeshore Community Health Care

Lakeshore Community Health Care (LCHC) enrolled pharmacy staff in a corporate training course with the YWCA of Greater Green Bay. The course uses the Intercultural Development Inventory (IDI), an assessment of a person's mindset related to culture that encompasses a person's attitudes and beliefs related to cultural difference, their ability to see the complexity of cultural difference, and their skills in interacting with people from different cultural backgrounds. After completion of this program and training, LCHC hopes to develop a more inclusive environment for patients in all aspects of their care at LCHC. In addition to the funding for staff completion of the training course,

LCHC also used grant funding to support patient materials about diversity, equity, and inclusion in both Spanish and English.

Streu's Pharmacy

Streu's Pharmacy has focused the work supported by this grant in minority population inclusionary practices and has partnered with Casa Alba, a local non-profit Hispanic resource center in Green Bay, Wis. In early 2022, Streu's started a diabetes prevention program (DPP) and has been looking to increase participation in this program. By partnering with Casa Alba and using grant funding to offset costs, they offered a 16-hour lifestyle coach training about DPP in Spanish to the Hispanic/Latinx population of Green Bay. Many of these individuals are underinsured or uninsured. With the grant from the Wisconsin Pharmacy Foundation, Streu's Pharmacy was able to not only provide this training session in Spanish but was also able to cover the cost for six participants to be part of the DPP for one year.

ThedaCare

Aligned with the goals of the Building our Tomorrow grant from the Wisconsin Pharmacy Foundation, ThedaCare used the ACC Foundation DEI Maturity Model[1] to help assess baseline DEI elements and implement future goals aligned with the organization's strategic initiatives. ThedaCare then recruited Dorothy Enriquez from The Ellevate Collective to present a lunch-and-learn program titled "The Inclusive Leader: A Primer on Unconscious Bias." The session was hosted in June 2023 and a post-session survey was provided to attendees to gauge the impact and lessons learned from this experience. This session also served as the kickoff meeting for the DEI and well-being committee for the ThedaCare pharmacy department. The newly formed ThedaCare DEI and well-being committee focus will be employee well-being and DEI initiatives. With the funds from the foundation, ThedaCare was also able to purchase the ASHP Diversity, Equity, and Inclusion certificate course.

After completing this course, the DEI and well-being committee plans to develop and offer curriculum to the pharmacy team that focuses on the core tenets of the certificate course. The goal of this work is to develop and empower a team and culture more comfortable in the workplace and workspace who appreciate and strive for a higher level of well-being.

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Respiratory Syncytial Virus Vaccines

by Mary S. Hayney, PharmD, MPH, FCCP, BCPS

Respiratory syncytial virus (RSV) infection is a common seasonal respiratory illness. Typically, RSV activity is high and peaks in December and January, but that pattern was disrupted during the COVID-19 pandemic.[1] Although it affects all ages, infants, older adults, and those who are immunocompromised are most likely to experience severe infection.

Nearly all children have been infected with RSV by age of 2 years, and it is the leading cause of hospitalization during the first year of life.[2,3] Infants with RSV infection frequently develop bronchiolitis and lower respiratory tract infection that leads to hospitalization. An estimated 50,000 to 80,000 hospitalizations and 100-300 deaths in infants are caused by RSV each year.[2]

The Centers for Disease Control and Prevention (CDC) estimate that 60,000 to 160,000 older adults are hospitalized for an RSV infection each year. Between 6000 and 10,000 people die of an RSV infection annually.[4] Known risk factors for severe RSV infection include advanced age, heart disease, lung disease, diabetes, immunocompromise, and other chronic medical conditions.[4,5]

RSV is an airborne-transmitted virus. Methods of transmission include coughing and sneezing. It can also be transmitted by direct contact. Transmission can occur two days prior to symptom onset and during clinical illness. RSV infection in infants is characterized by runny nose, decreased oral intake, and cough which may progress to wheezing and difficulty breathing. In adults, symptoms of RSV are those of other respiratory infections, including rhinorrhea, pharyngitis, cough, headache, fatigue, and fever. Symptoms typically resolve in 5 days.[6]

Protection from RSV infection is an important advance in medicine and public health. A long-acting monoclonal antibody, nirsevimab (Beyfortis™, Sanofi and Astra-Zeneca) has been licensed for children younger than 24 months of age.[7] For adults aged 60 years and older, two vaccines are available—recombinant RSVPreF3, adjuvanted (AS01E) (Arexvy®) from GlaxoSmithKline[8] and the recombinant RSVpreF vaccine (Abrysvo®) from Pfizer.[9] The RSVpreF vaccine is also licensed for immunization of pregnant individuals at weeks 32-36 gestation for the prevention of RSV infection in infants.[9]

Protection of Infants and Young Children From RSV

Two strategies are now available for RSV protection of infants and young children. Pregnant individuals can be immunized later in gestation to provide protection to their infants, or infants can receive a long-acting monoclonal antibody prior to or during RSV season. Both strategies provide protection against lower respiratory tract infection.

Nirsevimab

The Advisory Committee on Immunization Practices (ACIP) has recommended nirsevimab for all infants <8 months of age prior to or during RSV season which is October through March. Children who are at particularly high risk for complications of RSV infection aged 8-19 months should receive a dose prior to their second RSV season.[2] The second season dose is recommended for a small number of children who have pulmonary complications due to prematurity, severe immunocompromise, or cystic fibrosis with pulmonary manifestations. A second season dose is recommended for all American Indian and Alaskan Native children as

they experience high rates of severe RSV disease.[2] Nirsevimab is administered intramuscularly and can be administered with other childhood vaccines at the same clinic visit. The dose of nirsevimab is based on the child's weight and a higher dose for those who need it for a second RSV season (Table 1).

Compared to placebo, nirsevimab was 79.0% (95% confidence interval [CI] 68.5%–86.1%) effective in preventing medically-attended lower respiratory tract infection with RSV, 80% (95%CI 62.3%–90.1%) effective in prevention of hospitalization, and 90.0% 95%CI 16.4%–98.8%) for prevention of intensive care unit admission.[2] Nirsevimab is well-tolerated. The most common adverse reactions reported were injection site reactions and rash in fewer than 1%. Allergic reaction to nirsevimab or a component is the only contraindication.[7]

Passive Immunization Using RSVPreF Vaccine in Pregnant Individuals

Another strategy for protecting infants from severe RSV infection is through maternal immunization. The RSVPreF vaccine (Abrysvo®) was recently licensed for administration to pregnant individuals at 32 to 36 weeks gestation to prevent lower respiratory infection due to RSV in the infants.[9] This passive immunization strategy leads to infant protection that lasts from birth to age 6 months. At the time of this writing, the ACIP has not yet made a recommendation for the use of this vaccine.

Vaccine efficacy was measured from time of infant birth and was followed for at least 6 months. When administered at 32-36 weeks gestation, vaccine efficacy against severe lower respiratory tract infection at 90 days was 91.1% (95%CI 38,8-99.8) and at 180 days was 76.5% (95%CI 42.3-92.1). Vaccine efficacy against any lower respiratory tract infection due to RSV at 90 days was 34.7% (95%CI -34.6-69.3) and at 180 days was 57.3% (95%CI 29.8-74.7). The majority of solicited injection site and systemic reactions resolved in 2-3 days. Severe local reactions were reported by 0.3% of maternal participants and severe systemic reactions were reported by 2.3%. Preterm births were more frequent in the vaccine group (5.3%) compared to the placebo group (2.6%) in Study 1 (participants immunized 24-36.9 weeks gestation) and remained in Study 2 where vaccine was administered at 32 to 36 weeks gestation (vaccine group 4.2% vs placebo group 3.7%).[9]

TABLE 1. Nirsevimab Dosing Information

Child's Weight at Time of Dose Administration	*Nirsevimab Dose**
< 5kg	50 mg
> 5kg	100mg
Prior to second RSV season	200mg (as two 100mg/1ml injection)

**supplied as 50mg/0.5ml syringe and 100mg/1ml syringe that are color-coded*

Implementation Issues

A number of healthcare system issues will need to be addressed to implement the infant RSV immunization program. Nirsevimab is included in the Vaccines for Children Program. The ACIP cost effectiveness estimate for the use of nirsevimab for infants younger than 8 months of age was $102,000 per quality adjusted life year.[2] No similar information regarding maternal immunization is available at this time. The window for maternal RSV immunization is small (32-36 weeks gestation) which could present an obstacle. Also, a system must be developed to identify and recall infants younger than 8 months for nirsevimab prior to the season which has been identified as October. Infants born October to March could receive nirsevimab at the birth hospital prior to discharge. Because RSV immunization may be done at the birth hospital, pediatric clinic, obstetric clinic, and possibly public health clinic or pharmacy, coordination and information sharing through the immunization registry will be critical to avoid double immunization of the infant. Other system issues may be identified depending on the ACIP recommendation for maternal immunization.

