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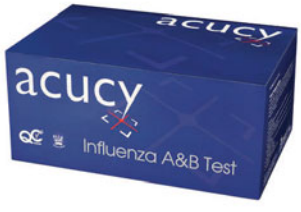

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Expecting the Unexpected: Emergency Preparedness in the Urgent Care Setting

Lyndsie Watkins, PA-C, FCUCM

Picture this: It's a busy day in your urgent care (UC). You're moving along steadily, seeing patients back-to-back. Unexpectedly, there is a commotion as a woman is brought in from the neighborhood right in front of the building. She appears unconscious, and you notice her staggard breathing. No one seems to know what happened prior to finding her on a nearby walking trail and bringing her in for care.

Would your UC team know what to do in this situation? Would you feel prepared to lead?

While large-scale emergency preparedness programs often exist in health systems and hospital settings to address unexpected situations—from sepsis to stroke to mass casualties—UC operators may not have access to emergency preparedness resources tailored to the lean and isolated UC environment. Teams need to be able to respond appropriately to both clinical emergencies as well as threats of physical harm.

UC organizations rarely have plans in place or sufficient hands-on training to ensure the staff can respond to the range of potential emergencies that may arise, such as patients presenting with high-risk pathogens or particularly high-acuity situations like the hypothetical situation above. This article examines how UC centers might systematically approach emergency preparedness and how clinical teams and patients would benefit from standardization across the UC industry as a whole.

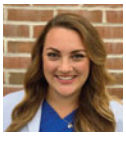
High-Risk Pathogens

Patients infected with transmissible pathogens are particularly likely to present to UC centers. A 2022 study found that patients later found to have highly infectious illnesses with potential for community spread, such as Ebola and mumps, frequently first presented to a UC center.[1] As an initial resource for evaluation and treatment, a UC center's ability to mitigate the risk of spread is a key feature of urgent care's role in emergency preparedness and protection of public health.

The Centers for Disease Control and Prevention has developed an "identify, isolate, and inform" approach, which has been utilized successfully in larger healthcare system settings but can also be adapted to any environment where the risk of encountering these high-risk pathogens exist.[2] Tools such as a hazard vulnerability analysis help provider organizations assess what emergencies may be most likely to affect them and allow for mitigation and emergency preparedness planning.[3] Of note, studies found that failure to implement such programs successfully resulted in more nosocomial infection within the systems studied as well as higher transmission and spread into communities.[3]

There are several key features of effective pathogen-related emergency preparedness plans that apply to UC:

- **Definitive screening:** Creating a culture within the urgent care setting to be aware of possible infectious pathogens and screening for concerning patients regularly is key. Training staff to be informed and communicating information surrounding any emerging pathogens keeps all aware and able to remain diligent.
- **Early identification of possible concerning patients:** Ideally, patients who are a concern for spreading high-risk pathogens should be identified and isolated as early into the visit as possible. This could take the form of screening during registration, alerts when signing in to identify concerning symptoms, or signage in waiting rooms. Being able to remove the patient from the rest of the population in the center and minimizing the number of staff in contact prior to identification helps mitigate spread.



Lyndsie Watkins, PA-C, FCUCM, is lead PA for Northwell Health GoHealth Urgent Care East Region, a director of its fellowship program, and co-director of the GoPrepare emergency preparedness programing.

- **Incorporation of workflows to guide staff appropriately in times of emergency:** Once identified, the patient needing assessment and treatment should be approached with care and caution. Assuring there are workflows in place for personal protective equipment use and guides on how to properly isolate patients in the setting of highly infectious pathogens is critical for success. Teams should be trained proactively and able to access this information when needed. Workflows on when to trigger a cascade of communication to leadership or local health authorities are also important. If additional resources are needed such as decontamination processes or guidance on testing protocols, it is imperative that teams have effortless access to clinical and operational leaders to facilitate these processes.

High-Acuity Patients

The pandemic exacerbated existing trends of decreased access to primary care providers, and clinician shortages are among the factors that have led to increased acuity of patients in the community.[4] This has resulted in emergency department (ED) crowding and higher-acuity presentations—such as myocardial infarction, respiratory distress, and anaphylaxis—in UC settings.[5] To better prepare UC clinicians and staff for the reality that such higher-acuity patients could present to UC, standardized emergency preparedness training programs are necessary.

Recently, I have been involved in the development of such a program in my organization, Northwell Health GoHealth Urgent Care, and the evolution of an emergency response training team, which we have dubbed "GoPrepare." The GoPrepare program was created to address the need for day-to-day preparedness for the clinical emergencies that may present in our centers.

Score cards for provider and staff performance when participating in this risk-reduction program have shown improvements. The scoring system evaluates the ability of the in-center teams to rapidly identify critically ill patients, intervene quickly, and activate support systems like emergency medical support (EMS) transfer to improve outcomes. We have recorded an increase from an average of 81.5% to 86% on the scorecards across all teams in the training. However, there are many variables, such as new cases presented and additional providers participating, so generally speaking, we use the scores as anecdotal but telling measures of progress.

The GoPrepare Emergency Response team visits UC centers within our organization unannounced and then initiates simulated cardiac arrest or other high-acuity scenarios with the in-center staff and providers. These simulations involve hands-on "mock code" training, in which a mannequin or patient simulator is used to allow for high-fidelity training in situ to best mimic what a real-life emergency scenario might be like.[6] The trainers who run the mock codes also evaluate the clinicians and staff members using our standardized scorecard to track success and areas needing improvement longitudinally. The digital scorecards are used to automatically generate emails that report scores back to the teams in a nonpunitive way. The performance data then provides guidance for continuing provider education. After the simulated scenario is completed, trainers also moderate a structured debriefing session.

Our emergency response team, in addition to leading these simulations, has ensured each center is equipped with appropriate resources for initial response to in-center emergencies. As part of GoPrepare, an automated "lifesaving checklist" form was created, which is reviewed bimonthly by all in-center teams to verify that emergency equipment, such as automated external defibrillators (AEDs) and oxygen supplies, are present, functional, and current.

Operational Concerns With Preparedness

Preparedness to handle critically ill patients and mitigate risks of infectious disease spread presenting to our centers is a priority, and successful emergency preparedness relies heavily on logistic and operational aspects of implementation. For example, it is critical that proper supplies are continuously available and functional in each UC center. This can prove to be a challenge, especially when facing supply chain issues. Additionally, plans for real-time staffing adjustments in times of emergencies may be necessary as well.

Outlining how communication should function between in-center staff members, organizational leadership, and emergency services before a critical situation occurs is a key component to emergency preparedness. Such communication plans must be as specific as possible and include criteria for when EMS should be activated as well as how each team member and organizational leader should respond to limit disruptions to daily workflows and the care of other patients in the centers. Our GoPrepare has made these plans available and accessible to team members in each center. Additionally, successful communication includes establishing relationships with local health entities, such as direct lines to local EMS to facilitate ED transfers when needed. Creating emergency-specific channels within organizations

can be useful in allocating resources to the primary need. For example, part of our GoPrepare program involves the use of an "emergency only" channel within our device chat function, which we use to signal when there is a need for any available team members to assist in a crisis situation.

Establishing the Standard in Preparedness

In 2016, the Centers for Medicare and Medicaid Services (CMS) attempted to catalyze movements toward standardization of emergency response plans by creating requirements for facilities serving beneficiaries in federally supported health plans.[7] These standards required organizations that billed CMS to have an emergency plan. The emergency plan required policies and procedures for responding to threat of a contagious infectious disease, a communication plan for emergencies, and annual testing of these protocols. However, due to variations in accreditation and licensing from state to state, the standard to which these rules are upheld is inconsistent.

The Urgent Care Association (UCA) has incorporated emergency preparedness standards into the requirements for accreditation.[8] These include having emergency medications (eg, naloxone and epinephrine) and AEDs immediately available on site and staff that is able respond appropriately to in-center emergencies. Additionally, the UCA has included requirements for a documented emergency preparedness plan with details on how to maintain or return to providing clinic services if interrupted due to unexpected situations. Conducting and documenting annual mock code sessions has also been added to the UCA's accreditation standards.[8]

While the effort may seem vast, some simple steps can be taken in the direction of improving overall preparedness within individual institutions. In our organization, an additional layer to our approach to emergency preparedness is required Advanced Life Support/Pediatric Advanced Life Support certification for all providers and Basic Life Support for staff. This standard establishes a baseline culture of preparedness for all those working in centers and allows for a foundation from which to grow with additional training. Additionally, looking to partner with local health systems to participate in community emergency preparedness programs or training efforts can be a useful resource, particularly if an organization does not have a system of its own in place yet. Organizations that have not already done a hazard vulnerability analysis can also find resources from the Department of Health and Human Services to understand the significance of these tools and how to best utilize them.[9]

The intention of the criteria set forth by the UCA is to advance quality and patient safety in UC, however, they only apply to centers seeking UCA accreditation. While UCA accreditation is increasingly become an industry standard in the United States, it is not requisite for UC centers to operate. This creates the possibility of a two-tiered system and an unpredictable discrepancy in UC center emergency preparedness. For example, in a survey of New York UC centers, it was found that nearly 25% did not have written emergency plans in place, and those that did varied in their level of comprehensiveness.[2]

Emergencies by their very nature are difficult to predict. Well-developed and frequently reviewed emergency response plans support teams in being maximally effective when a crisis arises. While patients frequently present to UC centers with emergent conditions, there remains a frustratingly unpredictable level of preparedness between various UC centers. We hope though sharing our success with the GoPrepare program we can stimulate further sharing of best practices throughout the UC industry and raise the bar for our collective ability to handle emergencies that present in our centers. ■

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URGENT INTERACTIONS

LETTERS TO THE EDITOR

In response to the November 2023 Letter From the Editor in Chief Joshua W. Russell, "Broader Issues Surround 'Work Note Seeking"

I just read your article, and a few points hit home. 1. Patients are not always forthcoming with their primary motivation for the visit […] 2. Patients with upper respiratory infections, stomach bugs, etc. are unnecessarily exposing medical staff, providers, and other patients to communicable disease […]

We are spending nearly $1 billion a year, taking up time, and spreading disease just for a paperwork formality!? So what's to be done about this? For the provider, perhaps leading with the question: "Do you need a work note?" And if the answer is yes, consider less/no testing and avoiding contact with the patient. Of course that's not what a good medical provider would do, but it's practical. Maybe a screening question upon check-in? Maybe [it's a] refusal to provide "work notes" and just provide discharge paperwork stating the patient was seen that day. Have any other UC and EM providers had any good ideas?

Boris Temkin, MS, PA-C

"Call 911 immediately if a patient seems unstable. Better to have them and not need them than to need them and not have them. They can always decline transport if the situation stabilizes."

— Joshua W. Russell, MD, MSc, ELS, FCUCM, FACEP

JUCM Editor in Chief

"A brilliant diagnosis dims when the patient does not fill their prescription."

—Michael Weinstock, MD

JUCM Senior Clinical Editor

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Strategic Planning

Lou Ellen Horwitz, MA

I want to mention our recent Advocacy victory: getting a mention of Urgent Care into the Centers For Medicare & Medicaid Services publication of the 2025 Medicare Physician Fee Schedule. If you want more details on why this is a big deal, you can listen to the 2 interviews I did with Eric Zimmerman (our lobbyist team leader) on the Urgent Care Leadership Podcast (found anywhere you get your podcasts).

I want to give a monumental shout-out to the many Urgent Care Association (UCA) members who spent hours in Congressional conversations to help achieve this milestone. More work needs to be done to get to the finish line, but it's great to get points on the board.

Also, as an update from my June column asking why so few were responding to our call for fundraising to support these efforts, not many more people or organizations have stepped up in response. The Board knows that it's important to the long-term success of Urgent Care and that it's our main job at UCA, so we will find a way to do it for you. Please keep renewing your membership and coming to Convention – it's all critical activity that contributes to our ability to accomplish payment reform goals for Urgent Care.

In August, the UCA team gathered to lay out our strategic plan for the next couple of years.

We continue to look to our core purpose of ensuring long-term success and advancement for Urgent Care as our starting point for all planning. Every year, we consider what that core purpose means to our members for the next 12-18 months and structure our planning around those needs.

First, we look at advancement: What do members need from UCA (and/or the College of Urgent Care Medicine [CUCM] and the Urgent Care Foundation [UCF] and Chapters)? We are focusing on three areas: empowering best practices in operations; reversing acuity degradation (with CUCM); and establishing Urgent Care as a recognized specialty for physicians, physician assistants, and nurse practitioners (also with CUCM). These involve working with partners to curate and create improved content, upgrading content access, collaboratively building criteria for clinician recognition programs, and supporting original research (with UCF) to drive advancement forward.

Next, we look at long-term success: What must we be doing now to ensure that Urgent Care is thriving in the future? We are focusing on four areas: payment reform; staffing challenges; elevating the profile of Urgent Care quality; and visit growth. We've never taken on visit growth before, so we are looking forward to working with everyone to mount (2025) and launch (2026) a national campaign to the public on using Urgent Care. Fundraising through UCF is critical. For improving staffing challenges, we are crafting a campaign to target healthcare professionals about working in Urgent Care, continuing our state-based advocacy so medical assistants can be trained to take X-rays, and working with partners to evolve the physician/physician-assistant supervisory ratio rules. For elevating the profile of Urgent Care quality, we are excited about where we are taking this and will share very soon.

There have been 2 main takeaways for me during our strategic planning. The first being that we have a great team. They are so dedicated to the success of members and have kept raising the bar with the skills and humility and connectedness to both lead and follow through. They are focused on our core purpose and how the work of UCA, CUCM and UCF and our Chapters support our shared goals: leveraging each entity where it can do the most good the fastest.

The second is how longitudinally we are able to work now that we are able to take on larger projects for you that have long-term impacts. Aligning the work of UCA, CUCM, and UCF has been the result of the staff and many volunteer leaders digging deeply into what we really want to accomplish. The future looks bright! ■

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

CONTINUING MEDICAL EDUCATION

Release Date: September 1, 2024
Expiration Date: August 31, 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
1. To provide best practice recommendations for the diagnosis and treatment of common conditions seen in urgent care
2. To review clinical guidelines wherever applicable and discuss their relevancy and utility in the urgent care setting
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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Emesis Ad Nauseum: A Case Report of Cannabinoid Hyperemesis Syndrome in Urgent Care (page 13)

1. Diagnostic criteria for cannabinoid hyperemesis syndrome includes which of the following?
- a. 3 or more vomiting episodes annually
- b. Duration of cannabis use of 1 year or more
- c. Resolution of symptoms after a period of abstinence from cannabis
- d. All of the above

2. Patients with cannabinoid hyperemesis syndrome may report symptomatic relief from which of the following?
- a. Hot showers or baths
- b. Sofosbuvir
- c. Melatonin
- d. Statins

3. Which of the following statements is true of patients with cannabinoid hyperemesis syndrome?
- a. High hospital admission rates
- b. Prolonged emergency department lengths of stay
- c. Vomiting refractory to antiemetic pharmacotherapy
- d. All of the above

Urgent Care Recognition and Management of Maisonneuve Fractures (page 21)

1. A Maisonneuve fracture typically results from which type of injury?
- a. Severe twisting of the ankle
- b. Contact of the knee against a hard surface, especially with a fall
- c. Crushing injury to the foot phalanges
- d. Torn anterior cruciate ligament

2. With Maisonneuve fracture, which nerve is particularly vulnerable to injury?
- a. Vagus
- b. Cranial
- c. Sciatic
- d. Peroneal

3. Once a Maisonneuve fracture is confirmed, which of these is *not* part of typical injury management in urgent care?
- a. Pain control
- b. Splint immobilization with strict non-weight bearing
- c. Timely orthopedic evaluation
- d. Cast immobilization with weight bearing after pain subsides

Progressive Diaphyseal Dysplasia: A Case Report (page 34)

1. How is Camurati-Engelmann disease (CED), also known as progressive diaphyseal dysplasia, diagnosed?
- a. Patient history
- b. Radiologic examination
- c. Genetic testing
- d. All of the above

2. How prevalent is CED?
- a. 3% of the adult population
- b. 30% of the adult population
- c. 300 cases reported worldwide
- d. 3,000 cases reported worldwide

3. The most common manifestations of CED include which of these?
- a. Bony pain of the extremities and proximal muscle weakness
- b. Proximal muscle weakness and syncope
- c. Sudden-onset headache and vomiting
- d. Chest pain and shortness of breath

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Case Report

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See CME Quiz Questions on page 11.

Emesis Ad Nauseum: A Case Report of Cannabinoid Hyperemesis Syndrome in Urgent Care

Urgent Message: Frequent cannabis use can lead to a syndrome characterized by severe and cyclical vomiting without other clear triggers. Termed "cannabinoid hyperemesis syndrome," this disorder is often refractory to conventional antiemetic pharmacotherapy.

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Abstract

Introduction: Cannabinoid hyperemesis syndrome (CHS) is increasingly recognized as a cause of cyclical vomiting.

Presentation: A 28-year-old man presented to urgent care (UC) with recurrent nausea and vomiting. He reported relief only when taking frequent, hot showers. He was noted to have multiple prior presentations for similar complaints in the previous 2 weeks.

Physical Examination: The patient was afebrile, normotensive, and had otherwise unremarkable vital signs other than mild tachycardia. He appeared uncomfortable, and his abdomen was mildly tender and without rebound or guarding. His abdomen was non-distended. He was observed to be frequently retching with only small amounts of clear gastric contents contained in an emesis bag.

Diagnosis: His previous work-up included unremarkable laboratory and imaging studies as well as a recent, normal esophagogastroduodenoscopy. A history of frequent use of cannabis was elicited. Felt to be the likely culprit for his presentation, cannabis cessation was advised. At the time of his UC presentation, the patient reported 5 days of abstinence from all cannabis and nicotine products.

Resolution: The patient was referred to the emergency department (ED) given his refractory nausea and vom-

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iting. With multimodal parenteral antiemetic therapy, the patient improved and was able to eventually tolerate oral (PO) fluids. He was discharged home from the ED with encouragement to continue to refrain from cannabis use.

