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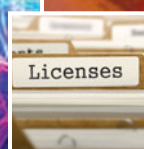
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17 Urgent Care Evaluation and Management of Spontaneous Pneumothorax

Spontaneous pneumothorax (PTX) occurs unpredictably. Because such patients may initially present to urgent care, it is important for clinicians to include PTX in the differential diagnosis of patients presenting with acute chest pain and/or dyspnea. Rarely, a spontaneous PTX can progress to a tension PTX if the diagnosis is delayed.

Vrunda Patel, BS; Kevin Radecki, MD

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25 Hot Water Irrigation to Relieve Discomfort After Wasp and Bee Envenomation: A Case Series



Hot water irrigation for 2 minutes with simple tap water provides immediate and sustained relief of pain and pruritus, as well as rapid de-escalation of large local reactions due to wasp and bee stings, as described in detail in this series of urgent care patient cases.

Ted C. Shieh, MD; Jenny J. Lu, MD, MS

CASE REPORT

37 Recurrent Neuropsychiatric Symptoms in a Patient With Repeated Exposure to Metronidazole: A Case Report



Metronidazole, even during short courses of therapy, can result in disabling neuropsychiatric symptoms. It is important for urgent care clinicians to be knowledgeable about these relatively uncommon but serious adverse medication reactions and when to consider emergency department referral.

Faren Clum, MD; Joshua Russell, MD, MSc, ELS, FCUCM, FACEP

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43 State Legislation Could Impact Urgent Care Facilities



Legislation requiring the licensure of urgent care centers has been proposed in 4 states so far in 2025—all of which call for the creation of state administrative offices that can further define the regulations that would affect operations.

Alan A. Ayers, MBA, MAcc

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URGENT INTERACTIONS



“Err on the side of kindness.”

— Joshua W. Russell, MD, MSc, ELS, FCUCM, FACEP
JUCM Editor in Chief



“It's important to understand the limitations of our testing. Whether it's a hip x-ray for a subcapital fracture or a wrist x-ray for a scaphoid fracture, negative testing doesn't always 100% exclude a diagnosis.”

— Michael Weinstock, MD
JUCM Senior Clinical Editor



“While disabling neuropsychiatric symptoms are not a leading side effect for most antibiotics, antibiotics are so commonly prescribed that we are likely to run into lesser known side effects over time. The case here is meant to alert urgent care practitioners to these lesser known risks and to demonstrate how anxiety or akathisia may present in this setting.”

— Faren Clum, MD
author of “Recurrent Neuropsychiatric Symptoms in a Patient With Repeated Exposure to Metronidazole: A Case Report”
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Call for Manuscripts

JUCM accepts submissions on most topics related to urgent care medicine. Following are a few examples of the types of topics that would be of interest to the JUCM audience. If you have a question, please contact us at editor@jucm.com. To submit an article for consideration, access our author guidelines at <https://www.jucm.com/author-instructions>.

- Severe progression of Group A Streptococcus
- Rare and not-so-rare causes of sudden-onset abdominal pain
- Assessing numbness in extremities after minor injuries
- Identifying and managing non-steroidal anti-inflammatory drug (NSAID) side effects
- Decoding symptoms as described by children and adolescents



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LETTER FROM THE EDITOR-IN-CHIEF

The Quality of Urgent Care Depends on our Commitment to HOLA Expertise

At least once a month, a friend or family member will text me—often for the first time in years—to share the summary of a recent visit to their local urgent care (UC). While these texts are universally unsolicited, I genuinely love receiving them. The unfiltered perspective cannot be matched by even the most sophisticated electronic medical record analytics or patient experience reports. This is because the stories they share with me, while anecdotal, provide a qualitative and holistic picture of how UC is actually practiced. Through all these exchanges, I have been most fascinated by how frequently my loved ones' assessments of how they were treated, and the actual medical appropriateness of their care are at odds.



"There's a reason why television medical dramas choose ED settings over UC centers."

As an example, a good friend recently shared with me the story of a "sinus infection" that began just before a long flight. The change in cabin pressure caused him intense facial pain while he was at altitude, so after he collected his luggage at his destination, he headed directly to the closest UC center. He was thrilled that he got in and out in 20 minutes and received the antibiotic prescription he sought, and all for a reasonable out-of-pocket cost. Obviously, after hearing this, I needed to know more. I asked him how long the sinus symp-

toms had been going on and what antibiotic they prescribed. "I just got sick the night before," he told me, "and, so they gave me a Z-pack." He seemed almost annoyed that I was probing at all, like someone might if you brought up the environmental impacts of tuna fishing just before they ordered some sashimi.

Many of you may have cringed and rolled your eyes like I did after reading his response. Not only did he lack

criteria to suggest that the sinus pressure was bacterial in etiology, but he also received an antibiotic—azithromycin no less—which is specifically *not* recommended in the current guidelines for acute bacterial rhinosinusitis.¹ Despite myriad efforts around antibiotic stewardship from various organizations, anyone practicing in UC recognizes that this is still an unfortunately common occurrence. Sinus pain perpetually ranks among the most common reasons for patients to seek care (and receive unnecessary antibiotics) when visiting UC.

Despite the collective groans that stories like these elicit from those clinicians who sincerely care about evidence-based medicine, this sense of disappointment seldom lasts very long, even for the most conscientious of clinicians. Indeed, desensitization is partially at play here—we all bear witness to cases such as this on a daily basis. However, there is something more insidious that allows these practices to persist; that *something* lies in the attitudes of both those who perpetuate these non-evidence-based practices and those who simply bear witness to them. Fundamentally, we all share an implicit belief that the stakes are so low for these common, self-limited conditions that it's really just not that important to be precise in their diagnosis and treatment. This unconscious and collective mindset is, in a way, understandable. If the patient seems to have a minor problem and we prescribe a treatment that carries a low risk of serious adverse effects, it's easy to imagine why busy practitioners pick the path of least resistance. As human beings, we evolved to conserve our precious cognitive energy, thus it is in our nature to avoid overspending mental resources. Psychologists have termed this tendency the "cognitive miser" phenomenon.² And while this aspect of humanity may have served our ancestors well evolutionarily speaking, our cognitive miserliness now serves as the greatest impediment to practicing high-quality UC medicine.

The Allure of HALO Focus

Beginning around 2020, the acronym "HALO" began appearing in the emergency medicine (EM) literature.

HALO—or high-acuity, low-occurrence—refers to rare but severe situations in which a patient’s survival depends on an appropriate and immediate response from the emergency clinician.³ Examples of these situations include the need for emergency thoracotomy after traumatic cardiac arrest or jet-ventilation in the midst of a failed pediatric airway. These are scenarios that emergency physicians (EP) are expected to be prepared for at all times, even though most EPs will go their entire careers and never face the majority of possible HALO situations. As such, simulation based medical education (SBME) has gained increasing acceptance in recent decades as a method to ensure emergency clinicians have opportunities to rehearse the cognitive and motor tasks required to navigate such catastrophes.⁴ Participating in these simulation exercises was indeed a major portion of my EM residency training, and they worked. Even though I have thankfully never faced many of the HALO events that I rehearsed in the simulation lab, I found that practicing simulated versions of these situations was instrumental for boosting my confidence. Building confidence, it turns out, is perhaps the main benefit of simulation training for HALO events because it so effectively alleviates anxiety. Since performance anxiety, unsurprisingly, has been shown to adversely affect cognition,⁵ the anxiolytic effects of simulated practice explain many of its benefits for performance when the stakes are highest.

As a resident, I didn’t need convincing to rehearse for HALO occurrences; the fear of being ill-prepared and faltering when someone’s life was in my hands was more than sufficiently motivating. I recall imagining worst-case scenario outcomes and feeling the negative emotions—shame, anger, grief—that would certainly arise if I failed in my attempts to resuscitate a patient who depended on me. This fear is not a unique, neurotic quirk of mine either; countless EM colleagues have confided that similar fears compel them to regularly practice (either mentally or in a simulated environment) for HALO scenarios as well.

The hallmark trait of an EP is preparedness for “anything at any time.” For this reason, using simulation to prepare for HALO scenarios is now a widely accepted part of post-graduate and continuing EM education, and rightfully so. However, functionally speaking, HALO practice serves relatively few patients. For all the times I have experienced simulations of massive tracheostomy hemorrhage or perimortem cardiac arrest, I have yet to use these skills on anything but hypothetical patients. Thankfully, the same is true for most of my colleagues in EM. Yet, the fear of failure in these emergencies serves as a powerful motivator for many EPs, including myself,

to invest in perpetual preparedness for the rare times when every second counts. The problem with this approach arises when focusing on HALO events distracts us (whether in the emergency department [ED] and even more so in the UC) from striving to improve how we manage the much more common and mundane presentations we encounter in real patients every day.

The Perniciousness of HALO Obsession in Urgent Care

While low-acuity complaints do certainly present to EDs, it is the UC setting that is much more defined by the ability to service this group of patients. Given UC’s ambulatory nature, patients very seldomly arrive in extremis, and the UC clinician’s responsibility in managing a resuscitation extends only through the brief moments from recognition of the emergency through the arrival of paramedics. Whereas the EP’s core identity is necessarily preparedness for worst-case scenarios, the UC clinician’s core identity should be fluency in managing the common acute-but-low-risk issues for which patients commonly seek care. Our patients rely on us—although they rarely explicitly say so—to quickly ensure they are not in immediate danger and then provide a reasonable provisional diagnosis and plan for treatment without exposing them to excessive cost or iatrogenesis. This is the job we signed up for. And unlike EP’s, our capabilities in managing these low-acuity conditions are put to use many times per shift.

The issue with this imperative for UC clinicians is that it lacks the allure and outward heroism of EM. There’s a reason why television medical dramas choose ED settings over UC centers. The higher the stakes, the greater the excitement. If we are being honest, there is not much that is intrinsically captivating about ear pain, sore throats, and twisted ankles. Repetition, not novelty, is the rule in UC, so some degree of ennui is understandable. This paucity of thrilling cases is arguably the greatest risk factor UC clinicians face for disregarding our primary responsibility to patients. However, simply because a case isn’t exhilarating enough to be featured on an episode of “The Pitt,” doesn’t mean that the care we provide will not impact patient outcomes. In other words, if we aren’t careful, it’s easy to subconsciously find ourselves behaving as though our clinical decisions don’t matter much.

Embracing HOLA in Urgent Care

For UC clinicians, managing acute bronchitis is like an EP managing septic shock: in each scenario, the patient is receiving care from the most appropriate specialist for their respective condition. Therefore, just as mastery of

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HALO situations is the duty of the ED practitioner, those of us working in UC are equally responsible for mastering less serious, more common illnesses and injuries. Although the disease narratives of UC patients may be less intrinsically captivating, they comprise a much larger proportion of human symptomatology.

Given the incompleteness of data available, estimating the number of aggregate emergencies versus urgencies that occur in a population is nearly impossible.⁶ We, however, can be fairly confident that the number of UC visits has exceeded ED visits in the U.S. since about 2019.⁷ Furthermore, it has been estimated that up to 40% of ED visits are non-emergent in nature⁸ bringing the tally of “urgent care appropriate” visits to well over 200 million annually in the U.S. alone. These figures also disregard the countless telehealth and retail clinic visits for minor medical issues for which there are no publicly available data. And as treating septic shock is the bailiwick of an emergency clinician, managing these high-occurrence, low-acuity (HOLA) presentations is what justifies and supports UC’s very existence. Just as EM has embraced excellence in HALO management to justify its value in the healthcare ecosystem, urgent care’s value (both actual and perceived) is predicated on our willingness to accept the mandate to excel in the safe and efficient delivery of HOLA care.

The Fundamental Challenge of HOLA Care

Why do nearly half of Americans face credit card debt and over 40% struggle with obesity?⁹ And why do these phenomena continue in an era when everyone has free, constant, and effortless access to informative resources on managing their personal finances and weight? Undoubtedly each of these issues are multifactorial, but they both have a shared root cause: People have a hard time appreciating both the positive and negative consequences of their actions when they cannot perceive an immediate or obvious impact. This universal phenomenon is called the “immediacy bias.”¹⁰ Put simply, we tend to ignore the implications of behaviors unless the effects are readily apparent.

Consider the story of my friend. He presented with one day of sinus pain and walked out with an antibiotic prescription. He was content. There was very little friction. The clinician who saw him was in-and-out quickly and most likely will never think about the interaction again. This is the immediacy bias at play. It’s easy to understand falling into practice patterns like these as they involve the least effort and usually have no obvious consequence. However, according to a *JUCM* analysis of Expertix data from over 10 million annual UC visits, sinus

complaints represent roughly 10% of all UC presentations. This amounts to over 20 million patient encounters annually in the U.S. alone. So, while the individual impact of taking the path of least resistance for any given visit generally does not produce any apparent long-term, untoward outcome, the impact of how this group of patients is managed collectively is not subperceptual. These small decisions in aggregate certainly result in measurable harms while perpetuating a suboptimal status quo, even if any individual clinician’s contribution is negligible.

Urgent Care’s Path Forward

While the immediacy bias may be our default setting, thankfully, there are many historic examples of humans overcoming this cognitive trap to solve large-scale problems. The “Keep America Beautiful” and Civil Rights campaigns of the second half of the 20th century, for instance, were critical for respectively reducing pollution and discrimination in America. The success of these movements depended on the cumulative effects of small, but conscious, choices made by millions of Americans over many years. No individual’s behavior alone could have brought about the desired changes. Furthermore, it was rare for anyone’s actions on a given day to result in perceptible progress. A single highway passenger who chose not to litter, for instance, did little to reduce the appearance of roadside debris. However, collectively and over time, those who believed in these causes and acknowledged the importance of their role—even when their individual contributions were undetectable—produced dramatic changes in our society.

