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## Dr. Anika Kumar and fellow pediatric hospitalists recap Pediatric Hospital Medicine 2022

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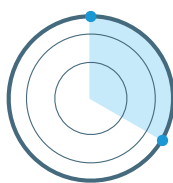
# A VICIOUS CYCLE WITH SIGNIFICANT BURDEN

WHAT COULD BE THE  
CONSEQUENCES OF RECURRENT  
*C. DIFFICILE* INFECTION?

Learn why it requires aggressive action



THE CDC ACKNOWLEDGES  
*C. DIFFICILE* INFECTION AS A  
MAJOR AND URGENT THREAT.<sup>1</sup>



IT RECURS IN UP TO 35%  
OF CASES WITHIN 8 WEEKS  
AFTER INITIAL DIAGNOSIS.<sup>2,3</sup>



THE CONSEQUENCES OF  
RECURRENCE ARE SIGNIFICANT,  
POTENTIALLY DEADLY.<sup>2</sup>

Now is the time to learn how Ferring is shedding light on the link between disease and disruptions in the gut microbiome, exploring the potential for repopulating its diversity and restoring hope to patients.

**References:** **1.** Centers for Disease Control and Prevention. 2019 Antibiotic Resistance Threats Report: *Clostridioides Difficile*. <https://www.cdc.gov/drugresistance/pdf/threats-report/clostridioides-difficile-508.pdf>. Accessed April 8, 2021. **2.** Lessa FC, Mu Y, Bamberg WM, et al. Burden of *Clostridium difficile* infection in the United States. *N Engl J Med*. 2015;372(9):825-834. **3.** Cornely OA, Miller MA, Louie TJ, Crook DW, Gorbach SL. Treatment of first recurrence of *Clostridium difficile* infection: fidaxomicin versus vancomycin. *Clin Infect Dis*. 2012;55(suppl 2):s154-s161.

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KumarA4@ccf.org

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Phone: 800-843-3360  
Fax: 267-702-2690  
Website: www.hospitalmedicine.org

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# Hospitalist Futures: Turning Turbulence into Favorable Change

By D. Ruby Sahoo, DO, MBA, FACP, SFHM, SHM Board Member

As hospitalists, we've perfected our routine, from pre-rounding methods to our friendly introduction to our patients and their families. We have our favorite silly stories or relatable examples we review with our patients to teach them about their illnesses or communicate a solid discharge plan. After making so many necessary revisions and perfecting our routines, our practice continues to evolve as the world of medicine continues to change around us.

It has been our ability to manage and lead change that has made us so valuable as a specialty. As change agents, we lead efforts to improve quality and patient safety, reduce barriers to patient throughput, and enhance communication among the entire health care team. During the COVID-19 pandemic, our knowledge and skill in leading change have been incredibly valuable to health care systems' abilities to respond rapidly to changing conditions.

These days, we hear about length of stay reduction, early discharges, and patient experience almost daily. All these phrases were almost unheard of 10 years ago. So, what's changed? For one thing, regulations from the Centers for Medicare and Medicaid Services (CMS), hospitals' biggest payer, now require us to pay attention to patient experience and prevent health care-associated conditions and adverse events, or else we risk financial penalties. In addition, consumerism has become a part of health care with patients playing a more active role in their care. We're continually revising our practice routines to provide higher quality care at lower costs to patients and health care payers.

The specialty of hospital medicine is dependent for the service we provide on revenue, which is actively changing. Despite so much advocacy work done by SHM and other organizations to



Dr. Sahoo

Dr. Sahoo is a hospitalist in the St. David's Health System of HCA in Austin, Texas, a National Hospital Medicine Performance Director with TeamHealth, a faculty member at Texas A&M School of Medicine, and an SHM Board Member.

prevent cuts to our pay, recent changes from CMS are predicted to lead to a reduction in reimbursement for our services. Commercial insurance companies are making even larger cuts to our reimbursement rates. While we continue to provide significant value to hospitals and communities in our care, our compensation has the potential to change adversely, if it hasn't already, due to these cuts.

In addition to direct blows to reimbursement for services, hospitals are operating in far more difficult financial environments than before as they deal with supply-chain delays, labor shortages, and throughput delays, all resulting in higher costs. In the setting of higher costs with lower reimbursements, the whole system is strained.

In my role at TeamHealth, I am regularly having conversations with hospitalists practicing in various parts of the country who are understandably concerned over the uncertain financial and operational future of hospital medicine. With increasing financial burdens on health care systems, further changes in our lives and practice patterns are inevitable in the months and years ahead. While



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we can expect more changes in the future, I encourage you to channel your angst, frustration, and/or anger over these changes. We cannot allow these changes to occur without our hospitalist voices being factored into the change. We *must* use our voices and unique talents to drive positive change.

Wondering how you can help change this for the better? Get involved in your local SHM chapter to find other individuals with similar struggles, develop solutions, and acquire strength in numbers as you charge through the change. Participate in Special Interest Groups, which are online forums within SHM where you can discuss how best to keep up with the changes. Get to know your local U.S. representative and let them know the value of a hospitalist to the hospitals and communities for which we provide care. Cutting reimbursement further to physicians and hospitals is not going to bode well for us or our patients, and the time to change that is now. Find out what the hospital, health system, or management group you are affiliated with or are employed by is

doing to advocate for hospitalists. Do they have lobbyists on the Hill fighting reimbursement cuts? Are they working with SHM to advocate in our favor? Are they taking on health insurance companies that have engaged in unethical business practices and (thus far) gotten away with it? See if there is an opportunity to get involved.

Last but certainly not least, educate yourself on what governmental policy changes are being proposed, what that means to you, your patients, and your profession, and join your voice with others to make your support and opinion powerful. You may feel like you don't have time for advocacy or getting involved in matters outside your immediate practice, but I assure you this will have a significant impact on you and your practice and will be worth your time.

Keep in mind the words of the 2014 Nobel Peace Prize laureate, Malala Yousafzai: "When the world is silent, even one voice becomes powerful." The world of health care is rapidly changing around us. It's up to each one of us to make our voices heard so that the changes work for us as well as our patients. ■

# Pediatric Hospital Medicine: Our Pandemic Journey to Everyday Advocacy

By Anika Kumar, MD, FAAP,  
FHM, Pediatric Editor

**M**ore than 1,000 pediatric hospitalists gathered for four educational days (July 28-31, 2022) at the Disney Yacht Club Convention Center for our first in-person Pediatric Hospital Medicine (PHM) Conference since the start of the COVID-19 pandemic.

Since our last in-person conference in 2019, our PHM community has witnessed trauma and experienced grief. During the early days of the COVID-19 pandemic, some pediatric hospitalists were deployed to care for hospitalized adult patients, while others saw their inpatient pediatric units close temporarily or indefinitely. The PHM community watched and responded to the murders of George Floyd, Brianna Taylor, and others. We cared for and mourned the pediatric deaths and injuries from firearms, including the 19 children who died in Uvalde, Texas.

The PHM community's energy was palpable over the long conference weekend as hospitalists captured one more selfie or lingered in their hugs for an extra second. Over the past three years, as a community, we were limited to video conference meetings and listserv posts to process and share our emotions related to these events and others.

The PHM Conference Planning Committee was intentional with its planning to highlight workshops related to physician resilience and equity, alongside the excellent enduring research and clinical content. However, this year's conference was unique, in that it was interspersed with advocacy.

Dr. Patricia Poitevien opened the conference with a plenary providing attendees with tools to engage in advocacy to dismantle systemic racism in medicine. Dr. Tim Cunningham's plenary focused on advocating for post-traumatic personal and systemic growth using storytelling. Dr. Angela Goepferd's plenary focused on strategies to advocate for safe, inclusive hospital care for LGBTQIA+ youth. The weekend ended with a plenary from Dr. Barbara Robbles-Ramamurthy on how to advocate for children during the mental health crisis in hospitals and communities.

In addition to the educational advocacy content, the conference held a charity run benefiting the



Dr. Kumar

*Dr. Kumar is a pediatric hospitalist at Cleveland Clinic Children's and an assistant professor of pediatrics at Cleveland Clinic Children's Lerner College of Medicine of Case Western Reserve University in Cleveland, Ohio. She is a member of SHM's Pediatrics SIG's executive committee and is the pediatric editor for The Hospitalist.*

Zebra coalition, a network of organizations in Orlando, Fla. that provide services to LGBTQIA+ youth facing homelessness, bullying, and abuse.

The message was clear from the plenaries and educational content—advocacy is an everyday activity.

As we encounter change, hospitalists are uniquely equipped to advocate on behalf of our patients when admitting and discharging them to physically and psychologically safe settings where they may recover from illness. Our advocacy can facilitate the evolution of a safe workplaces for our personal growth as hospitalists.

We hope you enjoy the session recaps from PHM 2022. They were written by SHM volunteer members and they can be found online as well. Simply scan the QR code below for quick access to all the recaps. ■



As the year comes to an end and the holiday season begins, we want to take a moment to recognize **you**.

Behind every success, every patient who returns home to loved ones, and every advancement in care, there is a hospitalist. Through your dedication and commitment, we are able to further our mission to transform hospital medicine and improve patient care. We look forward to welcoming another year with you by our side.

From all of us at SHM, thank you.

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# STI Guideline Updates for Pediatric Hospitalists

By Erin King, MD, FAAP

## PHM Session

2021 Sexually Transmitted Infection (STI) Guideline Updates: What the Pediatric Hospitalist Needs to Know

## Presenters

Jason Zucker, MD, Columbia University, New York, and Candice McNeil, MD, MPH, Atrium Health Wake Forest Baptist, Winston-Salem, N.C.

As the assistant director of the New York City STD/HIV Prevention Training Center and co-medical director of the Southeast STD/HIV Prevention Training Center, Drs. Zucker and McNeil shared their expertise on this ever-evolving topic. As of 2020, there were more than 2 million cases of chlamydia and gonorrhea, about 130,000 cases of syphilis, and a 235% increase in cases of congenital syphilis. Direct medical costs to treat these conditions, in addition to Human Immunodeficiency Virus (HIV), Hepatitis B, *Herpes simplex Virus-2*, and trichomoniasis are estimated to be \$16 billion annually. While youth ages 15 to 24 comprise just 13% of the population, they account for 26% of sexually transmitted infection (STI) cases, and we know that approximately 65% of youth over the age of 18 are sexually active. The need for a high-quality sexual health history was emphasized and techniques were shared (see below). It was also noted that time pressure, specimen collection, and minor-consent concerns often prevent providers from screening appropriately for sexual health conditions. Most patients are comfortable self-swabbing and collect such samples faster and better than their medical providers.

After this review, the audience was guided through an interactive case-based discussion of various presenting complaints for STIs, grounded in the 2021 Centers for Disease Control and Prevention (CDC) STI guidelines. The following updates were emphasized:

**Syphilis:** Diagnostic categories based on history, examination, rapid plasma reagin (RPR), and laboratory results include proven, possible, less likely, and unlikely infection. A history must include review of vision and hearing concerns to evaluate for neurosyphilis. If concerns arise, 10 days of penicillin V (PCN) should be used; otherwise, high-dose penicillin can be provided via one or multiple intramuscular doses (depend-

ent upon diagnostic category). Pregnant mothers with syphilis must be treated at least four weeks prior to delivery. The CDC diagnostic and treatment category charts should be used.

**HIV:** Pre-exposure prophylaxis (PrEP) is underutilized and should be encouraged for prevention of HIV infection. The absolute number of infections is higher in heterosexuals than in men who have sex with men.

**Monkeypox:** Consider it! It can be spread by fomites, direct contact with lesions, or contact with respiratory secretions. Two pediatric cases have occurred. To test, lesions must be swabbed vigorously with two swabs, which are sent for *Orthopoxvirus* testing (confirmatory to CDC). Most patients receive supportive care, and rarely, antiviral medications. Contacts should be vaccinated.

**Mycoplasma genitalium:** This has become an emerging pathogen of those with non-gonococcal urethritis or cervicitis (up to 25% of cases). You can test with a genital or urine nucleic acid amplification test (NAAT). Emerging macrolide resistance is a concern for those with persistent symptoms (44 to 90%, and also 0 to 15% fluoroquinolone resistance in the U.S.).