Conclusion: Refractory nausea and vomiting is common in CHS. Nicotine withdrawal was felt to contribute to his nausea as well. Cessation of cannabis use will typically result in complete resolution of symptoms associated with CHS.

Introduction

Cannabinoid hyperemesis syndrome (CHS), which was first described in 2004, is "an episodic syndrome of cyclic vomiting in the context of the prolonged use of cannabis."[1-4] The diagnosis is challenging to make in the acute care setting as it is often a diagnosis of exclusion or, per 1 of the Rome IV diagnostic criteria for cyclic vomiting, by resolution of episodes of vomiting occurring with sustained cessation of cannabis use.[5] The pathophysiology of CHS is still debated, however, it is theorized that excessive, chronic stimulation of the cannabinoid receptors can affect vagal afferent regulation of the gastric motility and emptying leading to nausea and vomiting.[6]

Although CHS is increasingly recognized as an etiology for many presentations of recurrent vomiting and abdominal pain, delays in diagnosis are common, and the average time from onset of symptoms to diagnosis is 4.1 years.[3] Frequent cannabis use has increased dramatically in recent decades with current estimates citing over 50 million Americans engaging in at least annual cannabis use and one-third of using adults meeting criteria for cannabis use disorder.[7,8] Additionally, with widespread decriminalization of cannabis in the United States, the average potency (ie, delta-9-tetrahydrocannibinol [THC] content) of cannabis has more than doubled over the past 30 years.[9] This combination of wider spread use of more potent cannabis, coupled with increasing clinician awareness of the condition, has led to a marked increase in diagnoses of CHS in recent years.[10]

Patients afflicted with CHS are more frequently male and will report symptomatic relief from hot baths or showers. Cannabis is a weak antiemetic at low doses, and patients may report symptomatic relief with infrequent use. Coupled commonly with psychological and/or physical dependence, patients often reject the possibility of cannabis as the culprit for their symptoms, leading to continued cannabis use in many cases.[1-4]

Cannabinoid hyperemesis syndrome is considered a subset of the cyclical vomiting syndrome (CVS). Of note, many patients with non-CHS CVS report symptomatic relief with cannabis (although use typically postdates the onset of symptoms), and 48% of patients with CVS report relief with hot showers irrespective of cannabis use.[2,11] Diagnostic criteria for CHS are proposed by expert consensus (**Table 1**), however it can occur with any duration of cannabis use, and the response to cannabis cessation is unable to be evaluated in the acute setting.[2,6]

Clinical Presentation

A 28-year-old man presented to UC with diffuse abdominal pain, nausea and non-bloody, non-bilious vomiting for 3 days. He was discharged from the emergency department (ED) just before this episode occurred. His UC presentation was the 4th in 2 weeks for the same symptoms. He had no other chronic medical or psychiatric conditions. He reported cannabis use 5 days prior to this presentation and had previously been using THC-containing products daily. He also had a 10-pack per-year history of cigarette use. He also reported no tobacco use over the prior 5 days due to his vomiting. His abdominal pain began in the epigastric region and progressed to radiation to the back and lower abdomen. He reported some relief with hot showers at home.

Physical Exam Findings

On presentation to UC, his heart rate was 112 beats per minute, but the remainder of his vital signs were normal. On examination, the patient seemed uncomfortable but non-toxic. His abdominal exam showed minimal tenderness in the epigastric region without rebound or guarding. He was non-distended with normal bowel tones and no palpable abdominal masses.

Table 1. Diagnostic Criteria for Cannabinoid Hyperemesis Syndrome

Clinical features	3 or more vomiting episodes annually
Cannabis use	Duration of use more than 1 year before onset of symptoms, frequency of use more than 4 times per week
Cannabis cessation	Resolution of symptoms after a period of abstinence from cannabis use for at least 6 months, or at least equal to the total duration of 3 typical vomiting cycles

Urgent Care Management

The patient initially presented to UC for the visit outlined above. In urgent care, he had a point-of-care basic metabolic panel which was entirely normal, including potassium, creatinine, and glucose values. A urine dipstick was normal except for 1+ ketones. He was administered intravenous promethazine and 1 liter of normal saline. On reassessment, his tachycardia had improved but he continued to vomit.

Differential Diagnoses and Medical Decision Making

The first visit during this patient's 2-week episode of repeated vomiting was to the local ED. A broad differential diagnosis was considered for his severe nausea and vomiting including pancreatitis, bowel obstruction, gallstone disease, and infectious enteritis. At that visit, he had normal labs including a complete blood count, metabolic panel, liver panel, and lipase. A right upper quadrant ultrasound and contrast enhanced computed tomography (CT) of the abdomen revealed no concerning abnormalities. In the ED, he was treated with intravenous (IV) droperidol and 1liter of Lactated Ringer's. He was tolerating oral (PO) liquids after his work-up in the ED and was able to be discharged home.

One week later, he presented to the same ED again for the same complaints. At the time, he reported ongoing daily THC use. Laboratory tests were repeated and were again normal. His electrocardiogram (ECG) showed QT interval 460 ms at that visit. He was treated with IV ondansetron and promethazine as well intramuscular trimethobenzamide for his persistent symptoms.

Given his refractory symptoms despite multimodal use of antiemetics, he was admitted to the hospital where his ongoing treatment included a nicotine patch, topical capsaicin applied to the abdomen 3 times daily, and IV pantoprazole, metoclopramide, and diazepam. During the hospitalization he had a normal esophagogastroduodenoscopy (EGD) and was transitioned to oral antiemetics on day 2. He was informed of the clinical suspicion for CHS and committed to abstinence from cannabis and tobacco. He was discharged with a prescription for oral omeprazole and ondansetron.

Two days later, he represented the ED with the same complaint. He again had an unremarkable laboratory work-up and an ECG without QT prolongation. His symptoms improved with 1 dose of intravenous droperidol at that visit, and he was again discharged. He ultimately presented the following day to UC for the visit discussed.

Final Diagnosis

Given refractory symptoms in UC after IV fluids and promethazine, he was referred again to the ED. In the ED, the patient again was given a nicotine patch. However, there was a delay in obtaining IV access, and 1 hour after receiving the nicotine patch, the patient's nausea improved without antiemetics. Eight hours later, without any antiemetic treatment, he was tolerating a soft diet and was discharged with a diagnosis of CHS complicated by nicotine withdrawal.

Disposition and Patient Perspective

At 24 hour follow-up, the patient continued nicotine replacement therapy and reported he was asymptomatic. He denied vomiting or requiring antiemetics at home to manage his nausea. He planned to follow-up with his primary care provider in the next week.

Discussion

Acute vomiting caries a broad differential diagnosis. However, in cases of recurrent episodes of vomiting, while having an initially broad differential is important, inquiries about cannabis use can be a critically important aspect of history gathering to determine if CHS may be the etiology. Laboratory studies (particularly liver function tests and lipase) and a urine pregnancy test (in female patients) can be helpful initially in assessing for biliary disease, pancreatitis, and hyperemesis gravidarum, respectively. Imaging studies such as right upper quadrant ultrasound and/or CT of the abdomen can prove useful for identification of alternate pathology. A metabolic panel is prudent in prolonged episodes to screen for sequalae of vomiting (eg, electrolyte derangements, hypoglycemia, starvation ketoacidosis, acute kidney injury, etc).[1,2] As this is a recurrent issue for patients, referral to a gastroenterologist for consideration of EGD is reasonable, however, there are no formal recommendations that all patients undergo EGD as part of their work-up.[3,11] When EGDs are performed during or shortly after a vomiting episode, epiphenomena like gastritis, esophagitis, or Mallory-Weiss tears may be sequalae and not causal.[6,11]

Obtaining an ECG is prudent as the risk of fatal arrhythmia increases with electrolyte derangements experienced from decreased PO intake (eg, hypokalemia, hypomagnesemia) and the cumulative effect of QT interval prolonging effects of most antiemetics.[1,4,12] Referral to the ED is generally warranted for patients with significant dehydration, known or suspected electrolyte derangements, marked QT interval prolongation, or refractory nausea impairing adequate PO intake. Clinicians should evaluate for the rare but real possibility of esophageal tear and rupture as well and refer patients

Table 2. Common Antiemetics [11,14-17]

Class	Name	Adverse Effects	Takeaway Points
5-HT3-RA			
	Ondansetron (IM, IV, PO, ODT)	Constipation, dose-dependent QTc prolongation, dizziness, drowsiness, headache	ODT formulation effective and tolerable by most patients.
Anticholinergic			
	Scopolamine (Transdermal)	Dry mouth, dizziness, sedation, visual disturbances.	Slow onset of action. Transdermal delivery for outpatient use. Caution in elderly.
Antihistamine			
	Diphenhydramine (IM, IV, PO)	Constipation, dizziness, drowsiness, dry mouth, sedation, visual disturbances, urinary retention	Highly sedating; May reduce akathisia associated with D2-RAs.
	Doxylamine (PO)		
	Meclizine (PO)		Available OTC.
	Promethazine (IM, IV, PO, PR)		Highly sedating; Achieves D2-RA at IV doses; be mindful of EPS, QTc prolongation (unlikely to progress to arrhythmia). Rectal formulation useful for breakthrough vomiting and widely available for outpatient use.
Benzamide (D2-RA, 5-HT3/4-RA)			
	Metoclopramide (IM, IV, PO)	ADR, agitation, akathisia,* dizziness, dose-dependent QTc prolongation, EPS, headache, insomnia, TD (black box warning)	Promotility agent; helpful for gastric emptying. Avoid if concern for bowel obstruction.
	Trimethobenzamide (IM, PO)		Does not prolong QTc.
Benzodiazepines			
	Diazepam (IM, IV, PO)	Sedation, addictive, paradoxical agitation in older adults	Typically reserved for inpatient use.
	Lorazepam (IM, IV, PO)		
Butyrophenones (D2-RA)			
	Droperidol (IM, IV)	Dose-dependent QTc prolongation, ADR, akathisia,* EPS, TD	Greatest efficacy as single agents in CHS.
Haloperidol (IM, IV)			
Phenothiazines (D2-RA)			
	Prochlorperazine (IM, IV, PO)	ADR, akathisia,* drug-induced leukopenia, NMS (rare), TD	
	Chlorpromazine (IM, IV, PO)		
Glucocorticoids			
	Dexamethasone (IM, IV, PO)	Anal pruritus (doses › 20 mg),* hyperactivity, hyperglycemia, gastritis	

** Occurrence more common with rapid infusion or push doses.*
5-HT-RA = 5-hydroxytryptamine receptor antagonism; ADR = acute dystonic reaction; D2-RA = dopamine 2 receptor antagonism; EPS = extrapyramidal symptoms; IM = intramuscular; IV = intravenous; NMS = neuroleptic malignant syndrome; ODT = oral disintegrating tablet; OTC = over the counter; PO = oral; PR = rectal; QTc = QT interval; TD = tardive dyskinesia.

to the ED for evaluation when such complications are suspected.[13]

The patient presented had recently had an extensive work-up prior to presentation to UC, ruling out conditions like appendicitis, bowel obstruction, cholecystitis, cholelithiasis, pancreatitis, urolithiasis, and inflammatory bowel disease. Other diagnoses which may present similarly include gastroesophageal reflux disease, functional dyspepsia, porphyria, diabetic ketoacidosis, and Addison's disease. Neuroimaging is advised for patients with localizing neurologic systems or other features consistent with elevated intracranial pressure, which can produce severe vomiting.[2]

Recommendations for treatment of acute vomiting episodes associated with CHS should be managed with antiemetics (**Table 2**), oral and/or IV rehydration, opioid sparing analgesia, and electrolyte repletion if indicated.[1-4] Butyrophenone agents such as droperidol and haloperidol have proven uniquely effective in ED settings for management of vomiting associated with CHS and are the recommended first-line antiemetics (if available).[1,2,4] Limited evidence also supports the efficacy of ondansetron, metoclopramide, and promethazine for the management of nausea in episodes of CHS as well.[1,2,4] Topical capsaicin may be offered as an adjunct treatment, especially if previously efficacious in managing vomiting episodes. Localized burning sensation is reported by 4.8% to 17.8% of patients, but resolves with medication removal.[1,14]

For pain, ketorolac or acetaminophen are reasonable options, while guidelines and best evidence suggest that opioids should be avoided given the chronic nature of the condition and their potential to worsen nausea.[2,4] Intravenous fluids containing dextrose are preferred for rehydration, which can mitigate nausea associated with ketosis from inadequate PO intake.[6]

The risk of QT interval prolongation or progression to fatal arrythmia is low with most antiemetics at routine doses.[15-18] While patients with CHS are typically younger and less often on simultaneous therapy with other pro-dysrhythmic cardiac medications, they often require multiple IV antiemetic agents and at higher than standard doses to control vomiting. In 1 study of CHS patients, a potassium less than 3.0 mmol/L was the only predictor of QTc prolongation greater than 500 msec.[19] Cardiac monitoring may be reserved for patients with a higher risk of arrhythmia: age ≥65 years, female sex, hypokalemia, or use of concomitant QT prolonging medications.[12] Scopolamine patches, trimethobenzamide, and dexamethasone do not prolong the QT interval at routine doses, however their efficacy in CHS has not been evaluated specifically.[15] Benzodiazepines are unlikely to prolong the QT interval, but their sedative effects and propensity for abuse/dependence limit utility in the outpatient setting.[4]

Extrapyramidal side effects (EPS) are not uncommon with dopamine antagonizing agents. The risk of EPS is higher in patients concurrently treated with antipsychotics, monoamine oxidase inhibitors, selective serotonin reuptake inhibitors, and/or serotonin-norepinephrine reuptake inhibitors.[16,17] Acute dystonic reactions and akathisia are often relieved with antimuscarinic agents (benztropine) or diphenhydramine. Although rare, laryngeal and pharyngeal dystonic reactions can be airway threatening emergencies.[16,17]

Several treatments for prophylaxis have been proposed for CVS and may be helpful in CHS. Tricyclic antidepressants (eg, amitriptyline) have shown efficacy in the long-term management of CHS and cannabis withdrawal symptoms. Amitriptyline can be started at 25 mg nightly and titrated weekly to the minimal effective dose of 75 to 100 mg.[3,11] In addition to tricyclic antidepressants, beta blockers, topiramate, and levetiracetam are also used, however, the need for close monitoring and titration may preclude their use in the acute care setting.[1,3,6,11]

This patient presented in this case demonstrated several suggestive features of CHS, including episodes associated with regular cannabis use and symptomatic relief with hot showers. Like many patients with CHS, multiple diagnostic tests were ordered to rule out alternative pathology. Refractory symptoms are common in CHS; patients have high hospital admission rates and prolonged ED lengths of stay, and often receive multiple diagnostic studies.[20]

Nicotine exposure is known to induce nausea and motion sickness in nicotine naïve individuals.[21] However, chronic nicotine exposure leads to reduced sensitivity of central nervous system nicotine receptors, which provides some emetogenic and nociceptive defense following anesthesia and surgery.[22,23] Chronic nicotine exposure may increase the threshold for nausea by causing a relative decrease in functional acetylcholine, similar to the anticholinergic and antimuscarinic actions of antiemetics.[22,23] Beyond the nicotine patches the patient received, there is no objective evidence that nicotine withdrawal significantly contributed to refractory symptoms, considering the expected convalescence from a CHS episode. Practically, concurrent cannabis and nicotine use is common, and cessation from both should be encouraged.[24]

Ethics Statement

The patient was unable to be contacted because of being lost to follow-up (phone number no longer in service), and therefore demographics and some details of the case were changed to protect patient anonymity and confidentiality.