Protection of Adults Aged 60 Years and Older From RSV

Two recombinant vaccines were recently licensed for the protection of adults aged 60 years and older. The ACIP recommended shared clinical decision making for the use of RSV vaccines in this population.[4] Rather than a routine recommendation for all members of the group, shared clinical decision making allows the clinician and the patient to choose the best strategy for the individual. That decision could be based on patient's underlying health and risk for severe RSV infection, the known risks and benefits of the vaccine, the clinician's discretion and the patient's values and preferences.[4,10]

RSVPreF Vaccine (Abrysvo®, Pfizer)

The RSVPreF vaccine uses recombinant bivalent pre-fusion protein antigens from the two subgroups, RSV A and RSV B. The clinical trial that led to licensure of this vaccine included just over 34,000 individuals aged 60 years and older who were randomized to vaccine or placebo and followed for approximately 12 months per participant.[11] That interval included one full and a second partial RSV season in the Northern Hemisphere. The primary endpoints of the study were incidence of RSV with at least two respiratory symptoms or incidence of RSV with at least three respiratory symptoms (Table 2). More local reactions were reported by vaccine recipients (12%) compared to placebo recipients (7%). The reactions were mild to moderate and median duration was 1 to 2 days.[11] Among study participants in phase 1, 2, and 3 trials, the relative risk of at least a grade 3 adverse event was 1.43 (95%CI 0.85-2.39) compared to placebo.[4] Grade 3 adverse events include those that prevent the individual from participating in usual daily activities. Three inflammatory neurologic events were reported among vaccine recipients while no such events were reported in the placebo group.[4]

The vaccine is supplied as a vial containing antigen and a syringe that is prefilled with sterile water as a diluent. To administer, place the plastic vial cap on the antigen vial and attach the syringe. Inject

the contents of the syringe and gently swirl the vial with the syringe attached and plunger depressed. When the antigen is reconstituted, draw up the contents of the vial into the attached syringe. After disconnecting the syringe from the vial adapter, attach a needle for vaccine administration. The vaccine is administered by intramuscular injection.[9]

RSVpreF3, Adjuvanted Vaccine (Arexvy®, GSK)

The RSVpreF3 vaccine contains a recombinant prefusion F glycoprotein and the AS01 adjuvant. This is the same adjuvant that is in the recombinant zoster vaccine, but the dose is smaller.[12] The pivotal clinical trial supporting licensure of the RSVpreF3 vaccine included almost 25,000 participants aged 60 years and older and followed them through two complete RSV seasons in the Northern Hemisphere.[13] The primary endpoint of this study was RSV associated lower respiratory tract disease with two or more respiratory symptoms (Table 2). Pain at the injection site was reported by 60.9% of those who received the vaccine compared to 9.3% who received placebo. The vaccine was well-tolerated but more reactogenic compared to placebo with symptom resolution in 1-2 days on average.[13] Grade 3 reactions from available studies were reported in 3.8% of vaccinees and 0.9% of controls (pooled relative risk 4.10; 05% CI 1.99-8.45). Three inflammatory neurologic events were reported in vaccinated individuals in trials without a placebo comparison.[4] No inflammatory neurologic events were identified in the phase 3 trial, and potential immune-mediated disease incidence was similar between vaccine and placebo recipients.[13]

The vaccine is supplied as two vials. The adjuvant-containing vial is the diluent that is transferred to the antigen vial using a syringe and needle. Gently swirl the vial until the antigen is dissolved with the

TABLE 2. Respiratory Syncytial Virus Vaccine Efficacy for Age 60 Years and Older[4,11,13]

	Vaccine Efficacy
Bivalent RSVpreF	
At least 2 respiratory symptoms	66.7% (95%CI 28.8-85.8)
At least 3 respiratory symptoms	85.7% (95CI 32.0-98.7)
Combined seasons 1 and 2 (>2 symptoms)	84.4% (59.6-95.2)
RSVpreF3	
Lower respiratory tract disease	82.6 (95%CI 57.9-94.1)
Combined seasons 1 and 2	74.5% (95%CI 60.0-84.5)
Participants with medical comorbidities	94.6% (65.9-99.9)

syringe and needle attached to the vial. Withdraw the reconstituted vaccine for intramuscular administration.[8]

RSV Vaccine Use

Both vaccines contain the pre-fusion (F) glycoprotein which induces potent neutralizing antibodies.[14] Both vaccines may be used for a single dose prior to RSV season.[4] No head-to-head comparisons are available. The populations enrolled and the endpoints of the studies were slightly different.

Data on and experience with coadministration of RSV vaccines with commonly used adult vaccines are lacking. Both RSV vaccine preparations have been administered with influenza. Influenza and RSV antibody concentrations following coadministration were generally lower but met noninferiority criteria. Only the influenza A H3N2 Darwin strain as an antigen in the adjuvanted influenza vaccine coadministered with the RSVpreF3 (GSK) vaccine was outside the noninferiority criteria.[4] The clinical significance of the lower antibody concentrations is unknown. The ACIP stops short of recommending coadminstration of RSV vaccines and other adults vaccines, such as COVID-19, tetanus-diphtheria-acellular pertussis, recombinant zoster (consider that the adjuvant is the same as the GSK RSVpreF3 vaccine), and pneumococcal vaccines. Clinicians are asked to consider the likelihood of the patient will return for additional immunization, the possibility that reactogenicity will be higher, the risk of acquiring the vaccine preventable disease, and patient preferences. However, the ACIP did state the coadministration of RSV vaccine and other adult vaccine is acceptable.[4]

The need for and timing of future doses of RSV vaccines is not yet known, but the clinical trials described above are ongoing to answer this question. Also, additional information about vaccine adverse effects will be sought, particularly the unresolved, but possible association of RSV vaccines with inflammatory neurologic conditions. Additional experience with administration of the RSV vaccines with other adult vaccines is urgently needed.

The RSV vaccines will be covered by Medicare Part D for enrolled individuals, typically those 65 years and older. For those aged 60-64 years, RSV vaccine will be covered by insurance. However, the timing of coverage may vary. Some may cover it already, but others may take time to add it to their formulary or will wait until the 2024 Adult Immunization Schedule is published.

As mentioned above the RSV vaccines are to be used with shared clinical decision making. The ACIP advises that clinicians and patients consider risk for severe RSV infection, including advanced age (though no specific age threshold for more strongly recommending RSV vaccine is made), frailty, residence in a long-term care facility, lung disease, cardiovascular disease, moderate or severe immunocompromise, diabetes, neurologic or neuromuscular conditions, kidney or liver disease, hematologic disorders, and other conditions that may increase the risk for severe RSV infection.[4]

Conclusion

The RSV monoclonal antibody and vaccines offer protection to segments of the population that are at high risk for hospitalization and mortality. These products were shown to be safe and efficacious is clinical trials. All infants 8 months of age and younger should receive nirsevimab. The use of the bivalent RSVpreF in pregnant individuals offers another option for passive immunization of vulnerable infants. The two RSV vaccine, bivalent RSVpreF and RSVpreF3, can be used to protect those aged 60 years and older. Clinicians can use shared clinical decision-making to determine which patients should receive these vaccines. Consider those that are at highest risk for severe infection, including advanced age and medical comorbidities.

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Original Work

Analysis of Opioid Prescription Practices After Mailed Intervention by a Pharmacy Benefit Manager to Prescribers of Commercial Health Plan Members

by Caitlin C. Albrecht, PharmD, Marleen K. Wickizer, PharmD, AE-C, CDCES, Agata Siwak, PharmD, Maria L. Hurst, CPhT, PMC, Robert V. Topp, PhD, RN

Abstract

Objective: High-dose opioid prescriptions are associated with increased risk of opioid misuse and overdose. With access to members' complete prescription claims histories, a pharmacy benefit manager (PBM) is in a unique position to intervene with members receiving high doses of opioids. This study investigates how a PBM-led intervention impacted members' future opioid therapy.

Methods: Members were included if they had opioid claims averaging ≥ 90 morphine milligram equivalents (MME) per day from July 1, 2019, through October 31, 2019. Sixty-five members qualified for the study; 33 in the intervention group and 32 in the control group. In November 2019, letters containing information about the members' opioid claims history were sent to prescribers of intervention group members. Outcomes were collected from July 1, 2020, through October 31, 2020. The primary outcome was mean decrease in daily MME; secondary outcomes included change in number of opioid prescribers.

Results: The average decrease in daily MME in the intervention group (33.3 ± 102.8) was not statistically different than the control group (13.4 ± 36.2, p = 0.30). The number of opioid prescribers was similar at baseline among the intervention (1.39 ± 0.14) and the control group members (1.63 ± 0.14) and statistically different following the intervention (1.18 ± 0.12 vs. 1.59 ± 0.12, p = 0.04).

Conclusions: Mailings to prescribers of members with high daily MME values were not found to be associated with a significant decrease in average daily MME but did result in a decrease in average number of opioid prescribers.

Though there have been improvements in opioid prescribing practices over the past several years, the opioid epidemic continues to be a major problem within the United States, with more than 68,000 deaths involving opioids occurring in 2020.[1] Additionally, non-fatal opioid overdoses substantially contribute to the number of hospitalizations and emergency department (ED) visits that occur annually; ED visits related to opioids increased by an average of 12% per year between 2014 and 2017.[2]

Higher average daily doses of opioids are associated with an increased risk of opioid-related mortality; doses of greater than 200 morphine milligram equivalents (MME) have been associated with a 2.9-fold increase in opioid-related death, and doses between 50 and 99 MME per day have been associated with a 1.9-fold increase in opioid-related death, compared to doses of less than 20 MME per day.[3] Higher daily doses of opioids are also associated with increased risk of overdose.[4] One study found that patients taking 50-99 MME per day had a 3.7-fold increase in overdose risk and patients taking more than 100 MME per day had an 8.9-fold increase in overdose risk, compared to patients receiving less than 20 MME per day.

The Centers for Disease Control and Prevention (CDC) published guidelines on opioid prescribing for patients with pain in 2016 and updated these guidelines in 2022.[5,6] The guidelines specifically discuss the use of high doses of opioids, defined in the 2016 guidelines as greater than 90 MME per day. Per the CDC, there has not been found to be a clear benefit associated with opioid doses of greater than 50 MME when compared to lower doses, despite substantial evidence of increased risk.[6] The CDC recommends prescribing the lowest effective dose possible when starting opioid therapy; they state that 20-30 MME per day for an opioid-naïve patient is often sufficient. Benefits and risks should be carefully evaluated when increasing dosing, and clinicians should closely monitor patients who are on high-dose opioid therapy and should provide strategies, including education, to reduce overdose risk when possible.

