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Why Specialty Recognition Matters More Than Ever for Urgent Care

Ivan Koay MBChB, MRCS, FRNZCUC, MD; Joshua Russell, MD, MSc, FACEP, FCUCM

Commuting in Jakarta can be a nightmare. The average citizen in Indonesia's capital city spends weeks stuck in urban transit each year. Compare this with Singapore, which is consistently rated one of the best cities in the world for commuters. The difference between the day-to-day experience of residents of each city is stark. The root cause of why these two metropolises of southeast Asia have such disparate commuter experiences lies in the contrast of how they were planned.

Jakarta's growth unfolded haphazardly in the 20th century, driven by whatever flukes and coincidences occurred within local economics and politics. There was little centralized guidance to the process.[1] Modern Singapore, conversely, developed rapidly after independence from Malaysia in the 1960s. A shared vision for Singapore as a "global city" and leader of technology and finance provided a unified goal for those directing its development. Significant planning went into how the city should be laid out, with a ring perimeter structure being the winning design.[2]

Comparing the two cities today, the effects of the different approaches to growth—planning and oversight versus growth through happenstance—has yielded drastically different "final products." While each city certainly can claim various cultural attractions and charm, visitors and residents alike would undoubtedly agree that Singapore hustles in a more functional manner that resembles what its architects had envisioned.

Cautions of Haphazard Growth

As urgent care (UC) continues to grow, it similarly faces the risk of perpetual and irreversible dysfunction if growth is allowed to proceed in a decentralized and haphazard fashion as was the case with Jakarta.

A recent article by Duffy et al. reviewed the state of emergency department (ED) utilization and overcrowding in the United States (US), Canada, and New Zealand (NZ). The authors' conclusions were heartening for the urgent care community both in New Zealand and worldwide, as UC was rightly touted as part of a solution to the international problem of ED overcrowding.[3] While the UC community has long held this to be true (and even self-evident), prior publications focused on this sort of dysfunction among EDs have failed to even make mention of the existence of UC.[4,5]

In NZ, however, urgent care has existed as a formally recognized specialty since 2000 and prior to that as the Accidental Medical Practitioner Association since the 1980s.[6] This has been instrumental to the development of a reliable network of UC centers throughout the country. Unfortunately, UC has failed to gain similar recognition as a specialty (or even sub-specialty) in other countries, despite rapid growth in the number of UC centers, especially in the United States.[7] The acknowledgement by Duffy and colleagues that UC centers can, should, and often do provide vital expanded access to unscheduled acute care for patients with minor illnesses and injuries is a much needed step in the right direction.[3] This comes in the midst of a long standing and ongoing struggle for recognition of urgent care by the American Board of Medical Specialties (ABMS) in the US; similar unrealized attempts at specialty recognition continue to unfold in the United Kingdom (UK), Ireland, and Australia.[8]

It's undeniable to those who work in UC centers and those residing in the communities they serve that UC does provide vital access to care. The specialty recognition in

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New Zealand, along with the oversight by the Royal New Zealand College of Urgent Care (RNZCUC), which oversees the practice of UC, has been a boon for UC clinicians and patients alike. The College ensures that all approved UC facilities meet specific standards and are staffed by appropriately trained clinicians—generally physicians. This has been instrumental for the reliable provision of high-quality care and has offered a reliable alternative to EDs for patients with low-acuity acute needs.

"To those of us in the industry, recognizing the various tiers of facilities may be easy, but for patients, understanding these differences is often less obvious."

And while the Urgent Care Association (UCA) has made great strides in the US—through its UC center certification efforts most notably—American UC centers still very much have the prerogative to forego being evaluated or certified by the UCA. Other than state licensing requirements, they have no firm barriers to keeping their doors open for patients. This results in a frustratingly persistent state of heterogeneity among UC centers, as there remains no legal or credentialing board requirement to use the label "urgent care."

To those of us in the industry, recognizing the various tiers of facilities—ranging from retail swab stations to detached EDs—may be easy, but for patients, understanding these differences is often less obvious. The consequences of this ambiguity can be significant for the scope, quality, and cost of services they ultimately receive. Contrast this with the experience of New Zealand, where patients can rest assured they'll receive reliable care regardless of the center they select.

Plight of Primary Care

In much of the world, and certainly in the US and Canada, primary care struggles to meet the demands of aging populations and increasing demands for unscheduled care, while EDs face staffing shortages and perpetual overcrowding. In their study recently published in *Academic Emergency Medicine*, Duffy and colleagues conclude that "the New Zealand system is appealing in its efficiency but required decades of investment and iterative improvement [to achieve what it has]," which seems very pertinent given the current plight of primary care and emergency medicine (EM).[3] The latest figures available from the Association of American Medical Colleges (AAMC) indicate that there were 118,198 active primary care physicians in 2020 in the US, compared to 101,764 in 2014, a marginal increase relative to rising demands.[9,10]

Simultaneously and somewhat ironically, EM is facing a possible clinician surfeit alongside the highest rates of depression and burnout among any specialty.[11,12] With the current state of upheaval and uncertain futures for the two most UC-adjacent specialties (ie, family and emergency medicine), it is no wonder patients are seeking care in UC centers with increasing frequency.

The UC sector of America already has a considerable infrastructure in place which has grown out of necessity, but in a regionally variable and uncoordinated way, to fill the unmet needs between primary and emergency care. As the famous Chinese proverb states: "The best time to plant a tree was 20 years ago. The second-best time is now." So, while much largely uncoordinated growth of UC has unfolded already, we can still meaningfully affect the prospects of UC fulfilling its mission in the U.S. and other countries if we proceed wisely from here.

What remains most critical and, as yet, unachieved is any guarantee for our patients that the UC centers they entrust with their care will be staffed with clinicians with appropriate training and equipment to deliver on urgent care's promise. Thankfully, this very problem was solved decades ago in NZ when UC received rightful recognition as a specialty. This was the lead domino that allowed for the creation of the RNZCUC, standardized clinician training and certification processes, and ultimately to a high-functioning nationwide network of UC centers.

Unstructured Urgent Care

It gets stressful quickly spending time in a dysfunctional city. Humans don't deal well with overwhelm, hassle, and unpredictability, especially when it's an unrelenting reality rather than the exception. I've often seen stress arise for these reasons among UC providers and patients alike because, outside of NZ, urgent care remains so unstructured. This is why it's so important that the next version of UC is designed with intention. Every UC leadership meeting I've ever sat through has discussed provider retention and increasing patient volumes. But, if

we're truly serious about retaining our clinicians and attracting patients, we need to ensure the next version of UC is more functional for everyone.

"If we're truly serious about retaining our clinicians and attracting patients, we need to ensure the next version of UC is more functional for everyone."

The US, Canada, the UK, and other nations would do well to heed the UC blueprint that has been laid out in NZ. Thankfully we don't need to conceptualize a city design from scratch. However, without such specialty designation (and the centralized oversight and specialized training which goes along with it), we run the real risk of happenstance, rather than strategy, driving the future function, or dysfunction, within the "cityscape" of urgent care's future. ■

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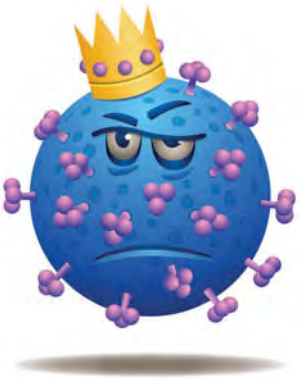

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URGENT INTERACTIONS

LETTERS TO THE EDITOR

In response to the January 2024 Letter From the Editor in Chief Joshua W. Russell, "'What Happens if We Do Nothing?' is Still the Right Question"

When we as doctors recognize other health concerns in our patient, we need to point them out and emphasize the importance of getting treatment. I recall about 40 years ago when it was said that the family doctor addressed about 6 or so issues at each visit. The sore rib would be addressed, but a quick initiation of treatment for the BP, refill of the metformin, and reassurance about a little insect bite would be given and the patient instructed to follow-up for the BP and DM. It took a few minutes, but the concept of whole-person medicine was preserved. These days, too many primary care doctors treat patients like an urgent care, single-issue patient, and care is dispersed to multiple doctors without concern for the whole person.

David H. Hopper MD
Retired from Urgent Care in Greensboro, NC

"Offer patients something for comfort while they wait. Getting a patient an ice pack buys you orders of magnitude more goodwill when it's time to discharge them."

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

"Reassurance is a big part of healing."

— Michael Weinstock, MD
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Free Advice

Lou Ellen Horwitz, MA

Members of the Urgent Care Association (UCA) get a lot of "free" stuff—resources, checklists, podcasts, job searches, magazines, webinars, templates, plans, and so on. But this year at the Urgent Care Convention we are going one better (two, actually). I'm talking about our new "Ask a Consultant" sessions and our Quality Programs Center, both of which essentially provide the space for free consulting (yes, *free*).

The Ask a Consultant sessions feature top, vetted consultants who are established experts across many areas of Urgent Care operations from startup to marketing to contracting, coding, and more. These individuals are donating their time and expertise to help Urgent Care Convention attendees improve and advance their operations—part of UCA's core purpose! Attendees will sign up for one-on-one sessions to meet with the consultant of their choice to receive live, customized input on their current challenges. We are thrilled to be able to offer this unique opportunity to Convention attendees.

The Quality Programs Center features best practices with our highly experienced Accreditation surveyors, each of whom have many years of experience working in Urgent Care operations. These experts operate accredited Urgent Cares all day, every day—and they can give you many examples of how to do things well. If you have challenges establishing or maintaining high quality in your centers, they can help you overcome the challenges and demystify the accreditation process so you can join their ranks. We are thankful to them for donating their time, expertise and experience to Convention attendees for the betterment of all Urgent Care.

To me, just these two opportunities make the Convention worth the trip. The last exciting event I'll highlight is the Urgent Care Foundation Celebration. This year's party is going to be something really special! And aside from having a good time, we are going to raise money for two critical needs in our industry: research and increased awareness.

Research is important for two reasons. First, original clinical research is a requirement for becoming a recognized specialty—a top goal for the College of Urgent Care Medicine. Second, the Urgent Care industry needs more studies about the impact we have on emergency department visits and the cost savings we provide to patients. The majority of industry studies to date have been done by outsiders with their own interests at heart, so we need our own independent research.

Raising awareness is important too. Not because patients still need educating, but because all our other stakeholders do! From Congress to other regulatory bodies to commercial payers, our impact is still not fully understood or recognized. A nationwide public relations campaign is needed, and together we can raise the funds to launch one next year. Even if you can't come to the Celebration, I encourage you to donate to the foundation to support this important work.

The last thing I want to touch on is the opening of UCA's search for a new CEO. We announced this in February and the search begins this month, so I wanted to take a moment to get personal about why I'm stepping out of the role. Let me be perfectly clear: I love Urgent Care. And I love UCA to the bottom of my heart. I have loved doing this job (both times!). I am not leaving to do something else or because I have concerns about our future. On the contrary, I have never been more optimistic about where we are headed and am so excited about the engagement we have from all of you.

I came back to UCA as CEO to use my skills and experience to get us through the pandemic, and to reinvent ourselves to meet whatever the post-pandemic future would become. As we look toward the execution of UCA's current Strategic Plan, we will need a CEO with different skills and talents. I am honored to work with the Board to find that wonderful, amazing person.

In the meantime, I'll stay right here and continue to do my best to serve. See you soon in Las Vegas. ■

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

CONTINUING MEDICAL EDUCATION

Release Date: March 1, 2024
Expiration Date: February 28, 2025

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
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3. To provide unbiased, expert advice regarding the management and operational success of urgent care practices
4. To support content and recommendations with evidence and literature references rather than personal opinion

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Isolated Sternal Fractures After Trampoline Falls in Children: A Case Series (page 13)

1. Sternal fractures are thought to be uncommon in children because of which attribute?
a. Increased elasticity and pliability of the chest wall
b. Increased rigidity of the chest wall
c. Location of the chest wall
d. None of the above

2. Which factor(s) describe when children are more likely sustain trampoline-related injuries?
a. Lighter body weight
b. Less complete motor development
c. More participants on the trampoline
d. All of the above

3. What type of follow-up is suggested for minor trampoline-related sternal fracture injuries?
a. Follow-up with a pediatrician
b. Non-steroidal anti-inflammatory drugs as needed for pain
c. Refrain from rigorous exercise for 4-6 weeks
d. All of the above

Updates in Weight Management Pharmacotherapy: Essential Knowledge For The Urgent Care Clinician (page 17)

1. Of these, which treatment has recently witnessed a surge in demand and prescribing for weight loss?
a. Glucagon-like peptide-1 (GLP-1) agonists
b. Albiglutide
c. Fluoxetine
d. None of the above

2. Which of these is a dual-acting glucagon-like peptide-1 (GLP-1) and glucose-dependent insulinotropic polypeptide (GIP) medication?
a. Tirzepatide
b. Liraglutide
c. Semaglutide
d. None of the above

3. Which side effects may be common in patients taking GLP-1 and GLP-1/GIP medications?
a. Nausea
b. Vomiting
c. Diarrhea and constipation
d. All of the above

An Atypical Cause of Fever and Confusion: A Case Report of Delayed Pulmonary Embolism Diagnosis (page 28)

1. Which of the following may cause both fever and altered consciousness?
a. Pneumonia
b. Encephalitis
c. Pulmonary embolism
d. All of the above

2. How many patients die each year in the US from pulmonary embolism?
a. 5,000-10,000
b. 10,000-15,000
c. 60,000-100,000
d. 1-2 million

3. The pathology of pulmonary embolism involves Virchow's triad, which consists of:
a. Hypercoagulability, venous stasis, and vessel wall injury
b. Hypercoagulability, pneumonia, and vessel wall injury
c. Hypercoagulability, venous stasis, and calf pain
d. Hypercoagulability, venous stasis, and gastroesophageal reflux disease

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Case Report

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See CME Quiz Questions on page 11.