Takeaway Points

- CHS is a syndrome of episodic cyclical vomiting that can occur with any duration of cannabis use and improves with cannabis cessation. Given the criterion of improvement with cannabis cessation and CHS being a diagnosis of exclusion, UC providers should exercise caution making an initial diagnosis of CHS.
- CHS symptoms are typically refractory to traditional doses of antiemetics.
- Vomiting can occur due to nicotine withdrawal and is best managed with nicotine replacement therapy.
- Patients with refractory vomiting may require ED referral for electrolyte repletion, cardiac monitoring, or management of refractory symptoms (ie, inability to tolerate PO fluids). Additionally, in patients with severe vomiting without an established diagnosis of CHS, ED referral for exclusion of alternative etiologies is prudent.
- Concurrent cannabis and nicotine (including electronic delivery systems) use is common, and cessation of both should be encouraged. ■

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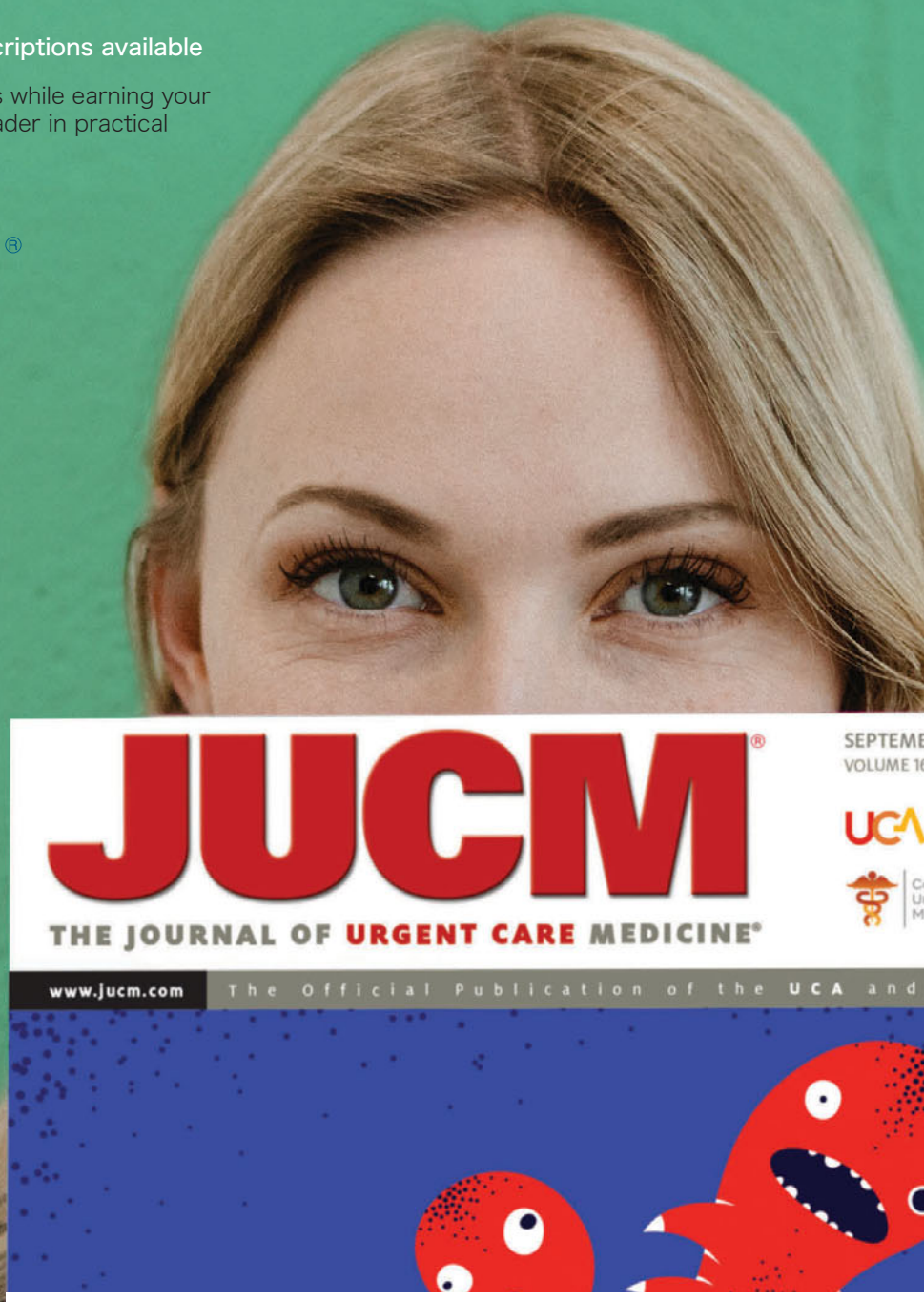

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Urgent Care Recognition and Management of Maisonneuve Fractures

Urgent Message: Clinicians should inquire about the mechanism of injury when a patient presents with ankle pain and consider x-ray that includes the ankle, tibia, and fibula to evaluate for the possibility of Maisonneuve fracture, especially when pain in the inferolateral knee is also present.

William O'Neal, MD; W. Bradley Strauch, MD

Citation: O'Neal W, Strauch WB. Urgent Care Recognition and Management of Maisonneuve Fractures. *J Urgent Care Med.* 2024; 18 (11): 21-28

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

Questions for the Clinician at the Bedside

1. When should a Maisonneuve fracture be suspected?
2. Does the presence of a Maisonneuve fracture alter management of an ankle injury?
3. Does the presence of a Maisonneuve fracture prolong recovery?
4. Can a Maisonneuve fracture be present without any pain at the proximal tibia/fibula?

Clinical Scenario

A 25-year-old male presented to urgent care (UC) with right ankle pain that occurred after externally rotating his foot during a game of pickup football. He was not able to bear any weight on the right ankle since the injury. The pain was worse with passive and active movements of the ankle. He denied numbness, tingling, and pain in the foot. There were no other injuries.

On exam, he winced in pain with ankle movements. The right ankle was moderately swollen; the skin was intact. The foot was warm and pink, dorsalis pedis (DP) and posterior tibial (PT) pulses were 2+. Palpation revealed tenderness of the medial and lateral malleoli, distal tibia and fibula, and deltoid ligament. There was no pain with palpation of the proximal 5th metatarsal. Anterior drawer and talar tilt tests were poorly tolerated, but there was no apparent ankle laxity.

Staff ordered an x-ray (XR) prior to examination of the patient, which was read as normal. As the patient returned from XR, he mentioned pain in the inferolateral knee as well. The clinician astutely had concern for Maisonneuve fracture with the patient's new pain complaint, and he was taken back for an XR of the tibia and fibula. The subsequent XR confirmed the presence of a proximal fibular fracture.

Discussion

A Maisonneuve fracture is a fracture of the proximal 1/3rd of the fibula which typically results from a severe twisting ankle injury causing disruption of the syndesmosis and interosseous membrane (IOM) of the lower leg.[1] This injury pattern most commonly occurs after significant external rotation of a planted pronated foot. It can also occur more rarely when the foot is twisted while supinated.[1] The Maisonneuve fracture was named after the French orthopedic surgeon Jules Germain Francois Maisonneuve, the first to physician to describe the injury. Maisonneuve fractures are characterized by a proximal fibular fracture associated with a rupture of the tibiofibular syndesmosis and the anterior fibers of

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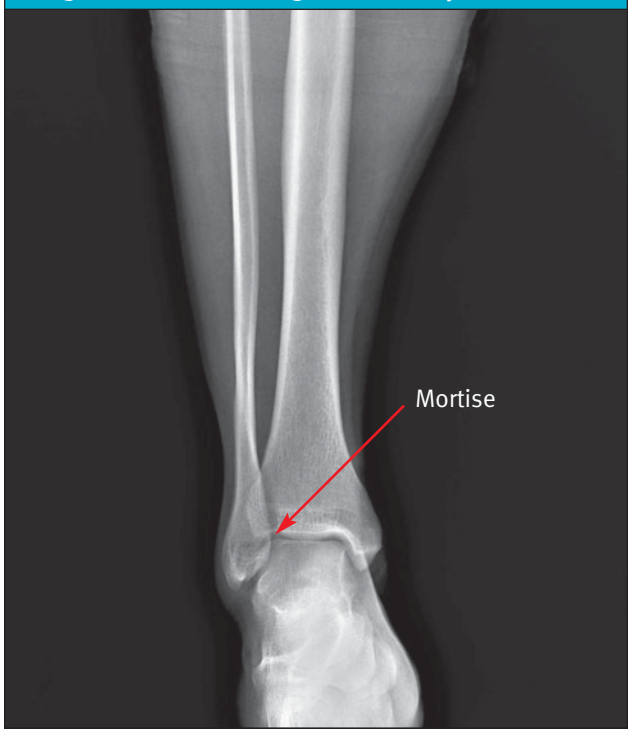
Image 1. Normal Adult Right Ankle X-ray



the deltoid ligament caused by external rotation mechanism.[2] The injury may also include a medial malleolar fracture occurring in 73% of cases as found in a large case series.[3] The various mechanisms of injury found in 1 study were: sports-related injuries (46%); walking/running/slipping on ice (33%); traffic accidents (15%); and falling from a height (5%).[4]

Relevant Anatomy

The ankle joint is comprised of the distal tibia and fibula (also called the medial and lateral malleoli) which sit atop the talus, and a strong IOM that holds the tibia and fibula together (**Images 1-2**). The bracket-shaped space between these 3 bones is called the "mortise" (**Image 1**). The ligaments of the ankle joint include (**Image 3**):

- Medial ligament—Deltoid ligament
- Lateral ligaments—Anterior and posterior talofibular ligaments (ATFL and PTFL), anterior inferior tibiofibular ligament (AITFL), and the calcaneofibular ligament (CFL)

These bones, ligaments, and IOM are collectively referred to as the tibiofibular syndesmosis, which plays a critical role for ankle function and stability.

Image 2. Tibia and Fibula Anatomy

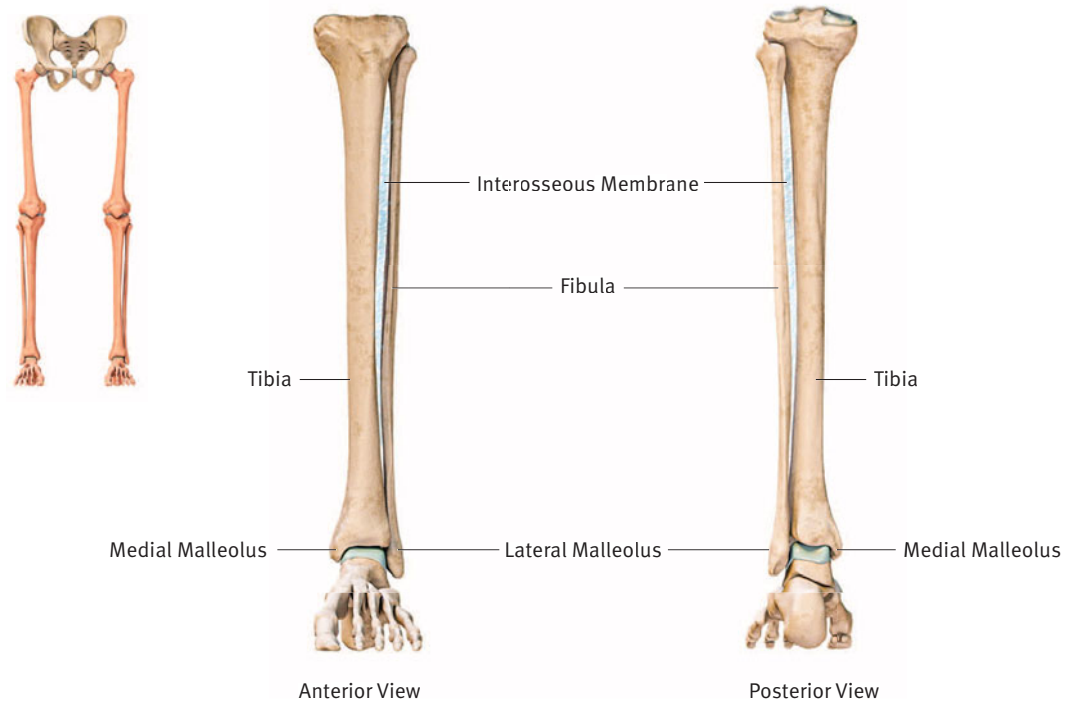
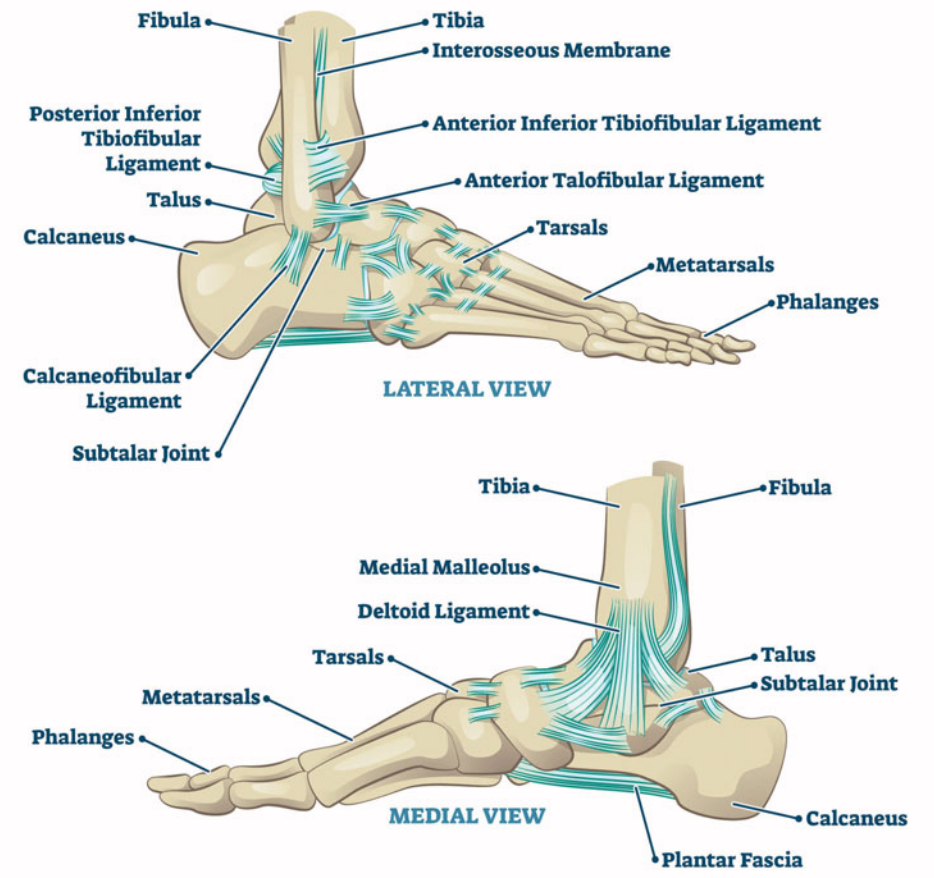


Image 3. Ankle Joint Anatomy Including the Deltoid Ligament, Anterior and Posterior Talofibular Ligaments, Anterior Inferior Tibiofibular Ligament, and Calcaneofibular Ligament



Clinical History

Clinicians should inquire about the mechanism of injury with a focus on high impact injuries to the ankle, such as a fall from height or a motor vehicle accident. Elucidating whether the injury resulted from foot inversion (as is the case with the vast majority of ankle injuries) or eversion is an important historical feature to clue clinicians into the possibility of Maisonneuve fracture.

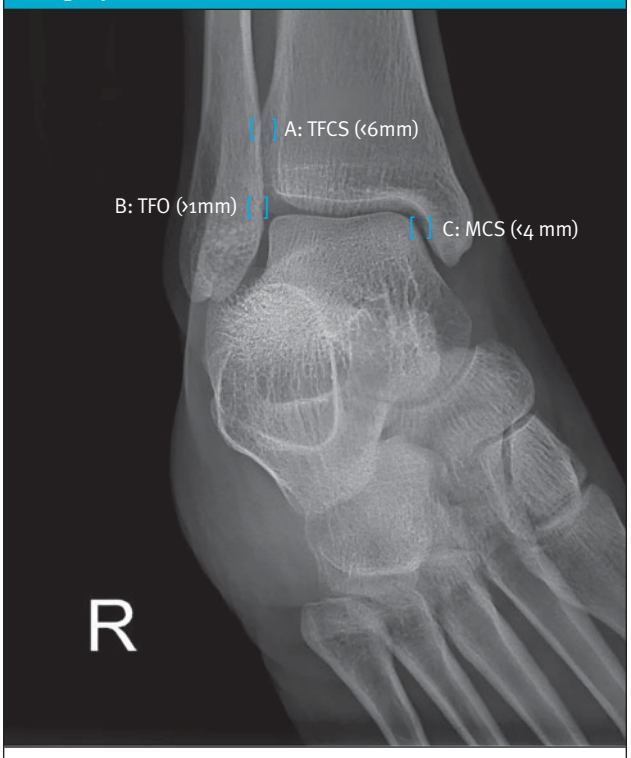
As with any trauma evaluation, it is important to inquire about the possibility of associated injuries to the head, neck, torso, or other extremities. Evaluate for pain in other injury prone areas of the lower leg such as the Achilles tendon, the midfoot, and the proximal 5th metatarsal. Because an ankle injury with associated Maisonneuve fracture is likely to cause significant pain, patients may not specifically complain of severe pain at the proximal fibula.[4,5] Inquire about foot drop or numbness and paresthesia of the lateral lower leg and dorsum of foot to assess for the possibility of concomitant common peroneal nerve injury.

Physical Examination

The physical exam, as is the case with any ankle injury, should focus on the ankle, foot, and knee. It is important to have the patient remove their shoes and socks to expose the entire lower leg and evaluate for signs of trauma including swelling, deformity, and/or ecchymosis. Palpate the entire lower leg carefully, including both malleoli and the ankle ligaments, observing for areas of maximal tenderness. Palpate the entirety of the fibula with special attention to the proximal 1/3rd when considering a Maisonneuve fracture. Pain at the medial ankle may represent a deltoid ligament or medial malleolus injury. Pain at the lateral ankle may represent an ATFL, AITFL, PTFL, or lateral malleolus injury.

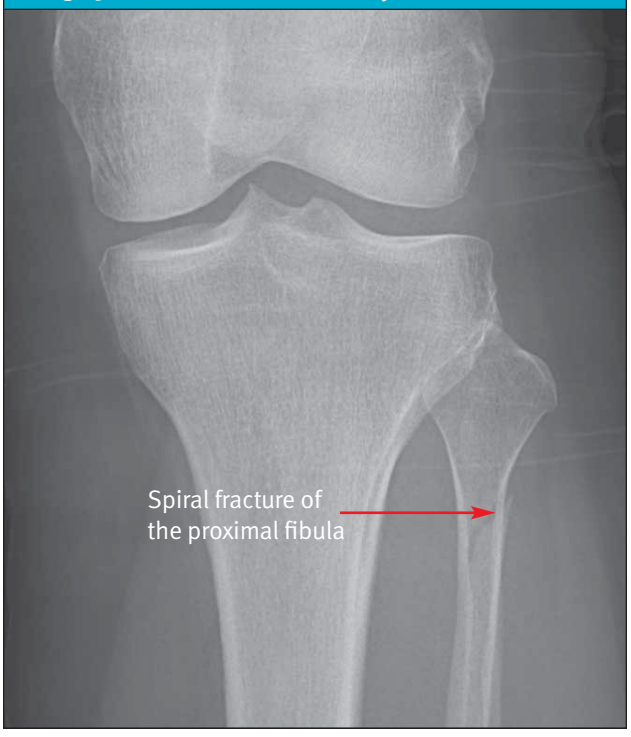
Evaluate range of motion of the ankle, knee, and toes. Special tests to evaluate for stability of the lower

Image 4. Mortise View of the Left Ankle



Labeled parameters: A = TFCS = tibiofibular clear space; B = TFO = tibiofibular overlap; C = MCS = medial clear space

Image 5. Lateral Tibia-Fibula X-ray



leg include the tibiofibular squeeze test and dorsiflexion external rotation stress test, which may indicate injury to the syndesmosis and IOM.[1] However, performing these tests or other tests that require weight bearing will likely result in increased pain and are unlikely to change the management approach. Assessment for laxity in the acute setting often does not change management and can cause significant pain, therefore, this should only be performed if the patient can tolerate the assessment. Perform a focused neurovascular assessment of the DP and PT pulses and sensation of all aspects of the foot. Evaluate for any wounds or skin defects, which may suggest open injuries and have significant implications for immediate management.