Rates of high-dose opioid prescribing were trending downward prior to the publication of the CDC's 2016 guidelines and continued to decrease following publication.[7,8] This and other studies support the idea that educational

programming targeted to providers on the risks associated with opioid use can impact prescribing practices and encourage lower levels of average daily MME.[9,10]

Daily MME values of 90 or higher may be the result of more than one opioid prescription taken concurrently, and doses of this magnitude are sometimes prescribed by multiple clinicians and filled at multiple pharmacies. Consequently, a clinician prescribing an opioid or a pharmacist filling an opioid prescription may not be aware of the patient's complete opioid history, as information stored within the electronic health record at one clinic may not be accessible to clinicians at other locations. A pharmacy benefit manager (PBM) may therefore be well positioned to identify members receiving high doses of opioids and to notify prescribers of the patient's complete opioid fill history. Navitus Health Solutions, a PBM, has a retrospective drug utilization review safety program, called the MME Safety Program, that identifies members who have received at least 90 MME per day in a given 4-month time period. This program includes standardized letters mailed to prescribers of identified members, which include information about the patient, their opioid and potentiator medication profiles, their opioid and naloxone fill histories, and the risks associated with high doses of opioids. The purpose of this study was to determine the effect of targeted mailings sent to the prescribers of members with high doses of opioid prescriptions on the member's future opioid prescriptions. A prior study evaluated the impact of mailed prescriber letters on opioid and benzodiazepine prescription rates in individuals receiving both classes of medications; this study differs from that one, as it evaluated members taking only high doses of opioids, not opioids and benzodiazepines.[11]

Methods

Study Design

This study was a retrospective analysis of prescription claims data from commercial health plan members. IRB exemption was obtained prior to accessing data. The study compared members of commercial health plans that participate in the MME Safety Program (the intervention group) to members of similar commercial health plans that did not participate in the program (the control group). Members within these commercial health plans were identified using the PBM's claims database. Eligible members had prescription claims totaling greater than or equal to 90 MME per day during the 4-month pre-intervention period, from July 1, 2019, through October 31, 2019. Members were excluded if they were under the age of 18 or were not enrolled in their respective commercial health plan throughout the entire study period, from July 1, 2019, through October 31, 2020. Members were also excluded if they had claims for oncology medications, had claims from a long-term care pharmacy in the past 4 months, or were currently receiving hospice care.

On November 1, 2019, the MME Safety intervention letters were mailed to providers. Prescribers of the intervention group's members were contacted via letter if the member had filled a prescription for an opioid written by the prescriber in the pre-intervention period. The letter included a list of the opioid medications the member had filled during the previous 4 months, as well as the fill date, drug name, quantity and days' supply, the name and address of the prescriber, and the name and address of the pharmacy where the medication was filled. Total number of opioid prescribers used, total number of pharmacies used, and any potentiator medications filled during the time period were also included. The letter contained several recommendations to the prescriber, including recommendations that the prescriber provide education to the member on opioid overdose, that they discuss and offer naloxone to the member, that they consider creating a plan to gradually taper down the member's opioid doses, and that they review the prescription drug monitoring (PDMP) database and coordinate therapy with different prescribers on the included profile as appropriate. The prescribers of control group members were not mailed a letter and no additional action was taken on these members as a part of the MME Safety program. The health plans included in the intervention and control groups were not within the same state nor in nearby states, so it is unlikely prescribers would have had members in both groups.

In November of 2021, data from the post-intervention period, from July 1, 2020, to October 31, 2020, were analyzed and compared to data from the pre-intervention period. Data collected from the pre- and post-intervention periods included member age, member gender, average daily MME, number of opioid prescribers, number of pharmacies used and specific opioids filled, including quantity per script and number of fills.

Statistical Analysis

The primary hypothesis was that members whose opioid prescribers received a letter with information about the member's opioid fill history would decrease their average daily MME nine months after the mailing (in the post-intervention period) compared to members whose opioid prescribers did not receive a letter. Additional outcome variables compared between the two groups in the pre- and post-intervention period included the average number of opioid prescriptions,

TABLE 1. Baseline Demographics

Characteristic	*Intervention Group (n = 33)*	*Control Group (n = 32)*
Age (years)	52.0 ± 10.9	53.2 ± 12.2
Female	24 (73%)	17 (53%)
Average Daily MME	188	145
Average Number of Opioid Prescriptions	2.36	1.84
Average Number of Opioid Prescribers	1.39	1.63
Has At Least 1 Long-Acting Opioid	27 (82%)	23 (72%)

MME = morphine milligram equivalents

the average number of opioid prescribers and the percentage of members with at least one prescription for a long-acting opioid. Univariate repeated measures ANOVA statistics were calculated to determine if either of the groups changed on measures of average MME, number of opioid prescriptions, or the number of prescribers over the duration of the study. Significant ($p < 0.05$) time, group, or group by time interaction effects indicated post hoc comparisons of the appropriate means using Tukey's least significant differences. Chi-square statistics were calculated to compare the percentage of members with a prescription for at least one fill for a long-acting opioid.

Results

A total of 65 members were included in the study, 33 in the intervention arm and 32 in the control arm. The majority of members in both groups were female and the average age was 52 in the intervention group and 53 in the control group. Additional baseline demographics are provided in Table 1. The primary outcome, decrease in daily MME, was not statistically significantly different between the intervention group (33.3 ± 102.8) and the control group (13.4 ± 36.2, $p = 0.30$). Table 2 presents the R-ANOVA analysis comparing average daily MME, number of opioid prescriptions and number of opioid prescribers between study groups over time. As this table indicates, there was a significant time effect ($p = 0.02$) for average daily MME with post hoc analysis indicating that the intervention group exhibited a significant decline in average daily MME from 188.2 ± 15.3 to 154.9 ± 15.7. The control group did not significantly change their average daily MME over the duration of the study (145.1 ± 15.6 vs. 131.7 ± 16.0). This table also indicates a significant group effect ($p = 0.04$) for the number of opioid prescriptions: the intervention group (2.36 ± 0.15) had a greater number of opioid prescriptions compared to the control group (1.84 ± 0.15) prior to the intervention, and both groups had a similar number of opioid prescriptions post-intervention (intervention group: 2.18 ± 0.16 vs. control group: 1.88 ± 0.16). Neither the intervention nor the control group significantly changed their number of opioid prescriptions over the duration of the study. There was a significant group effect ($p = 0.04$) for number of opioid prescribers: pre-intervention, the study groups had similar numbers of opioid prescribers (intervention group: 1.39 ± 0.14 vs. control group: 1.63 ± 0.14), and post-intervention, the intervention group had significantly fewer opioid prescribers than the control group (intervention group: 1.18 ± 0.12 vs. control group: 1.59 ± 0.12).

Table 3 presents a chi-square analysis comparing the percentage of long-acting opioids between the two groups pre- and post-intervention. This table indicates that the percentage of the intervention group (82%) and the control group (72%) prescribed at least one long-acting opioid was similar at both the pre-intervention ($p = 0.34$) and post- intervention (intervention group: 73% vs. control group: 66%, $p = 0.54$) data collection points.

Discussion

This study examined how mailed communications sent to prescribers of commercial health plan members receiving high daily doses of opioids impact the members' future opioid medication claims. One endpoint studied, change in number of opioid prescribers, was found to be significantly improved in the intervention group. The primary endpoint, change in daily MME, as well as the other secondary endpoints, did not show a statistically significant difference between the two groups, though numerically, the intervention group outperformed the control group. A prior study to identify factors associated with risk of prescription opioid abuse found that opioid prescriptions from two or more pharmacies or two or more prescribers within a 3-month period were associated with increased risk of abuse.[12] There may therefore be benefit in interventions that encourage the use of fewer opioid prescribers. The outcomes of this study differ somewhat from a prior study that evaluated the effect of prescriber mailings on opioid and benzodiazepine prescribing rates in members taking both classes of medication; that study found that there was a significant decrease in the average daily MME between the intervention and control groups.[11] This difference may be related to the fact that the earlier study specifically evaluated members

TABLE 2. R-ANOVA Comparing Daily MME, Number of Opioid Prescriptions and Number of Opioid Prescribers Between Study Groups Over Time

Outcome	*Intervention Group*		*Control Group*		*Statistical Interpretation*	
	Pre-intervention Mean ± SE	*Post-Intervention Mean ± SE*	*Pre-intervention Mean ± SE*	*Post-Intervention Mean ± SE*	*F*	*P*
Daily MME	188.2 ± 15.3	154.9 ± 15.7*	145.1 ± 15.6	131.7 ± 16.0	G: 2.77 T: 5.59 GxT: 1.08	0.10 0.02 0.30
Number of Opioid Prescriptions	2.36 ± 0.15#	2.18 ± 0.16	1.84 ± 0.15	1.88 ± 0.16	G: 4.52 T: 0.51 GxT: 1.01	0.04 0.48 0.32
Number of Opioid Prescribers	1.39 ± 0.14	1.18 ± 0.12#	1.63 ± 0.14	1.59 ± 0.12	G: 4.43 T: 1.36 GxT: 0.75	0.04 0.25 0.39

*# Groups were different at a specific time; *A specific group changed over time; MME = morphine milligram equivalents; G = Main effect of group; T = Main effect of Time; GxT = Group by Time interaction effect*

receiving both opioids and benzodiazepines, and concurrent use of opioid and benzodiazepines have been shown to put an individual at increased risk of adverse outcomes, including fatal overdose, compared to opioid use alone.[13,14]

Limitations

This study has a number of limitations to consider. For one, the sample size was fairly small, at 33 and 32 members in the intervention and control groups respectively. With smaller sample sizes, the risk of type II error increases; it is therefore possible that the lack of a significant difference in the primary outcome was related to the small sample size. Sample size was limited by the control group arm, specifically, as the majority of Navitus' commercial clients participate in the MME Safety Program. Health plans generally choose not to participate in the MME Safety Program if they have their own, internal opioid monitoring programs. These programs would have been in place prior to the start of the study and may have impacted baseline prescribing habits and outcomes.

There were also some baseline differences between the groups. Specifically, in the pre-intervention period, the intervention group had a higher average daily MME, higher average number of opioid prescriptions and a greater percentage of members with one or more claims for a long-acting opioid. There was also variability within the intervention and control groups. For example, the average daily MME in the intervention group, pre-intervention, ranged from 91.9 MME per day to 472.0 MME per day, and the average daily MME within the control group ranged from 92.2 MME per day to 339.2 MME per day.