Ultimately, if we are concerned for urgent care’s ability to appropriately diagnose and manage minor issues, we need to appreciate that, while it may be unexciting, devoting ourselves to improving the efficient delivery of evidence-based care is our imperative. Even if mastering the management of HOLA conditions is not what we enjoy about UC practice, it is what the rest of the medical community and our patients demand of us. In his 1785 publication *Groundwork of the Metaphysics of Morals*, the German philosopher Immanuel Kant outlined the “categorical imperative,” stating that our ethical duty is to behave in such a way that, if everyone were to behave similarly, it would result in the desired outcome.¹¹ This is indeed the UC imperative as well. Even though we may rightly feel that most of our individual clinical decisions have relatively few tangible impacts, the success (or failure) of the UC “movement” will be determined by our collective willingness to strive to deliver masterful HOLA care on every shift. With appropriate focus, I believe we

can achieve this goal in the not-so-distant future. Our success will depend on each of us taking up this charge, and will be best measured, perhaps, by the stories our friends and families text us while walking out of their local urgent care center. ■

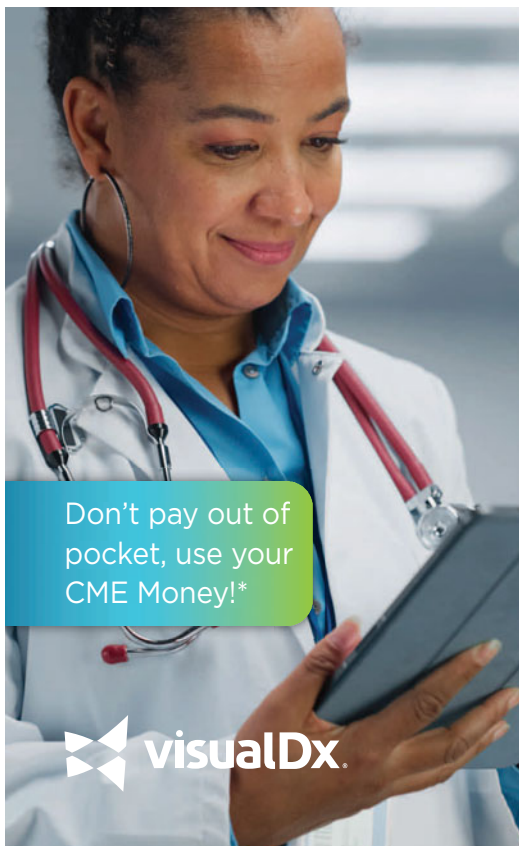


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The Search

■ Lou Ellen Horwitz, MA

As many of you know, early last year we announced my plans to retire as CEO of the Urgent Care Association (UCA). While that's still happening, I wanted to share why filling the role is taking such a long time.

Hiring the CEO is one of the most important responsibilities of your elected Board of Directors, and it's a responsibility they each take very seriously. They are committed to getting the best leader possible to take UCA and our affiliate entities into the future with a strong vision for the characteristics of that individual.

To align on that vision the Board spent a lot of time thinking about the strategic plans we have mapped out for the next several years, where the field of Urgent Care is going, what our shared challenges are, and how the CEO role needs to evolve to address all of those complex needs and constituents.

Chief Executive Officer of an association is a job that requires a special combination of experience and skills. First, leading UCA at this point in our evolution requires some Urgent Care experience. I didn't have that experience when I was CEO the first time, but we were a much younger field in 2006 with no advocacy efforts underway, so it was a much simpler job. That's no longer the case.

The College of Urgent Care Medicine has done excellent work in defining our clinical scope, but everything about Urgent Care is still evolving. Field experience is essential, especially as we navigate a pivotal moment in Urgent Care reimbursement. After years of effort, we've gotten our first mention in the Medicare Physician Fee Schedule—a significant milestone. While we're hopeful for federal reform in 2026, this is just the beginning of UCA's role in ensuring Urgent Care's long-term success. Commercial payers and Medicaid present even greater challenges, making it crucial for the next CEO to have deep expertise in payer negotiations, the regulatory environment, and advocacy.



Lou Ellen Horwitz, MA is the chief executive officer of the Urgent Care Association.

Second, the CEO needs to understand how associations function best. This work is a complex weave of engaging members in efforts that matter to them, connecting stakeholders to information and relationships that improve their situations, creating opportunities that drive straight-line revenue, and building a community that will attract like-minded people to band together around shared work and values.

The "Urgent Care collective" has grown into 5 distinct organizations, and the UCA CEO must also understand and weave together the core purposes, strengths, and priorities of all these organizations. This work requires someone who can commit to the Boards and members of all 5 entities to be deeply familiar with their goals, attentive to their financial stability, and approach strategic initiatives in an integrated way across the field. They must also be able to engage many, many volunteers to accomplish objectives.

Lastly, they must have prior experience as a CEO. UCA has an incredible team and fantastic boards, but we are at critical junctures with so many initiatives that are so important to the field that this is not a role for a first-time CEO. Healthcare by itself is complex, and making progress on the many fronts we are addressing is extremely complex. The ability to lead all of this—in a remote environment—while also building the new relationships that we will need in the years to come...well, that all takes a special combination of experience and skills.

Finally, the new CEO has to embody our organizational values: We Commit, We Collaborate, and We Advance. Together these values are what drive UCA and Urgent Care forward.

We're confident we'll find the right person and will keep you updated on our progress. I just didn't want you to think we'd forgotten about it! All of us are committed to engaging the best leader to achieve our core purpose: ensuring the advancement and long-term success of Urgent Care.

I'll see you all in Dallas (one more time) for the Urgent Care Convention and Foundation Celebration next month! ■



CONTINUING MEDICAL EDUCATION

Release Date: April 1, 2025

Expiration Date: March 31, 2027

Target Audience

This continuing medical education (CME) program is intended for urgent care physicians, primary-care physicians, resident physicians, nurse practitioners, and physician assistants currently practicing, or seeking proficiency in, urgent care medicine.

Learning Objectives

Upon completion of this educational activity, the learner will be able to:

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2. Review clinical guidelines wherever applicable and discuss their relevancy and utility in the urgent care setting
3. Provide unbiased, expert advice regarding the management and operational success of urgent care practices
4. Support content and recommendations with evidence and literature references rather than personal opinion

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CONTINUING MEDICAL EDUCATION

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Urgent Care Evaluation and Management of Spontaneous Pneumothorax (page 17)

- 1. Common presenting complaints and symptoms of pneumothorax include which of these?**
 - a. Pleuritic chest pain and shortness of breath
 - b. Shoulder pain and cough
 - c. Sudden onset of symptoms
 - d. All of the above
- 2. What are the 2 subtypes of spontaneous pneumothorax?**
 - a. Active and latent
 - b. Primary and secondary
 - c. Pre-existing and sudden onset
 - d. Resonant and hyper-resonant
- 3. Which of these findings may be present in a patient with spontaneous pneumothorax?**
 - a. Diminished or absent breath sounds
 - b. Reduced ipsilateral chest expansion
 - c. Hyper-resonance on percussion
 - d. Any of the above

Hot Water Irrigation to Relieve Discomfort After Wasp and Bee Envenomation: A Case Series (page 25)

- 1. What symptoms are likely to present to urgent care related to Hymenoptera envenomation from wasps and bees?**
 - a. Pain
 - b. Pruritus
 - c. Large local reactions
 - d. All of the above
- 2. For hot water treatment of Hymenoptera envenomation, what water temperature is appropriate?**
 - a. 46°C (115°F)
 - b. 40°C (104°F)
 - c. 26°C (78°F)
 - d. As hot as the patient can tolerate for 2 minutes

3. Why is hot water treatment of Hymenoptera envenomation worth considering for urgent care?

- a. Readily available
- b. Safe and easy to implement
- c. May reduce antibiotic and steroid use
- d. All of the above

Recurrent Neuropsychiatric Symptoms in a Patient With Repeated Exposure to Metronidazole: A Case Report (page 37)

- 1. What is the most frequent and well-known adverse reaction to metronidazole?**
 - a. Nausea
 - b. Vomiting
 - c. Diarrhea and cramping
 - d. All of the above
- 2. How common is the risk of severe neurologic events for patients taking metronidazole?**
 - a. 0.25%
 - b. 0.75%
 - c. 1.25%
 - d. 1.75%
- 3. What is the common indication for metronidazole prescribing in outpatient settings?**
 - a. Bacterial vaginosis
 - b. Group A Streptococcus
 - c. Toxic shock syndrome
 - d. Palmoplantar erythrodysesthesia

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Urgent Care Evaluation and Management of Spontaneous Pneumothorax

Urgent Message: Spontaneous pneumothorax (PTX) occurs unpredictably. Many patients with spontaneous PTX may initially present to urgent care, so it is important for clinicians to include it in the differential diagnosis of patients presenting with acute chest pain and/or dyspnea. Rarely, a spontaneous PTX can progress to a tension PTX if the diagnosis is delayed.

Vrunda Patel, BS; Kevin Radecki, MD

Citation: Patel V, Radecki, K. Urgent Care Evaluation and Management of Spontaneous Pneumothorax. *J Urgent Care Med.* 2025; 19(7):17-22

Editor's Note: While the images presented here are authentic, the patient case scenario is hypothetical.

Abstract

A spontaneous pneumothorax (PTX) occurs when an atraumatic pulmonary air leak into the pleural space occurs, resulting in increased intrapleural pressure and variable degrees of lung collapse. The diagnosis of spontaneous PTX relies on clinical assessment and imaging. Point-of-care ultrasound (POCUS) has been shown to be more sensitive than chest x-ray (CXR). Definitive management of spontaneous PTX varies based on the patient's clinical status. Increasingly, stable patients are managed conservatively with serial observation, whereas patients in shock from tension PTX require urgent needle decompression and chest tube placement. It is most important that urgent care (UC) clinicians consider the diagnosis of spontaneous PTX and appropriately refer patients to an appropriate emergency department (ED) when the condition is identified. Recognizing red flags suggesting the need for emergent intervention and activating emergency medical

Questions for the Clinician at the Bedside

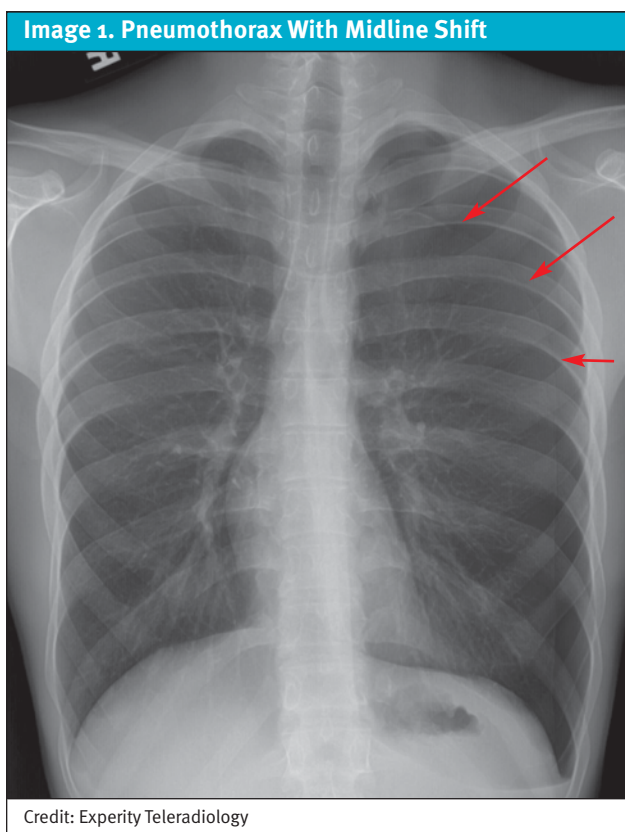
1. What are the most common risk factors, symptoms, and signs associated with spontaneous pneumothorax (PTX)?
2. What signs and clinical findings are most suggestive of tension PTX?
3. How reliable is chest x-ray for excluding PTX, and how do the test characteristics of x-ray compare with point-of-care ultrasound for the diagnosis of PTX?
4. What options exist for the management of spontaneous PTX, and how are these options affected by the patient's clinical status?
5. Which conditions may clinically or radiographically mimic PTX?

services (EMS) are crucial to prevent adverse outcomes. While UC specific guidelines do not exist, ED referral for all patients with a diagnosis of spontaneous PTX is recommended.

Clinical Scenario

A 32-year-old man with a history of spontaneous PTX

Author affiliations: Vrunda Patel, BS, University of Pikeville, Kentucky College of Osteopathic Medicine. Kevin Radecki, MD, Adena Regional Medical Center. Authors have no relevant financial relationships with any ineligible companies.



6 months earlier—which was treated with a chest tube—presented to his local UC center after experiencing a similar sudden onset of sharp, left-sided chest pain. The pain started 1 hour prior while inhaling from a cigarette he was smoking. The patient also complained of shortness of breath and dizziness. He denied fever, cough, or other preceding symptoms.

In UC, his vital signs were: temperature 37.2°C; heart rate 105 beats per minute, respiratory rate 26 breaths per minute; blood pressure 94/72 mmHg; and oxygen saturation 96% on room air. On exam, the patient was alert and oriented but appeared anxious and diaphoretic. Cardiovascular examination revealed a regular tachycardia with no murmurs. He had symmetric breath sounds, and there was no wheezing or rhonchi. His thoracic excursion appeared normal with respiration. The abdomen was slightly distended but soft and nontender without rigidity, rebound, or guarding. Extremities showed no swelling or pain, and peripheral pulses were weak and thready.

Definition and Classification of Spontaneous Pneumothorax

A spontaneous PTX (**Image 1**) is defined as air trapped

in the pleural space causing collapse of the underlying lung in situations without external trauma. Spontaneous PTX can be further divided into 2 subtypes: primary and secondary. While previously believed that primary spontaneous pneumothorax (PSP) occurred in patients without underlying lung disease, increasing evidence has cast doubt on this traditional conception. While patients with PSP may have no clinically apparent lung disease when it occurs, thoracic computed tomography (CT) imaging of patients affected with PSP shows evidence of pre-existing pleural porosity and emphysematous changes in the majority of cases.^{1,2} The incidence of PSP is nearly 3 times greater in men than women.³

A secondary spontaneous pneumothorax (SSP), by contrast, occurs in patients with underlying lung pathology such as chronic obstructive pulmonary disease (COPD), cystic fibrosis, pneumonia, or tuberculosis.⁴ Rarely, patients with endometriosis can develop extra-abdominal endometrial implants in the thoracic cavity, which can lead to SSP; this phenomenon is termed catamenial pneumothorax.^{4,5} Patients with SSP typically present with more severe symptoms than patients with PSP. In PSP, the patient's unaffected lung is functionally normal and can compensate for the loss of function in the affected lung.⁴ Patients with SSP tend to be older than patients with PSP (58 years vs 28 years, in 1 study) and, by definition also having pre-morbid clinical pulmonary disease.⁶ SSP will recur in over 50% of affected patients.⁷ While PSP recurs less commonly than SSP, patients are still at up to a 41% risk for recurrence in the 12 months following the episode.⁸

Relevant Anatomy and Pathophysiology

The visceral pleura lines the external surface of the lung and, in the setting of normal physiology is in close contact with the parietal pleura, which lines the thoracic cavity. In normal physiologic conditions, the pleural space is free of air, and hydrostatic forces balanced with lymphatic resorption keep the total pleural fluid volume under 10 mL.⁹

PSP is caused by blebs, bullae, and subclinical emphysematous changes at the periphery of the lung near the pleural border.¹⁰ SSP is most commonly related to COPD, interstitial lung disease/pulmonary fibrosis in older patients¹¹ and pneumonia, pulmonary tuberculosis, connective tissue disorders (eg, Marfan's syndrome), and cystic fibrosis in younger patients.¹² In either case, a rupture of subpleural lung parenchyma allows air to escape into the pleural space producing a spontaneous PTX.¹³

A tension PTX (**Image 2**) occurs when the pressure within the pleural space exceeds atmospheric pressure throughout all phases of respiration. This pressure, consequently, impairs venous return and cardiac filling and can progress to obstructive shock, if untreated.¹⁴ Given that atmospheric pressure is the force driving air into the pleural space when there is a defect, tension physiology in the setting of spontaneous PTX is a rare occurrence.^{14,15}