Diagnostic Testing

Testing centers around ankle radiographs, which include anteroposterior (AP), lateral, and mortise views. Significant ligamentous injury may be seen with pronation-external rotation injuries of the foot due to disruption of the syndesmosis. Because ligamentous injuries cannot be directly visualized on XR, secondary effects of ligamentous injury must be relied upon to suspect the diagnosis. Syndesmotic diastasis (widening of the syndesmosis) is an important suggestive finding of this to note.

Three radiographic parameters are used evaluate tibiofibular syndesmotic diastasis: tibiofibular clear space (TFCS); medial clear space (MCS); and tibiofibular overlap (TFO) (**Image 4**). These parameters are helpful in guiding diagnosis and management but are not required, and syndesmotic instability may be present even if they are normal.[6] Generally, >6mm width of the TFCS and >2mm displacement of the MCS are agreed upon as abnormal and may indicate syndesmotic instability.[7,8,9,10] If both the TFCS and MCS are widened, the specificity for syndesmotic injury is 86%.[7]

When suspecting Maisonneuve fracture, it is critical to obtain both AP and lateral tibia-fibula radiographs. In one review of Maisonneuve fractures, the fracture of the proximal fibula (**Image 5**) was not reliably visible when only an AP view was obtained.[1] Advanced imaging, (ie, computed tomography or magnetic resonance imaging) is fortunately not typically indicated as these modalities are largely not available in UC settings.

Urgent Care Management

Indications for emergent orthopedic evaluation for surgical repair include injuries associated with vascular or neurologic compromise, concern for compartment syndrome,

and/or ankle fracture-dislocations. Otherwise, initial UC management involves splinting, instructions for non-weight bearing, and pain control. Options for splinting include a sugar tong splint, posterior splint, or air splint and knee immobilizer. Provide crutches to ensure the patient can comply with non-weight bearing. Initial pain management should include oral non-steroidal anti-inflammatory drugs and acetaminophen. A limited quantity of opioid analgesics may be provided depending on the degree of pain and consideration for the individual's risk for adverse reactions and/or dependence.

If there is significant syndesmotic diastasis (ie, separation) or an associated fracture of the distal tibia, non-emergent evaluation for surgical repair is indicated.[1] If there is no significant syndesmotic diastasis or ankle fracture, conservative management may be considered.[1] The proximal fibular fracture itself is typically managed with immobilization and non-weight bearing. If there is neurovascular injury associated with the fibula fracture, surgical evaluation is needed. If emergent orthopedic evaluation is not indicated, orthopedics follow-up should be as soon as possible, ideally within 3-7 days after injury.

"Be cautious if the XR for patients with 'ankle injury' are ordered by staff prior to examining the patient. The knee should be examined in all patients with ankle injuries, and if there is proximal fibular tenderness, an AP and lateral series of the tibia and fibula should also be obtained."

Next-Level Urgent Care Pearls

- If a Maisonneuve fracture is diagnosed, and there is not an associated ankle dislocation or neurovascular compromise, a real-time discussion with an orthopedist (as available) may help avoid a an emergency department visit.
- Be cautious if the XR for patients with "ankle injury" are ordered by staff prior to examining the patient. The knee should be examined in all patients with ankle injuries, and if there is proximal fibular tenderness, an AP and lateral series of the tibia and fibula should also be obtained.
- Inquire about the possibility of other associated injuries, and always directly visualize and assess the joint above and below the site of injury (eg, foot and ankle).
- If the ankle XR shows no obvious widening of the mortise and a Maisonneuve fracture is identified, then stress/weight-bearing radiographs may be helpful in determining the likelihood of the patient requiring surgical fixation. However, if this is not feasible or the patient cannot tolerate any weight-bearing, this can be deferred until orthopedist follow-up.

Red Flags and Pitfalls

- Even when the patient is not complaining of subjective pain at the proximal fibula, a Maisonneuve fracture may be present. It is important to specifically palpate the proximal fibula with each ankle pain/sprain patient.
- While uncommon, Maisonneuve fractures associated with higher energy mechanisms may put patients at risk of immediate or delayed compartment syndrome. In patients with more severe mechanisms and those who are anticoagulated, ensure patients are aware of this possibility and that they understand that severe and escalating pain, particularly if it occurs without movement or weight-bearing, or is associated with paresthesias, should prompt immediate ED evaluation.[11]
- With a Maisonneuve or other proximal fibula fracture, ensure to evaluate for damage of the common peroneal nerve. Due to the proximity and course of the common peroneal nerve and its branches to the proximal fibula, it is particularly vulnerable to injury. Assess foot dorsiflexion and eversion, as well as sensation of the lateral lower leg and dorsum of the foot.

Clinical Scenario Conclusion

The patient's XR of the tibia and fibula revealed a spiral fracture of the proximal fibula. He received acetaminophen 1,000 mg, ibuprofen 600 mg, and an ice pack for analgesia while in UC. The patient was immobilized with a lower leg sugar tong splint and provided crutches with instructions to maintain strict non-weight bearing.

Because he did not have deformity of the ankle or neurovascular compromise, the patient was referred to orthopedics within the next 2-3 days.

Takeaway Points

- Evaluate for syndesmosis instability and a proximal fibular fracture in all ankle injuries. Either of these findings may have implications on both immediate management, activity precautions, and likelihood of requiring surgical fixation.
- If there is proximal fibula pain subjectively or tenderness on exam, obtain AP and lateral tibia-fibula radiographs to evaluate for a Maisonneuve fracture.
- Obtain AP, laterolateral, and mortise views of the ankle. If the mortise view shows widening of the TFCS (>6mm) or MCS (>2mm difference vs contralateral side of mortise), syndesmosis instability may be present.
- Once a Maisonneuve fracture is confirmed, management includes pain control, splint immobilization with strict non-weight bearing, and timely orthopedic evaluation.
- Orthopedic management usually includes surgical fixation if there is ankle syndesmotic injury, however there are some instances when conservative therapy may be an option. ■

Manuscript submitted July 7, 2024; accepted August 2, 2024.

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Original Research

Major Adverse Cardiovascular Events in Patients with Chest Pain And Moderate Heart Risk Scores Who Were Referred For An Expedited Outpatient Cardiology Evaluation: A Multi-Center Descriptive Study

Urgent Message: Patients with a moderate-risk HEART score referred from an urgent care center for an expedited outpatient cardiology evaluation were found to have a very low rate of MACE and no occurrence of ischemic cardiac deaths.

Nick Thomson, MD; Svetlana Barbarash, MD; Deloros Lebron-Gallagher, PA-C; Hollis Julson, MD; Michael Weinstock, MD

Citation: Thomson N, Barbarash S, Lebron-Gallagher D, Julson H, Weinstock M. Major Adverse Cardiovascular Events in Patients with Chest Pain And Moderate Heart Risk Scores Who Were Referred For An Expedited Outpatient Cardiology Evaluation: A Multi-Center Descriptive Study. *J Urgent Care Med.* 2024; 18(11): 28-32

Abstract

Introduction: The HEART score is an effective method of risk-stratifying emergency department (ED) patients with chest pain. This group of authors first described the low rate of major adverse cardiovascular events (MACE) in patients with a moderate-risk HEART score referred from an urgent care (UC) center for an expedited outpatient cardiology evaluation in a 2020 publication. This is a follow-up study of 446 UC patients presenting with acute chest pain over a 36-month period.

In the United States, patients with a moderate-risk HEART score who present to the ED are often hospitalized for further evaluation. The safety of outpatient evaluation of these patients is not well studied. We assessed the hypothesis that the rate of MACE is low among UC patients with acute chest pain and a moderate-risk HEART score and that expedited outpatient referral for cardiology evaluation is a safe practice for this population of patients.

Methods: A cross-sectional retrospective cohort study was performed from February 14, 2019, through March 30, 2022, in 5 UC centers in Las Vegas, Nevada. Included were 446 patients who presented with chest pain or potential anginal equivalent symptoms and had a

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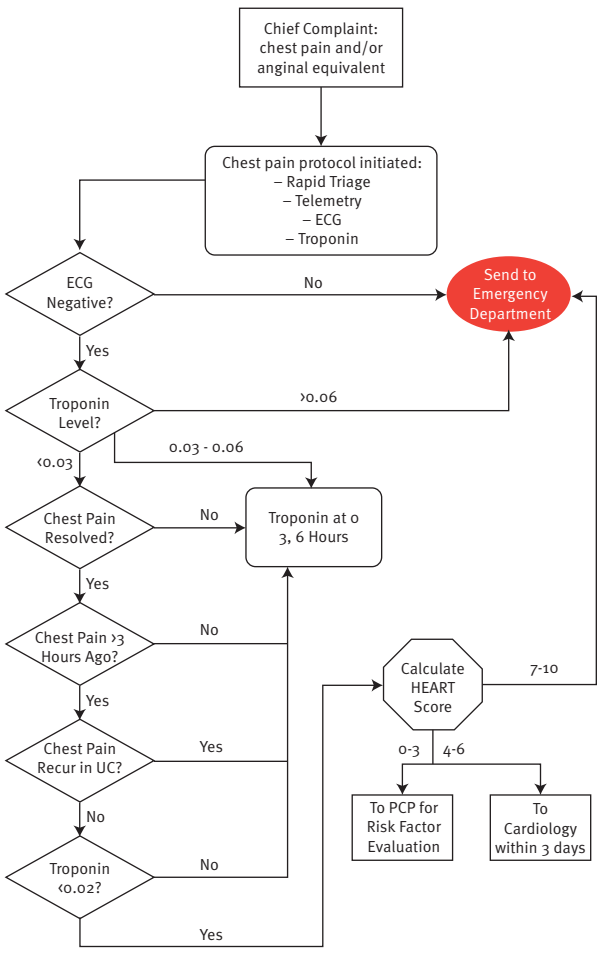
HEART score calculated to be between 4 to 6 in the UC. A streamlined disposition protocol was adopted by all UC providers for an expedited outpatient cardiology evaluation instead of immediate ED referral. The population was followed for 6 weeks with a primary endpoint of MACE (death, myocardial infarction [MI], coronary revascularization) determined by electronic medical record review and direct phone contact with patients. Outcomes were confirmed in 93% of patients.

Results: The average age of subjects was 65 years. Participants were 52% female. In the study, 395 patients (89%) were seen by a cardiology provider, and 346 patients (88%) were seen within 3 days. Diagnostic evaluations ordered included 265 cardiac stress tests (67%), 42 coronary computed tomography angiograms (11%), and 19 invasive coronary angiograms (5%). Eight patients (2%) were found to have MACE during the follow-up period: 2 had routine surgical revascularization; 4 had non-fatal MI followed by revascularization; and 2 patients died. Among the 2 patients who died, 1 was urgently referred for mitral valve replacement and died after surgery from renal failure and COVID-19, and the other patient died from COVID-19 pneumonia. There were no ischemic cardiac deaths.

Conclusion: Based on our descriptive analysis, patients with a moderate-risk HEART score referred from UC for an expedited outpatient cardiology evaluation were found to have a very low rate of MACE and no ischemic cardiac deaths occurred.

This data was originally presented as a moderated poster at the American Heart Association (AHA) conference in Chicago, Illinois, in 2022.

Figure 1. Protocol for Disposition of Urgent Care Patients with Chest Pain



PCP- primary care provider; ECG- electrocardiogram

Introduction

Chest pain is a common chief complaint in the emergency department (ED), accounting for over 7 million annual visits in the U.S.[1] Effective risk stratification of chest pain patients is crucial for identifying those at low short-term risk of major adverse cardiovascular events (MACE), including death, myocardial infarction (MI), and coronary revascularization, to allow for safe and expedited outpatient management while ensuring optimal allocation of healthcare resources. However, even with established risk-stratification protocols in place, many physicians are uncomfortable with discharging patients even in situations of very low risk of MACE.[2,3]

The HEART score, introduced as a chest pain risk-stratification tool in 2008[4] and validated in 2013,[5] has been implemented widely in ED settings for its ability to predict adverse outcomes in chest pain patients. This scoring system assesses 5 key parameters—history, electrocardiogram (ECG) findings, age, risk factors, and troponin levels—assigning scores ranging from 0 to 2 to each parameter. Patients are then categorized into low (0-3), moderate (4-6), or high (7-10) risk groups based on their total score.[4]

In the 2013 HEART score validation study, patients with scores of 0-3, indicating low risk, were found to have a short-term risk of MACE of 1.7%. However, in this study, those with moderate-risk scores (4-6), were typically admitted to the hospital and had a rate of MACE of 16.6%. Patients with scores ≥7, indicating high risk, were treated as candidates for early invasive

Table 1. Patient Demographics	
Average Age	65 years
Females	233 (52%)
Males	213 (48%)
HEART Score 4	262 (59%)
HEART Score 5	141 (32%)
HEART Score 6	43 (9%)
Arteriosclerosis	156 (35%)
Hypertension	335 (75%)
Diabetes	153 (34%)
Dyslipidemia	376 (84%)
Obesity	122 (27%)
Tobacco Use	55 (12%)
CVA/TIA	30 (7%)
CVA- cerebral vascular accident; TIA- transient ischemic attack	

measures due to their substantial risk of MACE of 65%.[5]

The HEART score's simplicity and effectiveness in identifying patients at low risk of MACE have made it a valuable tool for guiding clinical decision-making in ED settings.[6,7] However, the optimal management strategy for patients in the moderate-risk category remains uncertain as little is known about the effectiveness of close outpatient cardiology follow-up versus admission for this patient subgroup.

This study aimed to investigate the frequency of MACE in moderate-risk patients after receiving a negative assessment at an urgent care (UC) facility who were referred for an expedited outpatient cardiology follow-up.

Methods

A cross-sectional study was conducted from February 14, 2019, to March 30, 2022, at 5 UC centers in Las Vegas, Nevada. The study included 446 patients who presented with chest pain or possible anginal equivalent symptom and who had a HEART score of 4 to 6.

The exclusion criteria included patients under the age of 18 and unstable vital signs.

Patients were evaluated by UC providers, predominantly consisting of board-certified family medicine physicians and advanced-practice providers (APPs), including physician assistants and nurse practitioners. Subsequently, in cardiology follow-up, patients were assessed by cardiologists (for new patients) or APPs (for established patients).

All UC providers uniformly adopted a standardized disposition protocol, leading patients with moderate-risk HEART scores to be promptly scheduled for expedited cardiology evaluation within 3 days of discharge. UC staff directly facilitated appointment scheduling. During cardiology appointments, further work-up decisions were made, encompassing medical treatment, outpatient stress testing, echocardiography, coronary computed tomography angiograms (CCTA), or conventional coronary angiography at the discretion of the cardiology clinician (**Figure 1**).

Participants were followed for 6 weeks after the index UC presentation; MACE served as the primary endpoint. MACE outcomes were ascertained through comprehensive review of electronic medical records and direct phone contact with patients, with complete follow-up data being available for 93% of patients. Subsequently, the rates of MACE occurrence within the 6-week follow-up period were calculated.

The study was approved by the Institutional Review Board #2020-0050 as an exempt study on June 18, 2020.

Results

A total of 446 patients with a moderate-risk HEART score were referred to outpatient cardiology in an expedited manner. The average age of patients was 65 years with 233 (52%) being female (**Table 1**).

Among them, 395 patients (89%) received evaluation by a cardiology provider, and 346 patients (88%) were seen within 3 days following discharge from UC.

Among the patients who were seen by a cardiology provider, 265 stress tests were ordered, representing 67% of patients seen, with 232 stress tests actually completed. Additionally, 42 CCTA studies were ordered, representing 11% of patients seen, with 30 completed. Furthermore, 19 invasive coronary angiograms were ordered, representing 5% of patients seen, with 13 completed.

During the 6-week follow-up period, a total of 8 patients (2%) were found to have a MACE outcome (**Table 2**). This included 2 patients who underwent routine surgical revascularization, 4 patients who experienced non-fatal myocardial infarctions followed by revascularization procedures, and 2 patients who died related to causes other than ischemic cardiac events. One patient, urgently referred for mitral valve replacement, died post-surgery from renal failure and complications related to COVID-19. The other patient died from COVID-19 pneumonia. There were no cases of ischemic cardiac deaths observed during the study period.