As this study was conducted as a retrospective review of claims data, if any participants paid out-of-pocket for opioid prescriptions in the pre- or post-intervention periods, those medications would not have been included in the analysis. Data are limited to commercial populations within specific geographical locations, and therefore, findings may not be generalizable to Medicare or Medicaid populations or other geographical regions. The intervention relied on mailed letters to the prescriber's clinic or office, and it is therefore possible that letters were unread by the prescriber. In the future, potentially there would be value in surveying prescribers to gather opinions and feedback on what information within the letter is most pertinent or how the letter or means of delivery could be improved. Additionally, future directions could include telephonic and other omni-channel interventions.

Successful tapering of opioids requires time and careful collaboration with the member, as is discussed in detail in the CDC's guidelines for opioid prescribing.[6] Since it is necessary to taper slowly, potentially a greater decrease in average daily MME would have occurred if there had been more time between the pre- and post-intervention periods studied. It is also possible that opioid doses of greater than 90 MME per day were clinically appropriate for some of these members; in these situations, the letters may have provided a reminder to the prescriber to reaffirm that the member was benefiting from their current regimen and to potentially provide additional education on overdose or to prescribe naloxone.

TABLE 3. Chi-Square Analysis Comparing the Percentage of Long-Acting Opioids Between Groups at Pre-Intervention and Post-Intervention

	Pre-Intervention		*Post-Intervention*	
	No Long-acting Opioids	*At Least 1 Long-acting Opioid*	*No Long-acting Opioids*	*At Least 1 Long-acting Opioid*
Control	9 (28%)	23 (72%)	11 (34%)	21 (66%)
Intervention	6 (18%)	27 (82%)	9 (27%)	24 (73%)
Statistical Interpretation	$X^2 = 0.9$, $p = 0.34$		$X^2 = 0.39$, $p = 0.54$	

Conclusion

Mailed letters to opioid prescribers of members with high average daily MME values were not found to be associated with a significant decrease in average daily MME but did result in a decline in average number of opioid prescribers. Further studies may be necessary to determine the full impact of mailed interventions, and adjustments to the intervention, such as including more or different information within the letter, may result in a greater decrease in opioid prescribing. As a new program, the main goal of the mailings was to educate and increase awareness among prescribers of quantities of opioids being used by their patients. As prescribers become more familiar with the program, potentially more impact on measured outcomes will be seen.

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Original Work

Implementation of an Educational Intervention in a Rural, Critical Access Health System to Improve Urinalysis Collection and Urinary Tract Infection Treatment in the Emergency Department And Ambulatory Care Settings

by Madison C. Barabas, PharmD, Jennifer R. Larson, PharmD, BCPS, Karlee A. Dulak, PharmD

Abstract

Objective: The objective of this project was to improve urinary tract infection treatment through optimization of urinalysis collection and antibiotic prescribing practices in the emergency department and ambulatory care clinics in a rural, critical-access health system through a pharmacist-led educational intervention.

Methods: An educational presentation and post-education reference materials were created to guide appropriate urinalysis collection and antimicrobial regimen selection by providers for emergency department and ambulatory care patients. Pre- and post-education retrospective chart reviews were performed on all adult patients in these settings who had provided a sample for a urinalysis during their visit between September 2022 and April 2023. The intention was to evaluate the effectiveness of staff education and reference materials on improving the following urinary tract infection (UTI)-focused antimicrobial stewardship outcomes: appropriateness of urinalysis collection, treatment regimen including evaluation of fluoroquinolone usage, and duration of therapy.

Results: A total of 1,644 retrospective chart reviews were assessed (868 pre-education and 776 post-education). Overall, there was a decrease in inappropriate urinalysis collection and suboptimal or inappropriate antimicrobial regimens (18.89% vs. 10.95%) following an educational intervention. There was a decrease in inappropriate urinalysis collection (7.72% vs. 4.12%); suboptimal use of first-line agents (2.65% vs. 1.80%), which included unnecessary use of fluoroquinolones (2.07% vs. 1.55%); and suboptimal dosing or duration of therapy (7.60% vs. 4.90%).

Conclusions: The implementation of an antimicrobial stewardship educational intervention is an effective strategy to decrease rates of unnecessary urinalysis collection and inappropriate or suboptimal treatment of urinary tract infections.

Improving antimicrobial stewardship efforts continues to be a significant priority in healthcare in the United States with a recent focus shifting towards outpatient prescribing practices.[1,2] In 2021, there were 636 antibiotic prescriptions per 1,000 people in the United States.[3] It is estimated that 28% of these prescriptions were ordered for patients with symptoms and illnesses that did not require antibiotics.[2] Inappropriate or excessive antibiotic use can increase the risk for undesirable consequences, such as subjecting patients to adverse effects secondary to antibiotic agents, increased risk for antibiotic resistance, and increased risk of developing secondary infections, such as *C. difficile*.[4,5] Common reasons that antibiotic prescriptions are considered suboptimal include the use of substandard agents, insufficient or excessive dosages, or inappropriate durations.[6] With high volumes of antibiotic prescriptions occurring in outpatient settings, it is appropriate to continue to focus efforts on the evaluation and improvement of prescribing practices.

Rural Health Systems

The location of a health care system may also directly affect the prescribing habits and antimicrobial stewardship efforts of health care professionals at a facility. Health care systems located in rural areas are predisposed to facing resource disparities when compared to their urban counterparts, which may affect their ability to improve antimicrobial stewardship efforts.[5] Additionally, rurality was associated

with higher likelihood of poor antimicrobial stewardship and inappropriate antimicrobial prescribing practices.[7,8] For example, it was found that patients located in rural areas with a diagnosis of uncomplicated urinary tract infections (UTIs) were more likely to be prescribed suboptimal regimens when compared to urban patients with the same diagnosis.[6]

Pharmacist Involvement

Pharmacists play a vital role in rural healthcare as valued members of the care team. Pharmacists have extensive knowledge of medications and treatment algorithms to assist with disease management and increase the quality of health care. Pharmacists have an important role in antimicrobial stewardship efforts and can promote the use of appropriate and optimized antimicrobial regimens, participate in efforts to reduce rates of infection transmission, and be involved in educational efforts.[9,10]

Urinary Tract Infections

Urinary tract infections (UTIs) are one of the most common outpatient infections.[11] Factors that can increase a patient's risk for developing UTIs include a history of previous UTI, young age or old age, pregnancy, recent sexual activity, structural abnormalities affecting the urinary tract, or poor hygiene.[12] However, many patients experience asymptomatic bacteriuria (ASB) and can be colonized chronically with bacteria in their urinary tract without an infectious process occurring.[13-16] This colonization increases a patient's risk for receiving inappropriate antibiotic treatment, because it results in a positive urinalysis and urine culture even if signs and symptoms of infection are absent. Risk factors for ASB include older age, female sex, the presence of chronic urinary catheters, a diagnosis of diabetes, or a history of spinal cord injury.[13-16] Given the risks of inappropriate treatment, it is imperative to focus on improving diagnosing and prescribing efforts for UTI.

This quality improvement project aimed to improve urinalysis collection and antibiotic prescribing to align with evidence-based practices in the emergency department and ambulatory care clinics in a rural, critical-access health system through a pharmacist-led educational intervention. Three pivotal steps were involved in the project design, including creation, education, and assessment.

Methods

Phase I: Creation

First, 150 preliminary chart reviews via electronic health record were completed to help understand the current practices regarding the assessment and treatment of UTIs. This process helped identify institution-specific areas of potential improvement and guide the learning objectives for this project. From there, three resources were created to assist with the optimization of prescribing practices. This included an educational presentation and two reference guides, composed of a urinalysis collection guide and an antimicrobial agent selection and dosing guide.

The web-based educational presentation covered topics such as risk factors for ASB, signs and symptoms consistent with UTI, how to address and identify intolerances versus allergies to antimicrobial agents, appropriate regimens including dosing and durations, and consequences of inappropriate or non-optimized treatment of UTIs.[1-4,11-19] Additionally, at the end of each major topic, there was an example patient case identified during the preliminary chart reviews with either inappropriate urinalysis collection or

TABLE 1. Criteria for Appropriateness for Urinary Tract Infection (UTI) Assessment and Treatment

Objective	*Qualifying Criteria*	*Disqualifying Criteria*	*Exceptions*
Presence of symptoms consistent with UTI[12-15]	• Presence of dysuria, hematuria, urinary frequency, urinary urgency, flank pain, pelvic discomfort, altered mental status in absence of other causes • Part of assessment for ASB in pregnancy	• Changes in urine quality alone • Assessing for ASB or UTI in patients with a urinary catheter without reasonable suspicion for infection	Alternative indications for urinalysis such as ketonuria, bilirubinuria, poisonings, or by request of an outside source such as employment physicals
Use of first-line agents[13, 17]	Empiric therapy utilized first-line agents noted in the dosing guide	• Avoidance of first-line agents based on mild intolerances • Utilization of fluoroquinolones in absence of known or suspected *Pseudomonas* infections	• Known anaphylactic or IgE-mediated allergies • History of resistance or growing bacteria not susceptible to first-line agents • Drug interactions or renal function limitations
Use of recommended duration[13,17]	• Following agent-specific recommendations based on: » Patient sex » Complicated vs. uncomplicated infection	Utilization of a duration outside of recommendations	Documented rationale for an extended duration
Susceptibility based on urine culture results	Bacterial isolate(s) were susceptible to antimicrobial agent(s) prescribed (whether empirically or after regimen change following culture results)	Regimen not adjusted or incorrectly adjusted based on susceptibility results	N/A

ASB = Asymptomatic bacteriuria; UTI = Urinary tract infection

suboptimal antimicrobial therapy. This allowed for institution-specific feedback in reviewing how each case could have been better optimized.

The reference materials were created to be simple, single-paged guides to be utilized as quick resources after the web-based educational presentation aligning with evidence-based practices. The urinalysis guide outlined signs and symptoms consistent with UTI, when to consider ASB versus UTI, and a urine culture interpretation guide.[12-15] The dosing guide segmented medication choices into tiers, and prioritized them by listing first-line therapies at the top followed by alternative agents, with the goal of assisting providers with regimen selection. First-line therapies were identified using guideline-based recommendations, as well as through data extracted from the institution-specific antibiogram. It also included indication and sex-specific durations for therapy and dose adjustments based on renal function.[13,17] The dosing guide discouraged fluoroquinolone use except in cases of true allergies to other antimicrobial agents or in the setting of known or suspected *Pseudomonas* infections.