Isolated Sternal Fractures After Trampoline Falls in Children: A Case Series

Urgent Message: Isolated sternal fractures in children can occur from relatively minor trauma, such as a trampoline fall, and patients can often be managed conservatively.

NaShayla Davis, MD; Olabisi Pearse, MD; Swati Mahajan, MD; Marie-Helene Gagnon, MD; Rebecca Burger, MD

Citation: Davis N, Pearse O, Mahajan S, Gagnon MH, Burger R. Isolated Sternal Fractures After Trampoline Falls in Children: A Case Series. *J Urgent Care Med*. 2024; 18(6):13-16

Keywords: Trampoline, Fall, Fracture, Injury, Case Report

Abstract

Introduction: Trampoline use among children has increased in recent decades. Isolated sternal fractures are an overall uncommon pediatric injury. The limited data in the literature on isolated sternal fractures in children suggest that the injury may not necessitate extensive additional work-up as would be the case if sternal fracture occurred in a multi-injured patient.

Clinical Presentation: We present a case of an isolated sternal fracture secondary to trampoline use, in which a 7-year-old boy presented with chest pain after falling from a zip line onto a trampoline.

Physical Exam: The patient had no external signs of trauma, but he did have tenderness with palpation of the sternum.

Case Resolution: A sternal x-ray demonstrated a buckle fracture, which was managed conservatively, and the patient recovered uneventfully.

Conclusion: It is important to be aware that isolated sternal fractures can occur from relatively minor trauma in children, such as trampoline or bounce-house falls. A sternal fracture from such a mechanism of injury typically does not have associated intrathoracic injuries, and patients can usually be managed conservatively with minimal work-up.

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Introduction

Trampoline use has increased in popularity over recent decades with the rise in commercial trampoline parks, which has resulted in greater numbers of associated injuries. From 2000-2005 there were, on average, more than 88,000 pediatric trampoline-related injuries that presented to emergency departments (EDs) annually in the United States.[1] Injuries in children resulting from trampoline use can range from fractures to sprains/strains to simple contusions and abrasions. Sternal fractures have also been described as a type of injury which can result from trampoline play in children.[2]

Sternal fractures most commonly occur from direct trauma to the anterior chest, but can occur without direct trauma as well, with motor vehicle collisions (MVCs) being the most common culprit.[1] Trauma resulting in sternal fracture can also be associated with other thoracic pathology, such as acute respiratory distress (ARDS) and pulmonary contusions.[3,4] An isolated sternal fracture can actually occur from relatively minor trauma, however, and is less commonly associated with intrathoracic complications.[5] Patients with an isolated sternal fracture can be managed conservatively and can generally be safely discharged without continuous cardiac monitoring.[5,6] There are relatively few reports of isolated sternal fractures in children in the literature, but none of which were secondary to trampoline use. In addition to the case presented, there have been several other children over the past 5 years who presented to our hospital system with isolated sternal fractures related to either trampoline or bounce house use.

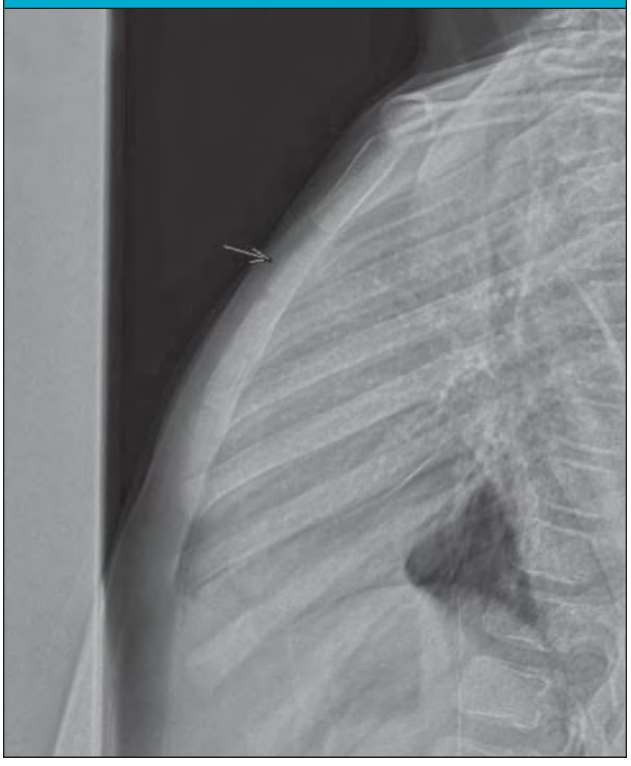
Clinical Presentation

A 7-year-old male presented to the pediatric emergency department with chest pain after letting go of a zip line and falling onto a trampoline the day prior. He landed on his side and had no loss of consciousness. The patient complained of sternal pain after the fall.

Physical Exam Findings

On examination, the patient was awake and in no acute distress. His vitals were stable. The airway was patent and clear. His lung sounds were symmetric and clear without wheezes, rales, or rhonchi. On cardiac auscultation, he had normal S1 and S2, regular rate and rhythm, no murmurs, and normal pulses and capillary refill. He had normal mental status and no focal neurologic deficits. The patient had no external signs of trauma (eg, abrasions, ecchymoses, swelling). His abdomen was soft, non-tender, non-distended, with normal active bowel sounds, without rebound or guarding.

Figure 1: Lateral Radiograph of the Sternum Showing a Buckle Fracture



There was tenderness to palpation over the upper sternum without crepitus or deformity. There was no tenderness or deformity of the clavicles. He had normal range of motion without tenderness or swelling in all 4 extremities.

Diagnostic Assessment

Based on chest exam findings, a sternum radiograph was obtained. The sternum radiograph showed a buckle fracture of the sternum (**Figure 1**).

Therapeutic Intervention and Case Conclusion

The patient's family was advised to apply ice to the chest, use ibuprofen as needed, and to avoid strenuous activity for the next several weeks. Return precautions were discussed, and pediatrician follow-up was recommended for recheck. At follow-up, the patient had no complications resulting from the injury.

Case Discussion

This case demonstrates an uncommon musculoskeletal injury that can result from trampoline use. Sternal fractures are thought to be uncommon in children due to the increased elasticity and pliability of their chest wall,

Table 1. Details of 24 Patients With Sternal Fractures, 2018-2022

Case Number	Patient Location	Age (years)	Sex	Cause of Injury
1	Emergency	4	Male	Bounce house
2	Emergency	5	Male	Bounce house
3	Urgent Care	8	Male	Bounce house
4	Urgent Care	8	Male	Bounce house
5	Urgent Care	9	Female	Bounce house
6	Urgent Care	5	Male	Trampoline
7	Urgent Care	5	Female	Trampoline
8	Urgent Care	6	Male	Trampoline
9	Urgent Care	6	Female	Trampoline
10	Urgent Care	6	Female	Trampoline
11	Urgent Care	6	Male	Trampoline
12	Emergency	7	Male	Trampoline
13	Urgent Care	7	Female	Trampoline
14	Urgent Care	7	Male	Trampoline
15	Urgent Care	7	Male	Trampoline
16	Emergency	8	Female	Trampoline
17	Urgent Care	9	Male	Trampoline
18	Urgent Care	10	Male	Trampoline
19	Emergency	11	Male	Trampoline
20	Urgent Care	12	Female	Trampoline
21	Urgent Care	12	Male	Trampoline
22	Urgent Care	12	Female	Trampoline
23	Urgent Care	13	Female	Trampoline
24	Urgent Care	14	Male	Trampoline

Presented to Children's Healthcare of Atlanta

which reduces the likelihood of fracture.[5] Sternal fractures in children are usually the result of severe blunt trauma to the chest, such as with a motor vehicle collision.[3,4] Isolated sternal fracture in children, however, has also been described after relatively minor trauma,[5] such as from a trampoline or bounce-house fall as seen with this patient.

Recreational trampoline use has gained popularity in the United States over recent decades. The American Academy of Pediatrics released a policy statement in 2012 recommending that pediatricians counsel patients and families against recreational trampoline use, regardless of safety measures, such as enclosures.[7] According to the US Consumer Product Safety Commission's National Electronic Injury Surveillance System for 2021 the rates for trampoline injury were 132 per 100,000 for 0- to 4-year olds and 171 per 100,000 for 5- to 14-year olds.[8] Of those pediatric patients who sustain trampoline-related injuries, lighter children are more than 13 times more likely to sustain an injury compared to heavier children, which may be due to less complete motor development.[9,10] The risk of injury also increases with more participants on the trampoline.[10]

Isolated sternal fractures caused by a trampoline fall typically occur in toddler and school-aged children.[11] Previous studies focusing on isolated sternal fractures in a large cohort of pediatric patients from a variety of low energy mechanisms, including a trampoline fall, did not find an association with blunt cardiac injury (BCI).[5,11] Patients who sustain a major chest injury, such as those related to high velocity MVC, however, do have an increased risk for BCI and other significant intrathoracic and intraabdominal injuries and warrant further work-up.[12]

The Eastern Association of Surgeons for Trauma guidelines suggest an electrocardiogram (ECG) and troponin blood test are reasonable to screen for BCI in adult patients who sustain a sternal fracture, though these recommendations have softened in recent iterations.[13] The utility of obtaining these studies in children is even less clear, but studies have generally not supported an association between isolated sternal fractures in children with low energy mechanisms and BCI.[11] Therefore, strong recommendations for or against obtaining ECG and troponin blood tests in pediatric patients who sustain minor chest wall injuries have been avoided.[5,11]

Case Series Methods and Inclusion Criteria

Upon review of patients from our institution from 2018-2022, we found 24 patients via retrospective chart review (median age 7.5 years, 62% male) with sternal fractures resulting from a trampoline or bounce-house injury who presented to either the ambulatory urgent care sites or the ED (**Table 1**). Cases were identified by searching our institutional database of radiographs for patients under the age of 21 with radiologic findings of sternal fractures from 2018-2022. Chart review was then performed on potential cases and only cases with confirmed history of "trampoline" or "bounce house" mechanisms of injury were included. Patients with other mechanisms of injury were excluded. All patients had chest or sternal x-rays, which showed an isolated sternal fracture. Of the 24 sternal fractures, only 1 was noted to be minimally displaced, while 13 were documented as buckle fractures, and the remaining 10 were documented as non-displaced.

Nine of 24 patients (37.5%) had an ECG ordered (mean age of 7.6 years), 7 of 9 (77.8%) of which were normal (mean age of 8 years). The other 2 patients with abnormal ECG findings followed up with a cardiologist and all were subsequently cleared (mean age of 6.5

years). There were 11 of 24 (45.8%) referred to orthopedics for outpatient follow up (mean age of 9.1 years). One patient returned to urgent care with a request for sports clearance. Most patients were discharged directly from the ED or urgent care.

Two of the 24 patients were admitted to the hospital (mean age of 7.5 years), both of which presented to the ED initially. The first patient presented to the ED for chest pain after falling out of a bounce house onto a wooden floor but had no tenderness to palpation on initial exam or complaint of pain. This patient was admitted per surgery recommendations despite having normal ECG, troponin, and no pain. The reason for admission was not clear from chart review, however, he was discharged the following day. The other patient presented for chest pain along with head injury and was noted to have a T6 compression fracture on their chest x-ray along with a sternal fracture. This patient was admitted for IV analgesia as the pain was not adequately controlled with oral agents. This patient was discharged the following day and did not require any surgical intervention. This was the only patient of the 24 patients in this series who had any fracture beyond an isolated sternal fracture.

Discussion and Summary

Our reported number of isolated sternal fractures likely underestimates the incidence of sternal fractures resulting from trampoline or bounce-house injuries seen in our facilities. Only patients who presented to the ED or urgent care centers within our institution who had a chest or sternal x-ray showing a sternal fracture and had documentation of a trampoline or bounce-house injury were included. This likely does not represent all pediatric patients in our area who have had sternal fractures related to trampolines or bounce houses as patients were not included if the mechanism was not noted, if patients sought care outside our institution or at their primary care provider's office, or if they did not undergo any medical evaluation.

Although sternal fractures are an uncommon injury in the pediatric population, clinicians should be aware that this is an injury that can occur from relatively minor trauma, such as a trampoline or bounce-house fall. As with all injuries, it is important to do a thorough physical exam to rule out other associated injuries. A sternal fracture from this type of injury typically does not have associated intrathoracic injuries, and patients can be managed conservatively with minimal work-up. Patients should be advised to follow up with their pediatricians, use non-steroidal anti-inflammatory drugs as needed for pain, and refrain from rigorous exercise for 4-6 weeks. Strict return precautions should be discussed.

Ethics Statement

The specific patient was unable to be contacted as he was lost to follow-up, and therefore demographics and some details of the case were changed to protect patient anonymity and confidentiality. In the case series review, specific patient identifiers were also intentionally omitted for patient privacy. This case review was part of a quality project, and therefore no institutional review board approval was required as it did not fall under human subjects research.

Take Away Points

- Sternal fractures do occur but are an uncommon injury in the pediatric population.
- A sternal fracture can occur from relatively minor trauma, such as a trampoline or bounce-house fall.
- Isolated sternal fractures from this type of injury almost never have associated intrathoracic injuries and therefore can be managed conservatively with minimal work-up, including a chest or sternal x-ray without a need for obtaining an ECG. ■

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Updates in Weight Management Pharmacotherapy: Essential Knowledge For The Urgent Care Clinician

Urgent Message: As more glucagon-like peptide-1 and gastric inhibitory polypeptide agonists are prescribed, it is important for clinicians to have a familiarity with adverse reactions and complications that may present in urgent care.