Looking for more education? The National STD Curriculum can be found at [www.std.uw.edu](http://www.std.uw.edu) and is being updated to the 2021 CDC guidelines. Once complete, this will launch as the second edition. It's free!

## Key Takeaways:

- An appropriate sexual health history should consider gender neutrality as well as potential sexual encounter type. Consider using the CDC's five Ps for history taking: Partners, Practices, Protection from STIs, Past history of STIs, and Pregnancy Intention. Example questions:
  - What is/are the gender(s) of your sex partners?
  - Are you currently having sex of any kind?
  - What parts of your body are involved?
- As of 2020, all U.S. jurisdictions have laws that explicitly allow a minor of a particular age (as defined by each state) to give informed consent to receive STI diagnosis and treatment services.
- Complete STI testing includes HIV, RPR, genitourinary, pharyngeal, and rectal gonorrhea, and chlamydia testing. Hepatitis C testing is recommended sometime during one's lifetime. Routine testing is not recommended for trichomonas unless

there is a high community prevalence.

- Pregnant patients should be screened for syphilis at presentation, at 28 weeks, and at delivery if high risk.
- Men who have sex with men, patients receiving PrEP, or those with HIV should be screened for syphilis every three to six months.
- All other sexually active individuals should be tested annually for syphilis.
- Extragenital testing is recommended for everyone, as rectal autoinoculation can occur without anal sex. Consider offering a self-swab for all patients.
- Current treatment recommendations:
  - Gonorrhea—ceftriaxone 500 mg (weight-based)
  - Chlamydia—100 mg doxycycline every 12 hours for seven days
  - Pelvic Inflammatory Disease—add metronidazole
  - *Mycoplasma genitalium*—resistance directed, sequential treatment with doxycycline and moxifloxacin ■



Dr. King

Dr. Erin King is a pediatric hospitalist at Children's Minnesota, Minneapolis, Minn. She currently serves as the director of graduate medical education at Children's Minnesota, overseeing supervision of NP, PA, and medical student, resident, and fellowship trainees. She was previously the associate program director for the pediatric residency at Children's Minnesota. She enjoys these diverse roles and has shared her resident teaching, peer observation and feedback, and research work on a national level.

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## SHM's 2023 State of Hospital Medicine (SoHM) Survey opens early 2023.

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**Notify me when the survey opens.**

| [Hospitalmedicine.org/SoHM](http://Hospitalmedicine.org/SoHM)

# 7 Types of Jargon Overuse

By Lynn McDaniel, MD, FAAP, FHM

## PHM Session

Say What? Diagnosing and Treating the 7 types of Jargon Overuse

## Presenters

Mike Pitt, MD, and Jordan Marmet, MD, University of Minnesota Masonic Children's Hospital, Minneapolis, Minn.

Effective communication between clinicians and patients is essential to good care and has been shown to improve patient outcomes. Plain language is essential to good communication, and yet physicians and health care professionals regularly use jargon—technical terminology of a given group—in discussions with patients and their caregivers.

Drs. Pitt and Marmet presented their work in classifying and quantifying the use of medical jargon on inpatient rounds in the context of other research about lay people's understanding of medical terminology. Breaking down the jargon commonly used can help clinicians and educators target areas for intervention.

Medical jargon can be divided into seven categories:

- Medical terminology
- Abbreviations or acronyms
- Medical vernacular
- Unnecessary synonyms

- Medicalized English
- Euphemism jargon
- Judgmental jargon

The majority (85%) of observed jargon falls into the three categories of medical terminology, abbreviations or acronyms, and medical vernacular.

Medical terminology is the language we all work so hard to acquire in medical school, to ease the communication among members of our field, like names for diseases (bronchiolitis) organisms (*E. coli*), tests, procedures, drug names, and even the names of medical specialties (nephrologist). We use abbreviations and acronyms so much that some of us don't even remember the full words—such as NPO (nil per os, Latin for nothing by mouth). Yet we commonly use these terms with patients and use abbreviations or acronyms such as CBC (complete blood count), EKG (electrocardiogram), and MI (myocardial infarction). Patients may even be unfamiliar with the term ED (emergency department), which can have more than one meaning. Medical vernacular is words that may be familiar, heard in any episode of "House" or "Scrubs," but many patients do not know the real meaning: words like "febrile," "sepsis," or "remission."

Health care professionals are known for needlessly using complicated words in place of simpler words that already have a shared understanding. The use of unnecessary synonyms such as "upper extremity" for "arm," "ambulate"

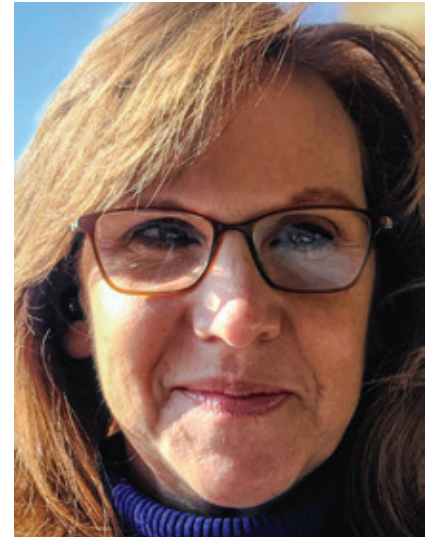
for "walk," and "erythematous" for "red," can lead to misunderstandings. One study cited that 81% of patients in an orthopedic clinic thought there was a difference between a fracture and a break, with 75% thinking a fracture was better than a break. Medicalized English refers to words that have a different meaning in medicine, words such as "diet" or "appreciate." "Impressive" is a generally positive term until it is used to describe an "impressive pleural effusion" on a chest X-ray. Euphemism jargon is used when we think we should use softer, easier-to-hear terms, such as "passed on," or a "spot" on an X-ray.

The last category, judgmental jargon, includes words that may reflect bias or sound derogatory, even if that's not the intent. Common phrases we all may have used that could convey judgment or mistrust include "denies alcohol use," "non-compliant," or "failed treatment."

Studies have shown that clinicians use about four undefined jargon words per patient encounter. Because even one misunderstanding between patient and clinician could lead to potential confusion or harm, we must improve our ability to communicate with patients in ways that are clear and meaningful.

## Key Takeaways

- The use of plain language is essential for effective communication between clinicians and patients and leads to better health outcomes.



Dr. McDaniel

*Dr. McDaniel is a pediatric hospitalist and associate professor at the University of Virginia Children's Hospital in Charlottesville, Va. She is the head of pediatric hospital medicine and serves as the medical director of acute pediatrics.*

- Medical professionals regularly use jargon and terms (more than four per patient encounter) that are often misunderstood by patients.
- The seven categories of jargon are medical terminology, abbreviations/acronyms, medical vernacular, unnecessary synonyms, medicalized English, euphemism jargon, and judgmental jargon.
- Classification of medical jargon can help diagnose and treat its overuse, and improve communication, by measuring it and giving real-time feedback. ■

# Peer-to-peer Reviews of Observation Status

By Kathryn Bakkum, MD

## PHM Session

Let's Talk Peer-to-Peer. Inpatient and Observation Status—What Really Matters?

## Presenters

Lucinda Lo, MD, Children's Hospital of Philadelphia, Pa., Amy Sanderson MD, FAAP, Boston Children's Hospital, Boston, Mass., Daxa Clarke, MD, Phoenix Children's Hospital, Phoenix, Ariz., and Sheila Snyder, MD, FAAP, Children's Hospital of Omaha, Neb.

Presenters started with a brief history of the creation of "observation status" in the 1980s and provided an overview of the different status levels as they exist today. They highlighted that the observation guidelines were initially developed with adult medical

care in mind. At times, these can be difficult to translate into pediatrics, which accounts for much of the frustration and confusion pediatric providers must navigate on a day-to-day basis.

Presenters next led attendees through a series of clinical scenarios, asking for the appropriate status assignment, and followed with short role-plays of potential dialogues for subsequent peer-to-peer reviews.

They ended the presentation by discussing clinical documentation improvement (CDI). They emphasized that the role of CDI is to bridge the gap between clinicians and coders by uniting information from various parts of the chart to ensure documentation supports the billing.

## Key Takeaways

- Peer-to-peer reviews are not a judgment on medical decision

making, they are for agreeing on status assignments and level of care.

- When performing a peer-to-peer review, providers should:
  - Not take anything personally.
  - Know the story, especially the diagnoses, and any related interventions.
  - Use institutional resources, such as case management, to determine which status guidelines the patient meets ahead of time.
- Clear and accurate documentation of a patient's diagnosis and treatment can help avoid peer-to-peer reviews, as missing clinical information is a frequent cause for denials.
- Ultimately, providers are the experts on their patients and are in the best position to advocate on their behalf, as well as on behalf of their institution. ■



Dr. Bakkum

*Dr. Bakkum is a second-year pediatric hospital medicine fellow at Akron Children's Hospital in Akron, Ohio, and is a trainee member of The Hospitalist's editorial board.*



# Hospital Closures Pose Challenges to Care, But the Devil is in the Details

By Thomas R. Collins

When 10-bed Nye Regional Medical Center, in west-central Nevada, closed abruptly in 2015, it meant that the residents of the former gold-mining town of Tonopah would have to drive about two hours across a hundred miles of desert roads to get to the nearest hospital.

The hospital's CEO, Wayne Allen, didn't sugar-coat it.

"This is a decision that will ultimately jeopardize the health and well-being of our community and surrounding areas," he said.

Hospital closures over the last decade—most notably in rural areas and in pediatrics, but urban closures as well—have left patients with fewer options of where they can seek care, physicians frustrated that they are letting patients down, and policy analysts trying to find data-driven solutions.

But experts say—and studies suggest—that the actual effects on outcomes from these closures are a mixed picture that, in each case, is determined by the realities on the ground, which differ from one scenario to the next. But the pace of closures, with no end in sight, has hospitalists continuing to worry.

At the time of Nye Regional's closing, leaving Tonopah's roughly 2,200 residents medically marooned, it was a symbol of the damage that hospital closures can have on remote communities. Since then, the situation hasn't improved. In 2015, there were 17 closures of rural hospitals, according to data from the University of North Carolina, Chapel Hill. That dipped to 10 closures in 2016 and 2017 but ticked up to 14 in 2018, 18 in 2019, and 19 in 2020.

Last year, only two rural hospitals closed, but experts say that struggling hospitals have been held aloft by COVID-19 federal relief money, and closures are likely to resume as that money dries up.

In urban areas, about 10 hospitals closed

per year from 2008 to 2013, according to data presented by Scott Krugman, MD, vice chair of pediatrics at Sinai Hospital of Baltimore at this summer's pediatric hospital medicine (PHM) annual meeting in Lake Buena Vista, Fla.

And urban closures continue. The announced closure of Atlanta Medical Center, a Wellstar Health System hospital, has sparked protests, with residents worried that low-income patients will be left without sufficient medical care. With that closure, expected to be finalized on Nov. 1, only one Level 1 trauma center would be left in Atlanta.

A Wellstar spokesperson told *The Hospitalist* that the company is committed to maintaining staffing levels for patient safety as services wind down and that they are in close contact with other area health care practitioners and the state health department.

"We are all working together to plan for a safe and orderly transition of care," the spokesperson said.

Tufts Children's Hospital in Boston stopped providing inpatient services as of July 1—with patients transferred to Boston Children's. Tufts is shifting the pediatric beds to more lucrative adult-care beds while keeping the neonatal intensive care unit open.

Daniel Rauch, MD, director of pediatric hospital medicine at Tufts, said in August that patients and families had been transferred, and that attempts were made to communicate to the families of all children who had been receiving care at Tufts.

"They are finding other care," he said. "How well we were able to reach them, explain that to them, and how well they're actually accessing it, we don't know." He said that with medical literacy low, and English often a second language for families, "outreach probably didn't get to all of them."

"It's likely that we're going to lose at least temporarily a fair amount of people from care," Dr. Rauch said.

He said that one concern has been a change in the complexity with which community physicians could get patients transferred.

"It used to be a single call to a system at Tufts, and no matter what went on at the Tufts end, for the hospitalist in the community, it was rather seamless," he said. "The patient was accepted, the patient left, and then Tufts figured it out. That's not the case anymore. I find that some of my team needs to spend an hour, hour and a half, organizing a transfer that used to take them five minutes."