Phase II: Education

A web-based educational presentation was provided to all prescribers and nursing staff located in the emergency department and ambulatory care clinics. The educational presentation slide set was provided in a virtual format to facilitate learning for all included staff members while working around scheduling conflicts. Staff had one month to complete the learning module. Additionally, providers in the ambulatory care clinics and nurses in both the emergency department and ambulatory care clinics were required to complete and score 100 percent on a five-question quiz that aligned with the learning objectives of the presentation in order to demonstrate adequate understanding of the material. The emergency department providers were exempt from completing the quiz due to logistics related to their employment and access to the institution's virtual educational platform. Instead, they were provided the learning materials via email and expected to review them.

TABLE 2. Comparison of Pre-Education and Post-Education Data

	Pre-Education			Post-Education		
	Month 1	Month 2	Month 3	Month 1	Month 2	Month 3
Total urinalyses collected	316	281	271	244	263	269
Total inappropriate urinalyses	17	30	20	9	10	13
Total inappropriate use of non-first-line agents (including unnecessary fluoroquinolone use)	11	8	4	7	3	4
	7	8	3	7	2	3
Total suboptimal doses or durations	24	26	16	11	18	9
Total regimens not appropriately adjusted based on susceptibility results	3	3	2	0	1	0
Monthly percentage of non-optimized encounters (%)	17.41	23.84	15.50	11.06	12.17	9.67

TABLE 3. Comparison of Emergency Department and Ambulatory Care Data

	Emergency Department		Ambulatory Care Clinics	
	Pre-Education	Post-Education	Pre-Education	Post-Education
Total urinalyses collected	506	457	362	319
Patients with suboptimal encounter	86	48	78	37
Total inappropriate urinalyses	58	30	9	2
Total inappropriate use of non-first-line agents (including unnecessary fluoroquinolone use)	4	4	19	10
	3	3	15	9
Total suboptimal doses or durations	19	13	47	25
Total regimens not appropriately adjusted based on susceptibility results	5	1	3	0

Phase III: Assessment

Retrospective chart reviews were completed via electronic health record by a single reviewer to assess encounters for all adult patients who were seen in the emergency department and ambulatory care clinics who provided a urine sample for a urinalysis in the 3 months before and after the completion of the educational intervention. Each encounter was evaluated for the presence of UTI symptoms, utilization of first-line agents, utilization of indication- and sex-specific durations, and as-needed adjustments to the regimen based on susceptibility results. Further information regarding the criteria is outlined in Table 1. Additional deviations not specifically noted in Table 1 were considered individually based on patient-specific factors, such as contraindications or provider discretion. If these criteria were not met, then encounters were classified as non-optimized or inappropriate.

Results

Descriptive statistics were used for reporting results. A total of 1,644 retrospective chart reviews were performed

in the emergency department and ambulatory care clinics for adult patients who had provided a sample for urinalysis between September 2022 and April 2023. A total of 868 samples were collected prior to education and 776 were collected following education. Of these, 18.89% of pre-education urinalysis encounters were deemed inappropriate or non-optimized in comparison to 10.95% of all post-education encounters. There was an improvement in all assessed categories between pre-education and post-education when averaged over each three-month period (Table 2). This included indication for urinalysis (7.72% vs. 4.12%); suboptimal use of first-line agents (2.65% vs. 1.80%), which included unnecessary use of fluoroquinolones (2.07% vs. 1.55%); deviation from recommended durations (7.60% vs. 4.90%), and regimens not appropriately covering the infectious organism(s) (0.92% vs. 0.13%).

The emergency department collected more samples for urinalyses in comparison to the ambulatory care clinics in both the pre-education (506 vs. 362) and post-education (457 vs. 319) groups (Table 3). The emergency department most often inappropriately collected urinalyses in the absence of appropriate symptoms or other reasonable suspicion. This was consistent between pre- and post-education data, with the incidence decreasing following education. The ambulatory care clinics frequently prescribed longer-than-recommended antimicrobial therapy durations to patients without reasonable cause. This also was consistent between pre- and post- education data, and its incidence also decreased following education. Overall, results demonstrated a trend towards improvement following the educational intervention.

Discussion (Including Limitations)

Though the objectives were the same for both the emergency department and ambulatory care clinics, each practice area demonstrated sub-optimization in different areas. The emergency department predominantly collected more inappropriate urinalyses compared to the ambulatory care clinics. This was likely because patients commonly present with non-specific symptoms leading to increased frequency of ordering urinalyses. Patients presenting to the ambulatory care clinics with concerns of UTI had symptoms that were more straightforward, such as dysuria, urinary frequency, or urinary urgency. The ambulatory care clinics were more likely to prescribe non-optimized durations than the emergency department; specifically, they were noted to prescribe extended durations to mostly female patients. Usually in these cases, the female patients were prescribed male-recommended durations despite not having indications or documentation to support the extended durations. This could be due to several reasons, such as personal provider preferences or due to pre-selected prescription favorite lists in the electronic health record.

To support continuous improvement, this project could be developed into an annual or semi-annual institution continuing education module to be updated as needed. There could also be additional tools created and implemented within the organization to support appropriate UTI treatment, such as the creation of order sets or including electronic health record alerts when medications such as fluoroquinolones are used. Additionally, pharmacists within the institution could become involved with the interpretation of culture results and regimen adjustment based on organism susceptibilities to ensure all patients are appropriately treated.

There were a few limitations to this project. First, the emergency department providers were unable to take the required learning assessment quiz due to technical limitations associated with their employment contract. It was expected that they would review the educational presentation, but the project facilitators were unable to formally confirm that they thoroughly reviewed the material.

Education was distributed to providers and nurses in a virtual format to accommodate scheduling and support participation. Though both live and virtual modalities are deemed acceptable for education for improving antimicrobial stewardship,[18,19] it may have been beneficial to complete education in person to allow for more conversation regarding the information, including facilitating discussion about the material. No formal feedback was requested from participants, but this could be done in the future to improve the presentation and experience.

Overall, results were limited due to the nature of retrospective chart review. The documentation provided for the encounter may have had incomplete or inaccurate information, resulting in an encounter being counted as inappropriate or suboptimal when it may not have been. There was also only a single chart reviewer. Though there were defined criteria for assessment, chart review was still relatively subjective and this could have introduced a risk for bias.

Conclusions

Pharmacist-led educational interventions can promote the improvement of UTI antimicrobial stewardship practices in rural health systems.

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Review Article | Writing Club

Efficacy and Safety of Phenobarbital in Alcohol Withdrawal Syndrome Management: a Focused Literature Review

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Alcohol withdrawal syndrome (AWS) is a potentially life-threatening clinical complication in patients who misuse alcohol.[1] In the United States, clinical treatment is required for approximately 500,000 episodes of AWS annually.[2] Protocols and guidelines are often utilized in hospital settings for the treatment of AWS.[3] However, severe and treatment-resistant cases are more likely to rely on clinician input and professional judgment for symptom management. Currently there are multiple dosing strategies used to manage AWS, including fixed dose, loading dose, symptom-triggered, and symptom-monitored loading dose regimens.[4]

The Clinical Institute Withdrawal Assessment for Alcohol Scale, Revised (CIWA-Ar) is used to measure the severity of symptoms associated with alcohol withdrawal syndrome.[4] Higher scores indicate greater potential for life-threatening complications, such as seizures and delirium tremens. Benzodiazepines are commonly used in symptom-triggered therapy protocols, which are often guided by CIWA-Ar. Benzodiazepines (BZD) mimic alcohol's depressive effects on the central nervous system (CNS) by increasing the opening frequency of gamma-aminobutyric acid (GABA) chloride channels.[5] Large doses of benzodiazepines can put patients at an additional risk of oversedation, delirium, and/or respiratory depression. Chronic alcohol users can develop a cross-tolerance to benzodiazepines and become unresponsive or require more frequent dosing.[6] Thus, there is a need for alternate AWS treatment strategies.

Barbiturates, like phenobarbital (PB), may be considered an alternative therapeutic option to benzodiazepines in the management of AWS due to the differing mechanism of action. Phenobarbital directly stimulates GABA receptors and reduces glutamate transmission by antagonism of N-methyl-D-aspartate (NMDA) and α-amino-3-hydroxy-5-methyl-4- isoxazole propionic acid (AMPA) receptors.[5] Cross tolerance between phenobarbital and alcohol is noted to be less than that of benzodiazepines and alcohol due to the difference in binding properties and receptor affinity.[1]

The long half-life associated with phenobarbital in comparison to benzodiazepines like lorazepam (LZ) (79 hours and 14 hours, respectively) is advantageous in treating withdrawal in the setting of adverse events, like seizures and delirium tremens.[7-9] Phenobarbital's tapering effect is an added benefit, reducing the need for additional supportive medications upon discharge.[5] However, this medication has historically been less preferred in the treatment of AWS due to its narrow therapeutic index in comparison to benzodiazepines.[6] Recent literature and studies evaluate phenobarbital as a safe and effective therapeutic option for the treatment of AWS.

This article reviews evidence for various phenobarbital dosing regimens both as monotherapy and as an adjunct to benzodiazepines in treating AWS within emergency departments (EDs) and intensive care units (ICUs).

Methods

A search of the PubMed and SCOPUS databases was performed, targeting publication dates between January 1, 1950, and February 18, 2022, using the following search terms: phenobarbital, barbiturates, alcohol withdrawal, alcohol withdrawal syndrome, emergency department, emergency room, intensive care unit, ICU, and critical care. Meta-analyses, randomized controlled trials (RCTs), and cohort studies were included. After removing duplicate articles, a total of 186 articles were identified. Abstracts were reviewed by the authors and were excluded if the full article was not freely accessible, not written in the English language, only discussed benzodiazepine use, included patients with seizure disorders, included patients with anxiety disorders, or lacked an objective association with phenobarbital use in AWS. Together, the authors identified 17 articles that met the above criteria. Articles were subsequently reviewed in full and pertinent results were summarized. Results were organized by dosing regimens, benzodiazepine requirements, mechanical ventilation, and severe complications, like seizures, hallucinations, and delirium.