Sergio Ramoa, MD, MS; Darya Zakirov, MS, APRN, FNP-C; Pascale Carbonara, MD; Deann Isherwood, MSN, FNP; Tu-Mai Tran, MD, MSc

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Keywords: obesity, weight management, GLP-1 agonist

Introduction

Obesity is a chronic disease with rising prevalence both in the United States (US) and worldwide. The prevalence of US obesity was more than 40% in 2017[1] and is expected to rise to nearly 49% by 2030 with almost 1 in 4 Americans with severe obesity.[2] Severe obesity, also called class 3 obesity, is a body mass index (BMI) equal to or greater than 40 kg/m^2. Patients with obesity have 46% higher inpatient costs, 80% higher prescription spending, and have a higher frequency of physician visits.[3]

Lifestyle interventions for the treatment of obesity (ie, dietary modification and regular exercise) have been shown to reduce the risk of cancer in almost every organ system, decrease or resolve insulin resistance, decrease mass effect on joints and muscles, reduce cardiovascular risk, and improve sleep apnea. However, lifestyle modifications alone—while more effective than no intervention—only result in modest weight loss, which is often difficult to sustain and speaks to the chronic disease nature of obesity.[4] Over the last decade,

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pharmacologic interventions have become increasingly utilized to treat obesity.[5] With the growing popularity of such interventions, side effects and adverse reactions have also been reported with increasing frequency.[6,7]

"Lifestyle modifications alone—while more effective than no intervention—only result in modest weight loss, which is often difficult to sustain and speaks to the chronic disease nature of obesity."

There are currently 3 medication formulations outside of the glucagon-like peptide-1 (GLP-1) class of agents that are approved by the Food and Drug Administration (FDA) to treat obesity. Examples of such medications include combinations of phentermine and topiramate, naltrexone and bupropion, and orlistat.[8] Phentermine was FDA approved for "short term" use (ie, <12 weeks duration) but now is more frequently prescribed for longer durations of therapy in combination with topiramate. Phentermine is a controlled substance, which can complicate prescribing and monitoring. However, in combination, phentermine-topiramate has shown similar efficacy to the GLP-1 agonists in weight reduction. Phentermine-topiramate combination, however, did seem to have higher rates of side effects and less sustained weight loss when compared to the GLP-1 agonists in a 2022 systematic review.[9] Orlistat, the only FDA-approved over-the-counter weight loss medication, inhibits lipases for fat excretion and is commonly associated with significant gastrointestinal (GI) upset. This is a barrier to long-term therapy with orlistat as <2% of patients can tolerate remaining on therapy for >2 years.[10] More recent reviews and meta-analyses of all these medications have demonstrated that the GLP-1 agents are superior to these agents, with tirzepatide showing the greatest weight reduction overall.[8]

For refractory cases, surgical options exist. Surgery, while effective for many, is limited by surgical candidacy. Bariatric surgery is an overall safe procedure associated with a risk of death of about 0.08%[11] and a risk of major complications of about 4%.[12] This is comparable to cholecystectomy, hysterectomy, and hip replacement. There are a number of bariatric procedures available to assist in weight loss with varying risks, benefits, and durability of weight loss. Roux-en-Y Gastric Bypass, for example, yielded an average of 21% weight loss from the baseline weight of participants.[13] Therefore, surgical options remain viable and attractive for many patients. However, due to barriers around patient engagement needed for a surgical intervention, financial considerations, availability of surgeons, and need for nutrition and mental health screening involved in bariatric surgery, clinicians have been turning increasingly to GLP-1 agents with over 9 million prescriptions in the United States in 2023.[14] With such high demand, many GLP-1 agents have been on the FDA shortage list, and many compounding pharmacies have begun producing formulations of these medications in an attempt to fill this supply-demand gap.[15] Given their rising popularity for the extremely common and risky situation of excessive fat mass, the remainder of this review will focus on the most commonly encountered formulations of GLP-1 and related agents.

GLP-1 Agonists and Glucose-Dependent Insulinotropic Polypeptide Medications

Although developed for the treatment of type 2 diabetes (T2DM), in recent years, there has been a surge in demand and prescribing of the GLP-1 agonist class of medications for weight loss. Currently, the demand for GLP-1 agonists has been greatest for the following agents:

1. Liraglutide (Saxenda) daily subcutaneuous injection
2. Semaglutide (Wegovy, Ozempic) weekly subcutaneous injection; orally formulated as daily Rybelsus
3. Tirzepatide (Mounjaro, Zepbound) weekly subcutaneous injection; also active at gastric inhibitory polypeptide receptors

Additional medications in this class include exentatide and dulaglutide. Albiglutide was discontinued in 2017.

Liraglutide and semaglutide have been FDA approved for weight loss and T2DM for a number of years and exclusively exert activity as GLP-1 agonists. Tirzepatide, a dual-acting GLP-1 and glucose-dependent insulinotropic polypeptide (GIP) receptor agonist, initially approved only for T2DM, was also FDA approved for weight loss in November 2023.[16]

Table 1. Frequency Of Side Effects, Percentage[21,22,23,28,29]

	Tirzepatide	Semaglutide	Liraglutide
Nausea	13-24	44	40
Diarrhea	12-23	32	21
Constipation	6-8	23	20
Vomiting	6-14	25	11
Headache	4-11	15	13
Dizziness	N/A	N/A	7

Mechanism of Action

Drugs active at GLP-1 and GIP receptors are known as insulinotropic peptides and work to improve post prandial metabolism and glucose equilibrium by stimulating insulin from the beta cells in the pancreas. These hormones also assist in increasing satiety by slowing gastric emptying and decrease drive for overeating.[17]

Side Effects

As would be expected based on the mechanism of action, the GLP-1 agents tend to have predominantly GI side effects including nausea, vomiting, diarrhea, constipation, and bloating, however, generally less than 10% of patients are unable to tolerate these medications due to GI side effects.[18] There have been conflicting reports regarding any increased risk of pancreatitis and gallstone disease related to the GLP-1 agents.[19] Despite their effects on insulin secretion, episodes of hypoglycemia attributable to the GLP-1 agonists are rare, even in cases of overdose.[20]

Liraglutide

Side effects in liraglutide included mild to moderate gastrointestinal disorders such as nausea and vomiting. However, more significant GI disorders have also been attributed to the medication. In one randomized controlled study, out of roughly 2,400 participants over a 56-week study period, 2.5% of liraglutide patients developed gallbladder (cholelithiasis or cholecystitis) events versus 1.0% in the placebo group. Ten patients in the liraglutide group developed pancreatitis (90% of which were mild) versus one patient in the placebo group.[21]

Semaglutide

Similarly, the most common side effects reported by patients receiving semaglutide are nausea, vomiting and diarrhea. In one placebo controlled trial, patients receiving semaglutide experienced cholelithiasis in 2.6% of the treatment group versus 1.2% in placebo group, and pancreatitis occurred in 0.2% versus 0% in the placebo group.[22]

Tirzepatide

As with the other GLP-1 agents, tirzepatide, the only GLP-1/GIP agonist also caused GI side effects most commonly including nausea, diarrhea, and constipation. In a 72-week double blind, randomized, placebo-controlled trial of more than 2,500 patients, there was no difference in hypoglycemia, cholecystitis, or pancreatitis in the tirzepatide group compared to the placebo group.[23]

Urgent Care Cases

Pain After Eating in a Patient Taking Semaglutide

A 34-year-old female with a medical history of non-alcoholic steatohepatitis, asymptomatic biliary sludge during a previous pregnancy, and class II obesity presented to the emergency department (ED) with right upper and lower quadrant abdominal pain. She was taking omeprazole for occasional dyspepsia and semaglutide for weight loss. She had been taking semaglutide for 2 months and had already lost 25 pounds. Laboratory evaluation revealed elevated hepatic enzymes, and a right upper quadrant ultrasound demonstrated cholelithiasis with a positive sonographic Murphy's sign. She subsequently underwent laparoscopic cholecystectomy with resolution of her symptoms. Her worsening gallstone disease was attributed to her use of the GLP-1 agent in addition to rapid weight loss, which can precipitate worsening formation of cholesterol stones.[24]

Severe Epigastric Pain in a Patient Taking Semaglutide

A 32-year-old female with past medical history of gastroesophageal reflux disease (GERD) presented with severe epigastric pain that radiated to the back. When not eating, pain was a 3 out of 10. With any form or type of food, the pain became more severe. She endorsed nausea and diarrhea as well. She was taking

esomeprazole 20mg daily. The patient had been also recently started on semaglutide. Her dose of esomeprazole was increased and sulfrafate was added for concern for gastritis. The patient endorsed improvement of overall pain but was still experiencing discomfort shortly after eating. Therefore, a gastric emptying study was ordered, which demonstrated moderate gastroparesis. While certain studies have shown no apparent impairment of gastric emptying associated with GLP-1 agonists,[25] there have been numerous case reports of delayed gastric emptying noted in the anesthesiology literature among fasted patients who have experienced aspiration in the setting of induction of general anesthesia.[26,27]

"Given the latency period for cancers to develop, it is likely that uncertainty will remain regarding associations between the GLP-1 agents and cancers for some years."

Patients may present to urgent care (UC) while receiving GLP-1 (and/or GIP) agonist therapy related to GI side effects. It is important to for UC clinicians to be aware of the frequency of these side effects to guide further work-up. Most patients, however, may be treated symptomatically. In patients who are not severely dehydrated and tolerating fluids, they may be encouraged to follow-up with their prescriber. Table 1 demonstrates the frequency with which various adverse reactions may occur with each agent.

Concerns Over Risks of Suicidal Ideation

Monitoring of drug safety with the FDA Adverse Event Reporting System (FAERS) from 2005-2023 seems to suggest that there is a slightly increased risk of suicidal ideation among patients taking semaglutide.[30] However, in a more recent, real-world cohort study of over 200,000 patients receiving semaglutide, it was shown that the risk of suicidal ideation was actually reduced among patients taking semaglutide compared to con trols with T2DM not receiving semaglutide.[31]

GLP-1 Agents and Risk of Renal Disease

Acute kidney injury (AKI) relates to a sudden change in renal function, typically measured by glomerular filtration rate. This can occur with states of volume depletion. Initially, there were concerns of the safety of GLP-1 agents for kidney disease.[32] However, more recent studies have shown that GLP-1 agents are largely protective against chronic kidney disease when used to treat T2DM compared to other anti-diabetic agents.[33] It is speculated that AKI risk was largely associated with volume losses associated with nausea, vomiting, and diarrhea. Therefore, it is likely that renal hazards may be avoided if these GI side effects are treated symptomatically, if they occur.

GLP-1 Agents and Cancer Risk

Animal experiments and some observational human studies have shown an increased risk of certain cancers associated with GLP-1 agonists, particularly of thyroid and pancreas.[34,35] However, results of these studies have been mixed and have failed to show consistent increases in the incidence of these cancers.[36] Given the latency period for cancers to develop, it is likely that uncertainty will remain regarding associations between the GLP-1 agents and cancers for some years. Currently, semaglutide is deemed to be contraindicated in patients with a personal or family history of medullary thyroid cancer or multiple endocrine neoplasia, type 2.[37]

Summary

Obesity is a highly prevalent and chronic disease in the developed world. Increasingly, patients and clinicians are turning to medications to mitigate long-term obesity and its consequences. The adverse events of older weight loss medications, such as phentermine, are more well established given the time the drugs have been on the market.

As newer medications, especially GLP-1 and GIP agonists, are prescribed, it is important for UC clinicians to have familiarity with common and less common adverse reactions and complications. Many patients taking these medications will experience GI side effects such as nausea, vomiting, diarrhea, and constipation. In some cases, pancreatitis and gallstone disease may be associated with, or exacerbated, by their use. Especially with newer agents used for obesity and weight management, it is important to monitor the medical literature updates as controversies continue to exist regarding their safety profiles and associations with disease with longer latency periods (eg, cancer) remain largely unknown.

Takeaway Points

- Prevalence of obesity in the US is rising, projected to reach nearly 49% in the near future. These rising rates of obesity are associated with increasing rates of diabetes and other metabolic diseases, which drive increased healthcare costs and risks of chronic morbidity.
- GLP-1 and GIP agonist therapy is increasing in popularity and may help to mitigate the obesity epidemic and consequent morbidity and mortality, however, these therapies are associated with many GI side effects. Patients may present to UC with GI symptoms, and obtaining an accurate medication history can guide further work-up and symptom management.
- Any uncertain side effects can be reported to the FDA, which actively monitors for adverse drug reactions. ■