He said there were also certain insurance types that Boston Children's didn't accept, so families "now have to figure that out financially."

Even though Boston Children's is just three miles away from Tufts, he said, there are complexities in transportation. Tufts was right on a subway stop, while Boston Children's sits in a more congested area that is less accessible and farther from a subway stop.

He said that pediatric intensive care unit (PICU) beds have been added at Boston Children's, but they are still in shorter supply than before. A child with new-onset diabetes and diabetic ketoacidosis would usually have been taken care of in a PICU, but now it's becoming difficult to get that child into an intensive care bed. A child in respiratory failure who is likely to need intubation would typically have been cared for in a PICU, but now it's more difficult to get that level of care, he said.

He said the closure took an emotional toll on the families.

"They considered Tufts their medical home and a lot of them for a variety of reasons had chosen specifically to get their care at Tufts, and not at Boston Children's," Dr. Rauch said. "And for them to be told that this was no longer an option for them was a difficult conversation.

He added, "No family wants to hear that their



Dr. Rauch



## ADVERTISEMENT

# AI's role in the value equation Embarking on a post-Covid era

With the depths of the COVID-19 pandemic in our rearview, many healthcare organizations are shifting away from 'survival' mode and renewing focus on their strategic goals. As healthcare leaders chase the optimal balance of quality and cost, many hospitals have identified clinical documentation integrity as a critical piece of the puzzle to achieve appropriate reimbursement and minimize the risk of denials/penalties.

Not only does clinical documentation play a critical role in the reimbursement process, but it is also increasingly becoming a swaying factor in where patients choose to receive care. With the advent of user-friendly care evaluation tools such as Healthgrades, patients are armed with the data and knowledge to assess hospitals and even individual clinicians based on their track record of patient safety and quality outcomes.

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**"Documentation that accurately, completely, and specifically conveys critical patient information to all members of the healthcare team, in other words continuity of clinical care communications, reduces error and builds a strong platform to support better care."**

— Robert Budman, MD, CMIO, Nuance Communications

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At the cornerstone of patient care, clinicians are uniquely positioned at the center of the documentation workflow, tasked with ensuring that documentation accurately reflects both the acuity of the patient and the quality of care provided. This is no small undertaking—and as public scrutiny around quality outcomes intensifies, it's no wonder that cognitive overload and burnout is rising in lockstep. While documentation improvement initiatives and programs have become commonplace in hospitals, relying on CDI departments to catch all documentation gaps would require a time and resource commitment that is not attainable for most organizations. Moreover, retrospective queries often disrupt the clinician workflow and can detract from productivity—and as most healthcare leaders will agree, inefficiency is expensive.

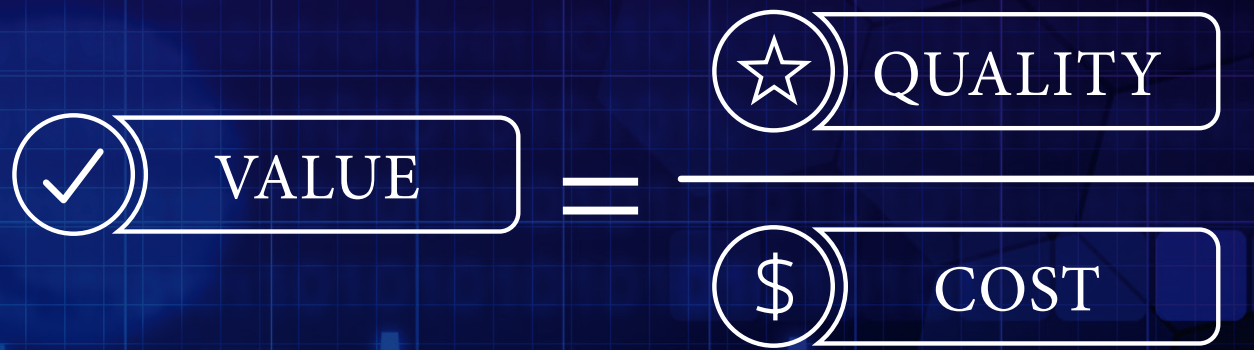
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**"CDI can't do it all—it does take a village and a strong partnership with clinical leadership. Assistive solutions that bring advice to the forefront via real-time AI are crucial to optimizing the workflow."**

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**“The ability to see a suggested diagnosis in the EHR, literally review it in a few seconds, make a clinical judgment on it and add it to the chart in less than a minute is a huge win. It’s so much better in terms of workflow and productivity.”**

— Reid Conant, MD, CMIO, Nuance Communications

Not only does this reduce the cognitive burden associated with capturing patient acuity, but it also eases information access and streamlines workflow. By delivering intelligence at the point of care, clinicians don’t have to leave the patient chart and can instead complete their documentation while the patient details remain top of mind. Quick access to previously documented information reduces time spent navigating the patient record, optimizing efficiency.

**“It’s been well studied that clinical documentation burdens and other stressors in the practice of medicine directly impact the quality of care and outcomes. Having the availability to lean on real-time guidance to assist us in catching high-risk conditions and optimizing the documentation so that we are appropriately compensated and covering our bases is incredibly helpful.”**

— Reid Conant, MD, CMIO, Nuance Communications

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family isn't generating enough revenue for the hospital versus what another patient can. That just doesn't resonate."

### Problems beyond access

During his PHM session, Dr. Krugman said there was a "heyday of expansion of community hospitals" in the 1990s, and this pattern is now reversing. "What's plummeted is community hospitals," he said. "What we're seeing is just ongoing consolidation and regionalization."

He said the closures can create problems beyond access.

"If you're a community hospital and you're seeing less volume, it's harder to staff it, it's harder to keep pediatric competent people there, so you get less competent and you send more out," he said. "At a certain stage, there's just no way out, to be honest with you."

In the session, he told the hospitalists in the audience, "You need to be prepared because it's not clear what is going to happen in the next decade."

What is likely to happen is that more hospitals will close, said Harold Miller, president and CEO of the Center for Healthcare Quality and Payment Reform (CHQPR) and adjunct professor at Heinz College of Information Systems and Public Policy at Carnegie Mellon University in Pittsburgh.



Mr. Miller

The CHQPR estimates that 600 rural hospitals are at risk of closing in the near future and more than 200 are at immediate risk of closing because of inadequate revenue to cover expenses and very low financial reserves.

Mr. Miller said the effects seen due to closures differ according to the circumstances surrounding them. The closure of Nye Regional had profound effects on access, despite bolstering of ambulance service and opening of clinics to help fill the void in Nye County. But the closure of the 10-bed Doctors Hospital at Deer Creek in 2010 in Leesville, La., did not affect access much, since 60-bed Byrd Regional continued to operate 0.3 miles away.

Closures are not automatically bad by rule, researchers have noted. After a closure, patients will sometimes receive care at a hospital that operates more efficiently, or the closure can improve the efficiency of hospitals that are still operating, researchers wrote this year in a paper, led by Soroush Saghafian, PhD, founder and director of the Public Impact Analytics Science Lab at Harvard University.<sup>1</sup>

"There are also potential implications for care quality," they wrote. "Hospital closures may move patients who previously sought care at lower quality hospitals to higher quality ones, thereby improving the overall quality of the health care system."

A 2019 study by the National Bureau of Economic Research looked rigorously at the closure of California hospitals between 1995 and 2011 and found that there was no overall effect on patient mortality from time-sensitive conditions such as stroke, sepsis, and heart attacks.

But among rural hospitals, mortality increased by 8.7% compared to hospital service areas where there had not been closures. No difference was seen for hospital closures in urban areas.<sup>2</sup>

But Mr. Miller noted that this and other studies don't account for distance to the nearest hospital, and the services that had been provided by the hospital before its closure.



"A lot of those hospitals are running a rural health clinic, which is the source of primary care for the community. And so, if the hospital closes, it's not just hospital services that are lost, it may be all health care services are lost in the community," he said.

### Why are they closing?

Mr. Miller pointed to several factors that are driving rural hospitals to close. Medicare payments have been reduced by 2% because of sequestration. Because the payment was originally planned to be 101% of the cost, that reduction makes the payments unsustainable for hospitals.

Private insurance payments also have not met rural hospitals' costs, according to the CHQPR's analysis of federal data, while urban hospitals receive more than it costs to care for their patients.<sup>3</sup> At its core, it's a simple problem: A hospitalist working at a hospital is a fixed cost, and when that cost has to be covered by payments for services to patients, the margin will be lower (and possibly even negative) the fewer patients there are.

Rural hospitals should be paid in two forms, he suggested: a "standby capacity payment" for being available when anyone needs it, and additional fees for the actual services provided.

"We don't pay for police departments based on how many crimes there are, we don't pay fire departments based on how many fires they put out," he said. "Why would you pay a small emergency department only when it sees somebody? And then the good news is, 'Well, it's good we didn't have any emergencies this month, but the emergency department couldn't stay open because it didn't get any money.'"

Reform efforts have been hampered by the incorrect belief that the inpatient services are the root cause of the financial problems at rural hospitals, he said. The federal Rural Emergency Hospital designation by the Centers for Medicare and Medicaid Services will offer assistance to rural hospitals that stay open as emergency department-only, with no inpatient services allowed. The program details are still being determined, but it will likely incentivize rural hospitals to shutter inpatient services, Mr. Miller said.

But the CHQPR's analyses have found inpatient services are not the biggest cause of rural

hospitals' problems, he said. The main problem, he said, is that commercial contracts don't pay adequately for emergency care or primary care. In fact, closing inpatient services, and leaving only the emergency department, makes matters worse, he said.

"You still have to have a nurse, and now the only thing that's paying for the nurse, is the emergency department visits, of which there aren't nearly enough," he said. "And the hospital can no longer care for patients in the community."

Dr. Rauch said he thinks the field is at a juncture. He said a path exists—local care with virtual specialty care—toward changing for the better, so the field will either follow that path or continue to see closures that may mean inferior or more expensive care.

"I think we're at an inflection point, where if the financing of at least pediatric care doesn't change dramatically, we're going to see further closures and consolidation and centralization and utilization of pediatric care," he said. "I think that is not good for the general pediatric population."

Offering remote care is a promising option, he said.

"I think what COVID-19 has taught us is that you actually can provide distributed care rather effectively using technology and people like hospitalists and other generalists to maintain kids in community settings closer to home," he said. A skilled generalist could take care of a patient on-site and specialists at free-standing children's hospitals could be consulted virtually.

Dr. Rauch said: "I think—I hope—that that is the future." ■

*Tom Collins is a medical writer in South Florida.*

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# Using SMART Regimens in Peds

By Weijen W. Chang, MD

## PHM Session

Get SMART: Implementation of updated asthma guidelines for pediatric hospitalists

## Presenters

Alexander Hogan, MD, MS, Connecticut Children's Medical Center, Hartford, Conn., Kathryn Kyler, MD, MSc, and Claire Seguin, MD, Children's Mercy Kansas City, Mo.

This session focused on how pediatric hospitalists can improve the asthma care of patients discharged from hospitalizations by instituting single maintenance and reliever therapy (SMART) regimens. More specifically, this is a single inhaler that includes both an inhaled corticosteroid (ICS) and a long-acting beta-agonist (LABA), which have U.S. Food and Drug Administration-approved formulations as budesonide/formoterol (Symbicort) and mometasone/formoterol (Dulera). SMART regimens for asthma are based on the expert panel report (EPR) update, EPR-4, released by the National Asthma Education and Prevention Program Coordination

Committee. The key SMART-specific recommendations discussed by the presenters for patient subsets were:

- 1. For patients over 4 years of age:** moderate or severe persistent asthma should be preferentially treated with low- or moderate-dose ICS/formoterol daily and quick-relief therapy, as compared to ICS/LABA plus as-needed (PRN) short-acting beta-agonist (SABA), or high-dose ICS plus PRN SABA.
- 2. For patients over 12 years of age:** moderate or severe persistent asthma should be preferentially treated with ICS/formoterol as daily and quick-relief therapy, as compared to higher-dose ICS/LABA daily with PRN SABA.

The target population is patients with moderate to severe persistent asthma older than 4 years with a severe exacerbation in the prior year and uncontrolled ICS/LABA with PRN SABA. Patients taking ICS/salmeterol as maintenance therapy were not to receive ICS/formoterol concurrently. Another clarification was that EPR-4 did not update recommendations for managing children hospitalized with acute asthma exacerbations.