History

Patients with PSP most commonly present with a sudden-onset pleuritic chest pain, with or without breathlessness, and occasionally shoulder pain and cough.¹⁶ PSP occurs at rest in 80% of cases and most frequently affects tall, thin males between the ages of 15 and 34 years, whereas SSP is more prevalent in individuals patients >50 years of age.⁵

Physical Examination

PSP typically presents with diminished or absent breath sounds and reduced ipsilateral chest expansion. Hyper-resonance on percussion may also be present. These findings are not universally present and, therefore, the diagnosis requires imaging due to variability in symptoms and signs.⁵ Hemodynamic compromise and significant hypoxia are uncommon, and vital signs may be normal, particularly in patients with PSP.¹⁶

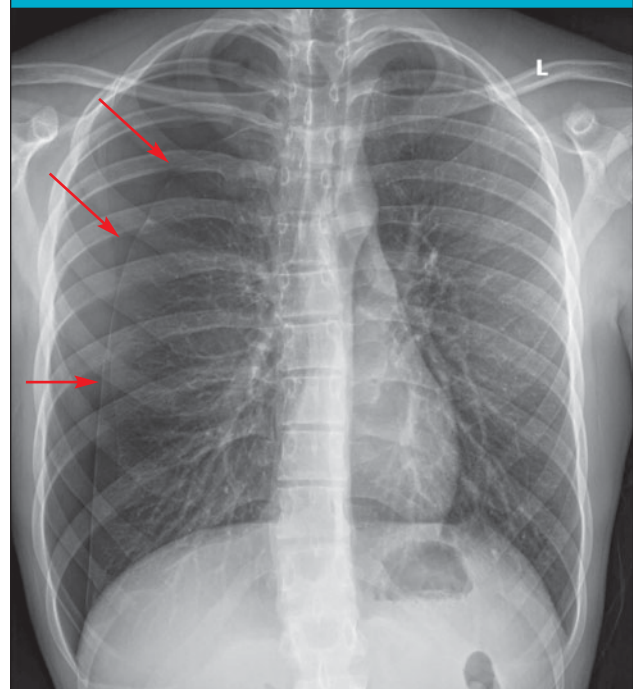
Tension PTX rarely occurs in cases of spontaneous PTX and is more common in patients with traumatic PTX and/or use of positive pressure ventilation.¹⁵ Clues suggesting the possibility of tension physiology include marked tachypnea, tachycardia, hypotension, tracheal deviation away from the affected side, jugular venous distention.¹⁷ If patients have concerning signs of tension PTX, EMS activation should not be delayed for radiographic conformation.¹⁷

Testing

Plain Radiography

The European Respiratory Society task force guidelines recommend an upright posterior-anterior (PA) chest radiograph as the preferred initial imaging study for diagnosing suspected PTX.⁵ PTX is often less apparent on a lateral view CXR, but obtaining 2 views can be helpful in the evaluation for alternate diagnoses.¹⁸ The hallmark radiographic finding for the diagnosis of PTX is displacement of the pleural line away from the chest wall, which is seen as an absence of peripheral lung markings.⁵ In an upright film, this finding is most often visible at the apex as the pleural gas tends to move cephalad while the pleural fluid moves caudally due to gravity.^{5,19}

Image 2. Right Tension Pneumothorax



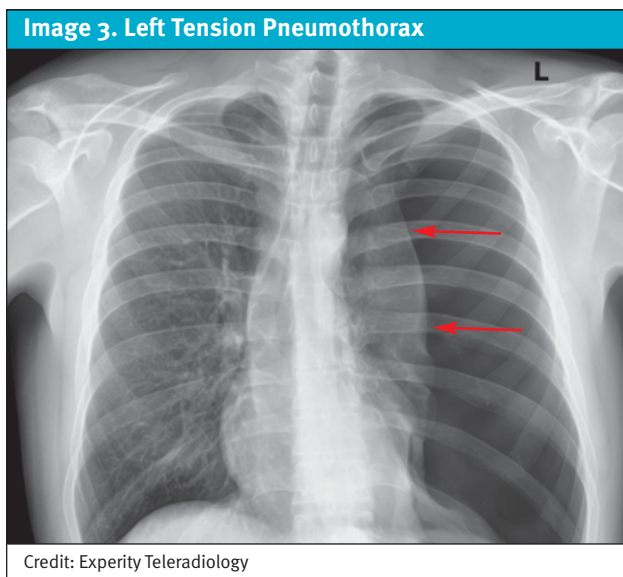
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Ultrasound

The value of bedside ultrasound in the evaluation of possible PTX has become increasingly apparent over recent decades. The American College of Emergency Physicians recognizes POCUS as a core application in the evaluation for suspected PTX, emphasizing its ability to provide rapid, bedside diagnosis and guide clinical decision-making in emergency settings.²⁰ A 2023 study demonstrated that POCUS using a linear probe had higher sensitivity (95.2%) and comparable specificity (97.3%) when compared to CXR for the diagnosis of PTX. While highly specific (97-99%), CXR sensitivity for PTX ranges from 52-73%.²¹ Given shortages of radiology technicians in the U.S. and superior test characteristics, PTX evaluation is among the more compelling arguments for POCUS in the UC setting.²² Lung ultrasound for PTX is among the more straightforward POCUS applications, and trainees have been shown to achieve proficiency with fewer than 10 supervised exams.²³ Lung POCUS has also been shown to be more accurate for predicting which patients with PTX require tube thoracostomy.²⁴

Other Imaging Modalities

While rarely available in UC settings, chest CT is the gold standard for the diagnosis of PTX.²⁵ However, with



a sensitivity of 100% for even small pneumothoraces, the extreme sensitivity of modern CT scanners for PTX can also lead to clinical conundrums and overtreatment of clinically insignificant pneumothoraces.²⁶

Diagnostic Dilemmas

Signs and symptoms of spontaneous PTX overlap with many other “can’t miss” diagnoses including aortic dissection, acute coronary syndrome, pneumonia, pericardial tamponade, and pulmonary embolism.^{27,28,29} Given limitations in diagnostic testing available in the UC setting, coupled with the insensitivity of CXR for PTX, it is likely that many patients with sharp chest pain and/or dyspnea will require ED referral without a definitive diagnosis. It is important that ED referral is not delayed in such patients if there are concerning vital sign abnormalities or other findings suggesting that the patient is unstable.

Frequently, patients with COPD can develop pulmonary bullae. On CXR, these bullae may be confused for PTX.³⁰ Clinically, COPD exacerbations generally present more insidiously than SSP with progressive dyspnea, increasing cough, and sputum production over hours-days.³¹ In cases where a bulla versus PTX are both considered possible, it is helpful to compare the patient’s CXR with a prior study when available. ED referral is warranted in cases of diagnostic uncertainty, so that the patient may be observed and advanced imaging obtained with the guidance of specialist consultation. Additionally, a ruptured bulla in a patient with COPD may produce a SSP.³² Such patients have little pulmonary reserve and may deteriorate quickly. This pos-

sibility should be considered in patients with atypical COPD exacerbations and (unlike asthma) underscores the importance of CXR for all cases of suspected COPD exacerbation.³³

Urgent Care Disposition

Management of PTX varies based on the patient’s clinical presentation, co-morbidities, and follow-up. No guidelines exist for the UC management of patients with spontaneous PTX. A 2020 study of ambulatory care patients with PSP showed that patients managed conservatively (ie, without pleural decompression/thoracostomy) had fewer hospital days but more frequent adverse events.³⁴ Conversely, another 2020 randomized controlled trial of patients with PSP found a higher rates of complications in patients treated interventionally compared to observation.³⁵ Interventional management was also associated with significantly higher rates of PTX recurrence (17% vs. 5%).³⁵ The use of smaller chest tubes and Heimlich valves (HV) has become increasingly adopted.³⁶ The HV has been shown to be effective in over 80% of spontaneous PTX and allows for PTX decompression without a water seal device in the outpatient setting.³⁶

While conservative outpatient management is becoming increasingly preferred for small, spontaneous pneumothoraces in hemodynamically stable patients, studies typically suggest that CXR is repeated in 3-6 hours after initial diagnosis to confirm the PTX is not expanding.¹³ As this is impractical in the UC setting, immediate ED referral upon identification of spontaneous PTX is recommended. Decisions regarding the need for additional imaging (eg, chest CT), decompression, and hospitalization are complex and typically undertaken in close consultation with an appropriate specialist. Additionally, many patients with PTX are treated with supplemental oxygen even in the absence of hypoxemia.³⁶ These logistical hurdles create further barriers to safe UC discharge, even for healthy, stable patients, in the absence of direct specialist guidance.

Management of Unstable Patients

While immediate ED referral is the most practical disposition for the vast majority of UC patients with spontaneous PTX, many patients may not require EMS transport. Patients with significant symptoms, such as severe chest pain or dyspnea, or evidence of physiologic instability—which includes systolic blood pressure <90 mmHg, persistent or progressive tachycardia, significant tachypnea (ie, respiratory rate >30 bpm), and/or oxygen saturation <92% on room air—warrant immediate EMS

activation.^{34,35} Additionally, patients with evidence of tension pneumothorax need to be transferred to ED immediately for urgent decompression.

While exceedingly rare in cases of spontaneous PTX, tension PTX in these settings have been reported.¹⁵ In patients with progressive tachycardia, hypoxemia (or oxygen requirements), and/or hypotension, immediate needle thoracostomy to decompress the affected hemithorax should be considered.³⁷ The optimal location for needle decompression has been debated, however, a recent cadaveric study found the pleural space was accessed with significantly greater accuracy when a 14-gauge angiocatheter was placed in the fifth intercostal space at the anterior axillary line compared to the second intercostal space at the mid-clavicular line.³⁸

Definitive Management

For patients with spontaneous PTX who have persistent air leak, recurrence, and/or failure of the lung to re-expand after an appropriate period of observation, chemical pleurodesis or thoracic surgery may be considered.³⁹ Follow-up with a thoracic surgeon for review of the various treatment options is indicated for patients with spontaneous PTX after ED or hospital discharge.³⁶

Next Level Urgent Care Pearls

- Patients with spontaneous PTX may have symmetric lung sounds and normal vital signs. Do not rely on physical exam alone to exclude spontaneous PTX.
- Patients with COPD may develop bullous lung disease. On CXR, this may be mistaken for PTX. Comparison with a historic CXR is useful in such cases.
- COPD exacerbations usually present with a relatively gradual decline in condition. Sudden deterioration may suggest a ruptured bullae with spontaneous PTX.
- A “normal” CXR does not exclude PTX. CXR is only 52-73% sensitive for PTX. Sensitivity is enhanced by ensuring images are acquired with the patient upright.
- Lung POCUS can be quickly learned. The sensitivity of POCUS for PTX is >95% when performed by appropriately trained clinicians.
- Needle decompression can be life-saving in the rare instances of tension PTX, which can arise after spontaneous PTX. The most successful approach for needle decompression involves using a 14-gauge angiocatheter in the fifth intercostal space at the anterior axillary line.

Clinical Scenario Conclusion

The patient had a 2 view upright CXR in UC which

confirmed a small left apical PTX. Given the patient's tachycardia, the treating UC clinician suggested activating EMS would be safest. The patient declined ambulance transport and opted instead to have his wife drive him to the ED of the hospital where he had been previously treated.

In the ED, the patient underwent repeat CXR that showed a stable PTX. He was placed on supplemental oxygen through a facemask and admitted to the thoracic surgery service. His PTX progressed somewhat on repeat imaging the following day, and he was treated with decompression with a small pigtail catheter with a Heimlich valve and discharged to follow-up in clinic. After 3 days, his PTX was no longer apparent on CXR, and the chest catheter was removed. He underwent semi-elective pleurodesis one month later to mitigate the risk of future recurrences.

Takeaway Points

- Common presenting symptoms of PTX include sudden-onset pleuritic chest pain, shortness of breath, and occasionally shoulder pain or cough.
- PSP occurs in younger patients without clinically evident lung disease, whereas SSP occurs in older patients with lower physiologic reserve.
- Both PSP and SSP have high rates of recurrence, especially in the months following the initial episode.
- On exam, diminished or absent breath sounds and hyper-resonance on percussion of the affected side and/or reduced chest expansion may be present. Patients may have tachypnea, hypoxemia, and/or tachycardia. However, patients (particularly those with PSP) may also have normal vital signs and physical exam.
- While rare, tension PTX can occur in cases of both SSP and PSP. If patients have vital signs suggestive of shock, do not delay EMS activation. In settings with prolonged EMS response times, UC clinicians may be compelled to perform needle decompression of the hemithorax in cases where a patient's condition is rapidly declining.
- POCUS evaluation can be easily learned and has higher sensitivity and comparable specificity for diagnosing PTX when compared to CXR.
- CXR findings include the displacement of the pleural line away from the chest wall and the absence of lung markings beyond the pleural line.
- Conservative management is increasingly being recommended for stable patients, as it is associated with fewer adverse events, reduced risk of recurrence, and a lower need for surgical interventions in patients

with PSP.

- In the absence of direct specialist guidance, it is prudent for UC clinicians to refer all patients diagnosed with spontaneous PTX to a nearby ED with surgical specialist coverage. ■

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Hot Water Irrigation to Relieve Discomfort After Wasp and Bee Envenomation: A Case Series

Urgent Message: Hot water irrigation for 2 minutes provided immediate and sustained relief of pain and pruritus, as well as rapid de-escalation of large local reactions due to wasp and bee stings in this series of patients.

Ted C. Shieh, MD; Jenny J. Lu, MD MS

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Abstract

Introduction: Pain, pruritus, and large local reactions (LLR) are the most common symptoms attributed to Hymenoptera (ie, wasp and bee) stings and can persist for 7 to 21 days after envenomation. Guidelines on the acute management of LLR are lacking, and commonly used treatments are ineffective, leading to prolonged symptoms, unplanned return visits, and inappropriate use of systemic antibiotics. Recent studies show that concentrated heat applied by using portable heat pens provides effective relief of pain and pruritus immediately after Hymenoptera envenomation. The efficacy of other forms of heat on pain, pruritus, and persistent local symptoms after delayed presentation, such as LLR, has not been reported.

Case Selection and Method: Three patients presented to our urgent care (UC) center in suburban Chicago, Illinois, between July-October 2024 with localized symptoms due to wasp or bee stings, which occurred within 3 days of presentation. Treatment involved 2 minutes of hot water irrigation using simple tap water at the highest temperature setting the patient could tolerate from a faucet in the clinic or at home.



Results: In case 1, a 53-year-old female presented with severe pain and mild itching minutes after sustaining more than 14 stings to the lower extremity after disturbing a ground nest of wasps. Hot water treatment resulted in immediate relief of pain and pruritus, which was sustained without need for additional treatment.