Results

Phenobarbital Monotherapy

Six studies, including 5 retrospective studies and 1 prospective RCT, evaluated the use of phenobarbital monotherapy compared to benzodiazepine monotherapy when treating patients with AWS.[5,6,10-13] Bosch and colleagues used a quasi-experimental study design with mixed methods that reviewed changes in workflow with phenobarbital-based monotherapy to determine if noninferior outcomes were possible in medical ICU patients with severe AWS.[10] This study (n = 485) demonstrated a decrease in hospital length of stay (LOS) when patients were treated with phenobarbital (10 mg/kg bolus with rescue doses of 2.5-5 mg/kg) in the ICU (mean difference 1.8 days, 95% CI: −3.4 to −0.2 d). One retrospective chart review notably compared phenobarbital monotherapy (6-15 mg/kg) to the current benzodiazepine protocol.[6] ICU admissions and ICU LOS rates were found to be similar between benzodiazepine and phenobarbital protocol use in patients. Notably, there was a statistically significant increase in ICU admissions for patients who switched from benzodiazepines to phenobarbital when they did not show improvement (44% vs 11%, p < 0.001). Conversely, another retrospective chart review that used similar protocols found a non-statistically significant increase in ICU admission rates in patients treated with benzodiazepines compared to phenobarbital (11.5% vs 0%, p = 0.078).[11] This same study showed no difference in hospital LOS between the two treatment groups.

A previously completed study in critically ill patients used physician clinical judgment to determine weight-based dosing relative to the risk for alcohol withdrawal delirium and risk of sedation.[12] The more recent study, by Goodberlet and colleagues, exhibited an increase in medical ICU LOS (2 [1:2] vs 2 [2:5], p = 0.002) and hospital LOS (4.5 [3:6] vs 8 [6:12], p < 0.001) for phenobarbital monotherapy protocol compared to the original regimen. Tidwell and colleagues assessed how outcomes differed when phenobarbital doses were determined using physician-directed risk factor assessment of active delirium tremens (DT), history of DT, and no history of DT.[5] This method of dosing phenobarbital showed statistically significant decreases in total hospital LOS (4.3 vs 6.9 d; p = 0.004) and mean ICU LOS (2.4 vs 4.4 d; p < 0.001) compared to benzodiazepine protocols.

One study assessed CIWA-Ar scores at baseline, at discharge from the ED, and at 48 hours post-discharge for patients who received either lorazepam 2 mg doses as needed or one dose of phenobarbital 260 mg followed by subsequent doses of 130 mg phenobarbital as needed.[13] Both groups demonstrated statistically significantly decreased CIWA-Ar scores from baseline to discharge from the ED (PB: 15.0-5.4, p < 0.0001; LZ: 16.8-4.2, p < 0.0001). Additionally, there was not a statistically significant difference between the use of lorazepam monotherapy and phenobarbital monotherapy with regard to hospital admission rates (12% vs 16%, p = 0.8), relapse rates, or compliance with medication between groups upon follow-up (p > 0.05).

Phenobarbital Adjunct to Benzodiazepines

One retrospective cohort study was a pre-post assessment of protocol revision that looked at the use of intermittent boluses of diazepam (D) (n = 54) versus escalating diazepam doses with adjunctive phenobarbital after one hour of continued agitation (n = 41) to treat AWS.[14] This study found that after implementation of the new protocol, patients received less diazepam in the first 24 hours (120 mg vs 280 mg, p = 0.01) and had significantly reduced rates of mechanical ventilation (47% vs 22%, p = 0.008) compared to patients treated prior to protocol implementation. A second retrospective cohort study that looked into symptom-triggered lorazepam plus phenobarbital (n = 36) compared to lorazepam monotherapy (n = 36) found similar median ICU LOS between the two arms [4.1 days (IQR = 2.4-8.4) vs 4.5 days (IQR = 2.8-6.1), p = 0.727].[15] Additionally, the average change in CIWA-Ar score from baseline to 24 hours was statistically significantly lower in the adjunctive phenobarbital arm (1.8 ± 9.0 vs. 6.5 ± 8.5, p = 0.0275).

Phenobarbital Monotherapy vs Adjunctive Therapy

In a randomized, double-blind, controlled trial (n = 102), the primary outcome of "initial level of hospital admission (ICU vs. telemetry vs. floor ward) from the emergency department" was analyzed for a single dose of phenobarbital (10 mg/kg) in adjunct to a symptom-guided lorazepam protocol compared to placebo. The former had decreased ICU admission rates directly from the emergency department (difference: 17%, 95% CI 4–32%).[16] However, there was no difference in admission rates to non-intensive care inpatient units. In a retrospective chart review, a single dose of parenteral phenobarbital (options of 260 mg IV, 130 mg IV, or 20 mg slow IV push) in conjunction with a symptom-triggered lorazepam protocol (ranging from 2 to 4 mg per dose) was compared to the same lorazepam protocol alone.[17] The addition of the bolus dose of phenobarbital resulted in a greater number of patients discharged within three days compared to those who received lorazepam alone (9 vs. 2 patients, p < 0.05). Despite this, the review found that changes in both CIWA-Ar scores and hospital admission rates were not significantly different.

Another retrospective cohort study that evaluated phenobarbital 260 mg IV with or without benzodiazepines (n = 97) compared to a symptom-triggered benzodiazepine protocol (n = 112) in the ED found similar ICU and hospital admission rates.[18] Additionally, there were similar lengths of stay in the ED and ICU between the groups but a statistically significant decrease in hospital LOS for the phenobarbital monotherapy group (3 vs. 4 days, p = 0.048). An observational study compared three treatment groups (D [n = 100], LZ + PB [n = 100], and PB alone [n = 100]) for management of AWS in adults in the ED.[19] The rate of ICU admissions was not statistically significantly different between groups (D: 8, LZ & PB: 11, PB: 13 patients, p = 0.99). The average length of stay was the lowest for the lorazepam plus phenobarbital group (D: 59 h, LZ + PB: 51 h, P: 70 h, p = 0.04).

Benzodiazepine Requirements

Across multiple studies, including one prospective RCT, two retrospective cohorts, and one observational study (n = 1088), it has been shown that phenobarbital used as monotherapy following failed benzodiazepine treatment, or as an adjunct to benzodiazepines, decreases

benzodiazepine requirements in treating AWS.[5,17,19,20] Notably, researchers have found a correlation between higher ICU LOS and the total amount of benzodiazepines administered (r = 0.48; p = 0.008).[14] Rosenson and colleagues demonstrated a mean 23 mg decrease in lorazepam use when patients were given a single dose of phenobarbital (26 vs. 49 mg; difference 23 mg [95% CI 7–40]).[17] Lebin and colleagues demonstrated a median decrease in benzodiazepines of 2 mg lorazepam equivalent (benzodiazepine 6 mg vs. 4 mg equivalent lorazepam, p < 0.001).[20] When assessing the need for adjunctive medications for treatment of alcohol withdrawal-related agitation (n = 205), it was found that phenobarbital compared to benzodiazepines required less quetiapine, haloperidol, and dexmedetomidine as supportive therapies.[5,11] Murphy and colleagues assessed the role of adjunctive phenobarbital in AWS by evaluating three studies that took place in the ED.[21] There was a lack of consistent dosing between each study, however, the benzodiazepine-sparing effect was consistent. An RCT (n = 44) found that patients who were given phenobarbital followed by placebo at discharge did not demonstrate a statistically significant decrease in CIWA-Ar scores after 48 hours compared to those treated with lorazepam followed by chlordiazepoxide at discharge (PB: 5.8 vs. LZ: 7.2, p = 0.6).[13]

Mechanical Ventilation

Bosch and colleagues found a decrease in mechanical ventilation rates, from 17.1% to 12.9%, after the implementation of a phenobarbital protocol.[10] Similarly, Tidwell and colleagues reported a statistically significantly lower rate of mechanical ventilation in the phenobarbital group (n = 60) compared to the benzodiazepine group (n = 60) when using physician-directed phenobarbital dosing compared to benzodiazepine protocols (2% vs. 23%, p < 0.001).[11] A study by Rosenson and colleagues looked into the use of a single dose of IV phenobarbital compared to placebo of 100 mL of normal saline in the ED infused over 30 minutes.[17] Another study by Nelson and colleagues compared three patient groups presenting to the ED following separate protocols: benzodiazepines only, benzodiazepines with phenobarbital adjunct, and phenobarbital only.[19] When phenobarbital was used as monotherapy or as an adjunct to benzodiazepines, there was no statistically significant difference in the rate of intubation for patients presenting to the ED between groups. Goodberlet and colleagues compared two populations, patients who received benzodiazepines versus those who received phenobarbital, and found that there was no difference in duration of intubation once mechanical ventilation was started in both the ED and ICU when assessing these populations pre- and post-implementation of a protocol that included phenobarbital for AWS.[12,19]

Adverse Effects

Across two retrospective studies and one RCT (n = 102), no significant differences in adverse effects, such as bradycardia, oversedation, and respiratory depression, were reported when phenobarbital protocols were utilized compared to benzodiazepines.[6,17,18] Another retrospective chart review (n = 85) compared alcohol withdrawal delirium (AWD) risk-based protocols for phenobarbital and benzodiazepines.[11] The study found phenobarbital had a statistically significantly lower incidence of side effects such as aspiration, oversedation, rash, and hypotension compared to benzodiazepines (PB = 0, BZD = 19.2, p = 0.006). Conversely, when Ammar and colleagues conducted a retrospective case series (n = 31) evaluating the use of phenobarbital monotherapy for AWS management, it was found that 10% of patients (n = 3) experienced hypotension following use of phenobarbital.[22]