Discussion

The findings of this descriptive study provide valuable

Table 2. Patients With Major Adverse Cardiac Events

Patient Age and Sex	Symptoms	Heart Score	Positive Components	Days to Cardiology Evaluation	Diagnostic Test	MACE Outcome
67, M	UC 5/13/19 with throat pain for 2 weeks	5	History: 2 Age: 2 Risk: 1	1	Stress delayed	ACS 5/26/19, PCI to RCA
70, M	UC 7/15/19 CP responsive to NTG	6	History: 2 Age: 2 Risk: 2	2	LHC recommended	LHC 8/7/19 noting MVCAD, 4V CABG 8/19/19
65, F	UC 10/23/19 with mild CP, dyspnea x 7 days	5	History: 1 EKG: 1 Age: 2 Risk: 1	2	TTE normal LVEF.	Referred for LHC, 2V CABG 11/27/19
54, M	UC 3/8/20 with CHF	4	N/A	2	TTE with critical bioprosthetic MS and severe elevated PAP. Sent directly to ED	Underwent CABG/MVR. Developed renal failure/COVID and died
67, F	UC 2/23/21 with sharp CP at rest	4	History: 0 Age: 2 Risk: 2	2 (no show)	None	2/24/21 NSTEMI with PCI to LCx and RCA
84, F	UC 7/19/21 with exertional chest heaviness	5	History: 1 Age: 2 Risk: 2	3 (no show)	None	8/11/21 STEMI leading to 4V CABG
71, M	UC 9/14/21	5	History: 1 Age: 2 Risk: 2	2	Nuclear stress cancelled due to hospitalization	9/25/21 with COVID pneumonia, cardiac arrest due to hypoxia 10/9/21.
87, M	UC 9/20/21 with CP and CHF symptoms	4	History: 0 Age: 2 Risk: 2	3	Treated for CHF, referred for angiogram as part of pre-TAVR work up for severe AS	10/13/21 NSTEMI with PCI to proximal/mid Diagonal branch

AS- aortic stenosis; CABG- coronary artery bypass graft; CAD- coronary artery disease; CHF- congestive heart failure; CP- chest pain; DES- drug eluting stent; ECG- electrocardiography; EF- ejection fraction; F – female; LAD- left anterior descending; LCx- left circumflex; LHC- left heart catheterization; LVEF - left ventricle ejection fraction; M – male; MS- mitral stenosis; MVCAD - multivessel coronary artery disease; MVR- mitral valve replacement; NSTEMI- non- ST-elevation myocardial infarction; NTG- nitroglycerin; PCI - percutaneous coronary intervention; RCA- right coronary artery; SOB- shortness of breath; TAVR- transcatheter aortic valve replacement; TTE- transthoracic echocardiogram; UC – urgent care.

insights into the short-term risks and management strategies of patients presenting to UC centers with moderate-risk HEART scores. Our results indicate that the implementation of a streamlined disposition protocol directing these patients to expedited outpatient cardiology evaluation is feasible and associated with timely access to specialized care and low MACE rates.

The high rate of cardiology provider evaluation (93%) emphasizes the effectiveness of this approach in ensuring that patients receive appropriate follow-up when a protocol is in place. Moreover, the majority of patients (88%) were seen within 3 days post-discharge, highlighting the success of the expedited referral process. This timely access to cardiology evaluation allows for prompt diagnostic testing with stress tests being the most commonly ordered test (67%). However, there remains room for improvement in completion rates of diagnostic tests, as evidenced by the discrepancy between tests ordered and tests completed. Furthermore, it is uncertain the degree to which these further cardiac investigations may affect longer-term risk of adverse cardiovascular outcomes in the moderate-risk HEART score group.

Our study observed a low rate of MACE within the 6-week follow-up period (2%), which is lower than previous research on the effectiveness of the HEART score in risk stratification for patients with acute chest pain.[5] The 2% "acceptable miss rate" is consistent with recommendations from the American College of Emergency Physicians (ACEP) clinical policy statement.[6] Notably, there were no ischemic cardiac deaths observed, suggesting that the expedited outpatient cardiology

evaluation pathway is effective in identifying moderate-risk HEART score patients.[8, 9,10]

Of note, many UC facilities are not able obtain rapid results for troponin blood tests. We excluded patients with positive troponin blood tests in this study. In recent years, the HEAR score (History, ECG, Age, Risk factors [ie, no troponin]) has been studied as a more rapid option for risk stratifying chest pain patients in lower resource environments. At extremely low scores, such as 0 or 1, the negative predictive value is very high; these patients would have a very low risk of MACE. Also of note, these patients were typically studied in an ED setting, so it is difficult to definitively extrapolate these results to the urgent care.[11,12,13]

The cases of MACE observed in our study highlight the importance of continued vigilance and comprehensive follow-up in patients with moderate-risk HEART scores. While the majority of patients had favorable outcomes, a small proportion experienced significant events, emphasizing the importance of close follow-up. However, based on these results, it appears that stable patients without concerning ECG findings or positive troponins who have moderate-risk HEART scores would not derive sufficient benefit to justify hospital admission when close follow-up can be arranged.

Limitations

The study used a retrospective approach, thereby confining the investigators to chart review and telephone patient interviews. The study was set within 5 UC centers located in Las Vegas, Nevada, influencing the generalizability of its findings to broader healthcare contexts. Furthermore, the relatively modest sample size of 446 patients underscores potential limitations in statistical power and precision of estimations.

Despite efforts to track patient outcomes over a 6-week post-presentation period—the follow-up rate was 93% (395 patients)—we could not confirm outcomes in 7% of patients which may have had unknown adverse outcomes. Moreover, while a substantial proportion of patients underwent diagnostic assessment during cardiological follow-up, there was a disparity between ordered tests and tests that were actually completed.

Lastly, the study's methodology lacks consideration for potentially confounding variables, including but not limited to comorbidities, socioeconomic status, and healthcare access, which could significantly influence the observed outcomes. It is imperative to recognize that not all healthcare settings possess the logistical capability to facilitate expedited follow-up consultations within the stipulated timeframe of 1-3 days. This assertion aligns with the clinical policy guidance articulated by ACEP in 2018, advocating for judicious consideration of further diagnostic measures or extended observation in instances where timely follow-up cannot be feasibly arranged within 1 to 2 weeks.[6]

Conclusion

Patients with a moderate-risk HEART score referred from urgent care for an expedited outpatient cardiology evaluation demonstrated a low rate of MACE and notably, no ischemic cardiac deaths attributable to delayed care. Implementing such pathways may not only improve patient outcomes but also optimize resource utilization by reducing unnecessary hospital admissions. ■

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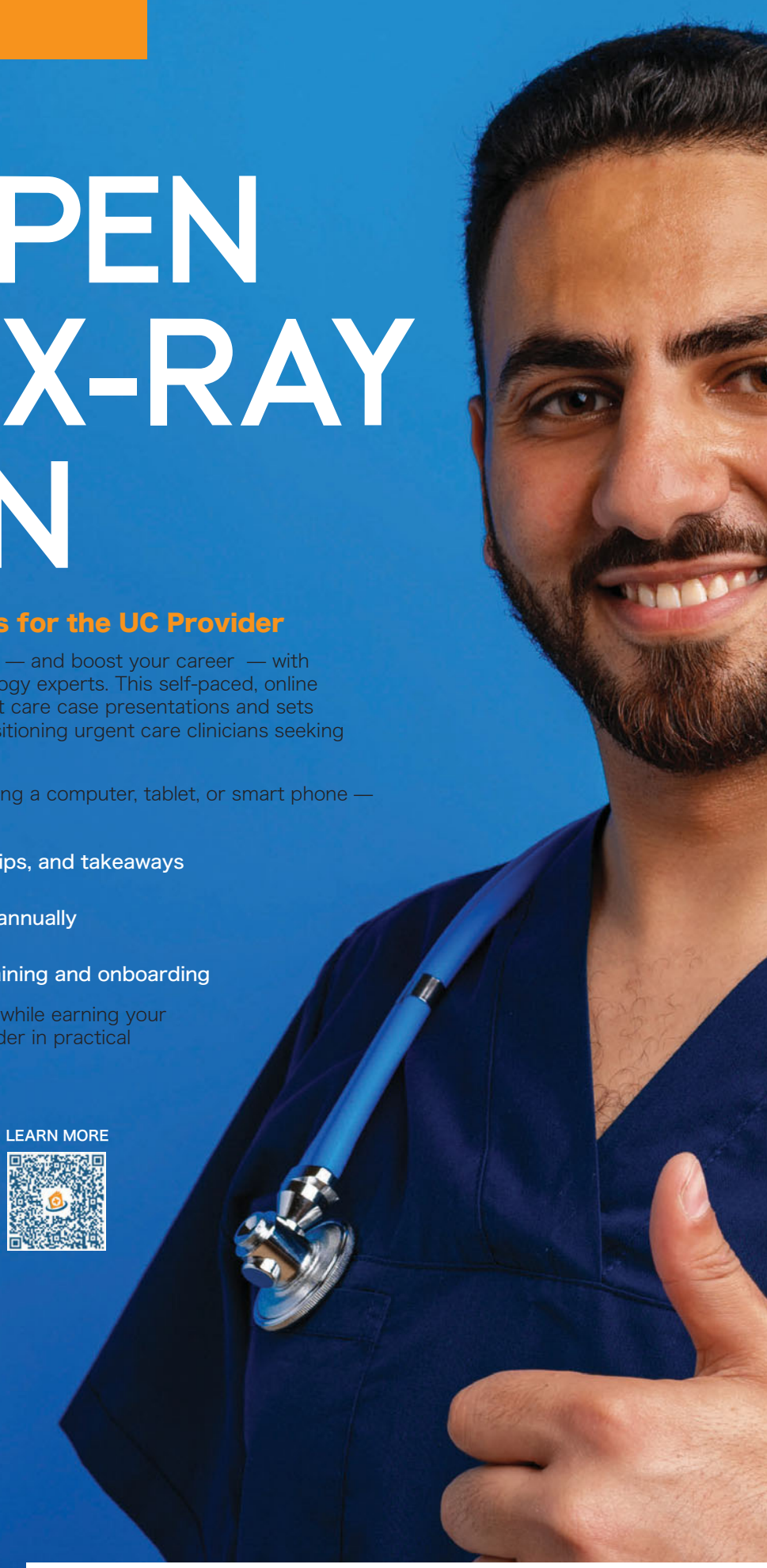

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Case Report

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See CME Quiz Questions on page 11.

Progressive Diaphyseal Dysplasia: A Case Report

Urgent Message: Progressive diaphyseal dysplasia, also known as Camurati-Engelmann disease, is a rare genetic disease that predominantly affects the bones. Clinicians who understand the manifestations of this disorder are better equipped to ensure appropriate management of disease flares and coordinate specialist follow-up.

Swetha Gogu, DO, MPH; Sudhir Gogu, DO, PhD, MBA

Citation: Gogu S, Gogu S. Progressive Diaphyseal Dysplasia: A Case Report. *J Urgent Care Med.* 2024; 18 (11): 34-37

Abstract

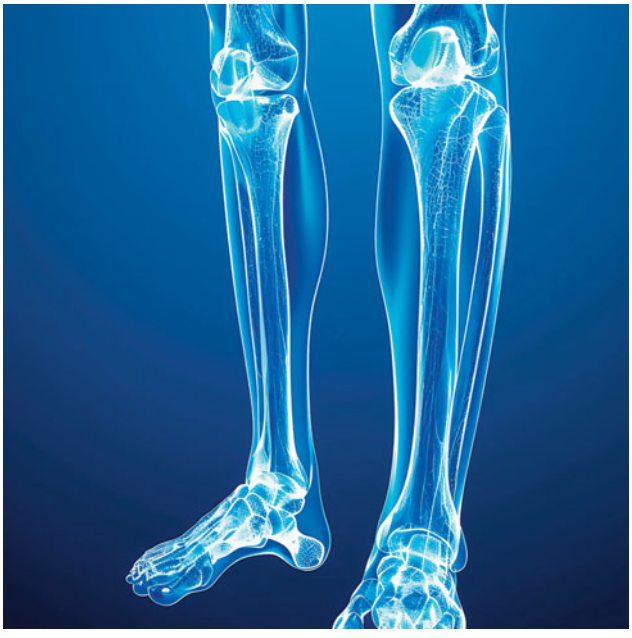
Introduction: Camurati-Engelmann disease (CED), also known as progressive diaphyseal dysplasia, is a rare autosomal dominant genetic disease that predominantly affects the bones.

Presentation: A 30-year-old male presented to the urgent care (UC) in a wheelchair with acute on chronic weakness in his upper and lower extremities. He also endorsed pain in his extremities for several days.

Diagnosis: The diagnosis of CED is often made from clinical and radiological findings. However, given that it is an autosomal dominant disease, molecular genetic testing for mutations in transforming growth factor beta-1 *(TGFB1)* can confirm the diagnosis.

Resolution: The patient was prescribed a course of corticosteroids for the acute pain. Referrals to orthopedics, genetics, endocrinology, and physical therapy were made for further evaluation and management.

Conclusion: CED is a rare form of skeletal dysplasia. It is important for UC providers to understand the manifestations of patients with this disorder and ensure appropriate specialist follow-up for this chronic, debilitating disorder.



Introduction

Camurati-Engelmann disease (CED), also known as progressive diaphyseal dysplasia, is an ultrarare autosomal dominant disease. There have been only about 300 total cases identified. The disease typically

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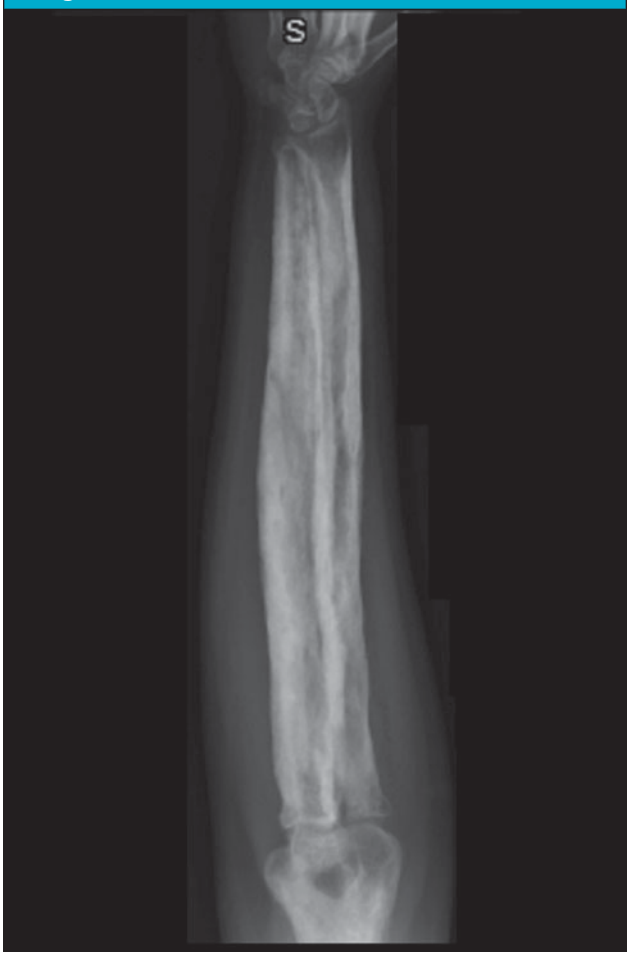
Image 1



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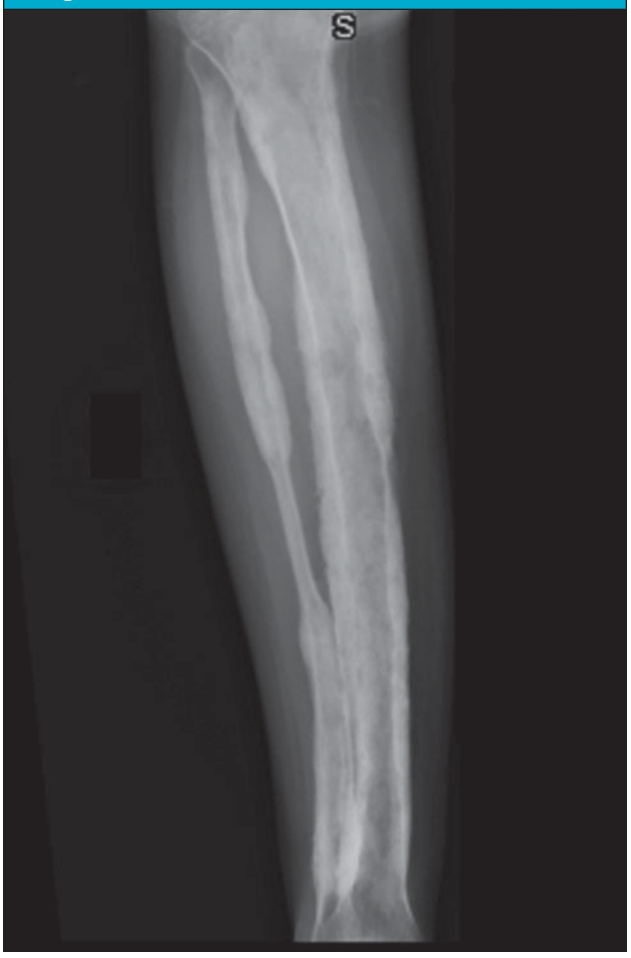

presents in childhood but may not present until late into adulthood for some individuals. Patients most often initially present with complaints of limb pain and fatigue. Patients often have a characteristic waddling gait. CED occurs when a dysfunctional copy of the gene encoding TGF-β is present. It is characterized by hyperostosis of the long bones and skull as well as severe bone pain with consequent weakness and gait alterations.[1,2]

Clinical Presentation

A 30-year-old male presented to an UC center in a wheelchair with complaints of 3 days of weakness in his upper and lower extremities. He also endorsed pain in his lower extremities and difficulty walking for several days. He denied paresthesias, headaches, hearing loss, or vision changes. His first medical evaluation for lower extremity weakness and pain was in his mid-teens, at which time he was diagnosed with CED. He had previously been managed with occasional courses of corticosteroids or non-steroidal anti-inflammatory drugs (NSAIDs) by his primary care physician (PCP), but because he was unable to see his PCP, he sought pain relief for his current pain flare at the UC center.

Physical Exam and Findings

The patient's vitals at the time of his UC visit were within normal limits. On physical exam, he appeared uncomfortable due to pain. His cardiopulmonary and abdominal exam were within normal limits. His musculoskeletal exam revealed atypically elongated extremities with lumbar lordosis and mild swelling of bilateral ankles. Due to pain, his active and passive range of motion was limited in upper and lower extremities. His neurologic exam revealed symmetrically diminished strength in all muscle groups of all 4 extremities. His sensation was intact to light touch throughout, and his deep tendon reflexes were normal.

Differential Diagnosis

CED has characteristic clinical and radiological findings, however, it is important to avoid anchoring on this diagnosis prematurely in patients with CED presenting with acute limb pain. Many clinical entities were considered as possible explanations for the patient's acute pain and weakness including infection (eg, osteomyelitis) and oncologic processes involving bony metastases. Co-existent chronic bone disease such as Ribbing's disease (multiple diaphyseal sclerosis), Paget's disease, Kenny-Caffey syndrome, osteopetrosis, avascular necrosis, and osteosclerosis were also considered. Neuropathies and myopathies can cause pain and weakness, but given the patient's description of the symptoms resembling prior episodes, it was felt that this case was most likely related to exacerbation of CED.