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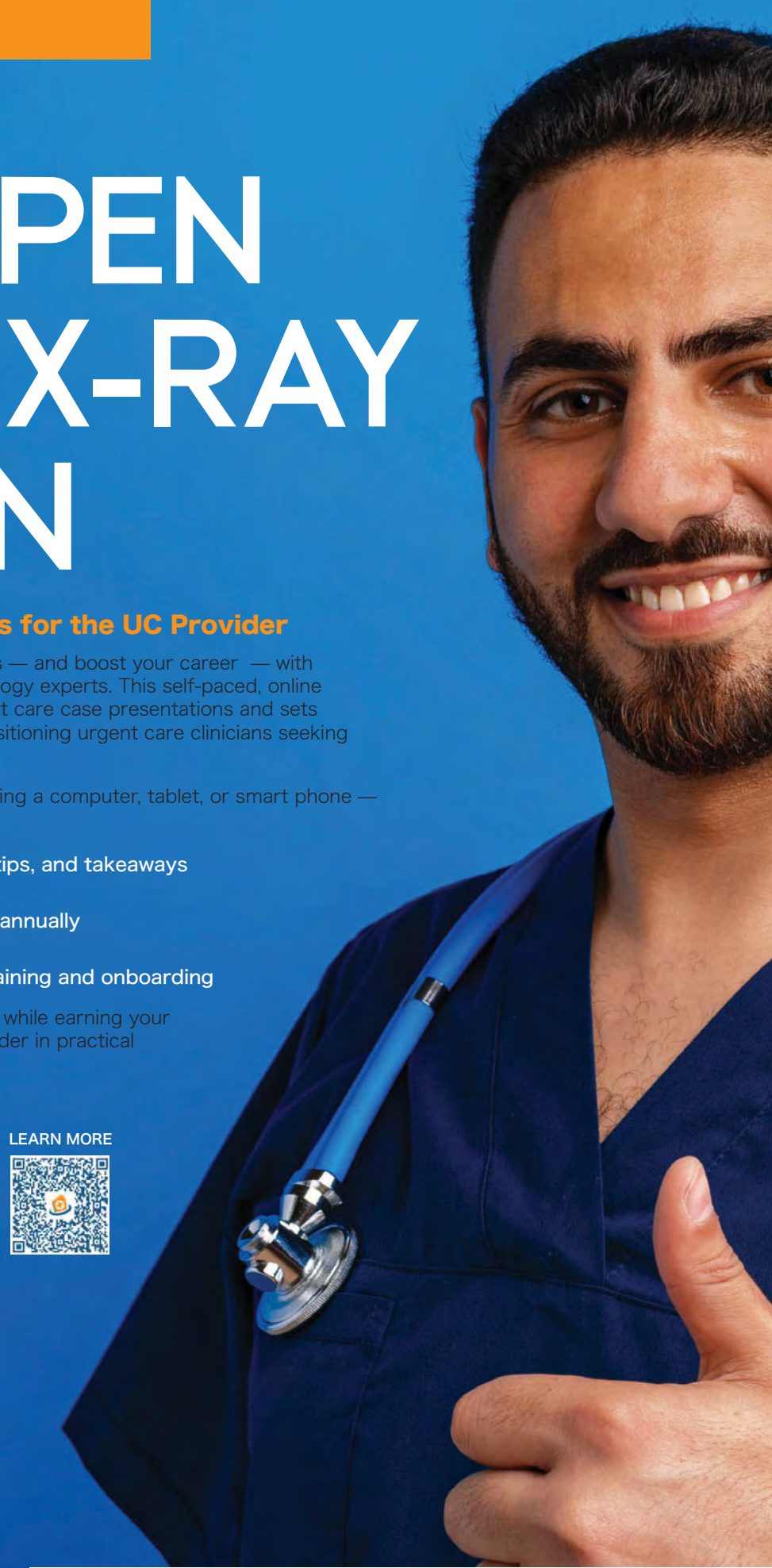

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Omicron versus Flu & RSV – Which is Most Dangerous for Children?

Take Home Point: In this study, hospitalization rates were higher for patients with RSV than Omicron (COVID-19) or influenza in all age groups of children.

Citation: Hedberg P, Abdel-Halem L, Valik J, et. al. Outcomes of Pediatric SARS-CoV-2 Omicron Infection vs Influenza and Respiratory Syncytial Virus Infections. *JAMA Pediatr.* 2023 Dec 26: e235734. doi: 10.1001/jamapediatrics.2023.5734

Relevance: With increasing availability for respiratory pathogen testing, it is more common to be able to diagnose specific respiratory viruses from urgent care (UC). Better understanding of the outcome of each viral infection in children can improve UC clinicians advice to parents.

Study Summary: This was a multicenter cohort study using 5 population-based data sources including all 3 pediatric emergency departments (ED) in Stockholm, Sweden. The authors included patients under 18 years with a polymerase chain reaction (PCR) test positive for SARS-CoV-2 (Omicron strain), influenza A/B, or respiratory syncytial virus (RSV) from 1 day before to 1 day after an ED visit. Outcomes were hospitalization, intensive care unit (ICU) admission, and 30-day all-cause mortality.

The authors reviewed 2,596 patients with positive viral testing and found, 896 [34.5%] had Omicron, 426 [16.4%] had influenza A or B, and 1,274 [48.0%] had RSV infections, respectively. Hospitalization rates were 31.5% for Omicron, 27.7% for either influenza strain, and 81.7% for RSV. For infants aged up to 1 year, odds ratios (ORs) for hospitalization were 11.29 (95%CI, 8.91-14.38) for RSV vs Omicron, and 1.67 (95% CI, 1.03- 2.68) for influenza vs Omicron. ICU admissions rates were ‹1% in the Omicron and influenza group and 2.9% in the RSV group. There were 3 deaths within 30 days of ED visit among all patients.

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Editor's Comments: The retrospective nature and design of the study only detected patients ill enough to present to the ED. Patients with mild symptoms likely did not present for care or presented to environments other than the ED. Vaccination status of children was not documented and the majority of the children were under 2 years of age. Regardless, based on the sample size and strength of findings, counseling parents to maintain greater vigilance among infants with RSV seems prudent. ■

Is Your Child Really Allergic to Penicillin?

Take Home Point: In this study, direct oral challenge with amoxicillin resulted in de-labelling of 98% of penicillin allergy in low-risk patients.

Citation: Vyles D, Hoganson J, McAneney C, et. al. Multisite Oral Amoxicillin Challenges During Pediatric Emergency Department Visits. *JAMA Pediatr.* 2023 Dec 1;177(12):1348-1350. doi: 10.1001/jamapediatrics.2023.3659.

Relevance: With approximately 10% of patients reporting penicillin allergy, it is the most commonly reported medication intolerance. However, true penicillin allergy is rare and the penicillin class of antibiotics is effective for many bacterial infections in childhood, as well as inexpensive. Safely de-labelling allergies in low-risk patients has been shown to improve outcomes and decrease health care expenses as well.

Study Summary: This was a cohort study of children aged 2 to 16 years with a parent-reported penicillin allergy presenting to 3 urban Midwest teaching pediatric EDs within the Pediatric Emergency Care Applied Research Network. Patients who were identified as low risk, based on a 3-tiered risk assessment method were enrolled. Parents of these children were approached to participate in direct oral challenge (DOC) with amoxicillin during their ED course.

The authors enrolled 117 participants who completed the DOC. They managed to de-label 98% of the children from their reported penicillin allergy after the DOC. The authors found significant differences among the frequency of low-risk assessment prevalence across the three sites (57%, 69%, and 46%; P ‹ .001), family interest in the DOC (87%,75%, and 58%; P ‹ .02), and clinician willingness to

proceed with DOC (85%, 94%, and 56%; P < .001).

Editor's Comments: This study was based in pediatric EDs which are better resourced to deal with any significant issues resulting from DOCs and also able to observe patients for longer periods of time compared to UCCs. Nonetheless, this adds to the rapidly growing body of literature highlighting the frequency with which reported penicillin allergies are spurious and how bedside tools rather than allergy testing can offer a viable strategy for safely de-labeling appropriately low risk patients at the point-of-care. ■

Buzzy, ShotBlocker, or DistrACTION Cards – Which Works Best?

Take Home Point: In this study, Buzzy, DistrACTION Cards, and the ShotBlocker device were more effective for reducing pain and anxiety associated with venipuncture in children compared to a control group.

Citation: Sivri B, Balci S, Dolgun D The Effect of 3 Methods (Buzzy, ShotBlocker, and DistrACTION Cards) Used While Taking Blood Samples From Children with Pain and Anxiety - A Randomized Controlled Trial. *Pediatr Emerg Care*. 2023 Aug 1;39(8):600-607. doi: 10.1097/PEC.0000000000002866

Relevance: Invasive procedures such as blood draws can be distressing to children and lead to subsequent fear and anxiety surrounding healthcare settings. In recent years, a growing number of devices have been developed to alleviate procedural discomfort for pediatric patients.

Study Summary: This was a prospective RCT comparing 3 non-pharmacological techniques, Buzzy, ShotBlocker, and DistrACTION Cards to reduce pain experienced by children while undergoing venipuncture in an ED setting in Turkey. Buzzy is believed to temporarily alter pain signals by skin stimulation with the effect of cold and vibration. ShotBlocker attempts to alter pain signals by applying pressure to the skin with protrusions on its surface. DistrACTION Cards attempt to decrease pain by drawing the child's attention to pictures on cards. State-Trait Anxiety Inventory for Children (STAIC) was used to determine the anxiety of the children, and the visual analog scale (VAS) and Faces Pain Scale – Revised (FPS-R) to evaluate the pain. Participants were randomized in a 1:1:1:1 fashion by computerized generated randomization to either receive one of the interventions or none (control).

The authors enrolled 242 patients with 61 control, 61 ShotBlocker, 60 Buzzy and 60 DistrACTION groups respectively. They found postprocedural STAIC scores of the control group were significantly higher than those of the children in each intervention group (p = 0.020, P = 0.012, and P = 0.002, respectively). There was no significant difference between the groups receiving each of the interventions based on the postprocedural STAIC scores.

For the VAS pain scores, children in the Buzzy, DistrACTION Cards and ShotBlocker groups were all lower than pain scores in the control group. Between the 3 intervention groups, Buzzy and DistrACTION cards children experience lesser pain compared to ShotBlocker group.

Editor's Comments: There may be limitations in generalizability due to the nature of this as a single center ED in Turkey. This study looked at venipuncture alone, which is infrequently performed on in children at most UC centers. It is also unclear to what extent these interventions may reduce pain and anxiety associated with other procedures in children. Other techniques such as bubble therapy were not investigated, however, these results suggest that low-tech, non-pharmacological techniques can facilitate painful procedures in pediatric patients. ■

Is Flu Season Now a Thing of the Past?

Take Home Point: Changes in non-pharmacological interventions implemented to control COIVD-19 have altered the pattern of seasonality for other respiratory viruses. It is unclear to what extent seasonal variations in other respiratory virus infection rates may be permanently altered.

Citation: Varela-Lasheras I, Perfeito L, Mesquita S, et. al. The effects of weather and mobility on respiratory viruses dynamics before and during the COVID-19 pandemic in the USA and Canada. *PLOS Digit Health*. 2023 Dec 21;2(12): e0000405. doi: 10.1371/journal.pdig.0000405

Relevance: Understanding the contribution of different factors to the dynamics of respiratory viruses is more relevant with climate change, newly emerging viruses, and changes in human behaviors. This may impact future recommendation on timing of vaccinations and decisions about when testing for influenza or other viruses may or may not be indicated.

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Study Summary: This was an epidemiological and surveillance data study encompassing data collected nation-wide from the US and Canada. Epidemiological data from the National Respiratory and Enteric Virus Surveillance System (NREVSS, Centers for Disease Control and Prevention), weather data from the Iowa Environmental Mesonet, and mobility data from the Bureau of Transportation Statistics (US Department of Transportation) and Google's COVID-19 Community Mobility Reports were analyzed. The analysis was performed by clustering analysis (to identify groups of viruses that have more similar temporal dynamics) and correlation analysis (exploring the similarities between the temporal dynamics of the viruses, with weather variables). Regression models were used to investigate the associations between the incidence of the different respiratory viral infections, weather conditions, and mobility.

The authors found that different respiratory viruses co-occur during the winter influenza season, but their incidence and dynamics were variable. Seasonal patterns diverged and became less consistent after the WHO COVID-19 pandemic declaration. Human patterns of travel and mobility have seemed to play a greater role in shaping the dynamics of respiratory virus surges since COVID-19 rather than patterns of changes in weather.

Editor's Comments: This was a robust epidemiological study looking at respiratory viral trends within both the US and Canada. The authors highlight the changing landscape of infections post pandemic. The results highlight the influence of human behaviors on trends in viral infections. As UC clinicians, it's worth noting that respiratory illness presentations may become closer to a year round phenomenon. It is important, however, to take the findings with a grain of salt as the data is limited to just several annual cycles since the COVID-19 pandemic. ■

Nirsevimab Use in Infants with RSV

Take Home Point: Nirsevimab therapy reduced the risk of hospitalization and severe disease among infants with respiratory syncytial virus (RSV) associated lower respiratory tract infection.

Citation: Drysdale S, Cathie K, Flamein F, et. al. Nirsevimab for Prevention of Hospitalizations Due to RSV in Infants. *N Engl J Med.* 2023; 389:2425-35. DOI: 10.1056/NEJMoa2309189

Relevance: Nirsevimab is a monoclonal antibody that has recently been approved for use for prophylaxis against RSV-related lower respiratory tract infections (LRTI) in children in the UK, Europe and the US. This study looks at its efficacy in a real-world environment.

"Human patterns of travel and mobility have seemed to play a greater role in shaping the dynamics of respiratory virus surges."

Study Summary: This study presents the results from the HARMONIE trial which recruited participants from 235 sites in France, Germany, and the United Kingdom. Eligible infants were randomly assigned in a 1:1 fashion to receive a single intramuscular (IM) injection of nirsevimab (50 mg for infants weighing <5 kg or 100 mg for those weighing ≥5 kg) or standard care (no intervention). The primary end point was hospitalization for RSV-associated LRTI.

The 8,058 infants (<12 months of age) were randomized to receive either nirsevimab (4,037 infants) or standard care (4,021 infants). The 99.6% of infants who received an IM dose of nirsevimab received it during the RSV season. The authors found that hospitalization for RSV-associated LRTI occurred in 11 infants (0.3%) in the nirsevimab group (1 event per 1000 person-months) and in 60 (1.5%) who received standard care (6 events per 1000 person-months), corresponding to an efficacy of 83.2% (95% confidence interval [CI], 67.8 to 92.0; P<0.001) for nirsevimab during the 2022–2023 RSV season. Analyses of subgroups defined according to age group (≤3 months, 3-6 months, or >6 months), weight, gestational age, sex, and the timing of randomization (before or during the RSV season) showed similar efficacy rates. The efficacy of nirsevimab was also consistent across the three participating countries.

Editor's Comments: The study had a short period of follow-up, 3 months, and was funded by pharmaceutical manufacturers. There was no blinding of the parents of the infants and its uncertain if this affected their subsequent behavior in seeking medical attention. Given the low reported risk of serious adverse events, this trial's data support the apropriateness of nirsevimab for preventing serious RSV illness in infants. Future studies should further define the practicality of this therapy and whether it is cost-effective. ■

Moderate-Vigorous Physical Activity to Overcome the Effects of Sedentary Time

Take Home Point: Small amounts of moderate-vigorous physical activity (MVPA) appears to be an effective strategy to ameliorate the increased mortality risk associated with a highly sedentary lifestyle.