Severe Complications

Five studies, which included four retrospective chart reviews and one prospective, double-blind, RCT (n = 1,132) found no significant difference in alcohol withdrawal-induced seizures between phenobarbital and benzodiazepines.[6,11,16-18] One retrospective chart review found no incidences of complicated AWS in the phenobarbital group when comparing phenobarbital-fixed dosing with oral taper up to seven days versus benzodiazepine-fixed dosing, using a lorazepam taper (n = 85).[11] Specifically, a statistically significant decrease in delirium was confirmed for the phenobarbital group. Uncomplicated AWS symptoms, including tremors, anxiety, gastrointestinal upset, headaches, diaphoresis, palpitations, and anorexia were not observed in the phenobarbital group (n = 33) and were statistically significantly lower compared to the benzodiazepine group (n = 52) (0 vs 73.1%, p = 0.001). One retrospective case series in a surgical ICU study (n = 31) assessed phenobarbital as monotherapy followed by a taper regimen and reported that no patients developed severe AWS-related complications, including seizures, hallucinations, or delirium.[22] Three retrospective studies assessed phenobarbital use both as monotherapy and as an adjunct to benzodiazepines in AWS (n = 362) and found that phenobarbital had no significant differences in mortality compared to when benzodiazepines were used alone.[11,12,18]

Discussion

Phenobarbital use is currently not the standard of care for AWS. As a result, the majority of phenobarbital protocols identified had varied dosing, routes, frequencies, and durations of treatment tailored to the specific healthcare institutions. Protocols were adapted to each institution based on severity of symptoms, medication availability, and provider preference. While this complicates comparison of phenobarbital use between studies, this may have been a beneficial approach to designing phenobarbital protocols specific to institutional demands. Similarities between protocols may be due to the narrow therapeutic index associated with phenobarbital. Given the risks of phenobarbital overdose and overall lower clinical experience with phenobarbital by many providers, it is possible that an increased level of caution and surveillance was exercised with phenobarbital dosing compared to the more frequently used benzodiazepines. This could account for the similar, and sometimes lower, number of adverse events seen with phenobarbital compared to benzodiazepines.[6,11,17,18] Although various dosing strategies were identified in this article, there is little data to suggest any overall "best" dosing regimen when utilizing phenobarbital in AWS. Both phenobarbital as monotherapy and as an adjunct to benzodiazepine treatment have evidence for comparable and, in some cases superior, outcomes to benzodiazepines alone.[5,10,11,14-16,19]

Many studies demonstrated a decrease or no difference in admission rates and/or LOS across general floors and ICU with phenobarbital treatment, suggesting that inclusion of phenobarbital in some manner may result in improvements in these outcomes. [5,6,10,15,18,19] In the single study where the phenobarbital group demonstrated an increase in hospital and ICU LOS, the authors noted a higher APACHE II score, a general measure of increased disease severity, in the phenobarbital group.[12] This suggests that patients in the phenobarbital group had a higher baseline illness severity when compared to the patients in the benzodiazepine protocol, a probable confounding factor.

The studies in this review demonstrate phenobarbital as a safe therapy in various dosing strategies. Some studies found patients who were treated with phenobarbital experienced fewer side effects than those treated with benzodiazepines.[11] None of the studies using phenobarbital experienced life-threatening complications or differences in mortality rates when compared to benzodiazepines.[6,17,18] Mechanical ventilation rates were decreased or comparable to benzodiazepine protocols when phenobarbital was utilized across studies.[5,10,12,17,19] Another interesting result is the overall decrease in benzodiazepine dose requirements seen in protocols which utilized benzodiazepines with or prior to phenobarbital.[5,17,19,20] A possible explanation for this outcome could be the efficacy of phenobarbital in those patients who are resistant to benzodiazepine treatment. Including phenobarbital in treatment regimens may expedite an ultimately necessary escalation of care, where previously, patients would receive excessive additional benzodiazepine doses with marginal additional benefit. In addition to decreased benzodiazepine requirements, phenobarbital therapy decreased the need for other sedatives, antipsychotics, and discharge medications.[5,11] Overall, these results indicate that phenobarbital reduces the use of acute therapies and hospital resources.

A number of studies in this review were retrospective, leaving an opportunity for bias.[1,6,11,14-18] Three of the studies reviewed were cohorts, which typically consist of small patient populations.[14,15,18] Larger studies are needed to support consistent guidelines with more coherent dosing protocols. In addition to the data presented in this article, future research on dosing regimens and head-to-head comparisons between phenobarbital and benzodiazepines is warranted to provide a more comprehensive comparison between phenobarbital and benzodiazepines in the setting of AWS.

While there are many potential benefits to the addition of phenobarbital demonstrated within these studies, it is important to note that overall, benzodiazepines have more evidence for efficacy and clinical experience as they are still recommended as first-line therapy for the treatment of AWS, according to the American Society of Addiction Medicine 2020 Clinical Practice Guideline on Alcohol Withdrawal Management.[23] Additionally, other factors aside from the treatments themselves could have contributed to the results seen in these data. Incomplete assessment of withdrawal risk or symptom severity may contribute to under- or over-prescribing of benzodiazepines in facilities that utilize CIWA-Ar assessments of AWS.[24] This could result from a lack of access to patient histories, overburden on the healthcare system, or, possibly, a lack of training in the use of CIWA-Ar-based benzodiazepine dosing. It is unclear if these factors played a role in the difference in outcomes between benzodiazepines and phenobarbital, or if addressing these issues would confer similar, or even superior, outcomes to the addition of phenobarbital. Nevertheless, the above data suggest that there is a place for phenobarbital in the treatment of AWS.

Conclusion

Phenobarbital is a safe and effective alternative to benzodiazepines for treatment of AWS when used in a supervised clinical setting. Phenobarbital use resulted in similar and, in some cases, improved rates of hospital/ICU admission and hospital/ICU LOS. Phenobarbital utilization also demonstrated decreased rates of mechanical ventilation, total benzodiazepine requirements, and requirements for other supportive medications. There were similar rates of adverse effects between phenobarbital and benzodiazepines.

It is reasonable for institutions to tailor a phenobarbital protocol that best suits the institutional resources and capabilities, as well as provider preference. Additional education may be appropriate to support providers in making clinical decisions regarding the use of phenobarbital in AWS treatment.

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CONCORDIA UNIVERSITY WISCONSIN SCHOOL OF PHARMACY "MORTAR & PENCIL" STUDENT WRITING CLUB:

Business Member Spotlight: Tomahawk Pharmacy

by Kyle J. Rehrauer, 2024 PharmD Candidate, Kristine M. Regal, 2024 PharmD Candidate

As a Tomahawk native, Tyler Stevenson, PharmD, grew up working in independent pharmacies in town and progressed to owning his very own independent pharmacy: Tomahawk Pharmacy. Stevenson's passion for personalized patient care is what motivated him to open Tomahawk Pharmacy in 2015. Since then, the pharmacy has moved into a larger facility and expanded its patient care services to provide the community with more than just prescription medications.

Day to Day Practice

Serving the community is at the center of Tomahawk Pharmacy's values. As a Tomahawk local, Stevenson knows that serving his community extends beyond the pharmacy's doors. He was a former member of the school board for three years, was a past president of the town's youth mentorship program, and has supported the town's fundraising events. Stevenson's background means the pharmacy does not stop at dispensing medications and offering vaccines.

In Stevenson's role as the pharmacy owner, the majority of his days are spent performing managerial tasks, such as contracting with insurance companies, budgeting for the pharmacy as a whole with respect to staff hours and products sold, and researching and implementing revenue streams that are non-insurance and non-pharmacy-benefit-manager-based. On Wednesdays, Stevenson steps into the role of a staff pharmacist, offering his skills and expertise by checking prescriptions, providing consultations, and administering various vaccines. In both of his roles, Stevenson gets the opportunity to interact with his staff in what they describe as a fun, family-based work environment that is accommodating for employees in many aspects. With activities such as staff contests and group trips to the Fireside Dinner Theatre, the pharmacy team is the epitome of a family-friendly business and takes pride in their closeness both with each other and the community. This also extends to the other healthcare providers in the area. Stevenson says that a good rapport with the town's providers and clinics as a whole has provided the pharmacy with collaborative interprofessional relationships, allowing them to provide the best patient care and advertise the pharmacy's services, such as compounding and pouch packaging.

Below: *Tomahawk Pharmacy in Tomahawk, WI.* ***Top-right:*** *Tyler Stevenson, PharmD.* ***Bottom-right:*** *Kayci Stevenson, PharmD.*

Despite the hometown feel of Tomahawk Pharmacy, their influence is felt at the state level. Close connections with a state legislator, who is also a Tomahawk resident, have allowed Stevenson to give community pharmacies a voice and advocate for legislation at the state level.

Raising the Bar

Tomahawk Pharmacy is certainly leading the charge when it comes to practicing at the top of their license, starting with the members they have on staff. A certified medical technologist and a certified veterinary/compounding technician are just some of the staff members with specialized training. With these different backgrounds, the pharmacy is able to offer more to the populations they serve, such as point-of-care lab testing and veterinary/compounding services. Above all the specialized training, Stevenson says that the genuineness and sense of responsibility that his staff possesses is what each patient remembers, strengthening the bond between the pharmacy and those who walk through its doors.Stevenson says his and his staff's ability to pivot at a moment's notice is how the pharmacy is so successful. As the owner, he reflects on how grateful he is that business decisions are a collaborative effort between him and his team, rather than corporate-office leaders who do not have the opportunity to interact with their patients. Having started from nothing eight years ago, the pharmacy has been able to grow in ways they never expected, such as administering COVID-19 vaccines both at the pharmacy and at multiple onsite pop-up clinics for businesses around town.

This exemplary staff includes Stevenson's wife, Kayci Stevenson, PharmD, who spearheaded the 10,000-plus COVID vaccines that the pharmacy has administered and serves as director of clinical services. In addition, Stevenson mentions the pharmacy's operations manager, Jackie Cherney, CPhT; their IT and med sync coordinator, Gina Karl, CVT; lab manager Erin Ray; staff pharmacist Rebecca Pashek; and pharmacist manager Amanda Barkley.