"Patients with CED are most likely to present to UC during acute pain exacerbations. In these instances, it is appropriate to treat pain symptomatically."

Urgent Care Management and Diagnostic Assessment

X-ray (XR) images of the bilateral lower legs and forearms were obtained to assess for progression of disease and alternate pathologies (**Images 1-2**). The radiologist's interpretation of the XR suggested that there was symmetric, irregular cortical thickening and periostitis of the long bones. There were no fractures or osseous lesions. As there are no diagnostic criteria for CED, the patient's diagnosis of CED in his mid-teens was presumed, based on his known history and associated radiographic findings.

Case Conclusion

The patient was prescribed a course of oral corticosteroids and advised to avoid NSAIDs while taking the steroids. Referrals to orthopedics, genetics, endocrinology, and physical therapy were made for further treatment and management. Additional recommendations included vision evaluation, and the patient was provided anticipatory guidance on expected course of the disease.

Epidemiology

CED was first described in 1920.[3] Rarely, the disease can come from a spontaneous genetic mutation in the egg or sperm cell. The prevalence of CED is unclear, but there have been over 300 cases reported to date worldwide.[4]

Pathophysiology

CED is a rare skeletal disorder that belongs to the group of sclerosing bone dysplasias caused by mutations in the Transforming Growth Factor Beta 1 (*TGFB1*) gene. The gene is located on chromosome 19q13. It encodes the TGF-β1 protein, which is found throughout the body but is particularly prevalent in the skeletal system where it helps regulate the formation and growth of bone and cartilage. The *TGFB1* gene mutations that cause CED result in the production of an overly active TGF-β1 protein. The abnormal activity in this protein causes an increase in signaling, which leads to more bone formation. As a result, the bones in the arms, legs, and skull are thicker than normal, contributing to the movement and neurological problems often experienced by individuals with CED.[5]

Presentation

Patients generally present with pain in the extremities, decreased muscle mass and symmetric proximal muscle weakness, contractures, wide-based waddling gait, bone pain, frontal bossing, and easy fatigability. If bones of the skull are affected, then individuals may experience headaches, hearing loss, tinnitus, vertigo, vision problems, and even facial paralysis if the nerves become compressed. Some individuals may also present with abnormally long limbs in proportion to the height of their body, a decrease in muscle mass and body fat, visible prominence of the long bones in the legs, and rarely delayed puberty. Pain symptoms tend to be exacerbated with cold, stress, and increases in activity.[1,4,6]

Treatment

There are currently no disease modifying treatments available for CED. Corticosteroids are reported to help relieve the symptoms during acute flares but do not slow progression of the disease.[1] The use of steroids must be weighed against the long-term risks they may pose. Additionally, there are limited case reports of losartan reducing bone pain and increasing physical activity as it has been shown to downregulate *TGFB1* signaling.[7] There is limited evidence with use of bisphosphonates.[2] NSAIDs and other analgesics and non-pharmacological (eg, heat or ice) methods can be

used to treat the pain. Selective cases may benefit from surgical intervention. Often a multidisciplinary team of physical therapists, occupational therapists, and physiatrists is important to help manage long term quality of life.[7]

Patients with CED are most likely to present to UC during acute pain exacerbations. In these instances, it is appropriate to treat pain symptomatically. However, it is important to ensure such patients have appropriate specialist care for follow-up. Most patients with CED will have 1 or more specialists involved in their care already, and it is prudent to consult with their primary specialist when feasible. Referral to a geneticist early in the course is prudent, although many patients with CED will have already undergone genetic evaluation. An orthopedist may be consulted due to concerns for bone dysplasia, and an endocrinologist to ensure proper growth and development of the bones. Additionally, patients with skull bases involvement should have routine ophthalmological, neurological, and otolaryngologic follow up.[6]

Discussion

While CED is a rare cause of skeletal dysplasia, patients with this condition may present to UC with exacerbations in pain and/or weakness. As the timing of diagnosis is variable, it is important to consider CED in the differential diagnosis for patients presenting with non-specific limb pains and radiological features of skeletal dysplasia. The prognosis for individuals with CED is highly variable and depends on the severity of the disease and the presence of complications. The condition is typically progressive, with symptoms worsening over time.[4,6]

Ethics Statement

An attempt was made to contact the patient to obtain informed consent to publish this case, but he was lost to follow-up and could not be reached. The patient's identifying details were changed or omitted to protect patient privacy.

Takeaways for Urgent Care Providers

- CED is diagnosed primarily on the basis of history and radiologic examination, however confirmation can be made with genetic testing.
- The most common manifestations include bone pain of the extremities and proximal muscle weakness. The disease usually becomes clinically apparent early in life, when most patients are diagnosed.

"The prognosis for individuals with CED is highly variable and depends on the severity of the disease and the presence of complications."

- There are currently no disease modifying treatments available for CED, however, short courses of oral corticosteroids have shown some efficacy in reducing exacerbations of pain.
- UC clinicians should make efforts to consult with specialists who are familiar with the CED diagnosis when making UC treatment decisions in order to coordinate appropriate follow-up. ■

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Guardrails for Nonsufficient Funds and Credit Card on File Fees

Urgent Message: Urgent care operators must navigate emerging federal, state, and payer regulations when developing financial policies that require payment by credit card and when setting fees for bounced checks and denied credit card charges.

Alan A. Ayers, MBA, MAcc

Citation: Ayers A. Guardrails for Nonsufficient Funds and Credit Card on File Fees. *J Urgent Care Med.* 2024; 18 (11): 41-43

Urgent care centers frequently charge a nonsufficient funds (NSF) fee when a patient's check for copays or balances due has "bounced" (ie, has insufficient funds in their checking account to cover the check).

NSF fees are also frequently charged when a credit or debit card payment can't be processed because the accountholder has insufficient credit or funds available. If their bill can't be paid, or their check won't clear, the transaction will not be approved. As a result, they are charged the fee due to insufficient funds.[1]

Regulators Increase Scrutiny on NSF Fees

Pursuant to federal law, banks must disclose any fees they charge in connection with a deposit account.[2] For everyone else, whether a retail merchant or medical business, specific NSF fees are regulated by states. For example, in California[3], New Jersey, and many other states, the maximum charge is $25. Virginia's maximum fee is $50.[4] The maximum charge is typically governed by a statute tied to a calculation of an annual percentage rate.[5] **Table 1** lists NSF fees by state.

NSF fees are coming under greater scrutiny, especially in light of a proposed rule by the Consumer Fraud Protection Bureau that would prohibit NSF fees on transactions that are declined instantaneously or near-instantaneously (those declined with no significant perceptible delay after the consumer initiates the transaction).[6] This prohibition would cover transactions involving the use of debit cards, ATMs, or certain person-to-person apps. The proposed rule provides that charging these fees constitutes an abusive practice under the Consumer Financial Protection Act.[6]

A Minnesota federal district court dismissed the Minnesota Bankers Association's and Lake Central Bank's lawsuit challenging the FDIC's supervisory guidance on NSF fees.[7] On February 22, 2024, California Attorney General Rob Bonta issued letters to California's 197 state-chartered banks and credit unions cautioning that overdraft and returned deposited item fees may violate that state's Unfair Competition Law and the federal Consumer Financial Protection Act.[8]

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Table 1. Maximum Nonsufficient Funds Fees Allowed by State

Arizona	$25	Nevada	$25
Arkansas	$30	New Hampshire	$25
California	$25	New Jersey	$25
Colorado	$20	New Mexico	$30
Connecticut	$20	New York	$20
Delaware	$40	North Carolina	$25
District Of Columbia	$25	North Dakota	$40
Florida	$25 if amount is ‹ or = $50 $30 if amount is ‹ or = $300 $40 if amount is ‹ or = $800 -or- 5% of check amount if › $800	Ohio	$30 or 10% of check amount, whichever is greater
Georgia	$30 if amount is ‹ or = $600 5% of check amount if › $600	Oklahoma	$25
Hawaii	$30	Oregon	$25
Idaho	$20 or amount of check, whichever is less	Pennsylvania	$25
Illinois	$25	Puerto Rico	$10
Indiana	$25	Rhode Island	$25
Iowa	$30	South Carolina	$30
Kansas	$30	South Dakota	$40
Kentucky	$25	Tennessee	$30
Louisiana	$25 or 5% of check amount, whichever is greater	Texas	$30
Maine	$25	Utah	$20
Maryland	$35	Vermont	$25
Massachusetts	$25	Virginia	$50
Michigan	$25	Washington	Lesser of $40 or face amount of check
Minnesota	$30	West Virginia	$25
Mississippi	$40	Wisconsin	$25
Missouri	$25	Wyoming	$30

Note this information should be independently verified by any entity which intends to charge a fee, in order to ensure alignment with the laws and statutes governing each respective state.
Source: https://www.vericheck.com/state-allowed-nsf-fees/

NSF Fees on Credit Cards

Most healthcare providers will accept credit cards as payment for medical services. Increasingly, urgent care centers will also ask a patient to provide a credit card at the time of service to cover any residual balance after the claim adjudicates, similar to how a hotel requires a credit card at registration to cover any incidentals like damage and theft.

But what if the credit card on file declines due to insufficient available credit or because the account was closed? Such can result in the same amount of labor for an urgent care as a bounced check because what should have been a passive process of charging a card now requires the urgent care to pursue payment from the patient—whether by mailed statement or referral to a collections agency.

To cover this added cost, urgent cares may charge a fee if the credit card on file is declined when the insurance claim adjudicates. Federal regulations only restrict the amount that a credit card company can impose as a fee.[9]

But it is significant to note that medical debt is treated differently than credit card debt. If a patient misses a credit card payment, the card issuer can report the delinquent payment to the credit bureaus as soon as the debt is 30 days past due. However, medical debt won't affect a patient's credit score unless it's sent to collections, is over $500, and remains unpaid for a year after the original delinquency date (the date the bill first became past due). When a patient puts his or her medical debt on a credit card, it becomes routine credit card debt. As such, the patient forfeits the yearlong grace period that medical debt has.[10] Plus, they lose the ability to negotiate a payment plan or reduced bill with the medical provider.[11]

Also, physicians can't require patients to share their credit card information to receive medical care.[12] Moreover, if patients do share credit card information, physicians can't keep or charge credit cards without a patient's consent to do so for subsequent use.[12] And while urgent care centers collect copays and patient balances at time of service, there may be other patient responsibilities including co-insurance and deductibles that are unknown until after the visit. Some facilities may require the patient to present a credit card on file to assure it receives payment for these residual patient balances after the insurance claim adjudicates. However, it's important to remember that credit card information is considered protected health information under HIPAA when maintained by a healthcare provider.

There are no clear requirements that physicians must follow to guarantee compliance with HIPAA in the storage of patient credit card information, but HIPAA's Security Rule states the "reasonableness" of the security measures in place while also setting forth minimum security standards to which a provider such as an urgent care must adhere.[13]

Medicare 'Assignment'

Another wrinkle to this issue is the fact that a patient can see the lowest cost if the health care provider accepts the Medicare-approved amount as full payment for a covered service. This is known as "accepting assignment." If a provider accepts assignment, it's for all Medicare-covered Part A and Part B services.[14] Further, Medicare is clear that fees charged to patients above and beyond what is allowed based on the fee schedule are prohibited.[15] The Department of Health and Human Services' Office of Inspector General stated in March 2004 that charging extra for services covered by Medicare constituted a potential assignment violation and may be subject to civil monetary penalties.[16]

Any fees, including interest or statement fees, are deemed beyond Medicare's deductible and coinsurance. Additional administrative costs are to be absorbed by the practice. The only exception is a charge for missed appointments (which typically doesn't apply to urgent care), which must be consistent with all patients.[16]

Private health insurance contracts likewise require providers to accept only the contracted amount as payment in full so the addition of fees begs the question of whether a provider is requiring payment above and beyond the assignment. It is for this reason that many opine that an urgent care cannot add surcharges to cover credit card processing costs.

Summary

Urgent care owners and operators should be aware of and stay up-to-date with the changes in NSF fee laws. In addition, a number of states are considering the elimination of such fees, and much could change if the proposed rule by the Consumer Fraud Protection Bureau prohibiting NSF fees is promulgated. ■

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Can Large Language Models Help in Assessing Acuity of Patients Presenting to EDs?

Take Home Point: Integration of large language models (LLMs) in the emergency department (ED) could enhance triage processes. This warrants further investigation particularly in the urgent care (UC) space.

Citation: Williams C, Zack T, Miao B, et. al. Use of a Large Language Model to Assess Clinical Acuity of Adults in the Emergency Department. *JAMA Netw Open*. 2024 May 1;7(5): e248895. doi: 10.1001/jamanetworkopen.2024.8895. PMID: 38713466; PMCID: PMC11077390.

Relevance: As we start to investigate the applications of artificial intelligence (AI) and LLMs specifically, it is useful to consider how they can improve efficiency without compromising patient safety.

Study Summary: This was a cross-sectional study using clinical details of all adults visiting the University of California, San Francisco (UCSF), ED with a documented Emergency Severity Index (ESI) acuity level (1-5) and a corresponding ED physician note created during the encounter. The authors queried chatGPT-4 (OpenAI model) to consider the clinical history of sets of 2 ED presentations and return a result to decide which patient in the pair had a higher-acuity presentation.

A sample of 10,000 pairs of presentations were compared, and the authors found the LLM correctly inferred the higher acuity patient for 8,940 of 10,000 pairs, with an accuracy of 89% (95% confidence interval [CI], 0.89-0.90). Model performance improved as ED triage acuity scores became more extreme between pairs, with up to 100% accuracy when distinguishing between patients with immediate versus non-urgent acuity levels. Of note, a 500-patient visit subset was analyzed by both the LLM and a group of emergency physician participants. Between the two, the LLM's accuracy (88%) was comparable and not statistically significantly different than that of the physicians (86%). The LLM's only significant performance weakness identified was in distinguishing patients assigned a less urgent versus non-urgent acuity.

Editor's Comments: There was no accounting for potential deterioration of patients within this study, an issue that is pertinent in the dynamic nature of ED/UC. Due to the pairwise nature of the study, it was not possible to reliably calculate model performance across different patient characteristics such as gender, race, and ethnicity. As most UC centers in the U.S. do not use ESI or similar triage or have nurses or other clinical staff for whom formal triage is within their scope of practice, the use of LLM holds great promise for triaging UC patients on arrival when this is beyond the scope of the front desk staff. ■

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Improving Staff Engagement and Retention

Take Home Point: Working culture, physical working environment, pathways to care, and supportiveness of leadership represent the core areas of concern for ED workforce development to improve staff engagement and worker retention.

Citation: Daniels J, Robinson E, Jenkinson E, et al. Perceived barriers and opportunities to improve working conditions and staff retention in emergency departments: a qualitative study. *Emerg Med J.* 2024; 41:257–265

Relevance: Through the pandemic and beyond, record numbers of healthcare professionals have left clinical practice, with emergency medicine (EM) being the most affected specialty. UC has also faced severe staffing shortages, likely for similar reasons. Identifying the pain points for clinicians will enable organizations to improve retention that allows for ongoing quality of care provision. Slowing turnover is important not only to ensure ongoing UC center function, but also to mitigate stress for remaining staff associated with high rates of turnover.

Study Summary: This was a qualitative study involving online focus groups with ED staff (physicians, nurses, advanced care practitioners) of all levels of experience and professional backgrounds from across the United Kingdom (UK) to gain understanding of participant perspectives and views. Profession-specific focus group interviews were

conducted online using a semi-structured topic guide with the contents recorded, transcribed, and stored securely. Directive content analysis was applied to the data to identify common themes from participant responses, using deductive codes to identify key concepts.

The authors used data from 33 participants of the initial 116 clinical staff who completed the eligibility consent form and survey. Four key themes were identified which included: "culture of blame and negativity," "untenable working environments," "compromised leadership" and "striving for support." These issues were perceived to play a disproportionately influential role in participants' ability to find their work sustainable. These also were the factors that most influenced their well-being and, importantly, their intention to leave. Leadership behavior and attitudes have a highly influential role across these themes and is unequivocally vital to workforce transformation; however, this is an area that has been largely neglected.

Editor's Comments: The small size and low proportion of subjects completing the survey limits the data's generalizability. The majority of the participants were female and Caucasian, with views of males and people of color less represented. The focus of the study on EM clinicians in the UK also limits generalizability to other healthcare systems and nations with alternate healthcare delivery structures. Regardless, there were common themes that emerged, and UC administrators would be wise to be mindful of the work environment of their centers if they truly hope to mitigate clinician burnout and turnover. ■

Is 4.5 Hours from Last Known Well Time the Appropriate Upper Limit for Thrombolysis in Patients with Ischemic Stroke?

Take Home Point: In this study, treating patients with large vessel occlusive ischemic strokes (CVA) between 4.5 and 24 hours of symptom onset with tenecteplase was shown to improve disability-free recovery, but resulted in higher rates of symptomatic intracranial hemorrhage (ICH). The important message for UC clinicians is really that the new meaningful "last known well" time that should prompt immediate ambulance transport for suspected stroke patients is now 24 hours. Additionally, it is important for UC clinicians to be aware of which hospitals in their area, if any, may offer endovascular interventions to ensure that patients who may potentially be candidates for endovascular intervention are referred to the most capable local facility.

Citation: Xiong Y, Campbell B, Schwamm L, et. al. Tenecteplase for Ischemic Stroke at 4.5 to 24 Hours without Thrombectomy. *N Engl J Med*. 2024 Jun 14. doi: 10.1056/NEJMoa2402980. PMID: 38884324.

Relevance: The present American Heart Association (AHA) guidelines for treatment of ischemic strokes are for the use of systemic thrombolytics (i.e. tPA) in patients without contraindications who were last observed to be at their baseline within 4.5 hours. Many patients present in a somewhat delayed fashion, limiting treatment options to mitigate long-term disability from ischemic CVA.