Hospitalists were encouraged to

incorporate SMART regimens in asthma action plans at discharge and to reinforce the need to reach out to primary care physicians regarding SMART regimens. Challenges to SMART regimen prescribing include insurance coverage and running out of inhalations before one month due to increased use. A solution to the latter problem was to prescribe two inhalers, one for home and one for school when in actuality, one would be used for maintenance and the other for rescue.

Possibilities for successful implementation of SMART protocols in discharge include clinical pathways, institutional guidelines, asynchronous medical education, and multidisciplinary quality improvement efforts that address care gaps, environments of care, and barriers.

## Key Takeaways:

- Pediatric hospitalists can and should initiate SMART regimens for asthma patients being discharged from the hospital setting.
- Sustained implementation of EPR-4 SMART guidelines requires assessment of care gaps, environments, and barriers, and should involve all relevant stake-



Dr. Chang

Dr. Chang is a pediatric and adult hospitalist at Baystate Medical Center and Baystate Children's Hospital in Springfield, Mass. He is also an associate professor of pediatrics at the University of Massachusetts Medical School Baystate, chief of pediatric hospital medicine, vice-chair for clinical affairs at Baystate Children's Hospital, and the physician editor of *The Hospitalist*.

- holders early in the process.
- Dissemination and implementation methods should be used to address barriers to SMART regimen implementation. ■

# Refuting Long-held Pediatric Clinical Tenets

By Stephen Ballis, MD

## PHM Session

Um, Dr. Dancel, We Don't Do That Anymore

## Presenters

Jennifer Fuchs, MD, UNC Children's Hospital, Chapel Hill, N.C., Steve Weinberg, MD, UNC Children's Hospital, Chapel Hill, N.C., Eric Zwemer, MD, UNC Children's Hospital, Chapel Hill, N.C., and Ria Dancel, MD, University of North Carolina, Chapel Hill, N.C.

Dr. Fuchs, Weinberg, and Zwemer, with contributions from Dr. Dancel, presented nearly a dozen commonly taught and widely accepted clinical tenets. They disproved these long-held dogmas using primary literature and provided evidence-based recommendations for various commonly encountered pediatric hospital medicine diagnoses.

The presenters also took time to review some alterations to our medical lingo in advocating for a shift away from using eponymous terms. Whether bestowing honor on historically dishonorable individuals, not accurately identifying all contributors (many of whom are female or non-white), or simply not accurately describing the finding or disease at hand, the teaching and use of such terms are falling out of favor.

After summarizing their amendments to the previously described doctrines, the presenters invited the audience to share other long-standing beliefs that evidence has invalidated, continuing the information sharing aimed at optimal patient outcomes.

## Key Takeaways

- Medical knowledge and research are ever evolving; new evidence might change our practices at any time, no matter how ingrained a belief might be.
- Lumbosacral dimples (located above the gluteal cleft) may require investigation, even if you can "visualize the base."
- Vancomycin is superior to metronidazole for treating *C. difficile*, but fidaxomicin may be the future.
- Refeeding syndrome is exceedingly rare in otherwise healthy term infants and toddlers hospitalized for failure to thrive.
- The first-line treatment for anaphylaxis is epinephrine, not H1 or H2 blockers, and not steroids.
- Eponyms can be insensitive or uninformative. Try to avoid using them.
- Not all newborns will be back to their birth weight by 14 days. Use the newborn weight tool, available at <https://newbornweight.org/> to check their progress.
- Children hospitalized for respiratory syncytial virus have an increased risk of asthma in the future.
- Hip clicks are insignificant.



Dr. Ballis

Dr. Ballis is a first-year PHM fellow at the Medical University of South Carolina in Charleston, S.C., where he completed his pediatrics training as well as a chief year.

- The Ortolani maneuver is most important in assessing for developmental dysplasia of the hip. ■



## Better Ways to Handle LGBTQIA+ Matters

By Thomas R. Collins

Let's say—said Angela Kade Goepferd, MD (they/she), medical director of the Children's Minnesota Gender Health Program at Children's Minnesota Hospital in Minneapolis—that a 12-year-old is in the hospital after a suicide attempt related to harassment at school for her gender identity. There, she is repeatedly referred to by her dead name—the given name she no longer uses—and is distressed by this.

When the phlebotomist arrives to draw blood and asks her name, Ari gives her chosen name, and the phlebotomist tells her, “No, your real name.” At this, Ari bursts into tears.

As a hospitalist, you might be called upon to help resolve a situation like this.

There is too much at stake for health professionals to mishandle LGBTQIA+ matters, said Dr. Goepferd in a moving and alarming plenary talk at PHM 2022. And, while this session was geared toward pediatric medicine, the overall message is one of better treatment for all LGBTQIA+ people, regardless of age.

“When we think about improving the family experience, sometimes it is the very little things that count here,” they said. “So had that person gone into the room and said, ‘Hi, Ari... I’m here to draw your blood today. I will just need to confirm the name that’s on your wristband. I know that’s not your real name, but I just need to confirm that name before I draw your blood today for safety.’ It could have made all the difference. So, it’s about how we frame these things for kids.”

They added, “If you are practicing medicine, you need to get this. Because culture is changing and if our systems don’t adapt, our patients aren’t going to come to us, or are going to feel like they’re getting terrible care. This is changing, and we need to get with the program.”

An array of anti-transgender legislation has put transgender children under attack—from anti-trans sports bans to bans on gender-affirming care, to education censorship bills, and bills that would ban transgender children from using the bathroom of their gender.

Just this year, Dr. Goepferd said, 330 anti-LGBTQIA+ bills have been introduced around the country—in every state. They sometimes go nowhere, but their very proposal can have profound consequences on children, they said.

“Our kids are watching—most LGBTQIA+ kids say that hearing about all of this has a negative effect on their mental health, which of course it does,” they said. “If your existence, and your right to use the bathroom and your right to play on a soccer team and all of these things, is being actively, publicly debated in an open forum, that’s going to impact whether you think that you matter and that you can really belong.”

In a 2017 study,<sup>1</sup> researchers compared suicide attempts among adolescents before policies were put into place allowing same-sex marriage with attempts after the policies were implemented. Then they compared this change with year-to-year numbers of adolescent suicide attempts in states without such policies. They attributed a 7% reduction in suicide attempts to policies allowing same-sex marriage, reflecting, Dr.

Goepferd said, “how hopeful adolescents felt about the future.”

They put the audience in the shoes of someone already receiving gender-affirming care, but who, because of legislation, would be forced to stop this care.

Someone who had been known her whole life to friends and family as female would suddenly, at 16, be “going to go through male puberty and get a low voice and a beard and become masculinized. I can guarantee you she’s not. Maya will not tolerate that. Maya would probably take her own life rather than have to go through the experience of becoming male at that point after identifying as female her whole life. And many of us would as well.”

“Policy does matter,” they said. “It matters in terms of actual kids’ lives and actual kids’ safety. So, this isn’t a theoretical issue that we’re talking about here.”

Pubertal suppression—a reversible delay in the onset of puberty—has been found to have profound benefits for kids, Dr. Goepferd said. A study in 2020 found that it is associated with a 70% decrease in suicidal ideation.<sup>2</sup>

They asked the audience to consider how society introduces the idea of gender to children very early on—boys dressing a certain way and playing with certain toys and girls doing the same—as long as it’s along the lines of traditional notions. And she said that we need to be open to the idea that children might not fit neatly into these categories.

“I challenge you to find a store that does not have something for girls that says princess on it. I challenge you to find a store that doesn’t have something for boys

that says ‘champ’ on it—we are grooming kids to be masculine and feminine from a very young age,” they said. “What we’re doing though is we’re talking about heterosexuality and we’re talking about cis-genderedness.”

They said that 80% of transgender kids are harassed at school and 63% will experience a discriminatory event that will change their life course, whether it’s being fired, or denied housing.

Hospitals should be a place of understanding and safety, and the care provided by hospitalists should be informed, aware, and sensitive, they said. They suggested doing away with bracelets that are labeled “M” or “F,” making electronic medical records more accommodating of transgender-relevant information, and making more of an effort to connect, such as talking with a transgendered child about what they might want to be wearing if they were not in the hospital.

“Most trans people are getting this harm everywhere in their lives—they’re swimming in it, and then they come into our hospital systems, and we harm them on top of that,” Dr. Goepferd said. “We want kids to believe that they can grow up to be happy adults. We want kids to thrive. That is what we want. All of our kids.” ■

*Tom Collins is a medical writer in South Florida.*

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# Pediatric Pain Evaluation, Physiology, and Treatment

By Michael Wedoff, MD

## PHM Session

The Agony and the Ecstasy: Pain Assessment and Management in the Clinical Setting

## Presenter

David Casavant, MD, Boston Children's Hospital, Boston, Mass.

**D**r. David Casavant presented his approach to pediatric pain evaluation, physiology, and treatment considerations. He began by discussing some of the pain evaluation tools that are most often used, including some less commonly reported signs such as the patient's posture, ability to attend to activities outside of their pain, and the cross-leg sign.

Next, he led the audience through a comparison of the different types of pain, which he delineated as acute (consisting of nociceptive and inflammatory) and chronic (consisting of neuro-pathic and central sensitization). Dr. Casavant gave examples of

possible treatment options for the two major categories of pain, including the appropriate uses of both pharmacologic and non-pharmacologic modalities.

The following portion of the discussion was focused on patient-controlled analgesia (PCA), with a focus on the history of use, mechanics of administration, and pharmacology. Dr. Casavant walked through an explanation of how optimal medication dosing is determined, introducing the concepts of ED<sub>50</sub>, TD<sub>50</sub>, and a drug's therapeutic index. He highlighted the importance of using the combination of a continuous infusion and small frequent doses of medication to maintain analgesia while limiting side effects. To illustrate this point, attendees worked through PCA troubleshooting cases.

The final segments of the presentation consisted of a discussion regarding the dangers of using oxygen for comfort in the case of hypoventilation and an approach to the use of reversal agents. The audience was reminded to monitor the end-tidal CO<sub>2</sub> during procedural sedation and to use medications

such as naloxone or flumazenil sparingly when in an inpatient setting. It's Dr. Casavant's stance that the problem is often hypoventilation rather than overmedication. He notes that the short half-life of reversal agents and their ability to precipitate a pain crisis should limit their use.

## Key Takeaways

- "Pain treatment is a contact sport," highlighting that you should always assess the patient when treating pain.
- Beware of oxygen for comfort, as it will not solve the problem of hypoventilation.
- Remember to consider the therapeutic index of a drug to maintain patients above the minimal effective dose but below the toxic dose.
- Practitioners should understand the mechanisms underlying acute and chronic pain, applying treatment modalities that are effective for the types of pain that are being experienced.
- PCA is effective because it matches the treatment of pain to



Dr. Wedoff

*Dr. Wedoff is a second-year pediatric hospital medicine fellow at the Medical University of South Carolina, Charleston, S.C. He has research interests in pediatric firearm violence prevention and opioid utilization.*

its occurrence.

- Use reversal agents sparingly, as the problem is often hypoventilation rather than over-medication. ■

# Debunking Medical Education Dogmas

By Bethany Woomer, MD

## PHM Session

Medical Education Dogmas: Things Educators Do for No Reason

## Presenters

Eric Zwemer, MD, UNC Children's Hospital, Chapel Hill, N.C., Jimmy Beck, MD, MEd, Seattle Children's Hospital, Wash., Whitney Browning, MD, Monroe Carell Jr. Children's Hospital at Vanderbilt, Nashville, Tenn., and Benjamin Kinnear, MD, MEd, Cincinnati Children's Hospital, Ohio

**T**he presenters discussed the limitations of medical education research including lack of funding, retrospective and uncontrolled data, suboptimal statistical methods, and limited outcome measures. The audience was led through four medical education dogmas and provided with proven educational alternatives.

## Dogma: Okay, boomer: Debunking the myth of the millennial learner

Dr. Browning analyzed the assumption that millennial learners

have different characteristics, values, and skills than their predecessors: notably poor work ethic, lack of organizational loyalty, and tech-savviness. Sweeping changes made to accommodate millennial learners are not supported by the literature. Generational stereotypes are often overstated, causing a divide. Educators should encourage generational humility and look at the evidence before making curricular changes.