Citation: Sagelv E, Hopstock L, Moreseth B, et. al. Device-measured physical activity, sedentary time, and risk of all-cause mortality: an individual participant data analysis of four prospective cohort studies. *Br J Sports Med*. 2023; 57:1457–1463.

Relevance: As UC clinicians, we spend a lot of sedentary time at work. This prospective cohort study examined how physical activity may mitigate harms of excessive sitting.

Study Summary: This was a pooled participant data from 4 prospective cohorts with device-measured physical activity placed at the hip of participants to examine whether the association between sedentary time and mortality was modified by physical activity. Participant data of prospective cohorts from Norway, Sweden, and the USA were pooled. All cohorts used ActiGraph accelerometers (ActiGraph, Pensacola, Florida, USA). Total physical activity was defined as step counts per minute divided by wear time, with volume of intensity-specific physical activity defined as: sedentary <100 counts per minute, light physical activity 100–2,019 counts per minute, and MVPA ≥2,020 counts per minute.

The authors analyzed data from 11,989 participants who were 50 years or older over 13 years. There were 805 deaths during the study follow-up period (6.7%). They found higher levels of MVPA were associated with lower mortality risk irrespective of the amounts of sedentary time. Higher sedentary time was associated with mortality in participants with low levels of MVPA. Accumulating at least 22 minutes per day of MVPA eliminated the association between sedentary time and mortality.

Editor's Comments: Participants in this study were older adults (>50 years). Many non-physical activity lifestyle factors, such as sleep and diet, were not accounted for, but could be significant confounders. Regardless, the strength of the associations reinforces the notion that movement is important for good health and adds further data in support of more intense movement, especially for those with particularly sedentary lifestyles. ■

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Case Report

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See CME post-test questions on page 11.

An Atypical Cause of Fever and Confusion: A Case Report of Delayed Pulmonary Embolism Diagnosis

Urgent Message: Pulmonary embolism can be frequently missed as a diagnosis because it can present with a variety of signs and symptoms. Understanding clinical decision rules and myriad presentations can help urgent care providers determine when patients benefit from immediate referral to an emergency department.

Francesca Cocchiarale, DO; Alexa Bailey, MS-3; Michael Weinstock, MD

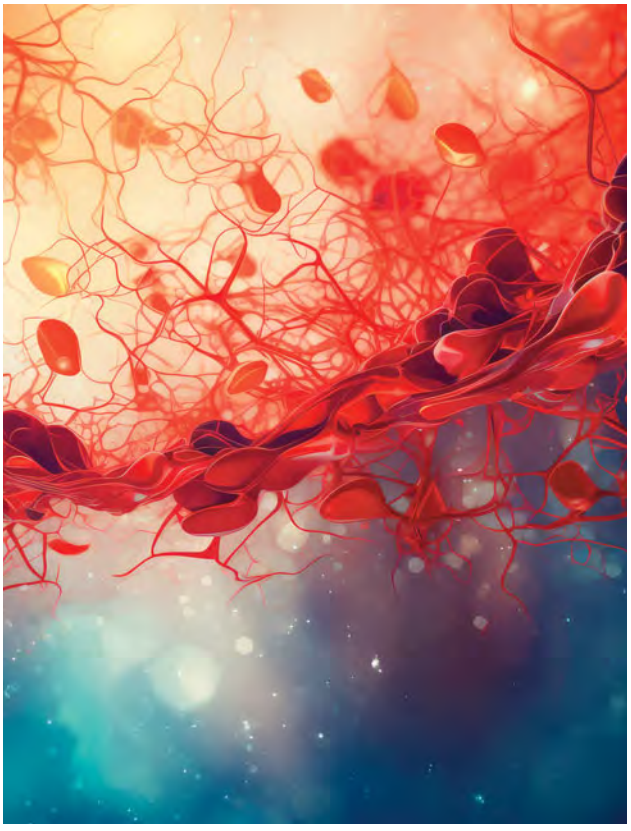
Citation: Cocchiarale F, Bailey A, Weinstock M. An Atypical Cause of Fever and Confusion : A Case Report of Delayed Pulmonary Embolism Diagnosis. *J Urgent Care Med.* 2024; 18(6):28-31

Keywords: pulmonary embolism, fevers, tachycardia, emergency department

Abstract

Introduction: Pulmonary emboli (PE) can manifest with a wide variety of different clinical presentations. This commonly leads to delays in diagnosis.

Clinical Findings: A 63-year-old man with a history of gastroesophageal disease (GERD), hypertension and a recent diagnosis of multiple myeloma who was on lenalidomide presented to the emergency department (ED) with 1 day of fever and confusion. His vitals were remarkable for a temperature of 38.2°C and pulse of 122 beats per minute (BPM). He initially underwent non-contrast computed tomography (CT) of the chest, which showed ground glass opacities in bilateral lungs, suspicious for pneumonia. Toxicology testing was negative. CT angiography of the head and neck also showed no abnormalities to explain the patient's fever and confusion. The patient was admitted and placed on broad-



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spectrum intravenous antibiotics.

Diagnosis: After several days of antibiotic treatment, he remained tachycardic and febrile and began to require supplemental oxygen. He also began to complain of left leg pain, which prompted clinicians to obtain bilateral lower extremity venous ultrasound (US). The US showed bilateral deep vein thromboses (DVT) in the posterior tibial veins. After this was discovered, a computed tomography angiography (CT-A) of the chest was ordered, which showed acute bilateral PE, without evidence of right heart strain. The patient was started on rivaroxaban and after receiving 2 doses, his fevers and tachycardia resolved.

Conclusion: It is important to consider a broad list of serious, infectious and non-infectious, diagnoses when patients present with altered mental status and fever.

Introduction

Tachycardia and fever are common symptoms that can be signs of a wide range of pathologies. In the United States, 600,000 of cases of venous thromboembolism (VTE) are diagnosed annually, and PE accounts for more than 100,000 American deaths each year. The 30-day mortality after PE diagnosis approaches 10%.[1] PE can present with a variety of non-specific signs and symptoms, such as tachycardia, elevated temperature, anxiety, syncope, and chest pain.[2] Given the relative frequency, associated mortality, and non-specific presentations for PE, it is important for clinicians assessing undifferentiated patients to include PE on the differential in a variety of presentations.

Case Presentation

A 63-year-old man with a history of gastroesophageal disease (GERD), hypertension, and a recent diagnosis of multiple myeloma presented to the ED with 2 days of fevers at home with a maximum temperature of 38.8°C. He had taken acetaminophen without improvement in his temperature. His wife brought him to the ED because he seemed confused a day after his fevers started. She noted that he was disoriented and did not recognize his family. At the bedside, his wife had to assist him with answering questions. She stated he had not had respiratory symptoms such as cough, rhinorrhea, and shortness of breath. He had not complained of chest pain or headache. He had no history of alcohol, tobacco, or drug use.

"It is important for clinicians assessing undifferentiated patients to include PE on the differential in a variety of presentations."

Physical and Laboratory Exam Findings

The patient's vitals in the ED were significant for a temperature of 38.2°C, and a pulse of 122 BPM. His respiratory rate and blood pressure were normal, and the oxygen saturation was 96% on room air. On exam, he appeared ill and anxious and was only oriented to himself. His lungs were clear. He was tachycardic but had a regular rhythm. His abdominal, skin, and extremity exams were unremarkable.

Differential Diagnosis

Many clinical entities were considered in explaining the patient's presentation of altered mental status, fever, and tachycardia, including encephalitis, meningitis, drug intoxication, alcohol withdrawal, bacteremia/sepsis, brain abscess, urinary tract infection, skin infection, intraabdominal infection, PE, and pneumonia.

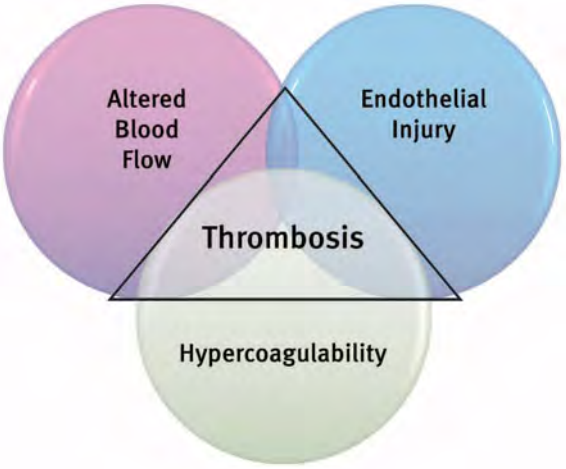
Case Timeline and Management

The patient initially presented to the ED given the severity of his symptoms. Labs were obtained including complete blood count, metabolic panel, and hepatic function panel, and all were unremarkable. Urine toxicology screening was negative. Computer tomography of the head and CT angiography study of the head and neck showed no acute intracranial abnormalities. Noncontrast CT of the chest showed ground glass opacities in the lungs, which were believed to represent pneumonia, as well as destructive bone lesions consistent with his known diagnosis of multiple myeloma.

The patient was admitted with a provisional diagnosis of pneumonia and sepsis, and his altered mental status was attributed to delirium from the infection. Due to his immunocompromised status and suspicion of encephalitis, a lumbar puncture was also performed and cerebrospinal fluid analysis revealed no abnormalities to explain his alteration in consciousness. He was started empirically on broad spectrum IV antibiotics.

After several days of receiving antibiotics in the hospital, he remained febrile and tachycardic and began to require supplemental oxygen. He also developed a cough.

Figure 1. Virchow's Triad: The Three Risk Factors for Thrombosis



On hospital day 6, the patient complained of left leg pain. A lower extremity doppler ultrasound (US) was ordered revealing bilateral DVT in the tibial veins. This subsequently prompted CT-A of the chest, which showed acute bilateral pulmonary emboli.

By hospital day 8, the patient had undergone the following testing:

- **Immunocompromised Respiratory Panel**: negative for over 20 viral, bacterial, and fungal pathogens
- **Echocardiogram:** normal ejection fraction and no valvular vegetations
- **Bronchoscopy with Bronchoalveolar Lavage**: negative for malignant cells or causative organisms
- **Blood Cultures**: no growth

Diagnostic Assessment and Case Conclusion

The patient was immediately started on rivaroxaban. After receiving just two doses, his fevers and tachycardia resolved completely and he was discharged to follow-up with his oncologist. He was continued on long-term oral anticoagulation and had improvement in his respiratory status.

Discussion

This patient underwent extensive advanced and invasive testing in an inpatient setting for over a week before the ultimate diagnosis of PE was made. Since urgent care (UC) diagnostic resources are dramatically more limited, it's understandable that the diagnosis of PE would present a challenge for UC clinicians, especially with atypical presentations.

This patient had an unusual presentation for PE. Chest pain, shortness of breath, and cough are the most common symptoms of chest pain.[3] Although not present in the majority of cases, fever is a relatively common finding present with PE and DVT as well. It is present in up to 33% of patients with VTE within 1 week of diagnosis and has been associated with larger clot burden and higher risk of intensive care unit admission and mortality.[4]

Delirium is an acute and rapidly fluctuating change in cognitive function associated with a trigger, often an acute illness, and is much more common in elderly patients.[5] Unlike fever, delirium is uncommonly caused by PE. Consequently, it's not surprising that while delirium—which is fully attributable to PE—is a relatively uncommon finding, it has been reported mostly in patients >70 years.[6,7,8] Relative to other cases of delirium apparently triggered by PE, the patient presented in this case was somewhat younger.

The pathology of VTE involves an understanding of Virchow's triad (**Figure 1**). Virchow's triad consists of hypercoagulability, venous stasis, and vessel wall injury.[1] Factors that can also influence development of PE include prolonged immobilization and advanced cancer.[9] The patient in this case had both an advanced cancer diagnosis and prolonged bedrest, for example. However, while the patient's diagnosis of PE was not confirmed until later in his hospitalization, the resolution of his fever, confusion, and tachycardia after starting anticoagulation lend credence to the idea that the VTE was at least somewhat contributory. It is important to reflect on the components of Virchow's triad when contemplating VTE as a potential cause of patients symptoms.

The patient had persistent tachycardia until his PE was identified and treated. As was the case here, fever in conjunction with tachycardia could prematurely lead clinicians toward anchoring on infectious etiologies. Anchoring bias involves receiving information and relying heavily on the first impression made to guide further decisions made about a situation.[10] UC and ED clinicians are particularly susceptible to anchoring bias since first impressions and initial decisions made in patient evaluation disproportionately affect further care.[11] This is why it is critical to consider PE in the setting of unexplained tachycardia. However, while tachycardia is a common feature in PE, it is only present in ~30% of cases.[12]

The Pulmonary Embolism Rule-Out Criteria (PERC) is a clinical decision rule that is a valuable tool for UC

use, as it does not rely on laboratory or imaging. Heart rate is one criterion in the PERC score, and the presence of tachycardia would not allow for PE to be excluded using PERC.[13]

In low-moderate pretest probability situations, d-dimer testing has been found to have a >98% negative predictive value for PE.[9] If stat d-dimer testing is available in urgent care, this test could be performed to risk stratify stable patients in whom the PERC rule cannot exclude PE. For patients in whom there is a reasonable suspicion for PE and it cannot be excluded with available clinical decision rules and/or d-dimer testing, immediate ED referral is indicated.

"Pulmonary embolism can present in a variety of fashions. Consider PE in cases beyond patients with chest pain and shortness of breath."