Study Summary: This was a phase 3, multicenter, prospective, open-label, randomized, blinded-outcome-assessment trial at 58 centers in China. Adult patients >18 years old who had stroke—including stroke on awakening and unwitnessed stroke—were recruited within 4.5 to 24 hours after the time that they were last known to be at their baseline. Patients were randomly assigned in a 1:1 ratio to receive systemic intravenous (IV) tenecteplase or standard medical treatment (control). The IV tenecteplase group received a bolus administered over a period 5 to 10 seconds at a dose of 0.25 mg per kilogram (maximum dose, 25 mg) immediately after randomization. The control group received antiplatelet therapy (i.e., standard medical treatment) at the discretion of the investigators. The primary outcome was the absence of disability (defined as a score of 0 or 1 on the modified Rankin scale) at 90 days.

The authors recruited 516 patients into the trial; 264 were assigned to receive tenecteplase, and 252 to receive standard medical treatment. They found the percentage of patients who had no disability at 90 days was 33.0% in the tenecteplase group as compared with 24.2% in the standard-treatment group (relative rate, 1.37; 95% confidence interval [CI], 1.04 to 1.81; P=0.03). Symptomatic intracranial hemorrhage within 36 hours after treatment occurred in 8 patients (3.0%) in the tenecteplase group and in 2 patients (0.8%) in the standard-treatment group (relative rate, 3.82; 95% CI, 0.82 to 17.87). The incidence of other adverse events and serious adverse events did not differ substantially between the 2 groups. Four patients in the Tenecteplase group and five patients in the control group also underwent endovascular retrieval procedures.

Editor's Comments: This study has a number of limitations and is not directly relevant to care provided in UC centers,

however, it is important for UC clinicians to be aware of changes in how acute strokes may be treated. Among the limitations, this study was conducted in China where ischemic CVA is more often thrombotic rather than embolic (i.e. related to atrial fibrillation and/or structural heart disease). The window of 4.5 – 24 hours is large. It is unclear if patients who benefited received tPA at hour 5 or hour 23 from the data. Furthermore, these were only large vessel occlusive (LVO) ischemic CVA, which is the minority of cases. Many recent studies have shown that patients with LVO CVA often benefit from early endovascular intervention (i.e. "clot retrieval"), however, this not used as a comparator in this study. ■

Are Vital Sign Measurements Subject to Bias?

Take Home Point: While thought of as objective, vital signs data are affected by human factors (i.e., bias) and these biases may impact the care patients receive.

Citation: Kleinig O, To M, Ovenden C, et. al. Vital sign measurements demonstrate terminal digit bias and boundary effects. *Emerg Med Australas*. 2024 Feb 27. doi: 10.1111/1742-6723.14395.

Relevance: Vital signs are important data points for healthcare practitioners. However, the reliability of vitals depends on the practices of the humans recording them and the fidelity/agreement between actual recorded values and the values measured.

Study Summary: This was a retrospective cohort study of patients admitted to general medicine and acute medical units at a tertiary hospital in South Australia. All recorded values for selected vital signs (heart rate [HR], respiratory rate [RR], oxygen saturation [SpO2], and systolic blood pressure [SBP]) were collected from electronic medical records (EMR) over a 2-year period. The most common methods for recording vital signs in the hospital were observation for RR, non-invasive automatic blood pressure cuffs for SBP and HR, and associated pulse oximetry monitors for SpO2. Polynomial regression was used to determine underreporting of out-of-range (i.e., abnormal) values and overreporting of values ending in 0, 2, or 5.

Records for 15,734 individual visits were included in the study, including 11,746 unique patients. The authors noted a total of 749,941 HR, 644,600 RR, 757,726 SpO2 and 572,515 SBP measurements were recorded. They found HRs of 60 ($P < 0.001$) and 99 ($P < 0.001$)—each at the boundaries of the "normal" range—were over-recorded. Even numbers were 26.1% more likely to be recorded than odd numbers ($P < 0.001$). RR measurements demonstrated no boundary effects, including at 20, the upper boundary of normal ($P > 0.1$). SpO2 demonstrated a boundary effect at 95% ($P = 0.003$), corresponding to the lowest possible number prior to the threshold for escalation of monitoring. SBP recordings demonstrated terminal digit biases and boundary effects. Even numbers were 18.8% overrepresented ($P < 0.001$), and multiples of 5 were 34.9% overrepresented ($P < 0.001$).

"Vital signs are important data points for healthcare practitioners. However, the reliability of vitals depends on the practices of the humans recording them."

Editor's Comments: The study was conducted at a single center, therefore it is likely that the biases observed are contributed to by local factors and hospital policies. The study did not evaluate the clinical impact of these biases, nor did it assess whether clinicians may have been conscious of their behaviors. The study does highlight the human factors behind recording data and the implications of arbitrary vital sign cutoffs which compel certain actions. For example, in the hospital in the study, an SpO2 <95% mandated increased monitoring of patients which is burdensome for patients and clinicians. This speaks to the unexpected consequences of clinical policies which compel extra work for clinicians without rational justification. ■

Is Blood on a Urine Dip Useful in Risk Stratifying Pediatric Blunt Abdominal Trauma?

Take Home Point: Microscopic hematuria did not prove clinically useful as a marker for differentiating clinically important intra-abdominal injuries (ci-IAI) in this retrospective pediatric blunt abdominal trauma study.

Citation: Papillon S, Pennell C, Bauer S, et. al. Presence of Microscopic Hematuria Does Not Predict Clinically Impor-

tant Intra-Abdominal Injury in Children. *Pediatric Emergency Care*. Publish Ahead of Print. doi: 10.1097/PEC.0000000000003210

Relevance: Traditional teaching and dogma in pediatric blunt abdominal trauma have suggested CT imaging is warranted if there is any degree of hematuria in children with blunt abdominal trauma. However, data from prior studies have called into question the significance of asymptomatic microscopic hematuria as its presence in isolation rarely is associated with injuries requiring intervention.

"Vesicles and pustules are common in neonates and young infants. There are no specific evidence-based guidelines guiding the work-up of afebrile infants with this issue."

Study Summary: This was a retrospective chart review among children presenting with a blunt abdominal mechanism of injury at a single, level I pediatric trauma center in the United States. Data collected included patient demographic information, mechanism of injury, clinical symptoms, vital signs at presentation, physical examination findings, laboratory data, injury, and radiographic findings. The primary outcome was a composite end point termed "clinically important intra-abdominal injury" (ci-IAI) which occurred if patients required ≥2 nights admission, received blood or blood products, or required therapeutic angioembolization or surgery.

The authors identified 240 patients who presented with blunt abdominal trauma during the study period, of which 165 patients had complete accompanying urinalysis (UA) for the same visit. 45 patients had microscopic hematuria and 120 had a normal UA. Three patients with normal UA had ci-IAI, while 2 patients with microscopic hematuria had ci-IAI. The authors found that urinalysis as an added test for IAI resulted in many more false positives without identifying ci-IAI. All children with ci-IAI had either abnormal findings on physical exam and/or abnormal liver function tests (LFT) or pancreatic enzymes. No child with a ci-IAI had isolated microscopic hematuria.

Editor's Comments: Although this study has interesting results, it has limited generalizability due to the small sample size and being conducted in a tertiary pediatric trauma setting. It is likely, for example, that these patients were much more significantly injured than would be expected to present to a UC center. While this does not offer definitive evidence of the inutility of UA for screening for renal injury after blunt trauma in children, the fact that no patient with ci-IAI had isolated microscopic hematuria coupled with the fact that over 25% of all patients had microscopic hematuria suggests that use of urine dip for risk stratification is much more likely to beget additional work-up without additional benefit. ■

This Afebrile Infant Has a Rash – Now What?

Take Home Point: In afebrile infants with pustules and/or vesicles, noninfectious etiologies were diagnosed two-thirds of the time and infection one-third of the time. Most of the infections were superficial and herpes simplex virus (HSV) was the culprit in <10% of cases.

Citation: Yun S, Cotton C, Faith EF, et al. Management of Pustules and Vesicles in Afebrile Infants ≤60 Days Evaluated by Dermatology. *Pediatrics*. 2024;154(1): e2023064364

Relevance: Vesicles and pustules are common in neonates and young infants. There are no specific evidence-based guidelines guiding the work-up of afebrile infants with this issue.

Study Summary: This was a multicenter, retrospective cohort study using data obtained from the electronic medical records (EMR) of children ≤60 days of age who received a pediatric dermatology consultation at 1 of 6 academic pediatric centers across the US. Afebrile infants who had skin lesions documented as pustules, vesicles, and/or bullae on manual review of medical records were included. Serious bacterial infection (SBI) was defined as bacteremia, urinary tract infection, or meningitis.

The authors identified 183 patients from their review, 73% of the patients were born at full-term. Of the 183 patients, 124 (67.8%) infants presented with pustules; 57 (31.1%) with vesicles; and 19 (10.4%) with bullae. Lesions most commonly were identified on the head (113 patients or 61.7%). In the EMR data, 83 (45.3%) patients had lesions on the trunk, 80 (43.7%) on the extremities, 47 (25.7%) in the diaper area, and 22 (12.0%) on skin folds. Also, 95 subjects (51.9%) had more than 1 affected site.

Forty of the 183 patients were evaluated by dermatology in the ED and 21 of these patients (52.5%) were admitted

to the hospital. Seventy-one (38.8%) infants had infectious etiologies and 122 (66.6%) non-infectious etiologies. Among the non-infectious etiologies, neonatal cephalic pustulosis was the most common (36 cases) with erythema toxicum neonatorum (18 cases), and irritant contact dermatitis (11 cases) being the other most common non-infectious diagnoses. No patient in this cohort was found to have an SBI detected that could be attributed to a skin source. No cerebrospinal fluid (CSF) culture nor blood culture returned a pathogen. Among the infectious diagnoses, superficial gram-positive infections (35 cases) were the most common etiology. Nine of the 127 infants evaluated for HSV (7.1%) had positive confirmatory testing.

Editor's Comments: This study has many important limitations. Notably, this was a retrospective study of infants ‹60 days of age who were afebrile and seen by a pediatric dermatologist in a tertiary care hospital. This would likely bias towards these subjects having more concerning rashes and/or the study population having more significant underlying medical issues than an average UC patient. It was assumed that if the patient did not return to the participating institution after discharge, they did not subsequently develop an SBI, herpes simplex virus infection, or other disseminated infection. Finally, it is critical to recognize that patients with measured or reported fever were excluded. This data offers some reassurance for the evaluation of younger afebrile infants that no patients in this cohort had CSF or bloodstream infection, however, should not be applied if there is a measured or reported fever. ■

Attempting to Understand the Molecular Basis of COVID-19 Infection

Take Home Point: This mechanistic study provides insights into the dynamics of immune responses to exposure of the SARS-CoV-2 virus in previously unvaccinated and uninfected individuals. Interestingly, nearly half of the individuals exposed to SARS-CoV-2 who had no evidence of immunity still did not develop clinical or laboratory evidence of infection.

Citation: Lindeboom R, Worlock K, Dratva L, et. al. Human SARS-CoV-2 challenge uncovers local and systemic response dynamics. *Nature*. 2024 Jul;631(8019):189-198. doi: 10.1038/s41586-024-07575-x

Relevance: There remain ongoing key questions as to why certain individuals got infected with COVID-19, some more severe than others, while others did not.

"There remain ongoing key questions as to why certain individuals got infected with COVID-19, some more severe than others, while others did not."

Study Summary: This was a human SARS-CoV-2 challenge study of young adults who were seronegative for previous COVID infections. These healthy volunteers were intranasally inoculated with a wild-type pre-Alpha SARS-CoV-2 virus strain (SARS-CoV-2/human/GBR/484 861/2020) in a controlled environment.

Following inoculation, 6 participants from the cohort developed a sustained infection as defined by at least 2 consecutive quantifiable viral load detections by nasal and/or throat PCR along with symptoms, 3 produced multiple sporadic and borderline-positive polymerase chain reaction (PCR) tests between day 1.5 and day 7 after inoculation, and 7 remained PCR-negative throughout the quarantine period, which indicated that these individuals successfully prevented the onset of a sustained or transient infection. In sustained infections, the authors observed global activation of interferon signaling that affected all circulating immune cells. There were higher levels of the protein HLA-DQA2 in multiple lineages of immune cells called antigen-presenting cells, both in the nasal mucosa and in blood in people who had transient or abortive infections. This suggests a non-typical role of this MHC II molecule in innate resistance to COVID-19 infection.

Editor's Comments: This was a small sample size, mechanistic study with little direct clinical utility. These immunology and molecular biology studies do, however, provide valuable insights into the intricacies and complexity of determining which exposed individuals develop clinical disease and how their immune systems respond. ■

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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.

47-Year-Old With Right Hand Pain

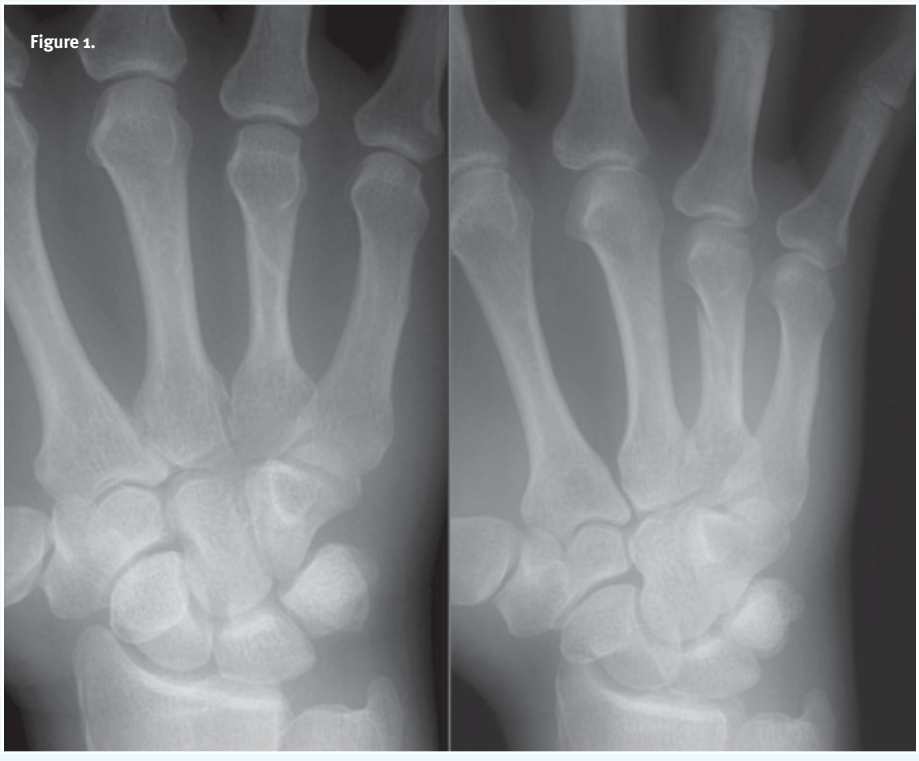


Figure 1.

A 47-year-old man presents to urgent care after trying out a new cardio boxing class at the local recreation center. He indicates that his right hand has been hurting ever since he hit a punching bag this morning, and the pain has been getting worse. X-rays are ordered, both anterior posterior (AP) and oblique views.

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

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

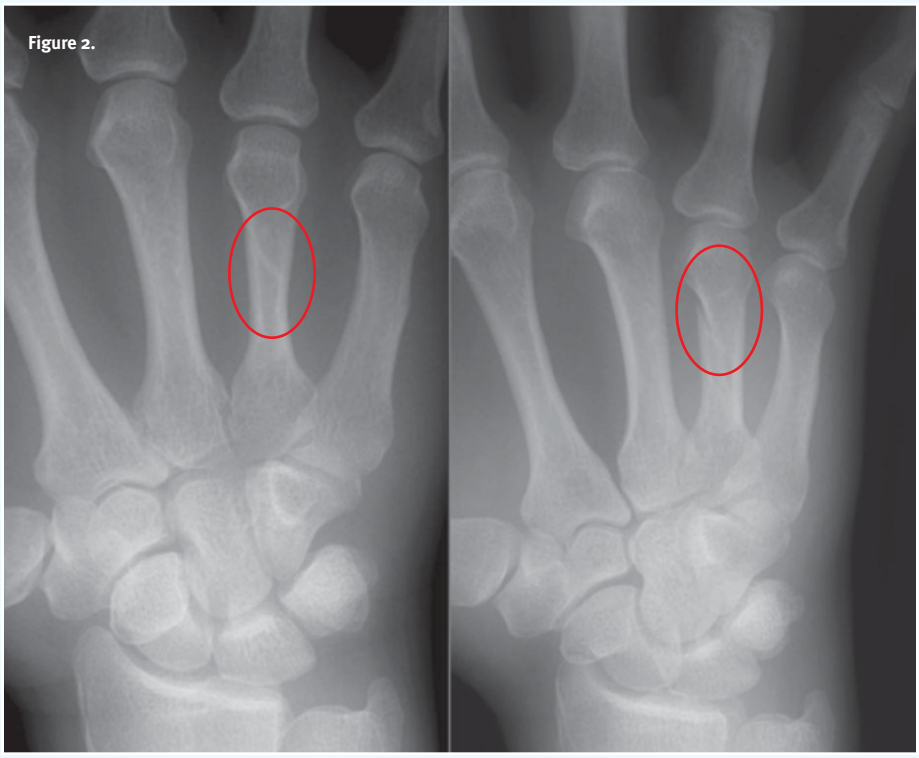


Figure 2.

Differential Diagnosis
- Hand sprain
- 4th Metacarpal (barber pole) fracture
- 5th Metacarpal (boxer's) fracture
- Ulnar styloid avulsion fracture

Diagnosis
This is a 4th metacarpal shaft fracture, specifically a "barber pole" fracture. Findings on the AP x-ray reveal a spiral band of sclerosis that has the appearance of a barber pole as well as a displaced spiral fracture of the 4th metacarpal on the oblique view. This type of barber pole fracture is common and may involve fractures of the metacarpal head, neck, and/or shaft. The mechanism of injury for a shaft fracture includes axial loading or direct trauma (eg, clenched fist and solid surface impact). Rotational and/or torsional force may also result in this type of injury.