Bumps in the Road

As an independent pharmacy in a rural community, Tomahawk Pharmacy faces a variety of challenges. One is the struggle for reimbursement from insurance companies.

In today's job market, Tomahawk Pharmacy also periodically struggles with finding pharmacists and technicians. The market, combined with the rural community's location, makes this even more difficult at times. Stevenson himself was raised in the "up north" environment and adores everything the area has to offer, such as hunting and fishing. However, he says that not many people want to move to northern Wisconsin's rural communities unless they grew up around, and know, the area. Tomahawk Pharmacy also hosts pharmacy students for introductory pharmacy practice experience (IPPE) and advanced pharmacy practice experience (APPE) rotations, but struggles to attract students due to the distance away from major cities and pharmacy schools. Despite the struggle of having his pharmacy far away from pharmacy schools, his rotations offer as many accommodations as possible to students interested in learning about independent rural pharmacies.

With Tomahawk being a small, close-knit community, Tomahawk Pharmacy has found creative ways to advertise. Stevenson has advertised through the Morning Forum, a local radio station that highlights different businesses in the community. Along with live radio broadcasts, Tomahawk Pharmacy does local advertisements in the newspaper and Facebook posts highlighting the unique services they offer. Above all, Stevenson says that the most important form of advertisement is word of mouth. Providing quality customer service to patients is what Tomahawk Pharmacy thrives on, and its patients' testimonies to other community members offers prospective patients a sense of trust in who they are receiving their care and medications from.

Moving Forward

Driven by its mission to enhance quality of life by bridging the gaps in patient care through connections, innovative services, and quality services, Tomahawk Pharmacy has countless ideas for how to prosper moving forward. Establishing a compounding service for selective prescriptions is in the near future for Tomahawk Pharmacy patients. This compounding service will provide a new level of convenience for customers, since the current nearest compounding pharmacy is a considerable drive away.

In addition to Tomahawk Pharmacy's current point of care services, they want to expand by hiring a provider as a medical director to perform test-to-treat services. When we asked Stevenson why he wanted to provide this service for community members, he said that it all stems from convenience for his patients. Being a father himself, he saw the need for the community to have access to test-to-treat care. There have been times when he did not know where to receive care for his children for minor ailments such as strep throat besides going to the emergency department. Not only would this new service provide convenience for the community, but also will save his customers a significant amount of money that they would otherwise be spending for a doctor's office visit.

With exciting services coming in the near future, we asked Stevenson what his fears were regarding implementing new services and what advice he had for other practice sites interested in initiating similar services. Stevenson said that he did not necessarily have any fears, but rather was more excited than nervous to implement a service that he knew would benefit his patients. As far as advice he has for other practice sites, Stevenson said that he likes to research the new service, reach out to other pharmacies who already have the service established, and then implement it. Stevenson also has found helpful training classes through organizations such as NCPA and PSW. These organizations also provide helpful resources and live training exercises for specific certificate programs.

In addition to being entrepreneurial with starting up new services, we asked Stevenson what advice he had for individuals who were interested in starting and managing their own independent pharmacy. Stevenson originally started Tomahawk Pharmacy in partnership with another independent pharmacy, then transitioned to owning his own independent pharmacy. He said that this partnership was a great starting point to owning a business, and that his past experience working in an independent pharmacy helped him create the community-driven pharmacy he runs today.

Kyle Rehrauer and Kristine Regal are 2024 Doctor of Pharmacy Candidates at Concordia University Wisconsin School of Pharmacy in Mequon, WI.

MEDICAL COLLEGE OF WISCONSIN SCHOOL OF PHARMACY STUDENT WRITING CLUB:

Business Member Spotlight: Fort HealthCare Pharmacy

by Matthew J. DeSchepper, 2024 PharmD Candidate, Bridget E. Nelson, MPH, MS, MLS, ASCP^{CM}, 2024 PharmD Candidate

Serving within the Fort Memorial Hospital in Fort Atkinson, Wis., Fort HealthCare's pharmacy services have been setting standards for rural pharmacy practice in Wisconsin since the 1950s. As the main hospital and only location with an inpatient pharmacy in Jefferson County, the Fort HealthCare system approaches rural pharmacy practice with an emphasis on patient safety and efficiency. The Fort HealthCare system is heavily involved in the well-being of its community and emphasizes the values of responsiveness, excellence, sensitivity, professionalism, empowerment, cultural diversity, and teamwork in its daily operations. With a modest team of six pharmacists, the pharmacy team at Fort Memorial Hospital takes pride in its ability to operate at a high level of effectiveness within an environment of limited resources, common in rural pharmacy practice.

Tyler J Prickette, PharmD, BCSP, director of pharmacy at Fort HealthCare, shared his insight about the practice of pharmacy, innovations, and challenges that he and his team experience.

Day to Day Practice

The day-to-day workflow for pharmacy services within Fort HealthCare combines inpatient and outpatient responsibilities. With outpatient pharmacy services from 6:30 a.m. until 9:30 p.m. on weekdays, and 7:00 a.m. to 4:30 p.m. on weekends and holidays, Fort HealthCare's pharmacy team works to prepare and dispense medications, evaluate evidence-based medication investigations, and direct patient follow-up plans in both outpatient and inpatient settings. The environment is professional but welcoming; each member of the team understands their responsibilities and collaborates with colleagues to provide outstanding healthcare. Pharmacists and technicians on the team at Fort HealthCare are versatile, with the ability to adapt their workflow effectively as events arise. In spite of some downsides to a modestly sized pharmacy team, the small group size also creates more opportunities for team members. Many of the pharmacists are encouraged to precept students, identify gaps in patient care, suggest updates for policies and procedures, and provide education to other clinical staff. The technicians are invited to do the same, with the aim to innovate in the practice of pharmacy and raise it to new standards. For Prickette, who was appointed director of pharmacy in April 2022, the management of ambulatory and inpatient practices are integral parts of daily workflow. The tasks of filling empty roles in the patient care team and simultaneously advocating for patient safety keep the director of pharmacy busy, but the Fort HealthCare team strives to broaden the scope of its ambulatory care practice to disease states, after beginning with opioid use disorder and diabetes mellitus.

Raising the Bar

The Fort HealthCare pharmacy team aspires to nourish patient safety and increase workplace efficiency, while concurrently broadening the scope of Fort HealthCare's ambulatory pharmacy services. Safety measures such as enhanced barcode scanning and implementation of PharmacyKeeper in the sterile compounding room are innovations in rural healthcare that Fort HealthCare hopes to begin using to improve drug preparation and administration. Each member of the Fort HealthCare team is encouraged to maximize the scope of their practice, from pharmacists leading initiatives to include more diverse disease-state management in their practices to technicians learning how to apply their skills to other beneficial services, such as information technology. Prickette formerly worked under a pain management pharmacy service and has been heavily involved in opioid stewardship throughout the state of Wisconsin, including efforts as a member of the Pharmacy Society of Wisconsin's Opioid Stewardship Group. Serving a community of approximately 12,400 residents in the immediate Fort Atkinson area, Fort HealthCare pharmacy services allows its clinical pharmacists to apply their knowledge to multiple specialties, and modulate their responsibilities based on the challenges they face. Throughout medically underserved areas, such as Fort Atkinson and Jefferson County, pharmacists must be able to apply their clinical knowledge and experience to multiple disease states as a part of their daily practice, especially when compared to communities in which specialized pharmacists are more readily available. Adding a focus on disease states to the workload at Fort will require creativity and collaboration, but the team hopes that patient care quality will benefit dramatically from these endeavors.

Bumps in the Road

Implementation of innovations in any business practice comes with its challenges, and Fort HealthCare pharmacy services is no exception. Promotions in the department, compounded with the obstacles of working in a rural health center, have disrupted plans for advancement. Nevertheless, the Fort HealthCare pharmacy team is well equipped to face these challenges. The introduction of PharmacyKeeper, a technology not yet used at Fort HealthCare, is a challenge familiar to Prickette, who worked as a pharmacy intern with University of Wisconsin Health during their implementation of PharmacyKeeper. As the only hospital system in Jefferson County, the Fort HealthCare pharmacy team has the additional responsibility of caring for critically ill patients from any of

the county's 16 towns, while also pushing against the perception of pharmacists as strict drug-dispensing specialists. The expansion of the Fort HealthCare pharmacists' roles will hopefully bring a new perspective of the pharmacy profession to rural communities in a patient care role. Addressing the retail-centered generalization of the role of the pharmacist is a concern for the Fort HealthCare team. That generalization can only be countered through the implementation of new responsibilities for the pharmacists and advocacy for the profession of pharmacy on a state-wide scale.

Moving Forward

Prickette encourages those who want to practice in healthcare leadership to be open to new opportunities. The successes that he celebrates today can be attributed to his willingness to accept new opportunities and approach novel challenges head-on. In his experience, the road to success is paved with how we respond to obstacles and address failure. The essence of the profession of pharmacy is that of leadership, and future pharmacists have the responsibility to shape how the practice is perceived. To him, the next several years of pharmacy practice will be abundant with opportunity and innovation, but not without their fair share of obstacles. The climbing prices of biologic medications, reimbursement for pharmacists' services, optimization of processes to reduce cost, and the generalization of pharmacists as drug-dispensing specialists are examples of obstacles Prickette aspires to confront in the coming years. Through the application of the skills and knowledge gained through enhanced training, the traditional role of the pharmacist can be expanded to fill gaps in patient care, cutting costs for both healthcare facilities and patients. There is hope that the patient population will perceive the pharmacist as more than drug-dispensing specialists, and that the future generation of pharmacists will strive to innovate the practice of pharmacy through thoughtful considerations of the roles the pharmacist can fill.

Matthew DeSchepper and Bridget Nelson are 2024 Doctor of Pharmacy Candidates at the Medical College of Wisconsin School of Pharmacy in Milwaukee, WI.

Below: *Fort HealthCare/Fort Memorial Hospital in Fort Atkinson, WI.*

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