The gold standard diagnostic testing for PE is a contrast-enhanced computed tomography pulmonary angiography (CT-PA).[14] In patients where CT-PA is contraindicated, ventilation/perfusion scanning is an alternative option.[14] Initial management of a confirmed PE involves systemic anticoagulation. Direct oral anticoagulation medications such as apixaban, rivaroxaban, edoxaban, and dabigatran are generally preferred for outpatient treatment of VTE due to simplicity of dosing and no requirements for monitoring, as well as generally lower risk of bleeding compared to warfarin.[9]

Ethics Statement

The patient presented in this case provided verbal consent for the creation of this case study and discussion regarding his care during his inpatient stay. Patient demographics were anonymized in the interest of patient privacy.

Key Takeaways for Urgent Care Providers

- Be aware of tendencies towards anchoring bias and keep a broad differential for undifferentiated patients, especially those with high risk complaints and/or abnormal vital signs.
- Consider the patient's past medical history thoroughly and what conditions they may be predisposed to, based on their underlying health issues.
- Become familiar with clinical decision rules that can be used with the clinical data available in UC, such as the PERC rule, as these can prevent a number of unnecessary ED referrals when applied correctly.
- Pulmonary embolism can present in a variety of fashions. Consider PE in cases beyond patients with chest pain and shortness of breath.
- Remember not all fevers are due to infection. PE is one example of an important non-infectious cause of fever and fever occurs relatively commonly in patients with acute VTE. ■

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Supervising Doctors May Be Held Liable in Malpractice Suits

Urgent Message: A supervising physician can be named in a lawsuit for malpractice against a nurse practitioner or physician assistant, however, there are steps supervising physicians can take to protect themselves against such actions.

Alan A. Ayers, MBA, MAcc

In urgent care settings, physicians are often responsible for supervising and overseeing a team of other healthcare employees, including nurse practitioners (NPs), physician assistants (PAs), and medical assistants (MAs). If any member of this team is found to be negligent, the doctor may be held liable.

Up to 85% of urgent care patients are seen only by an NP or PA, rather than a physician.[1] And while most states require an NP or PA to work under the "supervision" of a physician, court cases show that physicians underestimate their liability in supervising nurse practitioners and physician assistants.[2]

Even in states that have done away with requirements that NPs be physician-supervised, physicians in urgent care settings may still be liable by virtue of employing the NP. In fact, the vast majority of negligence actions against NPs and PAs also name the supervising physician.[2]

In addition to medical malpractice suits, state licensure boards may sanction doctors for improperly supervising NPs and PAs.

Vicarious Liability

Vicarious liability is based on the legal idea of *respondeat superior*, which is Latin for "let the master answer." Under vicarious liability, an employer is liable for the acts of an employee that are performed within the course of their employment.[3] This doctrine has been used to hold physicians liable for the negligence of nurse practitioners and physician assistants.

The law states that "[a]n employer may be liable to a third person for the employer's negligence in hiring or retaining an employee who is incompetent or unfit."[4] Negligence liability will be imposed upon the employer if it "knew or should have known that hiring the employee created a particular risk or hazard and that particular harm materializes."[4] As such, California follows the rule set forth in the Restatement Second of Agency section 213, which provides in pertinent part: "A person conducting an activity through servants or other agents is subject to liability for harm resulting from his conduct if he is negligent or reckless: … in the employment of improper persons or instrumentalities in work involving risk of harm to others[.]"[5] Liability for negligent supervision and/or retention of an employee is one of direct

Author affiliations: Alan A. Ayers, MBA, MAcc, is President of Experity Consulting and Practice Management Editor of *The Journal of Urgent Care Medicine*. The author has no relevant financial relationships with any ineligible companies.

liability for negligence, not vicarious liability.[4]

If the requirements are met, a supervising physician may be held liable for the following forms of negligence or errors committed by an NP or a PA:

- Misdiagnosis
- Administering wrong or untimely medication, or not administering one at all when required
- Errors with medication dosing
- Failure to monitor a patient
- Failure to follow up with a patient

Kansas (2022), New York (2022), and Utah (2023) no longer require supervision for all or most NPs. Twenty-seven states now have eliminated these requirements.[2] However, PAs lag well behind NPs in achieving independence. To that end, the American Academy of Physician Associates is calling to eliminate a mandated relationship with a specific physician.[2]

In *Zeh v. Maso*, for example, the Georgia Court of Appeals held that a supervising physician is not legally liable for the negligent conduct of a physician assistant practicing under them.[6] The plaintiff in that case tried to use Georgia's Physician Assistant Act to establish legal liability as the statute defined a PA's scope of practice with the literal text ascribing "responsibility" to the supervising physician.[6] In *Strickland v. Wellstar Health Sys.*, the plaintiff referenced similar "responsibility" language, but only from non-legal sources.[7] The court opined that if a Georgia statute literally ascribing "responsibility" to a supervising physician does not impose legal liability on the supervising physician, fact testimony and medical literature regarding responsibility will not impose legal liability on a supervising physician either.[7]

The court said: "As the Court of Appeals has made clear, 'responsibility' and 'liability' are not interchangeable, and if the Georgia Legislature wanted to proscribe liability on supervising physicians, they know the language to use."[7]

Steps Supervising Physicians Can Take to Protect Themselves

When considering the addition of an NP or PA to your practice, ask the state medical board about diagnosing and prescribing rules, as well as the required amount of supervision.[8] Physicians should also make certain to verify the credentials of the NP or PA under consideration. Contact the relevant state licensing board or professional association and verify that the applicant graduated from an accredited program.

Urgent care owners and operators should clearly detail the entire relationship between the doctor and other health professionals. The job description and practice protocols should be written to adequately describe the type of patients to be seen and the level of treatment to be provided.[9] In addition, supervising physicians should explain to the PA or NP how they see the role. Define what conditions and complaints are appropriate for first-level care, and when he or she must refer the patient to the supervising physician or a specialist.[8]

The most counterproductive thing a supervising physician can do is create an environment in which the NP or PA is discouraged from asking questions or asking for help.

"Urgent care owners and operators should clearly detail the entire relationship between the doctor and other health professionals."

Conclusion

It's important to note that the greatest malpractice risks exist when a PA or NP practices beyond their level of training and waits too long to contact the physician.[10] ■

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CLINICAL CHALLENGE: CASE 1

Challenge your diagnostic acumen: Study the following x-rays, electrocardiograms, and photographs and consider what your diagnosis might be in each case. While the images presented here are authentic, the patient cases are hypothetical. Readers are welcome to offer their own patient cases and images for consideration by contacting the editors at editor@jucm.com.

42-Year-Old Soccer Player With Knee Injury

Figure 1.

Figure 2.

A 42-year-old man presents to urgent care with knee pain. He says the pain started when he was playing soccer, just as he kicked a ball toward the goal. Ultimately, he had to leave the game because of the pain.

View the image taken 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 1.

Differential Diagnosis
- Posterior cruciate ligament (PCL) tear
- Anterior cruciate ligament (ACL) tear
- Tibial plateau fracture
- Patellar tendon tear

Diagnosis
The correct diagnosis is an ACL tear. In the anterior-to-posterior view, tibial eminence avulsion fracture (circle) overlying tibial spines and large effusion (arrow) can be seen. ACL tears are usually caused by forceful hyperextension of the knee or by a direct blow over the distal end of the femur with the knee flexed. Such an injury typically involves separation of the tibial attachment of the ACL to variable degrees, while separation at the femoral attachment is rare.

What to Look For
- On exam, there is frequently a large knee joint effusion and initially patient is unable to bear weight
- On exam, a positive Lachman's test or anterior drawer test is present

Pearls for Urgent Care Management
- On exam, ensure that all other ligaments are intact, including the PCL
- MRI is the imaging modality of choice to confirm diagnosis
- Initial treatment is rest, ice, compression, elevation, pain management and non-weight bearing if knee is unstable
- Referral to orthopedic surgery is indicated for further consideration of operative versus non-operative management

38-Year-Old With Rash After Heating Pad Use

Figure 1.

A 38-year-old woman presented to urgent care for rash that had developed on her trunk 2 months prior. On examination, extensive hyperpigmented, reticulated patches were seen on her back. She had no recent history of sunburn, extensive sun exposure, or history of dermatological conditions. Additional history revealed the use of a heating pad for the preceding 3 months to help manage her chronic back pain. She often rested on the electric heating pad for several hours and sometimes fell asleep with the heating pad on.

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).


Figure 2.

Differential Diagnosis
- Intravascular large B cell lymphoma
- Erythema ab igne
- Livedo reticularis
- Polyarteritis nodosa

Diagnosis

The correct diagnosis in this case is erythema ab igne (EAI), a disorder of hyperpigmentation caused by prolonged exposure to heat. Heat exposure produces cutaneous hyperthermia, which in turn results in histopathologic changes similar to those seen in sun-damaged skin. Patients who report long-term use of heating pads or electric blankets may experience EAI. Heat exposure from a fireplace or even a laptop computer can also trigger the disorder.

What to Look For
- The rash appears as mottled, reticulated, pink, reddish, or violaceous patches that eventually become brown from melanin deposition
- While usually asymptomatic, there may be pruritus or mild burning paresthesias
- Rarely, vesicles or bullae have been described in affected areas

Pearls for Urgent Care Management
- Treatment is removal of the heat source
- Skin changes usually clear without further intervention in weeks to months, however, some may become permanent

CLINICAL CHALLENGE: CASE 3

55-Year-Old Male With Dyspnea

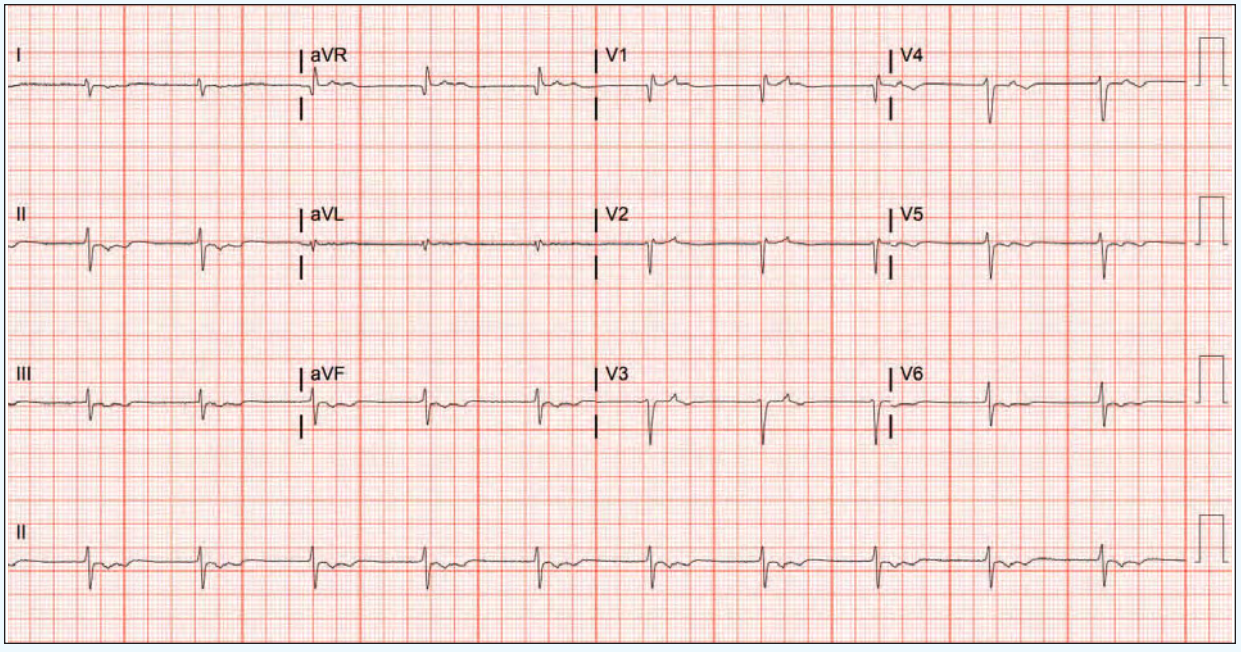

Figure 1: Initial ECG

A 55-year-old male with a history of heart failure presents to the urgent care with dyspnea. 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 Benjamin Cooper, MD, McGovern Medical School, The University of Texas Health Science Center at Houston, Department of Emergency Medicine

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

ECG STAMPEDE

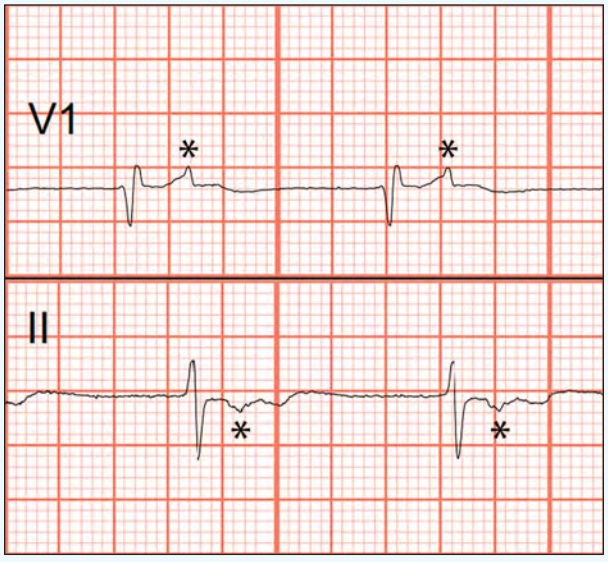

Figure 2. Retrograde p' waves in leads V1 and II (asterisks).

Differential Diagnosis

- Sinus bradycardia
- Junctional escape rhythm
- Complete heart block
- Hyperkalemia

Diagnosis

The diagnosis is junctional escape rhythm. The ECG reveals narrow escape complexes at a rate of 60 beats per minute. Retrograde p' waves are visualized immediately following the QRS complexes (**Figure 2**). Pacemaking cells exist throughout the conduction system, from the atrioventricular node through the distal Purkinje fibers. Inferior pacemakers are suppressed by the most superior (and dominant) one—usually the sinoatrial node. When impulses from the dominant pacemaker fail to conduct distally or an ancillary pacemaker outpaces and usurps control, an "escape" rhythm results.[1] When a superior pacemaker fails to generate impulses at a rate faster than an inferior one, then the faster, more inferior, one will "escape." In our case, the sinus node failed to generate a rate that outpaced the junction, which led to a junctional escape rhythm.