Cases 2 and 3 involved patients who presented with LLR and pruritus, 2- and 3-days post-envenomation by

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wasps or bees. In both cases, hot water treatment resulted in immediate relief of pruritus as well as significant de-escalation of LLR within a day. In case 2, the patient presented 3 days post-envenomation and denied prior history of allergic reaction to Hymenoptera venom. Using only topical steroids, the patient reported no recurrence of itching or other symptoms on follow-up. In case 3, the patient presented 2 days post-envenomation and reported a history of LLR to Hymenoptera stings. The patient noted immediate improvement of edema associated with LLR and resolution of itching and pain after hot water treatment. Treatment with oral prednisone and topical betamethasone was also initiated. At follow-up 2 days after treatment, the patient reported marked reduction in swelling and redness, although the patient experienced mild residual itching. None of the 3 patients were treated with oral antibiotics.

Conclusion: Heat applied to areas of local reaction to bee or wasp stings with simple hot tap water provided effective and sustained relief of pain and itching up to 3 days post-envenomation in this case series. Hot water irrigation can also provide rapid de-escalation of LLR. In our patients with a prior history of allergy to Hymenoptera presenting with LLR, topical and systemic steroids were necessary. The effect of heat using hot water appears safe and may provide anti-inflammatory and venom denaturing effects, resulting in faster clinical improvement of symptoms.

Introduction

Hymenoptera envenomation from wasps and bees are common with the life-time risk ranging from 56.6% to 94.5%.¹ While systemic allergic reactions can occur and remain the most critical concern, localized symptoms, specifically pain, pruritus, and LLR, constitute the vast majority of symptoms likely to present to urgent care (UC). The species of wasps and bees that attack humans usually do so when their hives are threatened or disturbed. Wasp and bee venom consists of a mixture of toxins with neurotoxic, lipolytic, proteolytic, immunogenic, and anti-infective properties,² which cause pain, cellular injury, pruritus, and local or systemic allergic reactions. LLR is an IgE-mediated sensitization reaction and a more common type of allergic response (2.4% - 26.4%) than systemic reactions (0.3% - 8.9%).^{3,4,5} Defined as swelling exceeding 10 cm in diameter and lasting over 24 hours, LLR typically lasts between 2 and 10 days, however reactions can last up to 21 days in certain cases.⁵ While

not specifically reported in the literature, our experience suggests that poorly controlled local symptoms, especially LLR, are common reasons for seeking attention in UC. While cellulitis after Hymenoptera envenomation is rare,⁶ many unplanned return visits to UC for LLR occur, and inappropriate antibiotics are often prescribed.^{5,7}

Current Treatments After Envenomation

Common domesticated honeybees can leave a stinger with a venom gland embedded in the skin after a single envenomation, while stinging wasps and other wild bees can sting repeatedly without leaving stingers behind.⁸ Current acute treatment recommendations for bee and wasp stings consists of removing the stinger and gland if present, applying cold packs to affected areas for pain and pruritus, and prescribing oral analgesics, antihistamines, and steroids.⁶ Standard treatment of LLR varies, but antihistamines and systemic corticosteroids are often utilized.^{5,7} While these treatments have been described in the literature, research on their efficacy is lacking.

Infections due to Hymenoptera stings occur rarely.⁵ In a retrospective study of emergency department (ED) patients treated for LLR after Hymenoptera stings, 6% of patients received systemic antibiotics.⁷ Although guidelines have been published advocating against the use of systemic antibiotics unless clinical signs of infection or risk factors are present,⁹ overlap in the appearance and symptoms of cellulitis and LLR can lead both patients and clinicians to inaccurately conclude that antibiotics are necessary. However, importantly, symptom control is critical as uncontrolled pruritus can lead to scratching and secondary infection.

Field studies using battery-operated heat pens have demonstrated highly effective relief of pain and pruritus when used immediately after envenomation by bees, wasps, mosquitoes and biting flies.^{10,11} Heat pens, however, can be painful to use, which is a factor limiting their adoption; no studies to date have demonstrated efficacy of heat pens when treatment is delayed. However, in the acute setting, heat may be anti-inflammatory^{12,13} and cause venom to denature.¹² This case series explores the effects of using hot water irrigation in the treatment of local symptoms from wasp or bee stings ranging from immediate use up to 3 days post-envenomation.

Hot Water Treatment Protocol

Our treatment protocol was developed by the primary author based on personal experience treating wasp and

honeybee stings using heat pens and hot water immediately post-envenomation, as well as experience treating a broad range of toxic marine envenomations using hot water. The protocol involves irrigation of the envenomated area using hot water from a faucet or hand-held shower. Treatment involves irrigating the envenomated area(s) at the patients' maximum tolerated heat level for 2 minutes, which is the duration we have found to effectively alleviate pain and pruritus based on past experience. Patients with distal upper extremity stings are irrigated in the clinic, while patients with stings to other anatomic areas are given instructions to perform hot water irrigation at home and then are contacted by phone to assess clinical response.

Findings

Case 1: Hot Water Treatment for Immediate Symptom Relief

History

A 53-year-old female without prior history of allergy to Hymenoptera, presented 15 minutes after sustaining multiple stings to the left lower leg after accidentally disturbing a ground nest of wasps. The patient reported severe pain to the affected area and mild itching.

Relevant Physical Examination Findings

The patient's vital signs were normal other than a blood pressure of 154/83 mmHg and heart rate of 105 beats per minute. She appeared to be in moderate discomfort. Examination of the left leg revealed more than 14 small erythematous skin lesions of the distal medial aspect of the lower leg near the medial malleolus. The remainder of her exam revealed no signs of systemic allergic response.

Urgent Care Management

The patient was instructed to return home immediately and apply hot water to the affected area per the protocol previously described. She was also prescribed topical betamethasone 0.05% cream and instructed to take over-the-counter antihistamines and analgesics as needed for itching and pain, respectively.

Case Conclusion

During a phone follow-up after 3 days, the patient reported that she had experienced complete resolution of both pain and pruritus immediately after the hot water irrigation procedure, which she implemented shortly after discharge from UC. She remained symptom free and stated she did not require any medications.

Case 2: Hot Water Treatment for LLR – Presentation 72 Hours Post-Envenomation

History

A 39-year-old female without prior history of allergy to Hymenoptera presented to UC 3 days after sustaining a bee or wasp sting to the left distal dorsal forearm while walking her dog. The patient became concerned because of an expanding area of pruritus, warmth, redness, and swelling surrounding the sting over the 48 hours prior to her visit. She denied scratching the affected areas or experiencing any pain, fever, or other systemic symptoms. Her only medication was cetirizine 10 mg daily for allergy symptoms.

“Treatment involves irrigating the envenomated area(s) at the patients' maximum tolerated heat level for 2 minutes, which is the duration we have found to effectively alleviate pain and pruritus based on past experience.”

Relevant Physical Examination Findings

The patient's vital signs were normal. Mild erythema and warmth along with swelling were noted to the volar forearm, consistent with LLR, surrounding the site of envenomation. The affected areas were non-tender and there was no induration or fluctuance. No other signs of systemic inflammatory or allergic response were observed.

Urgent Care Management

The hot water protocol was implemented in the clinic as her forearm could be irrigated in the UC center's sink. After irrigation with hot water for several minutes, the patient reported complete resolution of the bothersome pruritus. The patient was instructed to apply topical betamethasone 0.05% cream twice daily and to continue taking cetirizine according to standard package instructions. Oral prednisone 40 mg daily for 5 days was also prescribed to be started the following morning if the swelling and erythema did not de-escalate; the patient was advised to return for follow-up in 2 to 4 days.

Table 1: Summary of Case Findings

Case	Age Sex	Duration since envenomation on presentation	Initial presenting symptoms	Immediate response to treatment	Follow up findings	History of hymenoptera venom allergy
1	53 F	< 1 hour	P	no P	2 days: no P	No
2	39 F	3 days	I, LLR	no I	3 days: no I LLR reduced	No
3	44 M	2 days	P, I, LLR	no P, I	2 days: no P, mild I LLR reduced	LLR
<i>P = pain; I = pruritus; LLR = large local reactions</i>						

Case Conclusion

The patient returned for reassessment 4 days after her initial treatment (1 week after envenomation). She reported that the swelling had improved significantly by morning after treatment, and she did not take the oral prednisone. The pruritus did not recur. Topical betamethasone was applied twice daily as instructed to areas of swelling. The patient continued to take cetirizine 10 mg daily as part of her routine for other allergy symptoms. On repeat physical examination, there was less swelling and some dark discoloration to the skin in a small area adjacent to the site of envenomation at the distal forearm. All erythema and warmth had resolved.

Case 3: Hot Water Treatment for LLR – Presentation 48 Hours Post-Envenomation

History

A 44-year-old male with a history of prior local allergic reaction to “bee stings” presented 2 days after sustaining a bee or wasp sting to the right proximal volar forearm. He complained of tense swelling, warmth, and pruritus to the entire right forearm with mild pain localized to the site of envenomation. The affected areas were nontender. He denied scratching the affected areas and denied any systemic symptoms. The patient had not been taking antihistamines due to aversion to side effects.

Relevant Physical Examination Findings

The patient’s vital signs were normal. There was erythema, warmth, and swelling along the entire right volar forearm. The site of envenomation was noted at the proximal volar forearm. No other signs of systemic inflammatory or allergic response were present, and there was no induration or fluctuance to suggest secondary soft tissue infection.

Urgent Care Management

The hot water treatment protocol was implemented in UC, after which the patient reported immediate and complete resolution of pain and pruritus, as well as noticeable reduction of swelling. The patient was prescribed oral prednisone and topical betamethasone in a similar fashion to case 2. He initiated these medications shortly upon discharge. He again declined to take an antihistamine due to side effects.

Case Conclusion

The patient returned for reassessment 2 days after treatment (4 days after envenomation) for recheck. At that time, he reported that the swelling had improved significantly, and he only noticed mild swelling and erythema surrounding the site of envenomation. He did note that mild pruritus had recurred but was managed effectively with topical steroids.

Case Series Conclusion

Heat applied to bee or wasp stings and affected local areas using 2 minutes of hot water irrigation was well-tolerated by each of the patients (both in UC and in the patient’s home). All patients reported immediate relief of pain and itching which persisted through follow-up. Hot water irrigation also resulted in rapid resolution of the signs and symptoms of LLR.

Each of the 3 patients denied history of systemic Hymenoptera allergy. In this group, the symptom relief achieved with hot water treatment appeared to be sustained (**Table 1**). This symptomatic improvement led to less use of other treatments such as antihistamines, steroids, and antibiotics. The patient with a prior history of local Hymenoptera allergy who presented with LLR also benefited symptomatically from hot water irrigation, however, he also used topical and systemic steroids, which may have contributed to symptom resolution.

Hot water irrigation appears to offer an easier, safer, and more effective method for the treatment of local reactions related to Hymenoptera envenomation compared to other sources of heat (eg, heat pens). All patients reported a significant degree of immediate symptom improvement. The hot water treatment protocol demonstrated efficacy on both immediate reaction and LLR, suggesting efficacy through a broad duration of the phases of reaction after envenomation. Systemic antibiotics were avoided in each case.

We observed that the patients reported a transient and mild increase in pain and pruritus during the first minute of irrigation, followed by a rapid improvement (or complete) resolution of symptoms during the second minute of irrigation during hot water treatment.

Discussion

This case series demonstrates that 2 minutes of hot water irrigation is safe, well-tolerated, and effective as an alternative to heat pens, providing immediate and sustained relief of local symptoms due to wasp and bee stings. In the patients with LLR, the affected areas were pruritic and non-tender, suggesting an immunologic, rather than infectious process. Patients were accepting of deferring antibiotic and other treatments after achieving rapid resolution of symptoms.

Our protocol was easy to administer at home or in the healthcare setting and enables heat to be applied to a larger area all at once. It is important to note that the treatment protocol may be challenging in younger children due to the transient increase in symptoms. Additionally, the protocol should be used with caution in patients with neuropathy or other neurosensory disorders that would impair their ability to identify when the hot water irrigation exceeded safe levels to avoid thermal burn. Either direct or subjective measurement of the water temperature by a caregiver before irrigation and patient coaching may be helpful in these patients.

Previous prospective field studies using portable concentrated heat devices such as Bite Away and Heat It shortly after envenomation have shown marked reduction of pain and pruritus due to bites and stings from mosquitos, horseflies, bees, and wasps.^{10,11} These therapies have not demonstrated efficacy, however, with more delayed use. Hot water treatment has the added advantage of being widely available and allows for a broader area of coverage, which may explain hot water's efficacy in treating LLR and other persistent symptoms up to 3 days post-envenomation. Since patients may present to UC settings in a delayed fashion after

envenomation, often out of concern for the increasing swelling, pain, and itching associated with LLR, this hot water irrigation protocol provides a desirable tool to quickly address local symptoms.

Reduction of pain and pruritus from applying heat to wasp and bee stings immediately after envenomation has been postulated to rely on desensitization,^{10,11} while studies also have demonstrated immunosuppressive effects when temperatures exceed 41°C (105.8°F).¹² However, neither of these mechanisms of action fully explain the rate, degree, and duration of symptom relief observed in our case series. In a separate exercise, we measured the maximally tolerated water temperatures for 2 minutes of irrigation of several volunteers using an infrared thermometer and found that the temperatures tolerated ranged from 43°C-46°C (110°F-115°F). We postulate that heat, when applied using hot water in this temperature range, may have venom-denaturing effects, and the relief of symptoms may be largely due to thermolability of venom. This mechanism would be similar to what is observed with hot water immersion at 45°C (113°F) in the treatment of envenomation from toxic marine animals (eg, cnidaria [sea jellies], echinoderms [sea urchins], and venomous spiny fishes [stingrays, stonefish, lionfish, catfish]).^{13,14}

Pain, pruritus, and LLR can persist for 7 to 21 days after envenomation.¹⁵ Our observations suggest that using heat can quickly improve local reactions and markedly reduce pain and pruritus. This improvement in symptoms may increase patient acceptance of avoidance for systemic antibiotics. Additionally, the risk of secondary bacterial infection is likely to be mitigated, as less pruritus will lead to less scratching and compromise of the normal skin barrier. It is worth noting that Hymenoptera toxins also exhibit broad antibacterial properties,² which may explain why, in addition to the very superficial nature of envenomation, soft tissue infections from Hymenoptera stings are rare.

Our hot water treatment protocol appeared safe and easy to implement in clinical and home settings for treatment of local symptoms due to wasp and bee stings up 3 days post-envenomation. Prospective randomized studies would be instrumental in determining the treatment effects specific to hot water irrigation for the relief of symptoms after Hymenoptera envenomation. Given the ubiquitousness and safety of hot water, additional studies examining the effects of hot water for the treatment of systemic reactions and risk of future reactions, as well as any effect on rates of prescribing of systemic antibiotics and steroids would be worthwhile.