## Dogma: Anchors away! The misguided obsession with cognitive biases

Dr. Beck questioned whether teaching cognitive debiasing strategies improves clinical reasoning or reduces medical errors. Heuristics are often blamed, yet there is poor agreement among experts on biases present in case reviews. Educators should embrace diagnostic uncertainty and review both good and bad clinical outcomes.

## Dogma: All VARK and no bite: The learning styles matching hypothesis

Dr. Zwemer discussed VARK (visual, auditory, reading/writing, and kinesthetic) learning styles and the belief that matched teach-

ing results in improved learning outcomes. Students don't choose study strategies matching their VARK style or have better grades when matched. Instead, instruction should be determined by the subject matter.

## Dogma: Humans are not bread: Getting beyond time-based training

Dr. Kinnear re-examined time-based resident training. Individuals have variable learning curves, rates of competence attainment, and rates of entrustment over time. Competence attainment and time are related but not in a fixed manner.

## Key Takeaways:

- Rigorous scientific evidence on generational differences is lacking.
- There is a paucity of evidence to support the overhaul of the educational curriculum for the millennial learner, as this has not been associated with improved learning.
- Help learners navigate and become comfortable with diagnostic uncertainty.
- Be thoughtful about the best



Dr. Woomer

*Dr. Woomer is an assistant professor and the pediatric hospital medicine fellowship program director for the University of Louisville, Ky. Her interests include medical education, quality improvement, hyperbilirubinemia, asthma, and unconscious bias.*

modality for teaching a given subject matter instead of attempting to teach differently to multiple learning styles.

- We should consider a shift to fixed outcomes and variable time for resident training. ■

# Underrepresentation of Dermatologic Conditions in POC

By Anna Nelson, DO

## PHM Session

Dermatologic Disease Presentations, Skin Color, and Disparities in Medical Care

## Presenters

Deawodi Ladzekpo, MD, and Sonya Tang Girdwood, MD, PhD, Cincinnati Children's Hospital, Ohio

**D**rs. Ladzekpo and Tang Girdwood brought to light disparities in medical care that result from the underrepresentation of dermatologic conditions in patients of color (POC). The topic was introduced with a reference to Lyme disease, in particular the fact that many POC aren't diagnosed until they have advanced disease compared to white patients. The question was then put forth: Do POC not have symptoms until they are in the later stages? Or rather, does the lack of awareness of the appearance of erythema migrans on the skin of color delay

their diagnosis and treatment?

The first half of the session revolved around representation in medical education resources. Dr. Ladzekpo referenced several studies that each examined the number of images portraying common dermatologic diagnoses in POC that are used in popular board-study resources, including but not limited to question banks and National Board of Medical Examiners self-assessments. The percentage of images of POC ranged from only about 10-25% across several question banks even though people of color make up about 40% of the U.S. population. Similar statistics were found in studies examining medical textbooks.

The session then transitioned to Dr. Tang Girdwood's discussion on the inaccuracy of visual evaluation of conditions, specifically Lyme disease, neonatal jaundice, and vancomycin infusion syndrome. Additionally, one study examined the low accuracy of pulse oximeters in measuring arterial oxygen saturation in Black patients, bringing attention to the racial biases that medical devices

contribute and the need to reexamine how we triage POC in cases such as this.

Drs. Ladzekpo and Tang Girdwood closed their session by encouraging physicians to continue to listen to their patients, think outside of the box, and create inclusive lectures and other learning materials so we can improve the quality of care we provide to our POC in the future.

## Key Takeaways

- Medical school curriculum and board studying resources underrepresent patients of color
- Study materials and question banks should better reflect the POC demographic, which is around 40% in the U.S.
- Increased guidance on how to appropriately take pictures and document skin findings in POC is warranted
- Medical devices such as pulse oximeters are not as accurate at measuring arterial oxygen saturation in POC and encode racial biases
- Lack of representation leads to



Dr. Nelson

*Dr. Anna Nelson is a third-year internal medicine and pediatrics resident at the University of Louisville in Louisville, Ky., and currently serves as a trainee member on The Hospitalist's editorial board. Dr. Nelson aims to pursue a career in academic medicine as both an adult and a pediatric hospitalist.*

a lack of recognition, and thus, delays in diagnosis and delays in care ■



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## Key Clinical Question

# Beyond the Basics: How Should We Manage Acute Pain in Hospitalized Patients with OUD?

By Anna Maria South, MD, Eloise Fields, DO, Laura Fanucchi, MD, MPH, and Michelle Lofwall, MD, DFAPA, DFASAM

### Case

A 23-year-old male with opioid use disorder (OUD) with intravenous use is hospitalized with fever and several weeks of back pain. He is diagnosed with methicillin-resistant *Staphylococcus aureus* bacteremia and osteomyelitis of the cervical spine. He desires medication treatment for OUD (MOUD) but is afraid of inadequate pain management while hospitalized. During previous admissions, untreated pain and withdrawal led to in-hospital substance use.

### Brief overview of issue

The opioid epidemic is increasing hospitalizations and inpatient mortality related to OUD.<sup>1</sup> Patients with injection use can experience painful, life- or limb-threatening, infectious complications. They may delay seeking medical attention due to fear of undertreated pain and withdrawal.<sup>2</sup> Pain management in patients with untreated OUD can be challenging given their opioid tolerance. They may need opioids many times daily to avoid with-

drawal, and therefore can experience significant withdrawal while waiting several hours in an emergency department (ED). Simply treating withdrawal may not meet the opioid deficit to adequately address pain. Approaches to pain management need adjustments for patients with OUD. Inadequately treated pain can increase risk for return to use and patient-directed discharge. Opioid tolerance can decrease quickly due to under-dosing of opioids during hospitalization, and coupled with the increasing prevalence of nonpharmaceutical synthetic fentanyl in the illicit opioid supply, can lead to a fatal overdose for patients with return to use.<sup>2</sup> In-hospital substance use occurs in about 40% of patients with OUD not on MOUD,<sup>3</sup> often straining an already tenuous patient-provider relationship, and can lead to stigmatization of patients by medical staff.<sup>2</sup> In-hospital substance use may trigger an early administrative or patient-directed discharge before adequate treatment initiation and stabilization of both the OUD and the injection-related infection, increasing risks for mortality and readmission.<sup>1</sup> Addressing acute pain and OUD upon presentation to the hospital is critical to engage patients in care, build trust, and facilitate completion of inpatient medical treatment for admitting diagnoses that are often due to the underlying addiction.

### Overview of data

#### Initial pain and withdrawal management

Physicians might hesitate to start high-dose full agonists out of fear of causing sedation or overdose or due to the misperception that giving opioids will exacerbate the OUD. Acute life- and limb-threatening conditions might take priority over discussions about MOUD. The increase in nonpharmaceutical fentanyl in the illicit opioid supply is another complicating factor, and



Dr. South



Dr. Fields



Dr. Lofwall



Dr. Fanucchi

Dr. South is an assistant professor, division of hospital medicine, the Bell Alcohol and Addictions Scholar 2022, and works as an academic hospitalist and attending physician on the addiction consult and education service at the college of medicine, University of Kentucky, Lexington, Ky. Dr. Fields is an assistant professor, department of internal medicine, and works as a hospitalist and attending on the addiction medicine and education service at the University of Kentucky, Lexington, Ky. Dr. Lofwall is a professor of behavioral science and psychiatry, Bell Alcohol and Addictions Chair, college of medicine, University of Kentucky, and the medical director, First Bridge and Straus Clinics, Center on Drug and Alcohol Research, University of Kentucky, Lexington, Ky. Dr. Fanucchi is an associate professor, division of infectious diseases and center on drug and alcohol research, college of medicine, University of Kentucky, and the director of the Addiction Consult and Education Service, University of Kentucky, Lexington, Ky.

### Key Points

- Patients with OUD are not opioid naïve. They are opioid tolerant, and as such, will typically require higher doses of opioid agonists for adequate pain control.
- Management of acute moderate to severe pain needs to be adjusted if patients are on MOUD. Methadone and buprenorphine doses can be split to increase analgesic effects and full agonists can be added alongside considerations for non-opioid approaches such as regional nerve blocks, ketamine, and multimodal analgesia with parenteral buprenorphine.
- Patients who cannot tolerate a traditional buprenorphine induction due to acute pain, inability to tolerate brief periods of full agonist withdrawal, or elevated concern for precipitating withdrawal can be started on buprenorphine using a micro-induction protocol.
- Inpatient substance use is a symptom of a chronic medical disease and physicians should approach patients from a harm reduction perspective rather than a punitive one to preserve a therapeutic alliance and optimize patient outcomes.

patients may be unaware of its presence. Nonpharmaceutical fentanyl is significantly more potent than heroin and has lipophilic properties, potentially complicating traditional buprenorphine initiation, especially without an approved point-of-care test assay to detect the presence of fentanyl (or any of its analogues). Buprenorphine-precipitated withdrawal can occur if it is started too soon after the use of full agonists.<sup>4</sup> If there is significant risk of precipitated withdrawal, short-acting full agonists like hydromorphone or oxycodone can be administered until a treatment plan for OUD is developed in collaboration with the patient. The benefits of engaging the patient in care and avoiding precipitated withdrawal significantly outweigh the risks of administering short-term full agonists for a patient with OUD in the hospital.<sup>2</sup> Once pain is controlled, FDA-approved MOUD should be further discussed. Buprenorphine and methadone are safe and effective treatments for OUD that decrease cravings, mitigate withdrawal, and decrease mortality. While they provide analgesia, there are challenges to managing acute pain for patients on MOUD. A third MOUD, naltrexone, does not suppress withdrawal or provide analgesia, nor have the same mortality reduction as the other MOUDs. Patients on MOUD can receive multimodal pain control with non-opioids like acetaminophen, non-steroidal anti-inflammatory drugs, topical medications,

and other agents when appropriate. A brief description of the three MOUDs and strategies for acute moderate to severe pain control are discussed next.

#### Methadone

Methadone is a full mu opioid receptor agonist and will not precipitate withdrawal if started while patients are on other full agonists. It is an N-methyl-D-aspartate (NMDA) receptor agonist and inhibitor of hERG current, which is associated with prolonged QTc by way of delayed cardiac repolarization.<sup>5,6</sup> In the acute care setting, QTc monitoring is warranted given the prevalence of acute illness, electrolyte disturbances, and other concurrent QTc prolonging medications. These elements and methadone's active metabolites often limit methadone titration, and the clinical adage "start low and go slow" should be applied to avoid oversedation and iatrogenic overdose.<sup>7</sup> A typical methadone starting dose is 10 to 30 mg with no more than 40 mg on the first day, while monitoring for sedation. As pain and withdrawal are adequately treated, other full agonists are tapered. In addition, clinicians should be aware of limitations surrounding methadone as treatment for OUD: it can only be administered by an accredited Opioid Treatment Program (OTP) after hospital discharge. Referring relationships with OTPs for continuity of care are helpful. If a patient