The junction refers to the part of the conduction system involving the atrioventricular node and the proximal His bundle (immediately inferior to the atrioventricular node). It is the only part of the conduction system capable of producing a narrow QRS complex, provided that the bundles remain intact. Junctional escape rhythms generally produce a rate of 40 to 60 beats per minute, whereas more distal ventricular pacemakers are slower and less reliable.[2]

Normally, the atria depolarize from superior to inferior given the superior location of the sinoatrial node in the right atrium. The normal wave of atrial depolarization creates a positive deflection in the inferior leads (ie, II, III, and aVF), and a negative deflection in aVR—the typical morphology of P waves when the impulse originates from the sinoatrial node. Sometimes, when the impulse originates from the junction (or below), the atria will depolarize in the opposite direction (ie, from inferior to superior), and retrograde p' waves can be seen immediately following the QRS complexes. Retrograde p' waves are negatively deflected in the inferior leads (ie, II, III, and aVF) and positively deflected in aVR and V1 (**Figure 2**). Our patients ECG lacks typical P waves, indicating that the sinoatrial node failed to outpace the junction and resulting in a junctional escape rhythm with retrograde p' waves. In the setting of preexisting heart failure, the decreased cardiac output associated with acute (relative) bradycardia can become symptomatic, as with this patient. Immediate transfer to an electrophysiology-capable facility is indicated.

There is no evidence of complete heart block given the lack of observed sinoatrial activity. While hyperkalemia is possible, there are no features to suggest that is the case (eg, peaked T waves or QRS widening).

What To Look For

- Junctional escape rhythms are narrow, and typically produce rates between 40 and 60 beats per minute.
- Retrograde p' waves can be seen immediately following the QRS complexes, are upright in aVR and V1, and negatively deflected in the inferior leads.

Pearls For Initial Management And Considerations For Transfer

- Patients with symptomatic bradycardia warrant transfer to an electrophysiology-capable facility.
- If unstable, consider transcutaneous pacing.

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CLINICAL CHALLENGE: CASE 4

53-Year-Old Female With Fatigue

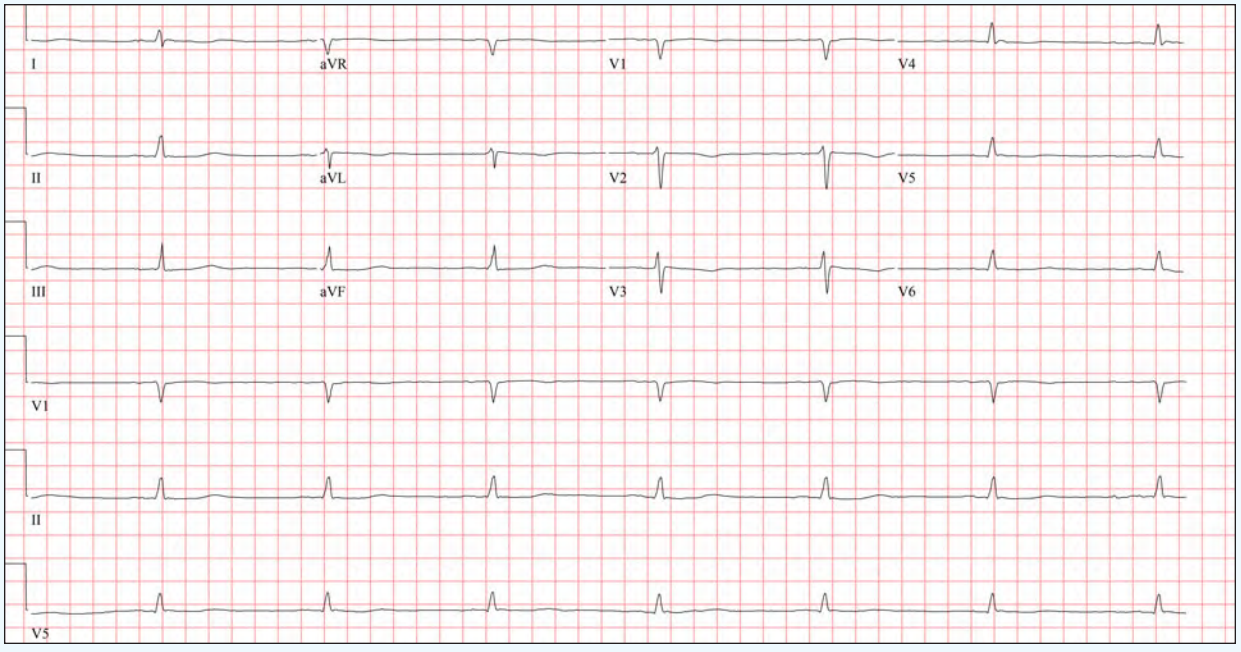

Figure 1: Initial ECG

A 53-year-old female with no significant past medical history presents to the urgent care with progressive fatigue for several weeks. 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

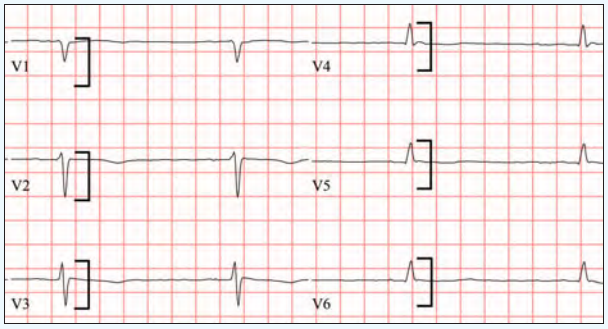

Figure 2: 10 mm of amplitude as depicted by the closed brackets

Differential Diagnosis

- Sinus bradycardia
- Myxedema coma
- Pericardial effusion
- Complete heart block
- Hypokalemia

Diagnosis

The diagnosis is myxedema coma. The ECG reveals sinus bradycardia with a rate of 40 beats per minute and low voltage. Atrial activity is difficult to see but careful analysis reveals blunted P waves. There is also a prolonged QT interval. The traditional definition of low voltage is an amplitude less than 5 mm in the QRS complexes of all limb leads or an amplitude of less than 10 mm in the QRS complexes of all precordial leads.[1] This patient had a QRS amplitude of less than 10 mm in all precordial lead (**Figure 2**). The differential for low voltage can be broken down into two categories: cardiac abnormalities resulting in diminished impulse generation; and increased impedance due to attenuating substances between the heart and the surface leads (**Table 1**).

When low voltage is encountered, the provider must consider the listed conditions in the differential diagnosis. Many causes can be ruled out with a comprehensive physical examination (eg, obesity, peripheral edema) and ancillary testing as needed (eg, COPD, pneumothorax), or bedside ultrasound when available (eg, pericardial effusion). Other conditions, such as hypothyroidism, may require additional testing. The combination of low voltage and bradycardia should raise the concern for hypothyroidism/myxedema.[3] Concern for severe hypothyroidism or myxedema should trigger additional laboratory testing and/or transfer to higher level of care. Interestingly, hypothyroidism can cause low voltage through two mechanisms: the direct effects of hormonal deficiency on the generation of cardiac action potentials and via the presence of a pericardial effusion, seen in up to one-third of patients with hypothyroidism and, rarely, leading to tamponade.[3,4] Patients with tamponade or large effusions due to hypothyroidism will characteristically lack a compensatory tachycardic response and will be bradycardic or normocardic.[5,6] Other electrocardiographic findings of hypothyroidism include sinus bradycardia, low voltage, and prolonged QT interval. Occasionally, dysrhythmias like torsade de pointes can result.[3,7] The presence of conducted P waves precludes the diagnosis of complete heart block. While hypokalemia can cause QT prolongation, it is not known to cause low voltage or bradycardia.

Table 1. Causes of Low Voltage

Increased Impedance
Pericardial
Effusion
Constrictive pericarditis
Pneumopericardium
Thoracic
Intra-pleural
Pneumothorax
Pleural effusion
Pulmonary
COPD
Pulmonary edema
Mediastinum
Pneumomediastinum
Soft tissue
Peripheral edema
Obesity
Decreased Impulse Generation
Prior myocardial infarction
Infiltrative cardiomyopathy (amyloidosis, sarcoidosis)
Myocarditis
Hypothyroidism

What To Look For

- Low voltage is caused by decreased impulse generation or increased impedance due to extracardiac causes like pericardial effusion, COPD, or obesity.
- Consider all causes of low voltage.
- In patients with bradycardia and low voltage, consider hypothyroidism/myxedema coma.

Pearls For Management, Considerations For Transfer

- Patients with severe hypothyroidism require transfer for admission, typically to an ICU.
- Be aware that hemodynamic instability could be caused by cardiac tamponade in patients with hypothyroidism, in which case fluid administration while preparing for immediate transfer is indicated.

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Nine Recurring Coding Pitfalls for Urgent Care Clinicians to Avoid

Brad Laymon, PA, CPC, CEMC

Over my career as a physician assistant, I have delved extensively into the intricacies of medical coding guidelines. Through collaborative initiatives with healthcare systems and fellow clinicians, I have been able to identify 9 common, recurring coding pitfalls. This process came with significant time and experience, and I want to share what I've learned as my ultimate objective has always been advancing charting accuracy to instill confidence among providers in their coding practices.

1. Failure to 'Diagnose' Abnormal Vital Signs

Generally, it's best to add abnormal vital signs as a separate diagnosis if they are not part of a primary diagnosis, but this is a practice I've rarely observed among my colleagues. This confirms that the abnormal vital has been identified and appreciated. For example, unexplained tachycardia can be added as a diagnosis with the International Classification of Diseases 10th revision (ICD-10) code R00.0, "tachycardia, unspecified."[1] Similarly, any patient whose blood pressure (BP) is elevated while in the urgent care (UC) center can have that vital sign abnormality added as a diagnosis. If they have a history of hypertension, then you have met the criteria for a chronic illness with exacerbation. If they do not have a history of hypertension, elevated BP could be added as a diagnosis with a plan for managing the elevated BP (ICD-10 code R03.0). Adding such diagnoses better captures the complexity of the patients we care for.[2]

2. Failure to Identify a Chronic Illness with Exacerbation

The occurrence of exacerbations of chronic illness are frequent causes for patient encounters in urgent care. From a medical coding perspective, a chronic condition is deemed poorly controlled if it fulfills specified criteria and the patient does not achieve treatment goals.

Consider the following examples:

- A 67-year-old male with a complaint of "a chronic back pain flare up" arrives in the UC. He denies any injury but states it started after raking the back yard for about 45 minutes. He takes meloxicam 7.5 milligrams as needed for this chronic condition.
- A 34-year-old female complains of an asthma attack. She has used her albuterol inhaler with little relief. She denies any recent upper respiratory infection.
- A 59-year-old male patient is being seen for a sore throat, but his blood pressure is 168/97. He does have a history of hypertension (HTN). He is prescribed hydrochlorothiazide 25 milligrams daily.

What do these patient complaints have in common? They all have chronic illnesses that are exacerbated and/or poorly controlled.

Let's look at the possible ways in which UC clinicians might address or manage these 3 examples:

- The 67-year-old male with chronic back pain will start taking acetaminophen 1000 milligrams every 8 hours as scheduled as well as his meloxicam 7.5 milligrams once daily instead of using it as needed for the next 5-7 days.
- The 34-year-old female with the asthma attack was given 1 albuterol nebulizer treatment in the center with improvement in her breathing. She will continue her albuterol inhaler at 2 puffs every 4-6 hours as needed and start a short course of oral prednisone.
- The 59-year-old male patient who is being seen for a sore throat has a blood pressure reading of 168/97. The clinicians has a discussion about his elevated blood pressure during the visit. He reveals that he is not taking his hydrochlorothiazide as prescribed. He

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Coding Tips for Patients Presenting with Chronic Illnesses That Are Poorly Controlled or Exacerbated

The following can all be coded as level 4 based on complexity, risk, and data reviewed:

- If you see a patient with 1 chronic illness with exacerbation and also engage in prescription drug management
- If you see a patient with 1 chronic illness with exacerbation and do at least 3 point-of-care tests
- Any chronic illness (eg, diabetes, hypertension, asthma, congestive heart failure, etc.), which is not at the recommended treatment goal and for which you prescribe or inform the patient to continue their current prescription medication

Be sure to document the chronic illness in the "history of present illness" (HPI) section and the treatment plan in the "medical decision making" (MDM) section.

Example: Even though the 59-year-old with HTN and sore throat is being seen for an illness/injury that is not related to the chronic illness which is not at-goal, with proper documentation, this can be coded for a level 4 visit.

will resume his hydrochlorothiazide 25 milligrams once daily, monitor his BP daily at home, and see his primary care provider for further evaluation/treatment.

What level of service would you code the above examples? The correct level of service—with proper documentation—would be level 4 for all the above visits.

3. Failure to Document Independent Historian

Obtaining history from multiple historians is additional work and increases the complexity of medical care, yet providers frequently fail to document this. An independent historian can be a parent, guardian, surrogate, spouse, or witness, to name a few, who provides all or part of the history because the patient is unable to provide a complete or reliable history due to verbal difficulties, dementia, psychosis, or because a confirmatory history is judged to be necessary. The independent history does not need to be obtained directly in person. Phone calls count. Interpreter services, importantly, do not count towards use of independent historians. Most significantly, independent historians need to be identified as such in our documentation.

4. Failure to Document Prescription Drug Management

In UC, we are constantly prescribing and adjusting medications, but we infrequently document all these discussions to capture this work for our coding. Prescription drug management criteria are met when a provider discusses, starts, continues, discontinues, or adjusts a prescription medication. Documentation of the drug, strength, and dosage should be noted.

"Independent historians need to be identified as such in our documentation."