Limitations

This was a case series involving 3 UC patients without a control group, so drawing broad conclusions on the efficacy of hot water treatment requires further study. Identification of the arthropods responsible for envenomation was based on the patient's recall, therefore the exact species or type of Hymenoptera was unknown, but limited to those residing in suburban Chicago, Illinois. It is uncertain what the efficacy of our protocol might be in the treatment of symptoms related to envenomation from other Hymenoptera species from other geographies. All diagnoses were clinical and based on the judgment of the treating UC clinician.

Ethics Statement

Each patient provided verbal informed consent to try the hot water irrigation protocol in addition to standard care. Patients also provided verbal consent for their clinical histories to be published. ■

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ABSTRACTS IN URGENT CARE

Evaluating Interventions for Improving Antibiotic Stewardship in Urgent Care

Take Home Point: An antibiotic stewardship intervention was associated with reduced rates of antibiotic prescribing for patients with bronchitis, but not viral upper respiratory infections (URI).

Citation: Park D, Roberts A, Hamdy R, et al. Evaluating an urgent care antibiotic stewardship intervention: a multi-network collaborative effort. *Infect Control Hosp Epidemiol.* 2025; Jan 8:1-6. doi: 10.1017/ice.2024.213

Relevance: Antibiotic prescribing for conditions not caused by bacterial infection remains one of the core challenges for quality of care in urgent care (UC) centers. Many studies on antibiotic stewardship interventions and outcomes have been previously published, with mixed results. This study was unique in design as it focused entirely on UC sites of care across many states in partnership with the Urgent Care Association (UCA).

Study Summary: This was a quality improvement study involving UC centers from across the U.S. The UCA and Urgent Care Foundation partnered to recruit participating centers. The antibiotic stewardship intervention consisted of 3 plan-do-study-act (PDSA) cycles over a one-year time period. The first cycle involved participating clinicians signing the UCA/College of Urgent Care Medicine Antibiotic Stewardship Commitment Statement and choosing among intervention(s) available. The second and third PDSA cycles allowed clinicians to review their individual progress and select new intervention(s) to implement if desired. Clinicians committed to active participation in data collection, implementing stewardship efforts, attending webinars, and regular monthly feedback for the entire study period. Clinicians included both physicians and advanced practice clinicians.

Forty-nine UC centers from 18 different states were enrolled with 138 individual clinicians participating. The clinicians randomly selected 30 cases monthly where the patient

was diagnosed with either bronchitis or viral URIs. The charts were then anonymously reviewed by other clinicians to determine appropriateness of antibiotic prescribing. During the study period, “actively engaged clinicians” were able to choose from multiple continuing medical education accredited options surrounding antibiotic stewardship. “Non-actively engaged clinicians” who worked in the same UC centers served as the control groups.

In all, 15,385 patient visits were included, and 49.2% of visits reviewed were performed by “actively engaged clinicians.” The authors found overall antibiotic prescribing rates decreased from 16.0% during baseline to 13.6% by the final 2 months of the intervention (4.4% absolute reduction, 24.4% relative reduction, $P < 0.001$). There was a significant decrease in antibiotic prescribing among clinicians actively engaged in the study for bronchitis (40% vs. 28.7%), viral URI (12.9% vs. 7.7%), and both diagnoses (15.9% vs. 9.6%) compared to baseline. There was a significant reduction in inappropriate prescribing globally for all clinicians for bronchitis. Engaged clinicians, importantly, also had significantly lower baseline prescribing rates of antibiotics in cases of bronchitis (40% vs. 61%, $P = 0.012$).

Editor’s Comments: This was a UC-specific study—one of the few available—which should be recognized and commended. The study design was robust and there are many interesting findings. The specifics of the educational interventions were left vague, but this is likely inconsequential. The most noteworthy findings are that even among engaged clinicians at the end of the study period, almost 8% of patients with what amounts to a common cold received antibiotics, and patients with bronchitis received antibiotics nearly 30% of the time. The combination of an educational intervention with clinician involvement did make a difference, but antibiotics were still prescribed inappropriately very frequently. This is clearly emblematic of larger issues than what can be solved by clinician education. Patients very commonly present to UC requesting antibiotics for viral illnesses. Without changes in the public’s demands for inappropriate antibiotics and support/protection for clinicians practicing evidence-based medicine, we can expect antibiotic prescribing rates to decrease only so much.

It would be compelling, as a follow-up study, to see how much regression of these prescribing behaviors among the “engaged clinicians” occurs after 3-12 months post-study. We suspect it would be considerable, as fighting this battle on a daily basis is largely unsustainable for any individual clinician. For those assessing quality in UC,



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these figures also serve as excellent benchmarks. Based on these data, it is clear that it would be unreasonable to expect antibiotic prescribing for viral diagnoses for any clinician to be lower than 5-10%. Centers and clinicians alike could be measured against the numbers from the engaged clinicians to determine how they stack up. Clinics and clinicians approaching this studies' post-intervention rates of antibiotic prescribing for engaged clinicians should receive praise rather than scorn. The numbers will certainly be higher than what would be ideal, however, attempting to move the needle further than these post-intervention figures by focusing on changing provider, rather than patient, behaviors will not only be ineffective, but more concerning, demoralizing for clinicians. ■

When Does Telehealth Compromise Patient Safety?

Take Home Point: Although extremely rare, serious incidents and deaths can occur with remote triage and management (ie, telehealth). This qualitative study identified themes among cases of primary care patients managed without in-person visits who suffered untoward outcomes.

Citation: Payne R, Clarke A, Swann N, et. al. Patient safety in remote primary care encounters: multimethod qualitative study combining Safety I and Safety II analysis. *BMJ Qual Saf.* 2024 Aug 16; 33(9):573-586. doi: 10.1136/bmjqs-2023-016674.

Relevance: Telehealth implementation and utilization have dramatically increased since the COVID-19 era began. While remote interactions offer expanded access and triage capabilities, best practices for remote evaluation and management of acute issues remain poorly defined.

Study Summary: This was a multimodal qualitative study in the United Kingdom which included analysis, longitudinal ethnography, and national stakeholder interviews. The authors identified and analyzed a sample of safety incidences involving remote primary care encounters from 12 general practices across England, Scotland and Wales. The practices were selected to achieve maximal diversity in locations, populations served, and maturity of digital integration. The authors analyzed 95 incident reports from reports to the National Health Services of patient harms. Data was collected from interviews and ethnographic notes to identify themes.

The authors identified several main themes among the safety incidents. Themes included: poor communication

related to telephonic modalities, limited clinical information, patient and caregiver burden, and inadequate training. They found examples of deaths or serious harms associated with remote encounters in primary care were extremely rare (n=95) despite an extensive search covering 2 years' worth of remote consultations. The total number of telehealth consultations reviewed (ie, denominator) was not reported. They noted that remote encounters depend on history taking and dialogue, where high quality verbal communication is crucial. They also raised concerns for inequities being exacerbated by telehealth as patients' various vulnerabilities (eg, extremes of age, poverty, language and literacy barriers, comorbidities) may differentially affect access to and effectiveness of telephonic evaluation.

"The underlying themes identified by the authors do highlight the critical principle that underpins all telehealth evaluations: Without in-person assessment, less data is inherent."

Editor's Comments: Remote consultations included a more comprehensive definition than what is commonly conceived of as telehealth in the U.S. For example, several cases of patient harms were related to patients speaking to non-clinicians (eg, receptionist, nurse aides) who relayed patient concerns to clinicians and the clinicians' recommendations to the patients in turn. Most instances of harm analyzed involved only telephonic/audio evaluation and there were examples of how the use of video platforms averted disasters.

Many of the cases of harm occurred before 2020 as well. We have collectively learned much and refined telehealth processes over the past 5 years and many of the themes discussed may not be representative of current issues in telehealth. However, telehealth use is likely to continue and even to expand as patient acceptance and technological solutions continue to expand. The underlying themes identified by the authors do highlight the critical principle that underpins all telehealth evaluations: Without in-person assessment, less data is inherent. Telehealth care can range in modalities from text-only to audio-only to video, with progressive increases in data. Clinicians should be mindful of the degree of limitations associated with the modality utilized, while also ensuring patients are aware that the trade-off for the convenience of remote consultation is greater uncertainty that the assessment they receive is accurate. ■

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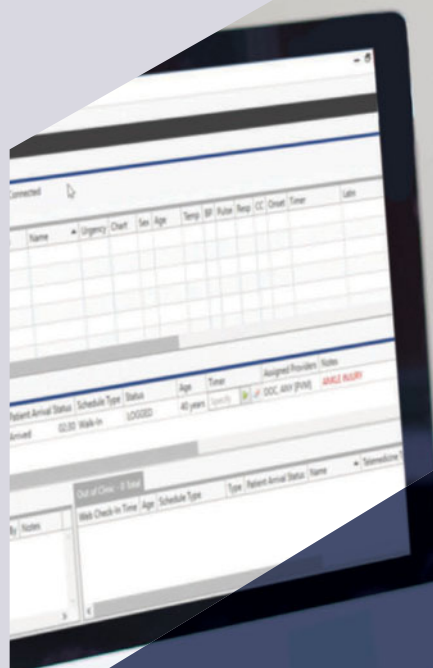
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How Effective is Suicide Screening in a General Clinic Population?

Take Home Point: Implementation of suicide-care (SC) screening significantly increased safety planning and reduced suicide attempts in the 90-days after a primary care visit.

Citation: Richards J, Cruz M, Stewart C, et. al. Effectiveness of Integrating Suicide Care in Primary Care: Secondary Analysis of a Stepped-Wedge, Cluster Randomized Implementation. *Trial Ann Intern Med.* 2024 Nov; 177(11):1471-1481. doi: 10.7326/M24-0024

Relevance: In the developed world, suicide is among the leading causes of death in young adults. Emergency department (ED) based studies, such as ED-SAFE, have shown reductions in suicide attempts and deaths when implemented. The effectiveness of suicide screening in UC has not been reported in the literature.

Study Summary: This was a secondary analysis of a stepped wedge, cluster randomized implementation trial of adult patients conducted in 19 primary care (PC) clinics of Kaiser Permanente Washington (KPWA). The original study was designed to evaluate the integration of substance use disorder (SUD) assessment in primary care. KPWA leadership suggested including population-based SC in the initiative and this was incorporated simultaneously as part of a comprehensive behavioral care initiative. SC was assigned randomly in set periods in combination with the substance use care to certain PC clinics. SC and SUD screening involved administration of a 7-item screening tool—which included the 2-item Patient Health Questionnaire for depression, the 3-item Alcohol Use Disorders Identification Test, a cannabis use frequency question, and a question about illegal drug or nonmedical use of prescription medications frequency. Intervention implementation was supported by 3 key strategies: practice facilitation, electronic medical record clinical decision support, and performance monitoring (audit and feedback provision).

The authors included 255,789 patients in the usual care group and 228,255 patients in the SC intervention group. They found the implementation of population-based SC implemented concurrently with SUD care increased safety planning 38.3 vs 32.8 per 10,000 patients; rate difference, 5.5 (95% confidence interval [CI], 2.3-8.7) and decreased the rate of suicide attempts by 25% (4.5 vs 6.0 per 10,000

patients; rate difference, -1.5 CI, -2.6 to -0.4) in the 90 days after primary care visits. The initiation of new psychotherapy decreased slightly in the SC period, suggesting that the intervention, including short-term counseling provided by clinical social workers may obviate demand for mental health specialty care.

Editor's Comments: There was no difference in rates of death by suicide reported, which is ultimately the most important outcome. With most urgent care (UC) centers closely tracking patient throughput efficiency metrics, such as door-to-door time, it is uncertain if this study's results will be seen as compelling enough to justify adding time to a patient's visit by UC center owners and administrators. While there was a 25% relative reduction in the rate of suicide attempts, which was statistically significant, the absolute reduction in suicide attempts with the intervention was only 1.5 per 10,000 patients. This results in a number needed to treat of 6,667 patients to prevent one suicide attempt. A 2019 Annals of Internal Medicine study found that the overall suicide attempt fatality rate was 8.5%. While not an UC based study, if these results are extrapolated to this data, approximately 70,000 patients would need to be screened for suicide to prevent one excessive death by suicide. For most UC centers, this would mean that screening all patients would prevent less than one death annually. It's impossible to ascribe a value to a life saved, however, there are likely screening interventions which would yield greater impacts in preventing morbidity and mortality (eg, diabetes, hypertension etc.).

However, as UC increasingly becomes the preferred location for young adults to access care, it is important that suicide prevention be studied in this setting specifically; the results of such interventions may be different in an UC population compared to ED or PC settings. Simultaneously, implementation of such a screening program would require appropriate resources to address patients who screen positive. This study was conducted within the Kaiser Permanente system, which allows for easy behavioral health specialty referrals, which is not the case for many UC centers. ■

How Commonly Does Acne Relapse After Isotretinoin?

Take Home Point: Almost a quarter of patients in this study experienced acne relapse after completing oral isotretinoin therapy. Patients who had a higher cumulative dose were less likely to experience acne relapse.

Citation: Lai J, Barbieri J Acne Relapse and Isotretinoin Re-

trial in Patients with Acne. *JAMA Dermatol.* 2025 Jan 15. doi: 10.1001/jamadermatol.2024.5416. Published online January 15, 2025.

Relevance: Isotretinoin is the only acne treatment that has been shown to induce acne remission. While this offers hope for many suffering from severe acne, recurrent acne is a relatively common phenomenon. Given the associated toxicities of the medication, it would be useful to better understand how to best achieve reliable remission so as to avoid multiple courses of treatment.

Study Summary: This was a cohort study of retrospective data collected by MarketScan, a commercial claims database in the United States. The authors reviewed de-identified data of patients with encounters where the patient was diagnosed with acne and received a prescription for isotretinoin associated with that encounter. Additionally, patients included required the isotretinoin course duration for at least 4 months or more and had at least 1 year of continuous enrollment after completion of isotretinoin.

The authors included 19,907 patients for analysis, 87% of which had an acne consultation with a dermatologist. Initial isotretinoin courses had a mean duration of 5.6 months and daily dose of 0.93 mg/kg/d, with a mean cumulative dose of 132.4 mg/kg. They found that 22.5% of patients analyzed had an acne relapse. Female gender was associated with increased risk of relapse. For patients with relapse, the most common systemic acne treatment prescribed after isotretinoin completion was an oral antibiotic—most frequently doxycycline or minocycline—followed by isotretinoin retreatment and spironolactone. Higher isotretinoin cumulative dosage was associated with reduced rates of relapse. While statistically significant, the hazard ratio (HR) was only 0.996 (95% CI; 0.995-0.997).

Editor's Comments: This was an observational study and therefore many potential confounders exist. The claims data and diagnoses were relied upon to confirm diagnoses and treatments. The most salient finding was the frequency with which patients fail to achieve sustained acne remission with isotretinoin. While this is not a medication started from UC, it is worthwhile to understand prognosis of patients who have used this therapy. ■

PRN Medications for Asymptomatic Hypertension

Take Home Point: The use of as-needed (PRN) antihypertensives in hospitalized patients was associated with a

higher risk of acute kidney injury (AKI) in this Veteran's Administration (VA) study.