**KEY CLINICAL QUESTION**

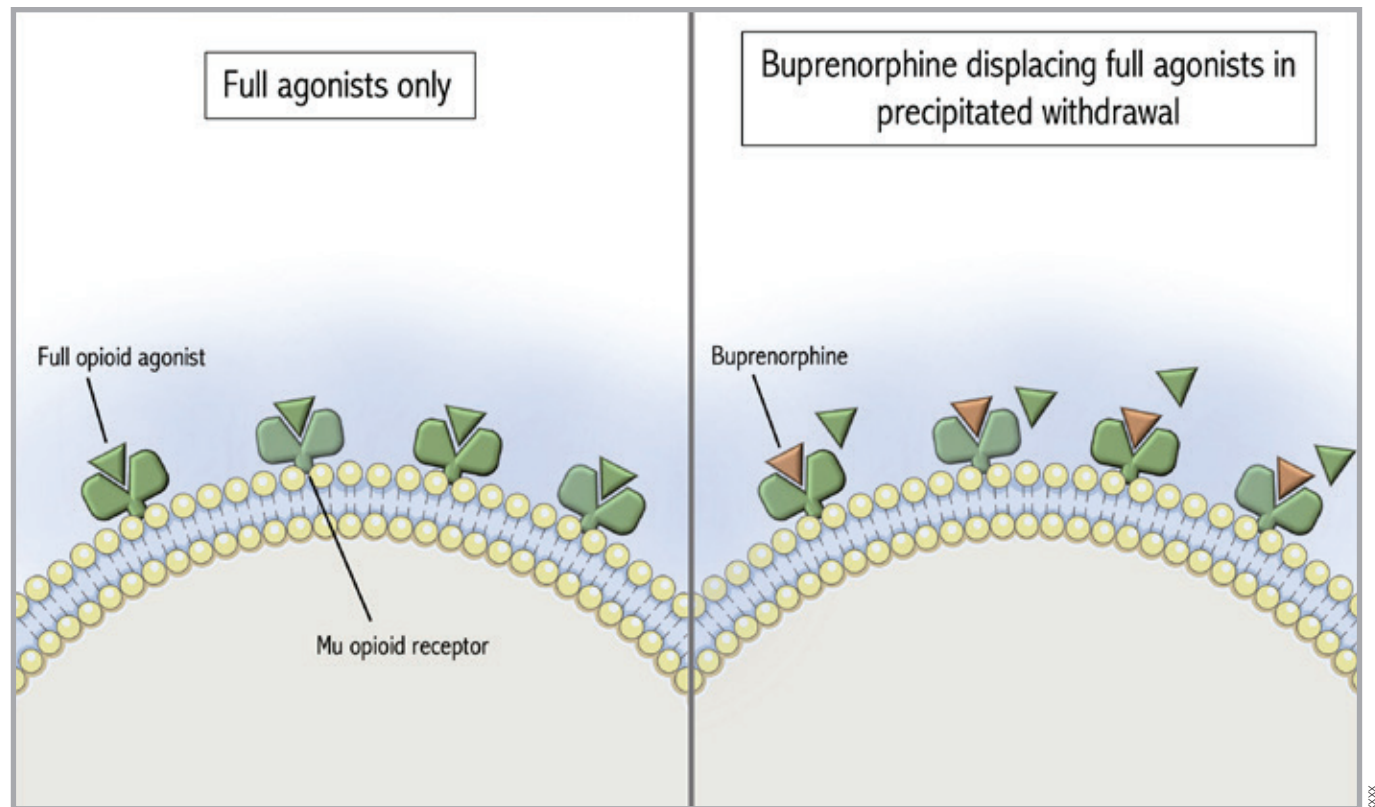
already on methadone has acute pain in the hospital, methadone can be continued. The outpatient daily methadone dose can be split into every-eight-hour dosing while inpatient, because analgesic effects typically last approximately four to eight hours.<sup>8</sup> If needed, other short acting full agonists can be added while monitoring for sedation. Higher doses of opioids may need to be used as such patients are not opioid naïve.<sup>9</sup>

**Buprenorphine**

Buprenorphine is a partial mu opioid receptor agonist with high receptor affinity that can displace full opioid agonists, potentially precipitating withdrawal (Figure 1).<sup>4</sup> To avoid that, standard buprenorphine initiation protocols recommend patients abstain from short-acting opioids for 8 to 12 hours prior to initiation (longer if transitioning from methadone) and be in mild to moderate opioid withdrawal. If patients cannot tolerate the required period of opioid abstinence due to acute pain or withdrawal symptoms, micro-induction protocols have been developed to allow continued full agonist administration during buprenorphine initiation. In contrast to a traditional initiation, a micro-induction gradually introduces buprenorphine while the full opioid agonist is still present (Figure 2). Slow increases in buprenorphine gradually displace full agonists without causing precipitated withdrawal.<sup>10</sup>

Buprenorphine buccal or transdermal patch formulations in microgram dosages are typically used for micro-induction, or the buprenorphine/naloxone sublingual films are cut into quarter or eighth pieces if allowed by hospital pharmacy policy.<sup>10</sup> Full agonists are continued throughout the titration protocol to avoid an opioid deficit as buprenorphine doses are too small to treat withdrawal adequately. Once the low-dose protocol has been completed and acute pain has improved, full agonists can be stopped without tapering as the theory is that the patient's receptors are now occupied by the partial agonist. Most micro-induction protocols take one week, though this is an active area of clinical research and shorter protocols are available. Examples of a week-long and a three-day protocol are shown in Tables 1 and 2.

If a patient already on buprenorphine is experiencing acute pain, buprenorphine can be continued if possible, including throughout the perioperative period. Patients who are continued on buprenorphine have decreased postoperative surgical opioid requirements as well as decreased risk of withdrawal and return to use.<sup>13,14</sup> Buprenorphine can be split for acute pain into every-six-hour dosing to maximize analgesic effect,<sup>14</sup> and additional



**Figure 1:** Mu opioid receptors occupied by full opioid agonists followed by precipitated withdrawal with buprenorphine. The Figure was adapted from De Aquino and partly generated using Servier Medical Art, provide by Servier, licensed under a Creative Commons Attribution 3.0 unported license.<sup>11</sup>

**Table 1: Example dosing protocol for micro-induction of buprenorphine while on full agonists.**

DAY	DOSE	FULL AGONISTS
1	Buprenorphine 150mcg buccal BID	Continue full dose
2	Buprenorphine 300mcg buccal BID	Continue full dose
3	Buprenorphine 600mcg buccal BID	Continue full dose
4	Buprenorphine/naloxone 2mg/0.5mg SL BID	Continue full dose
5	Buprenorphine/naloxone 4mg/1mg SL BID	Continue full dose
6	Buprenorphine/naloxone 8mg/2mg SL daily	Last day if no ongoing acute pain
7	Buprenorphine/naloxone 12mg/3mg SL daily	None if no ongoing acute pain
8+	Dosing can be adjusted based on patient's needs	

Sample protocols developed by Dr. Laura Fanucchi and the University of Kentucky Addiction Consult and Education Service and adapted from Weimer (2020) and Wong (2021).<sup>10,12</sup>

Abbreviations: BID: twice daily, SL: sublingual

**Table 2: Example rapid dosing protocol for micro-induction of buprenorphine while on full agonists.**

DAY	STEP 1	STEP 2	FULL AGONISTS
1	Buprenorphine 300mcg buccal Q3H x 2 doses	Buprenorphine 600mcg buccal Q3H x 6 doses	Continue full dose
2	Buprenorphine 600mcg buccal Q3H x 6 doses	Buprenorphine/naloxone 2mg/0.5mg SL Q3H x 2 doses	Continue full dose
3	Buprenorphine/naloxone 8mg/2mg SL Q3H x 2 doses		Last day if no ongoing acute pain
4+	Dosing can be adjusted based on patient's needs		

Sample protocols developed by Dr. Laura Fanucchi and the University of Kentucky Addiction Consult and Education Service and adapted from Weimer (2020) and Wong (2021).<sup>10,12</sup>

Abbreviations: SL: sublingual, Q3H: every three hours

full agonists can provide additional analgesic effect, though opioid-tolerant dosing may be needed. This strategy also applies to patients who are on monthly injectable subcutaneous buprenorphine.

**Naltrexone**

Naltrexone is an opioid receptor antagonist, indicated for OUD relapse prevention. The monthly intramuscular injection is the preferred formulation due to adherence concerns. It can precipitate

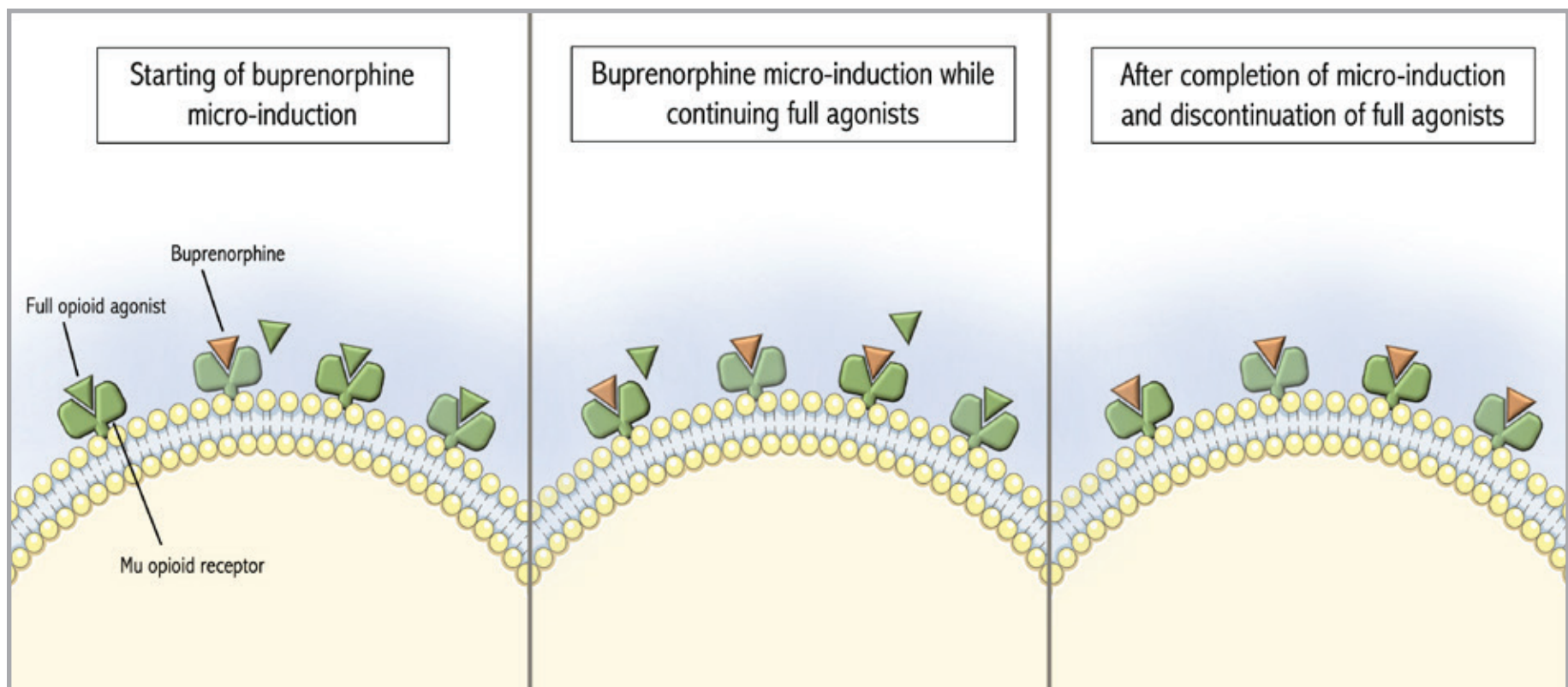
withdrawal, so patients should not be physically dependent when injectable naltrexone is started. This usually requires no full or partial agonists for at least 7 to 10 days, a high-risk time for overdose.<sup>15</sup> If patients are within four weeks of receiving the injection, pain control with opioid agonists can be challenging. Analgesic modalities such as regional blocks, ketamine, and closely monitored high doses of high-affinity, high-potency opioids like hydromorphone or fen-

tanyl can be considered to override the mu-receptor blockade.<sup>15</sup>

**In-hospital use: A cardinal symptom of inadequate pain control**

In-hospital illicit substance use is common<sup>2</sup> and a symptom of a chronic medical disease (i.e., substance use disorder). Hospitalizations are stressful and can trigger drug cravings and use to relieve distress. Opioid use could also be a clue to untreated pain, withdrawal,





**Figure 2:** Activity at the Mu opioid receptor during buprenorphine micro-induction. The Figure was adapted from De Aquino and partly generated using Servier Medical Art, provided by Servier, licensed under a Creative Commons Attribution 3.0 unported license.<sup>11</sup>

or intense cravings. Harm reduction, instead of punishment, is more therapeutic. Patients often internalize stigma from others, which has been associated with return to use and decreased engagement with treatment.<sup>16</sup>

### Application of data to the case

The patient's initial pain and withdrawal were treated with oral oxycodone and intravenous hydromorphone. He had an episode of in-hospital illicit opioid use and was approached with a non-judgmental attitude by providers who recognize OUD as a chronic medical disease, and after discussion with the patient, concluded that the in-hospital use reflected inadequately treated OUD. There was renewed discussion about MOUD options to avoid in-hospital overdose and/or administrative discharge. A plan was made to initiate buprenorphine/naloxone using a micro-induction protocol so that full agonist opioid analgesics could continue until the acute pain subsided. There were more frequent assessments of opioid cravings, pain and withdrawal, and close monitoring for sedation. As the acute pain from the vertebral osteomyelitis

improved, a strong therapeutic alliance with the patient developed and a dose of buprenorphine/naloxone 16 mg/4 mg was achieved over three days, without precipitating withdrawal. The patient's pain was greatly improved, and full agonists were discontinued. Since the buprenorphine remained bound to the mu receptor, he did not experience withdrawal when the full agonists were stopped. Outpatient addiction medicine follow-up was arranged for continuation of sublingual buprenorphine/naloxone treatment.