5. Failure to Discuss Tests That Are Considered But Not Ordered

We commonly consider many tests which are not ordered, either because we ultimately deem them to be not indicated or because the patient declines for some reason. If you recommend point-of-care tests or other labs, but the patient declines, document this conversation to receive credit. Similarly, if you consider further testing such as a chest x-ray for a patient with a cough, but decide that it's not necessary because the patient has normal vital signs and significant rhinorrhea, document this as well. Documenting these will count toward the risk/complexity of patient management. If a patient declines a test that you've recommended, it's important to document both the conversation and the rationale given for the patient to decline the test. Prescription drug management criteria are met when a provider discusses, starts, continues, discontinues, or adjusts a prescription medication. Documentation of the drug, strength, and dosage should be noted.

Prescription Drug Management Examples

- "Start amoxicillin/clavulanate 875 milligrams twice a day for 5 days."
- "Continue albuterol inhaler 2 puffs every 4 hours as needed."
- "Discontinue amoxicillin/clavulanate 875 milligrams due to gastrointestinal side effects."
- "Discussed risks/benefits of nirmatrelvir/ritonavir. Patient declines nirmatrelvir/ritonavir at this time."
- "Blood pressure is poorly controlled with current treatment. We will increase amlodipine from 5 milligrams once daily to 10 milligrams once daily."

6. Failure to Mention Comorbidities

If the patient has a comorbid condition that could increase the risk of complications and/or management of the patient, these conditions should be added as a diagnosis, and a brief treatment plan should be included in the MDM. For example, in a diabetic patient who presents with a foot wound, the diabetes would significantly increase the risk for infection and poor healing. Adding diabetes as a secondary diagnosis and a brief treatment plan such as, "patient will continue metformin 500 milligrams twice a day, check blood glucose level daily, maintain a strict diabetic diet, and follow up with their primary care provider," is sufficient.

Consider when and why to use comorbid conditions. The American Medical Association (AMA) guidelines[1] state "comorbidities and underlying diseases, in and of themselves, are not considered in selecting a level of evaluation and management services unless they are addressed, and their presence increases the amount and/or complexity of data to be reviewed and analyzed or the risk of complications and/or morbidity or mortality of patient management."

Examples would include:

- The diabetic patient presenting with any wound with counseling on diabetes
- A COVID-positive individual exhibiting multiple chronic conditions
- A patient with HTN experiencing chest pain and shortness of breath
- A daily tobacco user presenting with a cough with counseling on smoking cessation

Examples would *not* include:

- Notation in the patient's medical record that another professional is managing the problem without additional assessment or care coordination documented
- Referral without evaluation (by history, examination, or diagnostic studies) or consideration of treatment

It is not enough to just note the patient has a comorbid condition. It must be, "addressed and their presence increases the amount and/or complexity of data to be reviewed and analyzed or the risk of complications and/or morbidity or mortality of patient management."[1] A problem is addressed or managed when it is evaluated or treated at the encounter by the provider. For example, "Blood pressure is 138/88 today. Patient will continue taking hydrochlorothiazide 25 milligrams once daily, log blood pressures daily, and follow up with his primary care provider for evaluation." Adding the comorbid condition as a diagnosis is also warranted.

7. Failure to Document the Presence of Systemic Symptoms

Many patients present to UC with illnesses that produce expected and mild systemic symptoms, thus it's understandable that these symptoms, such as anorexia with the flu, might not be commented upon in our charts. Yet from a coding perspective, this matters. Systemic symptoms would include fevers, nausea and vomiting not in the setting of gastroenteritis, moderate-severe fatigue, confusion, dizziness, rash which is not dermatologic in nature, body aches, and loss of appetite, to name a few. To meet the criteria for "acute illness with systemic symptoms," the AMA guidelines state, "systemic symptoms may not be general but may be single system."[1] Most influenza, pneumonia, pyelonephritis, and COVID-19 patients would meet this criterion.

"Our documentation is the only tool we have to capture the complex cognitive work we perform."

8. Failure to Discuss the Decision to Refer Patients to an Emergency Department

Most patients who we feel would benefit from immediate emergency department (ED) referral or transfer via emergency medical services will meet criteria for a level 5 visit given the presumption you are considering high-risk conditions. Documentation of the patient's condition and diagnoses you are concerned about as well as any abnormal vital signs will help support a level 5 code. For the patient who is stable with normal vital signs, documentation of a differential diagnosis would be helpful when choosing the correct level of service. For example, the chest pain patient with a normal electrocardiogram and normal vital signs, who also seems more unwell than these objective measures would indicate warrants documenting a differential diagnosis to include the possibility of acute coronary syndrome or pulmonary embolism to ensure that the level 5 code is deemed justifiable for the visit.

9. Failure to Chart an Undiagnosed New Problem with Uncertain Prognosis

By virtue of the nature of urgent care, we see many patients with new, undifferentiated problems. A patient presenting with symptoms such as persistent fatigue, unexplained weight loss, and enlarged lymph nodes would fit into this category. Another example might be a patient with a sense of nausea, dizziness, or abdominal bloating. Despite a reasonable history, physical exam and possibly a screening point-of-care lab test or two, the exact cause of these symptoms remains unknown, as is often the case. There remains significant uncertainty surrounding the diagnosis and prognosis for such patients. Most of us will have conversations about this diagnostic uncertainty and need for ongoing monitoring of symptoms and follow-up, but less commonly do we document this. Additional patients that commonly fit into this category are those with low-risk chest pain, abdominal pain, or headache when they do not require immediate ED referral.

Conclusion

Our documentation is the only tool we have to capture the complex cognitive work we perform in evaluation and management of patients in UC centers. The "level" of our coding—designated by a Current Procedural Terminology (CPT) code—delineates how much we are reimbursed for the care we provide.[3]

Additionally, the Centers for Medicare and Medicaid Services view "undercoding" as similarly fraudulent to "overcoding,"[4] so we have an ethical responsibility to document a code that reflects the care that we provide. By recognizing the common coding pitfalls discussed above, UC clinicians can better ensure their documentation is sufficiently accurate and comprehensive to support an appropriate code. ■

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What is a False Claim?

Benjamin Barlow, MD; Phyllis Dobberstein, CPC, CPMA, CPCO, CEMC, CCC

The False Claims Act (FCA) is a federal statute enacted in 1863, inspired by defense-contractor fraud during the Civil War. Today it is used to prosecute inappropriate billing in the healthcare setting. Any person who knowingly submits false claims to the government (ie, Medicare, Medicaid, and Tricare) is liable for 3 times the government's damages plus a penalty that is linked to inflation. Penalties are per claim and can become quite expensive. In the past few years, urgent care has had settlements under the FCA totaling $44.4 million.

"In the past few years, urgent care has had settlements under the FCA totaling $44.4 million."

In 2018, an urgent care practice in New York agreed to pay $6,606,251.40 in damages. The issues were:

- Billing for lengthier and/or more complex services than were actually provided
- Billing for services performed by a non-credentialed provider under a credentialed provider

In 2021, an urgent care practice in South Carolina and its management company paid $22.5 million also for billing for services rendered by non-credentialed providers under a credentialed provider.

In 2022, an urgent care practice in Connecticut settled for $4,267,950.21. The issues were:

- Billing for unnecessary allergy testing and the unsupervised preparation of allergy immunotherapy
- Billing for services as if rendered by the medical director when the director was traveling internationally
- Submitting claims for office visits when COVID-19 testing was the only service provided

In 2023, another urgent care practice in Missouri agreed to pay $9,150,794 to settle allegations of false claims. The issues were:

- Submitting claims for services performed by non-physician practitioners under a physician
- Billing for claims that were up-coded
- Billing the uninsured program during the Public Health Emergency with improper billing codes
- Paying bonuses to certain employed physicians based on the volume or value of their referrals for designated health services

These settlements seem straightforward: a claim was submitted that did not reflect the services performed. However, in January 2024, an urgent care practice in Idaho and its owners entered into a settlement for $2 million for hiring "vulnerable, compromised, and inexperienced medical staff." These providers were allegedly pressured to write prescriptions for controlled substances that were sometimes unnecessary or unsafe. In one instance, the owners hired a nurse practitioner with alcohol and substance use disorder. Instead of cancelling appointments when the provider was too impaired to drive to the clinic safely, they sent a medical assistant to the nurse practitioner's home to provide a ride to work.

Why is this a false claim rather than malpractice? It's because the government was billed for worthless services. Obviously, this was a bad actor. They had a number of additional issues, including kickbacks from outside labs and giving false information to obtain government monies under the Paycheck Protection Program.

"There are legalities around asking about personal problems like burnout, drug or alcohol issues, divorce, financial distress, tax problems, etc."

Benjamin Barlow, MD is Chief Medical Officer for Experity
Phyllis Dobberstein, CPC, CPMA, CPCO, CEMC, CCC is Manager of RCM Compliance at Experity.

Subjective Measures

The case of the compromised nurse practitioner in Idaho does provide an additional concern when making staffing decisions, specifically that a subjective measure could be applied to a provider that is otherwise compliant with licensing and insurance requirements. One way to assess this risk is to have a standard interview process that includes questions to probe for any prior concerning behaviors. There are legalities around asking about personal problems like burnout, drug or alcohol issues, divorce, financial distress, tax problems, etc. So, it is critical that these questions are asked in a proper way with legal and human resource teams' sign off.

"Urgent care centers can also work with state medical boards to set up monitoring programs if a provider self-reports."

If concerns are discovered for a particular candidate and the decision is made to still hire the individual, setting up a strict monitoring program is recommended. Urgent care centers can also work with state medical boards to set up monitoring programs if a provider self-reports. Often the medical board mandates these programs be in place for providers that have had past issues, and working together with the medical board can foster a partnership.

Turnover in urgent care can be high compared to other practices, including hospital medical groups. When an urgent care is not highly selective in its hiring choices, however, the organization may end up with providers who on the surface seem to meet standards but in the day-to-day reality end up causing downstream issues. Having a comprehensive training program and a quality review process can alleviate a lot of these concerns post-hire.

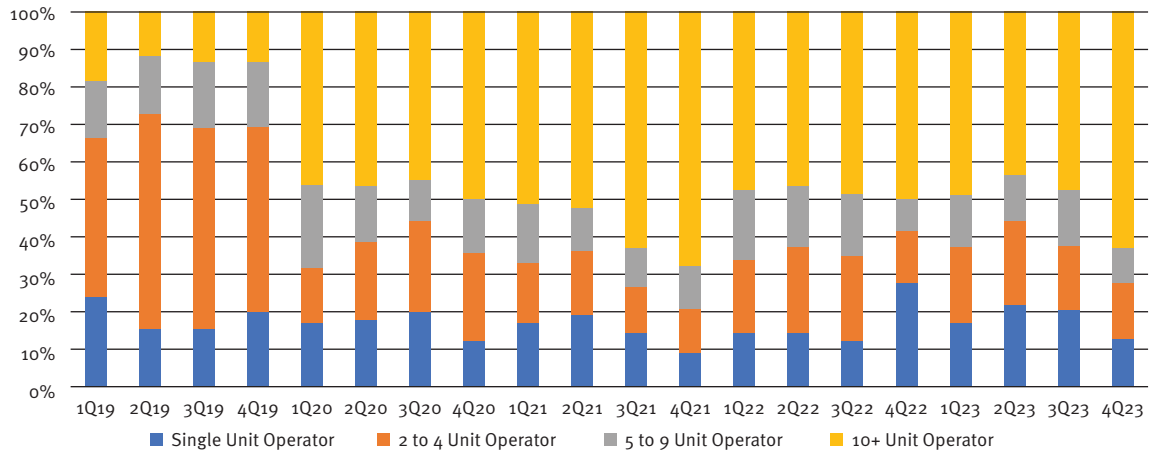
This raises the question of how a practice sets a standard to assure compliance with appropriate billing. While the issue is beyond the scope of this article, it begins with having a knowledgeable team member with expertise in compliance and working with the clinical staff to design clear checks and balances. If you aren't measuring it, you can't manage it. ■

DEVELOPING DATA

How Urgent Care is Becoming More Corporatized

Alan A. Ayers, MBA, MAcc

PERCENT OF DE NOVO URGENT CARES BY OPERATOR SIZE, 2019-2023



In 2023, the urgent care industry added 1,057 de novo locations—new sites that did not previously exist. But these new centers are far more likely to be owned by larger entities with 10 or more units, also called "enterprise" operators.

In fact, according to data from National Urgent Care Realty analyzed by Experity, for the past 4 years, 10+ unit operators have been the drivers of new rooftop growth. Prior to 2020, the industry was led by the lower midmarket, which consists of the 2-to-4 unit operators. The transition of industry growth dominated by midmarket frontrunners to enterprise frontrunners did not occur over time, but rather represented a sudden, one-time shift early in the pandemic.

Because single-unit operator growth has remained constant, an assumption can be made that enterprise growth most likely came at the expense of midmarket expansion.

Reasons for this shift from midmarket to enterprise growth acceleration include:

- Some midmarket providers have grown organically to >10 centers and are thus re-classed as enterprise.
- Some midmarket providers were purchased by and folded into enterprise platforms.
- Midmarket providers have attained a level of organizational complexity without the same level of expertise and support in functions like human resources and operations as enterprise companies.
- As a result, midmarket providers have struggled more with post-COVID issues of wage inflation, staffing shortages, turnover, and delayed reimbursement.
- Some midmarket providers are also focused on increasing profitability over growth as they'd like to eventually sell their practice.

Regardless, this indicates a strong trend towards the "corporatization" of urgent care. ■

Source: National Urgent Care Realty with Experity analysis.

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

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THANK YOU

It was great to see you at Urgent Care Connect to share ideas for the future, learn your success strategies, and build our strong community. Make plans now to join us next year at the Omni, Louisville, March 3-5, 2025.

SAVE THE DATE: MARCH 3-5, 2025