"The most salient finding was the frequency with which patients fail to achieve sustained acne remission with isotretinoin."

Citation: Canales M, Yang S, Westanmo A, et. al. As-Needed Blood Pressure Medication and Adverse Outcomes in VA Hospitals. *JAMA Intern Med.* 2025 Jan 1;185(1):52-60. doi: 10.1001/jamainternmed.2024.6213.

Relevance: In daily UC practice, it is common to find patients with asymptotically elevated blood pressures. Historically, very high blood pressures (BP) have been treated under the auspices of the outdated term "hypertensive urgency." Many patients still fret over elevated BP readings, however, it is important for patient safety to understand the consequences of treating numbers, especially those that may be situational.

Study Summary: This was a retrospective cohort study of veterans hospitalized in VA hospitals from 2015-2020. Veterans were assigned to the PRN medication group if they were hospitalized on a non-intensive care medical ward, had at least one systolic BP reading ≥ 140 mmHg, and received at least one administration of an antihypertensive during their hospital stay. Those who received scheduled antihypertensives served as the control group. Primary outcome was the time to first AKI event during hospitalization and secondary outcome was a composite endpoint of myocardial infarction (MI), stroke, or death during hospitalization.

The authors included 133,760 veterans who met criteria for analysis; 28,526 patients (21%) received as-needed antihypertensive medication administration while hospitalized. The most commonly used medication classes were vasodilators and beta-blockers. Patients in the PRN group were 23% more likely experience the primary outcome (AKI during hospitalization) compared to the control group (hazard ratio [HR], 1.23 [95% CI, 1.18-1.29]). The PRN group also had higher rates of MI (relative risk [RR], 2.92 [95% CI, 2.09-4.07]), stroke (RR, 1.99 [95% CI, 1.30-3.03]), and death (RR, 1.52 [95% CI, 1.32-1.75]).

Editor's Comments: As this was a VA based study, subjects were overwhelmingly male (96%) and older (mean age=71 years). Given these variables and other facets of veteran populations which differ from the general population,

these findings are not fully generalizable outside of this group of patients. The cohort and control group, however, were well selected and given the sample size, it is likely the effects reported are reflective of true iatrogenesis associated with PRN antihypertensives. This also corroborates prior studies on tightly controlling BP in both inpatient¹ and outpatient² settings. Asymptomatically elevated BP continues to cause much worry among clinicians and patients alike. It is important for UC clinicians to internalize the harms associated with acutely lowering BP in the absence of clear end-organ damage and educate patients about these dangers as well. ■

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Does This Child With Blunt Torso Trauma Need an Abdominal CT?

Take Home Point: Children with blunt torso trauma and 1 or 2 positive intraabdominal injury rule criteria have a very low risk of intraabdominal injuries which require intervention.

Citation: Arnold C, Ishimine P, McCarten- Gibbs K, et. al. Performance of individual criteria of the Pediatric Emergency Care Applied Research Network (PECARN) intraabdominal injury prediction rule. *Acad Emerg Med.* 2025 Jan 13. doi: 10.1111/acem.15084

Relevance: Blunt abdominal trauma is a common presentation to both emergency department (ED) and UC centers. Validated clinical decision rules (CDR) developed by the PECARN group have been aimed at identification of children at very low risk of serious injuries in an effort to reduce diagnostic radiation associated with unnecessary computed tomography (CT). The PECARN Head Injury CDR has been used for many years in acute care settings. More recently, the intra-abdominal injury (IAI) prediction rule has been validated. While some patients do have a score of zero, it is also common for children to “fail” the IAI rule because of 1 or 2 positive criteria. This study aimed to explore the risk of such patients to determine their risk of IAI.

Study Summary: This was a planned secondary analysis of a prospective, multicenter observational study of children

with blunt thoracoabdominal (torso) trauma evaluated in the ED by the PECARN group. The PECARN IAI rule is a step-wise CDR that sequentially asks about the presence of seat-belt sign/abdominal bruising, decreased Glasgow Coma Scale (GCS) score, abdominal tenderness, and any of the following: evidence of chest injury, complaints of subjective abdominal pain, vomiting, or decreased breath sounds. The primary objective of this study was to derive a clinical prediction rule to identify children with blunt torso trauma who are at very low risk for intra-abdominal injuries undergoing acute intervention (IAIAI). Acute interventions included laparotomy, angioembolization procedures, blood transfusion, and hospitalization. Children <18 years with blunt torso trauma were eligible for the study and the authors included patients if they only had 1 or 2 positive criteria from the previously published IAI prediction rule. Those with 0 or >2 positive criteria were excluded.

Of the initial 7,542 patients were enrolled in the original study, 2,986 (39.6%, 95% CI 38.5%–40.7%) had only 1 or 2 positive variables and were analyzed in this study. Two hundred twenty-seven (7.6%, 95% CI 6.7%–8.6%) were diagnosed with IAIAI. In the 1,639 patients with only 1 rule variable positive, IAI were identified in 21 (1.3%). In the 1,347 patients with 2 rule variables positive, IAIAI were identified in 27 (2.0%). The authors identified that a GCS score of <14 and decreased breath sounds were the strongest predictors for IAIAI.

Editor’s Comments: This data was collected in large pediatric trauma centers, so there is certainly a spectrum bias for more seriously injured children than would be seen in a community ED or UC center. The rates of IAIAI were low in patients with 1 or 2 variables present, but not low enough to rely on the CDR for safe discharge without imaging. If all criteria are negative, the risk of IAIAI is approximately 0.1%. With 1 or 2 positive criteria, the risk of serious abdominal injury was 10-20-fold higher. However, this may not be true for UC patients given the relatively lower acuity of trauma presentations when compared to those in trauma referral centers. Performing a similar study among pediatric UC patients with blunt torso injuries would be highly useful. While this cohort of patients were not low enough risk for IAIAI, it is possible UC patients would be. Until that time, these data can inform shared decision-making for patients with isolated vomiting or abdominal pain, for example, but who are otherwise well to defer immediate ED referral with reliable caregivers. Conversely, understanding that low GCS and decreased breath sounds are the most suggestive criteria for serious injury is also noteworthy—but these are patients who would likely be referred to an ED for further assessment regardless. ■



Recurrent Neuropsychiatric Symptoms in a Patient With Repeated Exposure to Metronidazole: A Case Report

Urgent Message: Metronidazole, even during short courses of therapy, can result in disabling neuropsychiatric symptoms. It is important for clinicians to be knowledgeable about these relatively uncommon but serious adverse medication reactions.

Faren Clum, MD; Joshua Russell, MD, MSc, ELS, FCUCM, FACEP

Citation: Clum F, Russell J. Recurrent Neuropsychiatric Symptoms in a Patient With Repeated Exposure to Metronidazole: A Case Report. *J Urgent Care Med.* 2025; 19(7):37-41

Abstract

Introduction: Metronidazole is a commonly prescribed antibiotic. While gastrointestinal symptoms are the most frequent side effects, adverse neuropsychiatric symptoms have also been well established. Given the relative infrequency of such neuropsychiatric symptoms, clinicians may not consider metronidazole as a possible cause, leading to unnecessary workups.

Clinical Presentation: A 57-year-old man with stable stage IV colorectal cancer and recent hospitalization for hepatic abscess currently being treated with metronidazole had an urgent care (UC) telehealth visit 1-week post-discharge with complaints of 2-3 days of new-onset anxiety and insomnia. He denied systemic symptoms, including fever, and denied headache, vision changes, and seizures.

Physical Exam: His home-measured vital signs were normal. He appeared chronically ill and anxious with notable psychomotor agitation. When palpating his own abdomen, he reported no tenderness. His neurologic and mental status exam revealed no focal deficits.



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Case Resolution: The patient was initially diagnosed with adjustment disorder, and he was started on a selective serotonin reuptake inhibitor (SSRI). At subsequent visits, he developed worsening anxiety and more severe psychomotor agitation. His laboratory assessment was normal. Additional psychotropic medication adjustments were made but provided no relief, and his symptoms persisted until he completed the oral (PO) metronidazole. When the liver abscess recurred months later, similar symptoms returned shortly upon restarting metronidazole and resolved again when the medication was stopped.

Conclusion: While relatively uncommon, metronidazole can cause a variety of neuropsychiatric adverse reactions. Cessation of metronidazole most often results in full resolution of symptoms.

Introduction

Metronidazole is a synthetic antiprotozoal and antibacterial agent prescribed for a wide range of common infectious conditions seen in UC centers.¹ In 2023, nearly 1% of all U.S. UC visits received a metronidazole prescription, resulting in an estimated 1.7 million prescriptions, according to exclusive data analysis provided by Experity for this article. The most frequent and well-known adverse reactions involve gastrointestinal symptoms (eg, nausea, vomiting, diarrhea, cramping). However, a variety of less common adverse reactions involving neuropsychiatric symptoms have also been described, including peripheral neuropathy, confusion, gait instability, dizziness, seizures, acute psychosis, and encephalopathy.¹ Metronidazole-related neuropsychiatric reactions appear to be idiosyncratic and can occur even with short therapeutic courses, although the risk is higher with prolonged duration of treatment.²

The largest population study to date examining neurologic adverse outcomes associated with metronidazole found the risk of any severe neurologic event was 0.25%, with central nervous system (CNS) adverse events approximately fourfold more likely than those affecting the peripheral nervous system (PNS).³ Patients at highest risk are those receiving prolonged courses and intravenous administration as well as those with low body mass index (BMI), cirrhosis or chronic kidney disease.⁴

Clinical Presentation

A 57-year-old man with a history of stable, stage IV colorectal cancer with metastases to the liver and lungs

and no history of psychiatric illness presented in a video-based telemedicine UC visit 1 week after being discharged from the hospital where he was treated for a hepatic abscess. During his hospitalization, he was treated with intravenous (IV) ceftriaxone and metronidazole. When his condition stabilized, he was discharged with plans to continue a PO third-generation cephalosporin and PO metronidazole (500mg 3 times daily) until he was able to follow-up with an infectious disease specialist in several weeks. At the telemedicine UC visit, he reported high levels of anxiety and increasing difficulty sleeping. He stated that his fevers related to the abscess had resolved, and he denied abdominal pain, nausea, vomiting, diarrhea, constipation, headaches, and depressive symptoms. He denied any alcohol or drug use.

Physical Exam Findings

The patient's vital signs were taken using equipment he had in his home. He was afebrile and reported a normal heart rate, blood pressure, and oxygen saturation. He appeared thin, but not cachectic, and chronically ill, but in no acute distress. He was speaking in full sentences on video and his face and extremity movements appeared symmetric. The patient was asked to palpate throughout his abdomen and reported no tenderness. His neurologic and mental status exams were notable for visible signs of anxiety, a relatively flat affect, mild-moderate psychomotor agitation and obvious restlessness. There was no apparent rigidity or spontaneous clonus.

Urgent Care Management

The patient was initially diagnosed with adjustment disorder and started on a selective serotonin reuptake inhibitor (SSRI). He and his wife were asked to track his symptoms and check-in with his oncologist to determine if this may be related to his chemotherapeutic regimen.

Case Continuation and Timeline

Five days later, the patient presented for a second telemedicine-based UC visit. He reported that despite starting the SSRI as prescribed, he had noticed progression to a nearly intolerable level of restlessness and anxiety. He had a non-focal neurologic examination and normal vital signs again, so emergency department (ED) referral was not pursued. However, his psychomotor agitation was objectively more severe over video-exam, and he was unable to remain seated during the visit, pacing while his wife spoke for him.

Importantly, the patient and his wife both confirmed that he had never had similar symptoms, and there were no particular thoughts or worries causing him the anxiety. The medication reconciliation did not reveal any obvious culprits for either the anxiety or akathisia. At the second visit, he was diagnosed with anxiety, and the dose of the SSRI was increased. He was also prescribed hydroxyzine to help with severe anxiety/panic, which was preventing him from sleeping. He was provided with an urgent referral to psychiatry at this time and given instructions to seek care in the ED immediately if his symptoms continued to progress.

Given the rapid onset and severity of symptoms in a patient with no prior psychiatric history, the UC clinician ordered outpatient laboratory tests, including thyroid-stimulating hormone and a basic metabolic panel. Both returned results all within normal limits. On follow-up with his oncologist, the possibility of a rare neuropsychiatric side effect to one of his antibiotics was considered, and the antibiotics were stopped as he had no radiologic evidence of residual abscess in the liver. Over the next few weeks, his symptoms improved dramatically. However, his oncologist felt that his psychotropic medications were more likely resulting in his improvement and discounted the possibility of an antibiotic adverse reaction.

Diagnostic Assessment and Case Conclusion

A few months later, the patient's liver abscess recurred, and he was again started on metronidazole. Within 2 days, the patient had return of restlessness (ie, akathisia) and anxiety. As the cause of his symptoms now became increasingly apparent, the metronidazole was stopped, and his antibiotic therapy was modified. Again, he had quick resolution of his neuropsychiatric symptoms. He decided to taper off the SSRIs as his symptoms had resolved again when the metronidazole was held. With avoidance of metronidazole, his symptoms of anxiety and restlessness did not return.

Discussion

Metronidazole is among the most commonly prescribed antibiotics in the UC setting. While neuropsychiatric adverse reactions occur in only an estimated <1% of cases,³ it would be expected that over 4,000 cases of such reactions would occur among patients receiving metronidazole from UC centers in the U.S. each year, as per exclusive data analysis provided by Experity for this article. However, given that neurological symptoms tend to resolve for most patients after stopping the

antibiotic, it is likely that many subclinical cases of metronidazole-associated neuropsychiatric reactions never reach medical attention. There is also considerable overlap between these neurologic symptoms and antibiomania (ie, mania associated with starting an antibiotic), however, the mechanisms of antibiomania are distinct and not antibiotic-class specific.⁵ Many antibiotics, including metronidazole,⁶ can cause antibiomania, however, fluoroquinolones and clarithromycin are the most common offenders.⁷ Overall, there is considerable overlap and inconsistent nomenclature for these neuropsychiatric reactions. Since both conditions resolve in most cases when the antibiotic is discontinued, clinically differentiating the 2 is less material than identifying that the antibiotic is the likely culprit.