### Bottom line

Tailored strategies allow for initiation and management of medications for OUD for hospitalized patients with acute pain. ■

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### Quiz

1. **A patient with OUD is admitted to the hospital. Their primary concern is worry and fear about experiencing opioid withdrawal. Their total clinical opioid withdrawal score (COWS) is 15, they are irritable, and they do not want to discuss MOUD options at this time. What is a good initial step to foster the therapeutic physician-patient relationship?**

- a. Do not offer opioids. The patient has an opioid use disorder and you do not want to make that worse.
- b. Give the patient full opioid agonists. Frequently reassess for symptom control and sedation and talk about MOUD options when the patient is in less distress.
- c. Offer comfort medications to treat the withdrawal such as loperamide for diarrhea and clonidine for elevated COWS.
- d. No need to engage the patient in care. You suspect that they are about to leave as a patient-directed discharge, and it is unlikely anything you do will change that.

**Correct option:** B. This will control the patient's withdrawal symptoms and allow a comfortable discussion about initiation of MOUD. This option offers the benefit of engaging the patient in care. Every hospitalization is an opportunity for patients with OUD to be engaged in their care and given an opportunity to start a mortality-reducing MOUD. While C is a common approach, comfort medications alone are unlikely to adequately relieve the patient's withdrawal, craving, and pain. Comfort medications will not maintain opioid tolerance and will not protect against opioid overdose should the patient return to illicit use, which is common in patients with OUD who are not receiving a standard-of-care, MOUD treatment.

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# Is VBG an Alternative to the Troublesome ABG?

By Stacey Watkins, MD, PhD, Sherri Bogard, MD, and Malavika Kapuria, MD

## Case

A 70-year-old man with hypertension and insulin dependent type 2 diabetes mellitus initially presented for evaluation of left hip pain after sustaining a mechanical fall and was found to have a left femoral neck fracture. Following evaluation by orthopedic surgery in the ED, the patient underwent emergent left hip hemiarthroplasty. He didn't receive a dose of insulin. Approximately 12 hours later, the patient became confused and a point of care glucose level was >600 mg/dL. A stat peripheral venous blood gas (pVBG) showed a pH of 7.20, and his urinalysis confirmed ketones. The patient was transferred to a higher level of care for diabetic ketoacidosis (DKA) and appropriate treatment with IV fluids and insulin was initiated.

## Brief overview of the issue

Arterial blood gases (ABGs) have been the gold standard to assess acid-base disturbances, as they provide comprehensive information about the oxygenation, ventilation, and acid-base status of the body. They can be difficult and painful to obtain, and carry a small risk of patient-related complications (arterial injury, infection, and formation of local hematomas or aneurysms).<sup>1</sup> It has been debated whether the more easily attainable pVBGs may be suitable alternatives to ABGs.

Venous and arterial blood gases are inherently different and influenced by many factors. First, arterial blood is richly oxygenated, and venous blood is relatively less oxygenated and more acidic following oxygen unloading at target tissues. And blood gas values obtained from venous blood depend on many factors, including the partial pressure of oxygen in arterial blood (PaO<sub>2</sub>), arterial-tissue gas exchange, cardiac output, and local peripheral blood flow.<sup>1</sup> Also, disease states that frequently warrant blood gas acquisition, such as shock, congestive heart failure, and respiratory failure, may cause discrepancies in ABG and pVBG measurements.<sup>1</sup> Lastly, sampling techniques, including tourniquet use resulting in local ischemia, may contribute to erroneous blood gas values.<sup>1,2</sup>

## Overview of the data

Many clinicians are taught to use mathematical corrections to estimate ABG values from VBG samples for pH and the partial pressure of carbon dioxide (pCO<sub>2</sub>). For clarity, this review focuses on pVBGs.

## Key Points

- pH correlates well between ABGs and pVBGs
- pVBGs cannot be substituted for ABGs for pCO<sub>2</sub> measurements
- ABGs are still preferred in any patient with hemodynamic instability or mixed acid-base abnormality

Specifically, ABG pH is calculated by adding 0.02 to 0.04 to the pH value obtained from a pVBG.<sup>3</sup> Similarly, clinicians are taught that arterial pCO<sub>2</sub> can be estimated by subtracting 3 to 8 mm Hg from the venous pCO<sub>2</sub> value.<sup>3</sup> But, these are simple calculations and current studies don't fully support using pVBGs as a substitution for ABGs.

Review of the literature suggests the differences between ABG and pVBG pH are so small that the mathematical correction of 0.02 to 0.04 is clinically insignificant and therefore unnecessary (Table 1).<sup>1,4-9</sup> Simply put, one can confidently use a venous pH to understand a patient's overall acidity or alkalinity. And, the data supporting venous pH substitution for arterial pH are strongest in chronic obstructive pulmonary disease (COPD) and DKA, two frequently encountered pathologies managed by hospitalists.<sup>4,5,8-12</sup>

As previously mentioned, clinicians may subtract 3 to 8 mm Hg from the pVBG pCO<sub>2</sub> value to estimate the ABG pCO<sub>2</sub>.<sup>3</sup> However, data supporting this mathematical correction are weak. Comparisons of arterial and venous partial pressure of carbon-dioxide (PaCO<sub>2</sub> and PvCO<sub>2</sub>, respectively) are inconsistent and do not support using pVBGs instead of ABGs to assess hypercarbia (Table 2).<sup>1,7,9,13</sup> One meta-analysis found the 95% approximate credibility interval ranging from -10.7 mm Hg to 2.4 mm Hg, which may initially appear reasonable.<sup>1</sup> However, extrapolating this to an example PvCO<sub>2</sub> of 55 mm Hg estimates a PaCO<sub>2</sub> between 44.3 mm Hg and 57.4 mm Hg—values that span both the physiologic normal and the pathologic hypercapnic states—which is clinically unreasonable. This wide range has particular clinical significance for hospitalists, especially when managing hypercapnic states such as COPD exacerbations.

To maximize the use of pVBGs as an alternative to cumbersome ABGs, prior research proposed the use of a screening venous pCO<sub>2</sub> value to identify hypercarbia. Specifically, a venous pCO<sub>2</sub> less than or equal to 45 mm Hg effectively rules out clinically significant hypercarbia in acute respiratory disease (100% sensitivity, 100% negative predictive value).<sup>9,11,12,14</sup>



Dr. Watkins



Dr. Bogard



Dr. Kapuria

Dr. Watkins is an assistant professor in the division of hospital medicine at Emory University School of Medicine in Atlanta. Dr. Bogard is an assistant professor in the division of hospital medicine at Emory University School of Medicine in Atlanta. Dr. Kapuria is an assistant professor in the division of hospital medicine at Emory University School of Medicine in Atlanta.

Table 1. Summary of 22 studies correlating the pH in ABG and VBG samples<sup>4,6,7</sup>

AUTHOR, YEAR	# OF PATIENTS	CONDITIONS STUDIED	INTERPRETATION (agreement between ABG/VBG)
Bradenburg, 1998	38	DKA	+
Gokel, 2000	100	Various	+
Kelly, 2001	246	Various	+
Rang, 2002	218	Various, in ED	+
Ma, 2003	200	DKA	+
Eizadi-Mood, 2005	50	TCA OD	+
Ak, 2006	132	COPD	+
Razi, 2007	107	AECOPD	+
Toftegaard, 2008	103	Various	+
Gennis, 1985	171	ED patients	+
McKeever	234	AECOPD	+
Kelly, 2013	53	ARF and NIV	+
Koul, 2011	100	Various	+
Treger, 2010	40	Various	+
Malatesha, 2007	95	Various	+
Middleton, 2006	110	ICU patients	+
Kelly, 2002	196	ARF	+
Chu, 2003	46	ARF and MV	+
Khan, 2010	100	Lumbar disc surgery	+
France, 1974	48	General anesthesia	+
Raoufy, 2011	132	AECOPD	+
Zeserson, 2018	129	Various	+
Malinoski, 2005	25	ICU trauma on MV	-

(+): supports substitution of ABG for VBG. (-): does not support substitution of ABG for VBG. Abbreviations: TCA OD: tricyclic antidepressant overdose, COPD: chronic obstructive pulmonary disease, ED: emergency department, AECOD: acute exacerbation of chronic obstructive pulmonary disease, ARF: Acute respiratory failure, NIV: non-invasive ventilation, ICU: intensive care unit, MV: mechanical ventilation

In summary, pVBGs approximate pH well but not pCO<sub>2</sub>. While PvCO<sub>2</sub> may be used for initial hypercarbia screening, the data do not support the direct substitution of PvCO<sub>2</sub> for PaCO<sub>2</sub>. And, they do not support implementing a mathematical corrective factor for the replacement of PvCO<sub>2</sub> for PaCO<sub>2</sub>.

pVBGs can still be useful in many clinical scenarios. For example, acute respiratory hypercarbia (such as in COPD exacerbations) will result in acidemia, which can be reliably identified with a pVBG pH. Most clinicians would feel comfortable initiating bilevel positive airway pressure (BiPAP) based solely on clinical presentation and pVBG pH. However, accurate pCO<sub>2</sub> measurements are ideally needed to continue monitoring patients on BiPAP. The management and eventual discontinuation of BiPAP cannot be determined solely based on pH estimations, therefore ABGs are still recommended.

ABGs should be obtained in certain clinical scenarios, even for pH estimations. There have been mixed results in how well ABGs and pVBGs correlate in patients with shock.<sup>6,7,15-17</sup> This is mainly due to study designs which fail to separate types of shock, making it dangerous to come to any conclusions regarding pVBG to ABG substitutions.<sup>6,7,15-17</sup> Due to the potential for inaccuracy in hemodynamically unstable patients, ABGs are recommended in this population. Additionally, clinical scenarios involving mixed acid-base disturbances have not been adequately studied so ABGs remain the preferred test for these situations.<sup>6</sup> Severe acidemia (pH <7) is another indication to choose an ABG, given that there are few data in this population to ensure correlation with a pVBG.<sup>8</sup>

An important limitation is the lack of outcome-based studies.<sup>5</sup> Most studies have examined the correlation between ABGs and pVBGs, but there are few data to see if patients have poorer outcomes if their management was based on pVBG diagnostics rather than ABGs.<sup>5</sup> Overall, more studies are needed to corroborate the current data. Specifically, studies comparing the efficacy of PaCO<sub>2</sub> with PvCO<sub>2</sub> may be particularly valuable in optimizing pVBG as a more effective screening tool.<sup>5</sup>

### Application to the case

For our patient, without comorbidities or shock, a pVBG is an acceptable alternative to the ABG to determine if acidemia is present. This statement is supported by multiple studies, including several that focused only on DKA patients, which have demonstrated the strong correlation of pH in these two different blood samples (ABG and pVBG).<sup>4,8,10</sup> An ABG would be the test of choice in DKA patients with the following complications:

hemodynamic instability, mixed acid-base disorder, or severe acidemia (pH <7).<sup>8</sup>

### Bottom line

In general, it is reasonable to substitute ABGs with pVBGs for pH assessments, but not for pCO<sub>2</sub> evaluations. ■

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Table 2. Summary of 21 studies correlating the pCO<sub>2</sub> in ABG and VBG samples<sup>4,6,7</sup>