Whereas antibiomania is a clinical diagnosis, direct CNS tissue injury can occur with metronidazole, which creates characteristic findings on brain magnetic resonance imaging (MRI).⁸ The patient in the case presented did not undergo brain imaging, however, his akathisia was more suggestive of metronidazole-related CNS toxicity than antibiomania, which tends to have more manic or psychotic features.⁷ Metronidazole-related neurotoxicity most commonly affects the CNS causing cerebellar symptoms (eg, dyscoordination, dysarthria, gait disturbance) but can also cause akathisia, encephalopathy, and even seizures.⁹ While less common, metronidazole-related PNS toxicity has also been a long recognized, rare complication.¹⁰ The most common PNS disorder associated with metronidazole therapy is peripheral neuropathy, however, autonomic neuropathy has also been reported. Metronidazole related PNS disorders almost always involve treatment courses exceeding 4 weeks and cumulative doses over 42 grams.¹¹ Compared with CNS injury, metronidazole-related PNS toxicity has a more favorable prognosis, with nearly all patients experiencing full recovery after discontinuing metronidazole.¹¹ Manifestations of peripheral neuropathies include paresthesia and numbness with characteristic findings evident in patients who have nerve conduction studies.¹²

While the most important facet of treatment of metronidazole-related neuropsychiatric symptoms is prompt discontinuation of the medication, there are reports in the literature of corticosteroid treatment and supplementation with thiamin (Vitamin B1) and cyanocobalamin (Vitamin B12) perhaps hastening recovery in patients with CNS symptoms and lesions visible on brain MRI.^{13,14} While B vitamin supplementation is typically safe, given the doses and

duration of corticosteroid use described in the literature, it is recommended that this decision be deferred to a neurologist or other appropriate specialist at follow-up. Neuropsychiatric symptoms, such as agitation and anxiety, can be treated symptomatically and limited courses of benzodiazepines are a reasonable option. Unlike generalized anxiety disorder, in which SSRIs are recommended as a first-line therapy, there are no reports of SSRIs reducing metronidazole-related neuropsychiatric symptoms.

“For metronidazole-related neurologic symptoms, if the diagnosis is correctly made, the prognosis for affected patients is generally favorable.”

Because metronidazole relies on both renal and hepatic clearance, patients with more advanced liver or kidney disease are at greater risk of neurotoxicity.¹⁵ Low body mass index (BMI) is also a risk factor for neurologic toxicity.¹⁵ As such, patients with end-stage renal disease (ESRD) and/or severe hepatic impairment (Child-Pugh Class C) require dose adjustment if metronidazole therapy is prescribed.¹ The patient in this case had both low BMI and some degree of liver disease. In patients with either liver or kidney disease and low BMI, it is useful to consider alternative therapies. While there are no studies that specifically address the likelihood of neurologic symptoms recurring with repeat exposure to the drug (as was seen with the patient in the case presented), if neurologic symptoms arise in a patient exposed to metronidazole, it is prudent to consider alternative agents—as would be the case after any adverse drug reaction.

A 2011 systematic review of case reports found that the average duration of therapy with metronidazole before onset of neurologic symptoms was 54 days. However, importantly 26% of cases occurred within the first week of therapy, and 11% occurred within the first 3 days.² Given that neuronal, especially CNS, toxicity can occur with even short courses of metronidazole, consideration for similarly efficacious and safer therapeutic alternatives to metronidazole is advisable in the setting of low-risk infections. For example, bacterial vaginosis (BV) is the most common

indication for metronidazole prescribing in outpatient settings.¹⁶ However, there are many alternative treatment options for BV, including intravaginal metronidazole, which does not carry the same risk of systemic side effects.¹⁷ As BV frequently recurs even after treatment with oral metronidazole, shared decision-making and counseling about the risks of repeat oral metronidazole exposure is worthwhile, especially as intravaginal therapy is safer, equally efficacious, and also associated with fewer minor side effects (eg, nausea, metallic taste) as well.^{18,19}

Failing to identify a temporally associated change in medications that corresponds to the onset of symptoms can lead to both delays in stopping the offending medication and in unnecessary testing and referrals.²⁰ For metronidazole-related neurologic symptoms, if the diagnosis is correctly made, the prognosis for affected patients is generally favorable. With cessation of metronidazole, 65% of patients have complete resolution of symptoms and 29% experience significant improvement with recovery generally occurring over days-to-weeks.^{2,21}

Takeaways For Urgent Care Providers

Metronidazole, even during short courses of therapy, can result in disabling neuropsychiatric symptoms. It is important for UC clinicians to be knowledgeable of serious adverse medication reactions, even if relatively uncommon, especially those related to the medications they commonly prescribe. In patients with new neuropsychiatric symptoms, a thorough review of all prescription and over-the-counter medications is essential. When metronidazole is implicated as a cause of neurologic toxicity, recognition and prompt discontinuation are imperative to allow for the highest likelihood of rapid and complete recovery. Finally, it is critical to avoid premature closure. Acute neuropsychiatric symptoms have a broad differential diagnosis, and in patients with severe symptoms (eg, inability to walk, seizures), ED referral is recommended, even if an adverse medication reaction is suspected.

Ethics Statement and Patient Perspective

Verbal informed consent for publication was obtained from the patient to share his story. He was hopeful that clinicians might learn from his experience about this relatively uncommon but severe and life altering side effect of metronidazole.

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State Legislation Could Impact Urgent Care Facilities

Urgent Message: Legislation for the licensure of urgent care centers has been enacted or proposed in 4 states for 2025, creating state administrative offices that can further define rules affecting operations.

Alan A. Ayers, MBA, MAcc

Citation: Ayers AA. State Legislation Could Impact Urgent Care Facilities. *J Urgent Care Med.* 2025; 19(7):43-45

Several states have recently proposed rules calling for the regulation of urgent care centers. While most of the bills have a long journey ahead before possible enactment, urgent care owners and operators should be aware of this push for greater regulatory oversight. All of the proposals call for the licensing of urgent care centers, which the appropriate administrative agency would define with the authority given them to promulgate rules and regulations in the implementation of the laws.

Massachusetts—Enacted

On January 8, 2025, Governor Maura Healey signed an act that will bring about an overhaul in how healthcare businesses operate.¹ With stricter oversight, more reporting requirements, and new licensing mandates, H.B. 5159 brings increased oversight of healthcare operations in the Commonwealth, including urgent care centers.^{2,3}

The Massachusetts House and Senate passed their versions of the act with nearly unanimous support.⁴ The law provides for healthcare regulation in the form of new license categories for office-based urgent care centers. Implementing regulations must be issued by October 1, 2025.

The law delegates broad discretion to the Massachusetts Department of Public Health (DPH) to create and implement specific licensure requirements. The new law defines “urgent care centers” as:



[C]linics not affiliated with a licensed hospital that provide urgent care services [that provide] a model of episodic care for the diagnosis, treatment, management or monitoring of acute and chronic disease or injury that is:

- (i) *for the treatment of illness or injury that is immediate in nature but does not require emergency services;*
- (ii) *provided on a walk-in basis without a prior appointment;*
- (iii) *available to the general public during times of the day, weekends or holidays when primary care provider offices are not customarily open; and*
- (iv) *is not intended and should not be used for preventative or routine services.*

DPH will issue 2-year licenses to maintain an urgent care center “to an entity or organization that demonstrates to the department that it is responsible and suit-

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able to maintain such an urgent care center.”⁵ Further, the Department is empowered to collect fees, impose fines, and to conduct surveys and investigations that may result in suspension or revocation of a license, or the refusal to renew an urgent care license. The department may impose a fine of up to \$10,000.

In addition, there will be disclosure requirements for “significant equity investors.”

Oregon—Proposed Legislation

On January 13, 2025, the Oregon House introduced Bill 3221 which requires an urgent care center in the state to be registered with the Oregon Health Authority (OHA)⁶ and to meet certain standards.⁷ This bill is by far the most comprehensive of those being considered across the country. It requires urgent care centers to register with the OHA in a process it creates in order to maintain a state registry that may be accessed on the internet.

An “urgent care center” is defined in the bill as “a facility, or part of a facility, that offers walk-in medical care to members of the public for acute, non-life-threatening issues that do not otherwise require emergency services.”⁸

The bill requires certain information to be posted on the urgent care center’s website and mandates patients receive a clinical summary and copy of medical notes made during a visit. It also establishes a minimum standard for on-site services that an urgent care center must provide and gives the OHA the authority to establish a complaint procedure. Urgent care centers wouldn’t be able to use the word “emergency” or other similar terms in their branding, list of services, or marketing materials.

Finally, the bill directs the OHA to conduct a study on incentivizing urgent care centers to accept all patients regardless of payer and submit recommendations to the Legislative Assembly by September 15, 2026.

HB 3221 was referred to the House Committee on Behavioral Health and Healthcare on January 17, 2025, with subsequent referral to the Joint Committee on Ways and Means. In addition, a public hearing was scheduled.

New Jersey—Proposed Legislation

New Jersey recently introduced 2 bills. In January 2024, Senate Bill 1111⁹ was introduced to establish the registration and operational requirements for retail health clinics and urgent care centers.¹⁰ The bill defines “urgent care facility” as “a healthcare facility that offers episodic, walk-in care for the treatment of acute, but not life-

threatening, health conditions.”

This bill would require urgent cares that aren’t otherwise licensed as an ambulatory care site to register with the department on an annual basis. As part of annual registration, urgent cares must submit the following information:

1. The registrant’s location and hours of operation;
2. The names of the registrant’s medical supervisor, operational supervisor, and chief customer service officer;
3. The names of any healthcare professionals employed by or affiliated with the registrant;
4. The nature and scope of the healthcare services provided and the conditions treated at the clinic or facility; and
5. Any other information as may be required by the department.

This registry information would be made available on the department’s website.

The bill also details the rights of patients receiving healthcare services at an urgent care facility.

Further, the Commissioner of Health would be directed to promulgate rules and regulations to implement the provisions of the act. These may include, but aren’t limited to, requirements regarding the nature, scope, and specific healthcare services that may be provided at urgent care centers and any additional standards and requirements for the operation of urgent cares “as may be appropriate.”¹¹

The New Jersey Senate also introduced Senate Bill 1109 early last year. The 2024 bill is a carryover of Assembly Bill 5731 from November 2023. That bill was introduced and referred to the Assembly Health Committee with no other action taken. It would require urgent care providers to have the same credentials and degrees applicable to hospital emergency department (ED) providers.¹² The proposal states that each healthcare provider employed by an urgent care¹³ in the state must have any credential and degree that would be required of the healthcare provider if he or she was employed in an ED of a general acute care hospital licensed pursuant to P.L.1971, c.136.

Maine—Proposed Legislation

Maine also is considering regulating urgent care facilities. A far less-detailed bill entitled, “An Act to Establish Minimum Standards for Certain Urgent Care Facilities,” was introduced in the state legislature on January 6, 2025.¹⁴

“Urgent care facility” is defined in the bipartisan bill as “a healthcare facility that is not otherwise licensed

with a primary purpose of providing medical evaluation and care on a walk-in basis for non-life-threatening injuries and illnesses.” As used in this bill, “urgent care facility” doesn’t include:

1. A facility that is licensed as part of a hospital;
2. A facility that provides services or accommodations for patients who stay overnight; or
3. The private office of a physician or dentist in individual or group practice.

The 21-line bill states that the Department of Health and Human Services would have the authority to establish standards for the licensure of urgent care. These standards must address staffing, quality of care, advertising and promotion, inspections, complaint investigations, and accreditation. The standards must include a licensure fee of from \$50 to \$500. In January, the bill was referred to the Committee on Health and Human Services.

Conclusion

If the regulations require an urgent care to have certain capabilities, urgent care owners must understand how such rules will be enforced. Typically, the authorized agency will make provisions for enforcement.

It’s premature to be concerned whether such enforcement might lead to financial loss for an urgent care owner. Frequently, providers will convert to general practice or primary care by simply reducing hours, not staffing x-ray, and/or implementing scheduled appointments. Whether there will be exceptions that circumvent

the rules is hard to anticipate—especially in light of the fact that only 1 state has passed such measures, and the regulations promulgated pursuant to that law have yet to be fashioned. Again, but for Massachusetts, none of the other legislation introduced appears to have much steam in making its way through the legislative process and enacted into law in the near future. ■

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GET STARTED





Editor's Note: While the images presented here are authentic, the patient cases are hypothetical.

28-Year-Old With Foot Pain



A 28-year-old woman presents to urgent care after an indoor rock-climbing event. She fell 10 feet from the wall without any safety gear to break the fall. She describes deep pain in her left foot, and she is limping. An exam reveals dorsal and plantar midfoot tenderness and bruising across the dorsal foot. A 3-view x-ray series is ordered.

Review the image and consider what your diagnosis and next steps would be. Resolution of the case is described on the following page.

Acknowledgment: Images and case provided by Experity Teleradiology (www.experityhealth.com/teleradiology).

Figure 2.



Differential Diagnosis

- Fourth metatarsal fracture
- Lisfranc fracture dislocation
- Middle cuneiform fracture

Diagnosis

The correct diagnosis in this case is Lisfranc fracture dislocation. The anterior-posterior x-ray shows widening of the metatarsal M1-M2 and cuneiform (C) C1-M2 distance as well as a longitudinal fracture of cuboid bone. The oblique view shows a frayed appearing fracture at the base of M2, a possible longitudinal fracture at the base of M3, malalignment of the M2-C2 joint, and longitudinal cuboid fracture. This type of fracture is named after Jacques Lisfranc, a French field surgeon in Napoleon's army, who described a technique for amputation of the forefoot. However, the eponym is used today to describe fractures and dislocations that occur at the junction between the tarsal bones of the midfoot and the metatarsals of the forefoot.

What to Look For

- On x-ray, there are fractures and dislocations at the junctions between the tarsal bones of the midfoot and the metatarsals of the forefoot.
- Significant pain and swelling are usually present, and weight bearing is difficult.
- Neurovascular compromise is possible, so it is especially important to check the dorsalis pedis pulse and evaluate for acute compartment syndrome.

Pearls for Urgent Care Management

- Immobilization with short-leg splint or boot and non-weight bearing status
- Rest, ice, compression, and elevation
- Appropriate pain management
- If available, surgical referral is indicated to ensure healing



36-Year-Old With Hair Loss



A 36-year-old man presents to urgent care with asymptomatic hair loss that developed on multiple sites of his scalp over the previous 2 months. The hair loss developed in round patches that expanded to involve most of the back of his scalp. His past medical history is notable for hyperthyroidism.

View the image above and consider what your diagnosis and next steps would be. Resolution of the case is described on the following page.

Acknowledgment: Image and case presented by VisualDx (www.VisualDx.com/jucm).



Differential Diagnosis

- Alopecia areata
- Alopecia mucinosa
- Pseudopelade
- Telogen effluvium

Diagnosis

The correct diagnosis in this case is alopecia areata—an autoimmune disease of the hair follicle resulting in non-scarring hair loss. Most cases are sudden onset and limited to 1 or 2 small patches of alopecia that involve the scalp, eyebrows, eyelashes, or body hair. In severe cases, all hair on the scalp is lost (alopecia totalis), or all scalp and body hair is lost (alopecia universalis). There is an increased incidence of alopecia areata in patients with Down syndrome and those with autoimmune diseases, most commonly thyroid disease.

What to Look For

- Asymptomatic nonscarring hair loss usually in broad confluent smooth circular patches
- Occasionally tingling, burning or pruritus is experienced prior to hair loss
- Exclamation point hairs (short broken hairs with narrow proximal end compared to distal end) are pathognomonic
- Nail abnormalities may also be present

Pearls for Urgent Care Management

- Educate the patient that the course of alopecia areata is unpredictable with wide variation and note that recurrences are common
- Psychosocial support is important
- For adults, recommended therapy is intralesional corticosteroid injections; topical corticosteroids are also recommended if injections are not feasible
- For pediatric patients, recommended therapy is topical corticosteroids



65-Year-Old With Hypertension

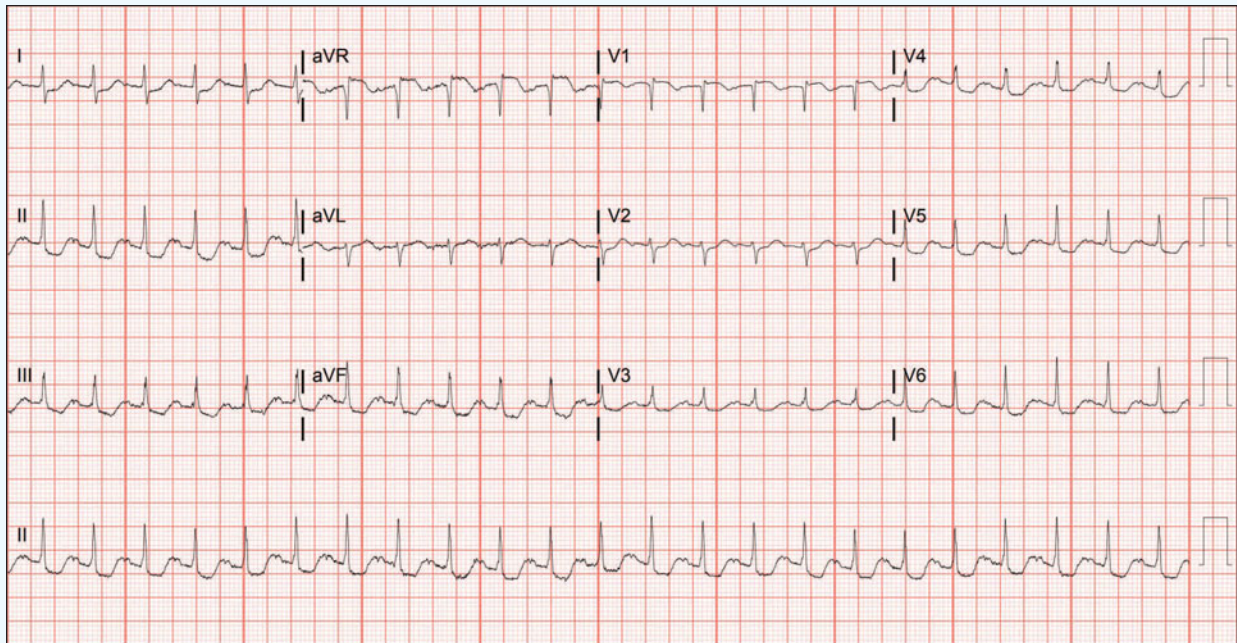



Figure 1: Initial ECG

A 65-year-old female with a history of hypertension presents with chest pain and dyspnea for 1 day. She denies fever, cough, nausea, vomiting, or abdominal pain. Upon arrival to urgent care, her respiratory rate was 28 breaths per minute, blood pressure 179/102, and oxygen saturation 92% on room air. An ECG is obtained.

View the ECG captured above and consider what your diagnosis and next steps would be. Resolution of the case is described on the next page.

Case presented by Catherine Reynolds, MD, McGovern Medical School at UTHealth Houston.

Case courtesy of ECG Stampede (www.ecgstampede.com).

ECG  STAMPEDE

Differential Diagnosis

- ST-Elevation myocardial infarction (STEMI)
- Left ventricular hypertrophy (LVH) with strain
- Diffuse subendocardial ischemia
- Hypokalemia
- Supraventricular tachycardia

Diagnosis

The diagnosis in this case is diffuse subendocardial ischemia from submassive pulmonary embolism. The ECG shows a regular, narrow-complex, sinus rhythm with a rate of 138 beats per minute. There is a normal axis and normal intervals. There are diffuse ST-segment depressions in the inferolateral leads and ST-segment elevation in aVR (Figure 2).

This pattern of diffuse ST depression with ST elevation in aVR represents global subendocardial ischemia, and can be caused by many conditions, including left main coronary artery disease or multivessel disease.¹ Any condition with a supply/demand mismatch may have this pattern, including pulmonary embolism, severe anemia, hypoxia, tachydysrhythmias, and shock. Typically, the pattern on the ECG will reverse when the cause is resolved. When this electrocardiographic pattern is encountered, a broad differential should be considered. In a study of 142 ECGs with this pattern, only 27% were associated with acute coronary syndrome.² A targeted history and physical will help to determine the cause, as well as performing adjunct testing such as labs, imaging, or bedside ultrasound.

In this case, the patient was transferred to the emergency department, where she was given adenosine for suspected supraventricular tachycardia, which did not improve her symptoms or resolve the tachycardia. Additional workup discovered a submassive pulmonary embolism. These ECG findings were due to the supply/demand mismatch in the oxygenation of the myocardium caused by her pulmonary embolism.

What to Look For

- Global subendocardial ischemia can result from any disease process that creates a mismatch in the oxygen that the myocardium is requiring and the oxygen that the coronary arteries are supplying.
- When diffuse ST depressions with ST elevation in aVR is encountered, consider conditions like pulmonary embolism, severe anemia, hypoxia, and shock.

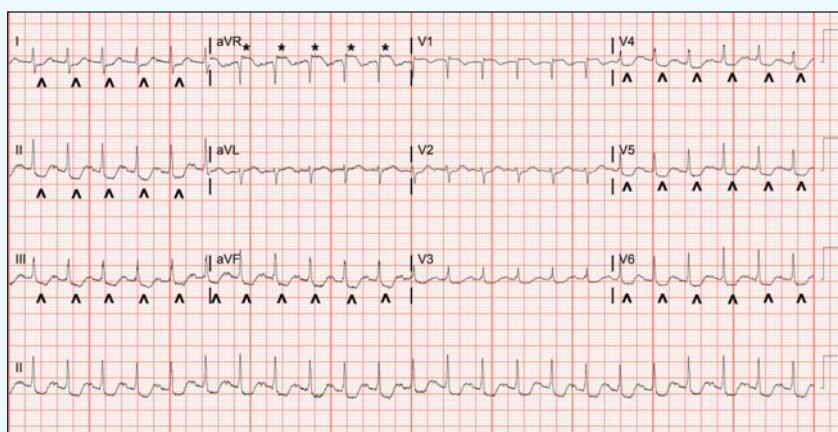


Figure 2: ST elevation in aVR (asterisks) and ST depressions in the inferolateral leads (arrows)

- This ECG pattern is often transient and will likely resolve when the cause is reversed.
- Other electrocardiographic findings of pulmonary embolism include sinus tachycardia, T-wave inversions (especially in anterior and inferior leads), right axis deviation, tall P wave in lead II, and the S1Q3T3 pattern.

Pearls for Management, Considerations for Transfer

- Always consider a broad differential with this ECG pattern and allow an in-depth history and physical guide your workup and next steps.
- Many causes of this pattern are life-threatening, and the urgent care physician should prepare for transfer.

References

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Refresher: Guidelines for E/M Coding

■ Phyllis Dobberstein, CPC, CPMA, CPCO, CEMC, CCC

Hard to believe that the new evaluation and management (E/M) guidelines have been in place for urgent care for 4 years. These guidelines created by the American Medical Association (AMA) were a complete shift from what was previously published by the Centers for Medicare & Medicaid Services. Instead of bullet points, levels are determined by the work involved in treating a patient. E/M codes can be leveled by either medical decision making (MDM) or time. Here is a summary of the guidelines to help your providers.

Medical Decision Making Documentation Requirements

E/M services still need an appropriate history and/or examination to be codable. The amount of documentation is up to the provider. There is no specified criteria of what each history or examination should include.

There are 3 elements for determining the level of the visit.

1. Number and complexity of problems addressed
2. Amount and/or complexity of data to be reviewed and analyzed
3. Risk of complications and/or morbidity or mortality of patient management

1. Number and Complexity of Problems Addressed

This is the element that has the most errors—with providers choosing either too high or too low. It is imperative that all providers understand the definition of each option for proper selection.

The problem addressed level is based on the patient's presenting problem. It drives the testing and treatment options. This is not based on the final diagnosis but rather the symptoms and diagnoses being ruled out. It won't always correlate to the management risk. Follow the AMA guidelines for the definition of problems addressed.



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Below are definitions provided by AMA CPT 2021 for acute, uncomplicated illness or injury and acute illness with systemic symptoms. These are the options most common in the urgent care space.

Problems Addressed	Condition Evaluated or Treated at the Encounter by the Reporting Provider
Self-limited or minor	Transient and runs a definite and prescribed course
Acute	Recent or new short-term problem
Chronic	Expected duration of at least a year or until death of the patient
Uncomplicated	Treatment considered but low risk of morbidity
Complicated	Extensive injury that requires evaluation of body systems that are not part of the injured organ
Stable	Patient has met treatment goals
Systemic symptoms	Symptoms cause a high risk of morbidity without treatment
Exacerbation	Worsening but does not require hospitalization
Severe exacerbation	Progression with significant risk of morbidity and may require hospitalization
Undiagnosed	Differential diagnosis that likely results in a high risk of morbidity without treatment
Threat to life or bodily function	Poses a threat in near term without treatment

Acute, uncomplicated illness or injury:

- A recent or new short-term problem with low risk of morbidity for which treatment is considered.
- There is little to no risk of mortality with treatment, and full recovery without functional impairment is expected.

- A problem that is normally self-limited or minor, but is not resolving consistent with a definite and prescribed course is an acute uncomplicated illness.

Acute illness with systemic symptoms:

- An illness that causes systemic symptoms and has a high risk of morbidity without treatment.
- For systemic general symptoms such as fever, body aches or fatigue in a minor illness that may be treated to alleviate symptoms, shorten the course of illness or to prevent complications; see the definitions for self-limited or minor or acute, uncomplicated.

2. Amount and/or Complexity of Data to be Reviewed and Analyzed

Count all labs (80000 series), whether billed or not, as an order, and give 1 data point for each unique test. Radiology tests (70000 series) and tests from the Medicine section (90000 series) will be counted for data only if they are an outside referral (ie, not billed by the practice).

Unique tests are defined as a CPT code regardless of the number of times they are billed. For example, influenza tests (CPT 87804) are counted as 1 order even though the CPT is billed twice.

3. Risk of Complications and/or Morbidity or Mortality of Patient Management

Management risk is based on the final diagnosis and the

treatment plan. This includes possible management options selected and those considered, but not selected. Social determinants of health should also be considered.

Time

Within an urgent care setting, few visits will be leveled based on time. It is an option that should be considered in cases that take longer than expected based on the MDM. In these rare circumstances, the provider must document total time spent on the day of the encounter both face-to-face and non-face-to-face.

These items do not count toward total time:

- Time spent by clinical staff
- Time spent performing procedures

If 2 providers see the patient, you can count the time for both of them. Both will have to document their portion of the visit, however, and the time spent by each provider should not overlap. Time also includes work performed on the patient's case while they are not in the office.

Training your providers on these E/M coding concepts will have a direct impact on the health of your urgent care business. ■



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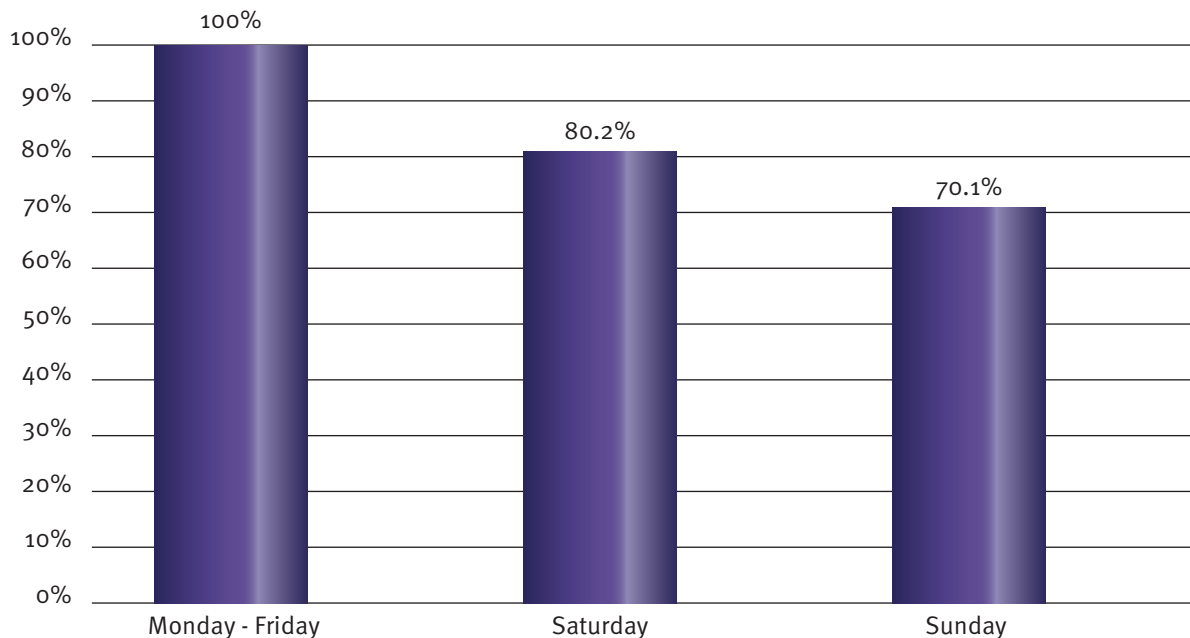
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Does Urgent Care Require 7-Day Operations?

■ Alan A. Ayers, MBA, MAcc

URGENT CARE OPERATION BY DAYS OF THE WEEK



Source: Analysis of 14,301 centers in National Urgent Care Realty database as of February 12, 2025.

While patients and payers may expect urgent care to be available 7-days a week, approximately 20% of urgent care centers are closed on Saturdays, and approximately 30% are closed on Sundays, according to a February 2025 analysis of 14,301 centers by National Urgent Care Realty and Urgent Care Consultants.

Of the centers open 7 days a week, 24% open and close at the same time every day. Otherwise, centers

that are open weekends are likely to do so with reduced hours, typically closing 2-4 hours earlier on Saturday and Sunday than on weekdays. Just 79 centers across the United States are open 24 hours a day, 7 days a week, according to the data. An immaterial number of centers operate Wednesdays (~0.2%) and Fridays (~0.6%).

The Urgent Care Association no longer prescribes 3,000 hours per year minimum operating time for accreditation or certification. However, some health insurance payers may mandate minimum hours when the objective is to reduce emergency department utilization. Other factors that influence hours of operation include local patient demand, competition, and provider and staff availability. ■



Alan A. Ayers, MBA, MAcc is President of Urgent Care Consultants and Senior Editor of *The Journal of Urgent Care Medicine*.

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