AUTHOR, YEAR	# OF PATIENTS	CONDITIONS STUDIED	INTERPRETATION (agreement between ABG/VBG)
Koul, 2011	100	Various	+
Treger, 2010	40	Various	+
Malatesha, 2005	95	Various	+
Chu, 2003	53	ARF and MV	+
Zeserson, 2018	129	Various	+
Ak, 2006	132	COPD	+
Elborn (1991)	48	COPD	+
France, 1974	48	General anesthesia	+
Razi, 2007	107	AECOPD	+
Khan, 2010	100	Lumbar disc surgery	+
Eizadi-Mood, 2005	50	TCA OD	-
Gennis, 1985	171	ED	-
Ibrahim, 2011	122	ED	-
Malinoski, 2005	25	ICU trauma +MV	-
Kelly, 2005	107	AECOPD	-
Rang, 2002	218	Various	-
Kelly, 2002	196	ARF	-
McKeever, 2016	234	AECOPD	-
Kelly, 2013	53	ARF and NIV	-
McCanny, 2011	89	AECOPD	-
Toftegaard, 2008	103	Various	-

(+): supports substitution of ABG for VBG. (-): does not support substitution of ABG for VBG. Abbreviations: ARF: Acute respiratory failure, MV: mechanical ventilation, COPD: chronic obstructive pulmonary disease, TCA OD: tricyclic antidepressant overdose, ED: Emergency department, ICU: intensive care unit, AECOD: acute exacerbation of chronic obstructive pulmonary disease, NIV: non-invasive ventilation

### Quiz:



**A 69-year-old man with known COPD presented to the ED with a two-day history of progressively worsening dyspnea following exposure to multiple sick contacts. On initial evaluation, the patient was in mild to moderate respiratory distress and unable to speak in long sentences but was not using his accessory muscles of breathing. The patient's blood pressure was 130/84, heart rate was 117 beats per minute, respiratory rate was 32 and oxygen saturation on room air was 85%. On auscultation, he had decreased air movement, prolonged expiratory phase breathing with end-expiratory wheezes throughout. Patient was placed on BiPAP in the ED and initial pVBG demonstrated pH 7.22, pCO<sub>2</sub> 70 mm Hg and oxygen saturation of 93%. The ED clinician is now calling to admit and give sign-out on this patient. He has been on BiPAP for about three hours. His respiratory rate has decreased but he still has mild increased work of breathing. What is your next step in management?**

- Immediate intubation
- Order another pVBG
- Order an ABG
- Increase fraction of inspired oxygen (FiO<sub>2</sub>)

**Correct option: C.** While it's reasonable to exchange pVBGs for ABGs when assessing pH alone, the correlation of pCO<sub>2</sub> levels obtained from ABGs and pVBGs is not well-validated. Specifically, scientific literature doesn't support using pVBGs for accurate determination of pCO<sub>2</sub> levels, so conclusions about CO<sub>2</sub> retention cannot reliably be drawn from pVBGs in this scenario. The value of ordering the appropriate diagnostic test is best highlighted in cases where patients remain at risk for requiring a higher level of care. In these scenarios, accurate pCO<sub>2</sub> measurements from ABGs can herald impending respiratory failure or support clinical improvement with management thus far.



## SIG Spotlight: Pediatric Hospital Medicine

By Richard Quinn

When SHM pivoted from a committee structure to its cadre of Special Interest Groups (SIGs), advocates for pediatric hospitalists grew up.

“We were this small fish in a big pond,” said SIG chair Amit Singh, MD, a pediatric hospitalist at Lucile Packard Children’s Hospital Stanford in Palo Alto, Calif. “That transitioned to this SIG, and we thought that might dampen the membership, but we used it as an opportunity to be more inclusive.”

SHM has more than 25 SIGs that are sponsored by SHM to “create communities of hospitalists around topics of interest, practice areas, and/or care models.”

The pediatric community might be the one that pulls the most heartstrings, given its patient population. The group, launched in earnest in its current form in 2018, has some 362 members nationwide.

Outgoing SIG chair Courtney Edgar-Zarate, MD, a medical/pediatric hospitalist



Dr. Singh

in Lexington, Ky., says one of the unique things about pediatric hospital medicine practitioners is that they cross multiple lines within hospital walls. Some are dedicated staffers; others take care of that census along with their adult patients.

“We’re pediatric hospitalists, but we’re also part of a large community with the adult hospitalists, the community hospitalists, those who serve areas of the hospital in different roles,” said SIG vice chair Klint Schwenk, MD, medical director of inpatient services at Norton Children’s Hospital in Louisville, Ky. “And even though we see different patient populations and different patients, we still have a common community.”

Dr. Singh says that’s even more important in areas where there are fewer pediatric hospitals. Take medication dosages, as input into electronic health records. Children’s medication is weight-based, but adults’ isn’t always.

“The majority of children who are hospitalized or are taken care of in an inpatient setting are actually not in pediatric-specific emergency departments or children’s hospitals,” he adds. “So, there are a ton of our colleagues who work in the community, in adult hospital settings, who are responsible for taking care of children, and we’re the



Dr. Schwenk

only advocates for those children. So, it behooves us to partner with our adult colleagues, who are in leadership positions, who are in administrative positions, or in quality, pharmacy, or IT, to make sure those systems are working and functioning for our pediatric patients.”

Working together with pediatric specialists and others has only proven more important during the tumult of the past few years.

“All of us in hospital medicine has had a lot of challenges, whether it’s COVID-19, mental health, or various financial crises,” Dr. Schwenk said. “We learn a lot from our adult colleagues, and I think we have a lot to offer them, as well, from our perspective in pediatrics. Within SHM, I think it’s nice that, even though we have differences, we have a lot of common threads we can learn from each other.”

One of the go-forward focuses for the SIG is broadening its membership.

Last year, it recruited two pediatric hospital medicine fellows and continues to recruit this year.

Dr. Edgar-Zarate said that with the relatively new advent of a pediatric hospital medicine board certification, it’s important “we included them and their opinions, their experiences, and try to get them involved.”

“We also want to make sure we don’t forget about our learners,” she said. “What are they talking about? What are they wanting to learn about? Even when thinking about our annual meeting committee and things like that. We

absolutely adored our fellows this past year. They were fabulous and have joined our executive council as members now. We’re really excited to continue to work with them from this past year.”

Another big push for the upcoming year is inclusion.

“We’re working hard to promote the diversity of our group,” Dr. Singh said. “Both the diversity of where people practice, as well as diversity in who they are. ...we’re really committed to that, we really celebrate that, and we really want to make sure our division, our group of people, kind of feel like they’re more than just their name and their title.”

To that end, Dr. Edgar-Zarate is particularly proud of the SIG’s diversity, equity, and inclusion subcommittee that launched in the past year.

And why not?

It’s all part of the community of pediatric practitioners that, given the SIG to mature, has done just that.

“I think that growth has emboldened us to say, ‘Why don’t we do this? Why don’t we do that?’” Dr. Edgar-Zarate said. “And now that we have so much pediatric leadership support, I think that’s also kind of helped us reach out and do more. We definitely have a whole lot more pediatric representation in the *Journal of Hospital Medicine*, as well as *The Hospitalist* itself. We have grown; we have definitely gotten more traction in that way.” ■

Richard Quinn is a freelance writer in New Jersey.



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# Chapter Spotlight: New York City/Westchester

By Richard Quinn

Every SHM Chapter in the country dealt with the crisis scenarios wrought by COVID-19.

Massive upticks in patient censuses hobbled hospitalists in every state. Burnout from seemingly endless days affected health care professionals across the country. News headlines of worry on how our nation's health care system would handle it all took center stage.

However, not every SHM Chapter covers New York City and Westchester County, the epicenter of the pandemic in the spring and summer of 2020. So not to sound too much like a New Yorker, but chapter president Mirna Giordano, MD, a pediatric hospitalist at Columbia University Medical Center, wears those experiences like the proverbial badge of courage.



Dr. Giordano

"I really feel honored to be the president of this chapter because of how New York City dealt with the COVID-19 crisis," she said. "I feel like my co-hospitalists, both in pediatric and adult medicine, have definitely been seen more as heroes from the public point of view. But, to me, they're more comrades."

Dr. Giordano sees physician wellness as a main tenet of the chapter, particularly after the professional gauntlet of the past few years. She adds that other groups focus on clinical pearls or practice-management tips, but she sees her SHM colleagues taking care of each other as much as their patients.

"The burnout rate in our field is pretty high," Dr. Giordano said. "People work many hours, busy hours, on our feet. We're seeing a more and more complex patient population. Hospitalized

patients today have many more comorbidities than those hospitalized 10 years ago. The work is challenging. So, we're trying to stay healthy ourselves. First, take care of ourselves, our families, marriages, children, and partners/friends. That's exceptionally important."

One point of pride for Dr. Giordano is the chapter's involvement in the Pediatric Overflow Planning Contingency Response Network (POP-CoRN). POPCoRN was born in the early days of the pandemic. Two hospitalists training in internal medicine and pediatrics launched a collaborative that helped pediatric-focused institutions admit adult patients diagnosed with COVID-19.

"I found that remarkable because, as you say, when things are changing, we really do not know if in the coming year we will have a pandemic that will, for example, affect children," Dr. Giordano said. "In which case, having already established some connections and forming the network, we could go the other way around, where the adult hospitalists would help us fight potentially a very lethal virus in the pediatric environment. I think that was definitely one of the very remarkable outcomes: the collaboration between the SHM and the POPCoRN."

Collaboration is something Dr. Giordano thinks is valuable in all chapter activities. Take the joint event with the American Academy of Pediatrics (AAP) in the spring of 2022, held because she views the professional home for pediatric hospitalists as a grouping of SHM, AAP, and the Academic Pediatric Association (APA). Dr. Giordano adds that another focus of the New York City/Westchester Chapter is a further collaboration between pediatric and adult hospitalists.

"Children and adults live longer and have more comorbidities and complex issues, including social determinants of health-related ones," she said. "I think pediatric hospitalists can transition their patients to adult hospitalists more smoothly. Very often, the surgeons taking care of our patients are adult surgeons taking care of

pediatric patients. So, interprofessional comanagement within the field must be well developed. Learning from each other is how we will grow faster, better, and hopefully pay it forward to future generations of patients and doctors."

Dr. Giordano said that a future goal for the chapter is to reach out more to trainees interested in becoming hospitalists.

"The trainees are not always aware of the SHM chapter opportunities, so we're excited every year to get the poster competition for our members, and maybe attract more medical students, residents, and fellows to these events, and give them the incentive to showcase their scholarly projects, exchange the ideas about future collaboration and potentially have their abstract/poster go straight to the national conference," she said.

Another approach that the chapter uses is implementing social media to connect with younger physicians.

"We are thinking of inviting hospitalists who have been very present on social networks—like Dr. Eric Burnett—who have huge followings on Twitter, TikTok, Instagram, or Facebook," Dr. Giordano said. They "have managed to connect the important roles both within the hospitals and in society and we want to see and learn more from them about the significance of social media in our life today, and how can we optimize its use in patient care."

Dr. Giordano adds that whatever the chapter does moving forward, the focus is the well-being of its 327 members. Regular surveys of the group, founded in 2015, are aimed at giving back to them.

"When you collaborate with people, you become closer to them," she said. "There were topics, projects, and outcomes that sprouted out of the COVID-19 crisis that made us stronger as team players." ■

*Richard Quinn is a freelance writer in New Jersey.*



Medical Center Hospital in Odessa, TX invites applications for a Section Chief of Hospital Medicine opening. The Section Chief of Hospital Medicine will serve as a full-time leader and will be employed by Medical Center Hospital. The section of hospital medicine at Medical Center Hospital includes over 20 physicians and advanced practice providers. The team provides coverage at a 402-bed, level III trauma hospital.

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For further information, contact Kristin Goedken at [kristin-goedken@uiowa.edu](mailto:kristin-goedken@uiowa.edu).

Interested candidates are invited to search the Jobs@UIOWA site: <https://jobs.uiowa.edu/content/faculty/> and search for requisition #74556

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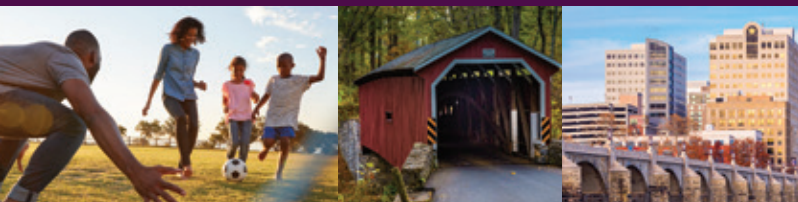
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Photo was taken before March 2020 when COVID-19 precautionary measures were not in place.

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