What to Look For
- Metacarpal fractures are most often the result of direct trauma but may also occur from repetitive stress
- Locations metacarpal fractures include the head, neck, shaft and base of the metacarpal
- Key examination components include evaluation for bony deformity, malrotation, skin breakage and neurovascular compromise

Pearls for Urgent Care Management
- Metacarpal fractures with significant angulation first require reduction
- Treatment includes gutter splint immobilization for nondisplaced metacarpal fractures with minimal angulation and no malrotation; immobilize metacarpophalangeal joints in 70-90° of flexion and splint for at least 4 weeks
- Referral to orthopedics is indicated for open fractures, unacceptable angulation, malrotation, and multiple fractures for consideration of operative management

64-Year-Old With Facial Lesion

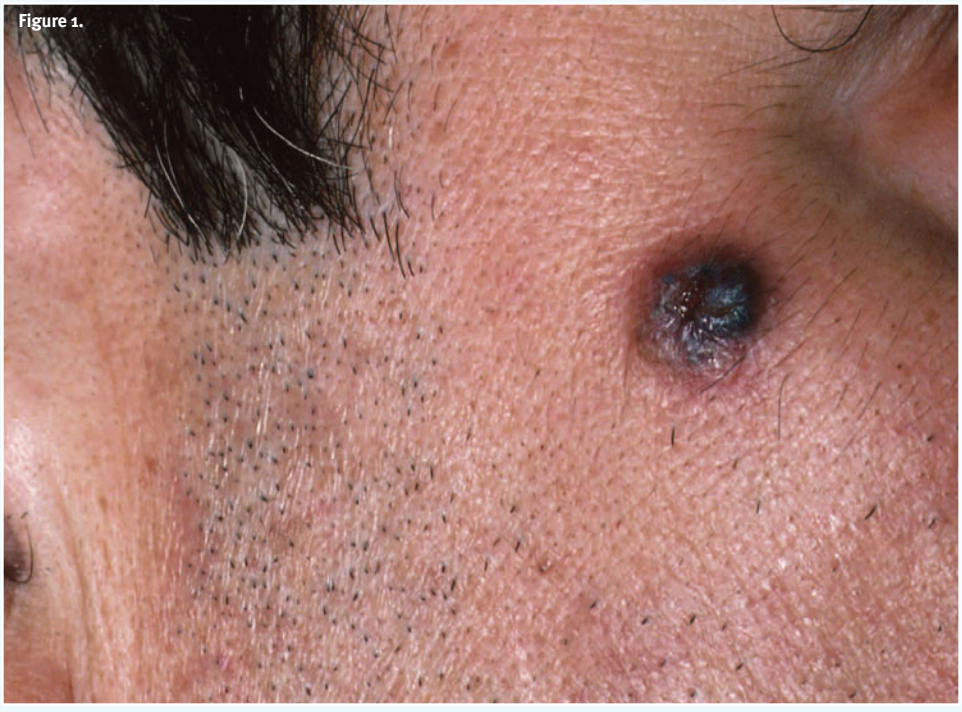


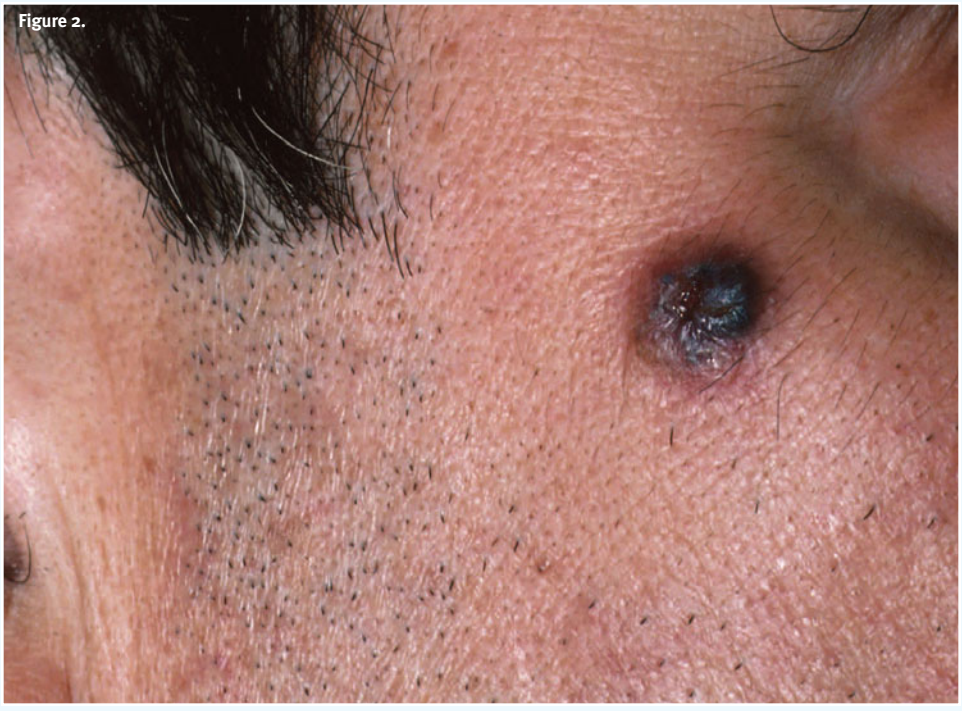
Figure 1.

A 64-year-old man presents to urgent care with a lesion on his face for the last 2 months. On examination, a shiny, eroded, blue-black nodule was seen on his right cheek. He is a postal worker. Histopathology examination showed aggregates of melanin and melanocytes within sheets of basaloid keratinocytes with peripheral palisading and surrounding clefts within a fibromyxoid stroma containing melanophages.

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

- Blue nevus
- Cutaneous squamous cell carcinoma
- Pigmented basal cell carcinoma
- Superficial basal cell carcinoma

Diagnosis

The correct diagnosis in this case is pigmented basal cell carcinoma (BCC)—the most common type of cancer in humans. A neoplasm of basal keratinocytes, BCC is rarely fatal. Accumulation of melanin and melanophages in the BCC tumor nodules produces clinically pigmented BCCs, which can occur on any site but most commonly on the head and neck. The condition has greater incidence in older individuals with a median age at diagnosis of 68 years. Pigmented BCCs are observed twice as frequently in Hispanic patients as compared to White patients, and environmental factors such as indoor tanning or exposure to ionizing radiation also increase risk of BCC.

There are several subtypes of BCC, including nodular; superficial; infundibulocystic; fibroepithelial; morpheaform (sclerosing, desmoplastic); infiltrative; micronodular; and basosquamous.

What to Look For

- Nodular BCC typically presents as a pink, pearly, flesh colored papule which may be translucent with visible telangiectatic vessels. It may also be pigmented as in the case above. It frequently has a rolled border and an ulcerated center.
- Superficial BCC typically presents as a light red to pink flesh-colored macules, patches, or thin plaques that may have a slight scale. These may also be pearly or shiny.

Pearls for Urgent Care Management

- Referral to dermatology for biopsy and eventual surgical excision is indicated
- Topical therapies are considered second-line

CLINICAL CHALLENGE: CASE 3

52-Year-Old With Palpitations

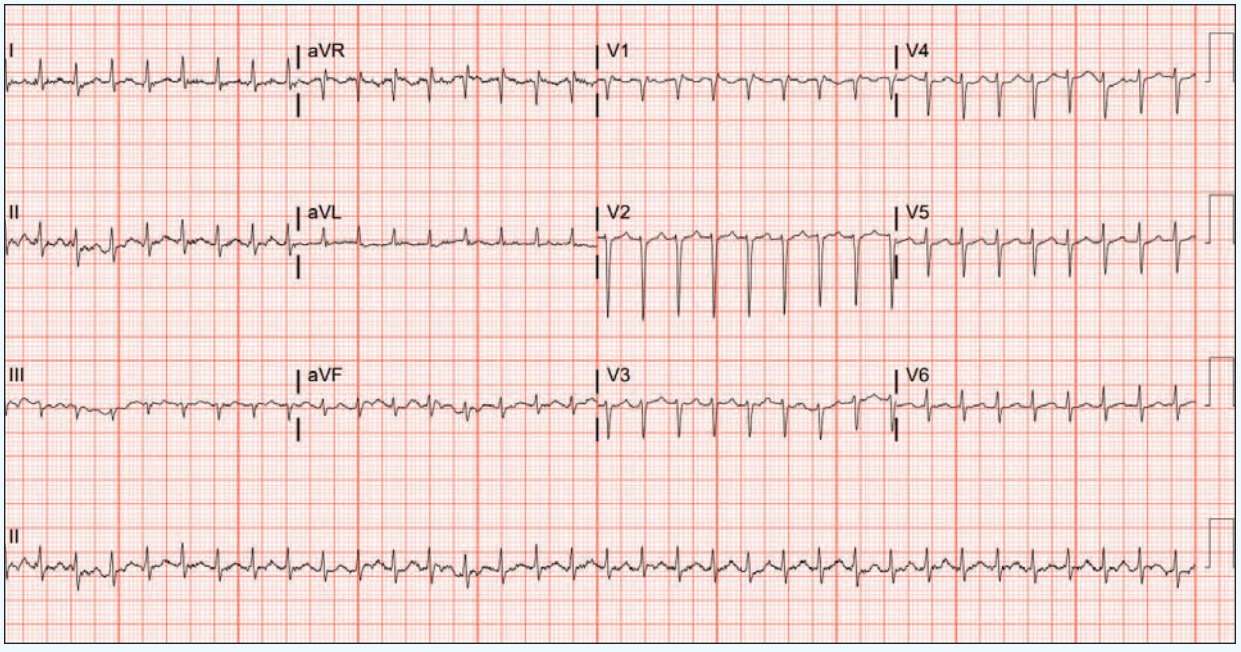


Figure 1: Initial ECG

A 52-year-old male presents to urgent care complaining of palpitations. 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

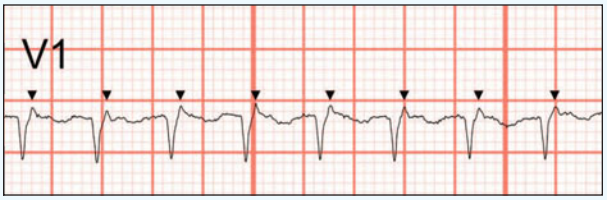


Figure 2: Pseudo-R waves in V1 represent retrograde P' waves (arrowheads).

Differential Diagnosis

- Atrioventricular nodal reentrant tachycardia
- Sinus tachycardia
- Atrial tachycardia
- Atrial flutter

Diagnosis

The diagnosis in this case is atrioventricular nodal reentrant tachycardia. The rate is tachycardic at 200 beats per minute with a narrow QRS and a regular rhythm. P waves cannot be clearly delineated; however, retrograde P' waves can be seen immediately following the QRS complexes in V1, where they create a pseudo-R appearance (**Figure 2**).

Discussion

The differential for narrow complex regular tachycardia includes sinus tachycardia, atrioventricular nodal reentrant tachycardia (AVNRT), atrioventricular reentrant tachycardia, atrial flutter, and atrial tachycardia. P waves can aid the diagnosis but are often obscured by the preceding P waves at faster rates. If P waves are present in a sawtooth pattern (especially in the inferior leads), atrial flutter is likely (2:1 conduction usually has a ventricular response rate around 150). AVNRT is a micro-reentrant circuit within the atrioventricular node that typically has a rate between 140 and 220 beats per minute. While most cases of AVNRT do not have visible P waves, up to one-third of AVNRT cases will have retrograde P' waves immediately following the QRS complex, giving the appearance of a "pseudo-S wave" in the inferior limb leads, or a "pseudo-R wave" in V1 (**Figure 1**).[1–3] The presence of tachycardia beyond the maximum expected heart rate (220 minus the age), and lack of R-R variation also favor AVNRT.

Treatment of AVNRT includes atrioventricular nodal blocking agents (eg, adenosine, diltiazem, metoprolol, amiodarone) or maneuvers to increase vagal tone.[3] Vagal maneuvers are techniques to increase the parasympathetic tone and can be helpful for treating certain arrythmias; examples include the Valsalva maneuver, carotid massage, and gagging or vomiting. The modified Valsalva technique includes a passive leg raise after the Valsalva strain and is reported to be nearly 50% effective.[4] While cardioversion is recommended for unstable patients, this equipment is rarely available in Urgent Care, so 911 activation is indicated. Having an automated external defibrillator (AED) near the patient while awaiting ambulance transport is appropriate, however, applying the pads is not indicated unless the patient loses consciousness. This patient's rhythm converted to sinus after administration of adenosine.

Atrioventricular reentrant tachycardia involves an accessory pathway, the stigmata of which can be seen on the resting ECG (ie, delta wave and shortened PR interval). Atrial tachycardia involves an ectopic focus that delivers impulses typically at a rate of 150 to 250 beats per minute.[5] With atrial tachycardia, the P wave axis will be abnormal (usually down in aVR and up in lead II indicating non-sinus activity).

What to Look For

- AVNRT is narrow, fast, and regular
- Rates typically exceed the maximum expected heart rate (220 minus the age)
- One-third of cases will have retrograde P' waves immediately following the QRS complexes in V1 or lead II

Pearls for Initial Management, Considerations for Transfer

- When AVNRT is suspected, attempt bedside vagal maneuvers first
- If vagal maneuvers are unsuccessful, medications can be attempted if available; otherwise, transfer to a capable facility
- If unstable, immediate electrical cardioversion is indicated

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Opening Your Urgent Care While Contracted as a Primary Care Practice

Alan A. Ayers, MBA, MAcc

Over the past 2 decades, urgent care has been on the forefront of consumerism. Increasingly, healthcare consumers are realizing how much they are contributing to the cost of healthcare delivery through taxes and payroll premium deductions, and therefore, they're more motivated than ever to attain the full value of the benefits they've paid for. Urgent care has remained focused on the consumers' sense of value by appealing directly to patients as clinics market their convenient locations, diagnostic capabilities, and extended night/weekend hours.

However, regardless of their reasons for preferring an urgent care center, patients simply will not choose a provider that requires them to pay out-of-pocket for what they believe is a covered benefit under their health insurance plan. Given that the vast majority of healthcare is paid by third parties, it's not surprising that patients in the United States generally don't elect to pay directly for healthcare services and therefore will seek in-network providers aligned with their health insurance plan.

Opening an urgent care center with an out-of-network status—even if just for a few weeks until the ink is dry on the payer contracts—could result in financial ruin when patient volume fails to reach reasonable business targets. Volume will suffer if too many patients balk at direct-pay-only situations and walk out or if they are turned away because the center cannot bill their insurance. Long-term, the patient may continue to believe the center is out-of-network, even after the network status is secured.

Contracting as Primary Care

To avoid a disappointing launch, a center should commit to opening with in-network status from at least some of the larger payers in the market. In a highly concentrated area, substantial coverage may be achieved with as few as 2 or 3 major payers. The largest commercial payers in most markets are usually Blue Cross and Blue Shield plans, United Healthcare, Cigna, Elevance (Anthem), and Aetna CVS. Many of the largest commercial payers also operate Medicare Advantage and managed care Medicaid plans. In some cases, urgent care operators have gained access to payer networks—even closed networks—as a result of an acquisition of an in-network provider organization. However, the roll-up process once the transaction is complete takes months, and the ability to add more locations to an existing payer relationship is never guaranteed.

Another option to gain in-network status is to contract with payers as a primary care practice rather than an urgent care practice. However, the business case for doing so must consider some of the challenges in opting for a primary care contract, such as the following.

- **Credentialing:** If the urgent care has hired emergency medicine physicians, for example, there may be limitations on the physician's ability to credential as a primary care provider (PCP).
- **Clinical Workflows:** Primary care contracts often do reimburse for wellness services, physicals, and vaccinations, which are not universally reimbursed in urgent care contracts, thus enabling new revenue streams for the practice. But the services also require clinical workflows that are different from the typical urgent care workflow.
- **Services:** Being listed in insurance directories as "primary care" does set an expectation among members that the center will provide primary care services—which the center may not realistically be able to deliver—such as chronic care management.
- **Inventory:** Supply inventory—especially medication inventory—can change substantially and lead to significant waste when an urgent care takes on primary care services.

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Table 1. National Distribution of Urgent Care Visits by Place of Service

Description	Percent of Visits	Average Net Revenue per Visit
Urgent Care Center	83%	$145
Physician's Office	15%	$133
Rural Health Clinic	2%	$123

Source: Experity EMR Data, 2023. Includes all revenue from insurance-reimbursed visits which include an evaluation and management code.

- **Revenue:** Lower co-pays for primary care office visits offer a marketing advantage versus the higher out-of-pocket responsibility for the patient for urgent care visits, but the lower price point may also result in less revenue.
- **Revenue cycle management:** Whereas urgent care contracts often pay a case rate or fixed fee per visit, in primary care, providers may be in value-based payment contracts or fee-for-service structures, causing less predictable payment and revenue expectations alongside more complex revenue cycle management—including the much larger code sets used in primary care.

Adding Primary Care to Urgent Care

When pursuing primary care contracts as an additional business line for an urgent care center, the simultaneous delivery of services can present unique challenges, such as the following.

- **Visit flow:** Primary care services, especially annual wellness exams, can take longer than expected, interrupting the steady flow of urgent care patients, making wait times longer for walk-ins.
- **Throughput:** Patients presenting in primary care are likely to have multiple complaints to address, which require additional time and expertise to manage and can slow down throughput—often benchmarked at approximately 4 patients per hour for urgent care.
- **Referrals:** Primary care calls for a greater number and variety of referral relationships compared to urgent care, and running both lines of business at the same time can turn the referral process into a heavy lift.

Conclusion

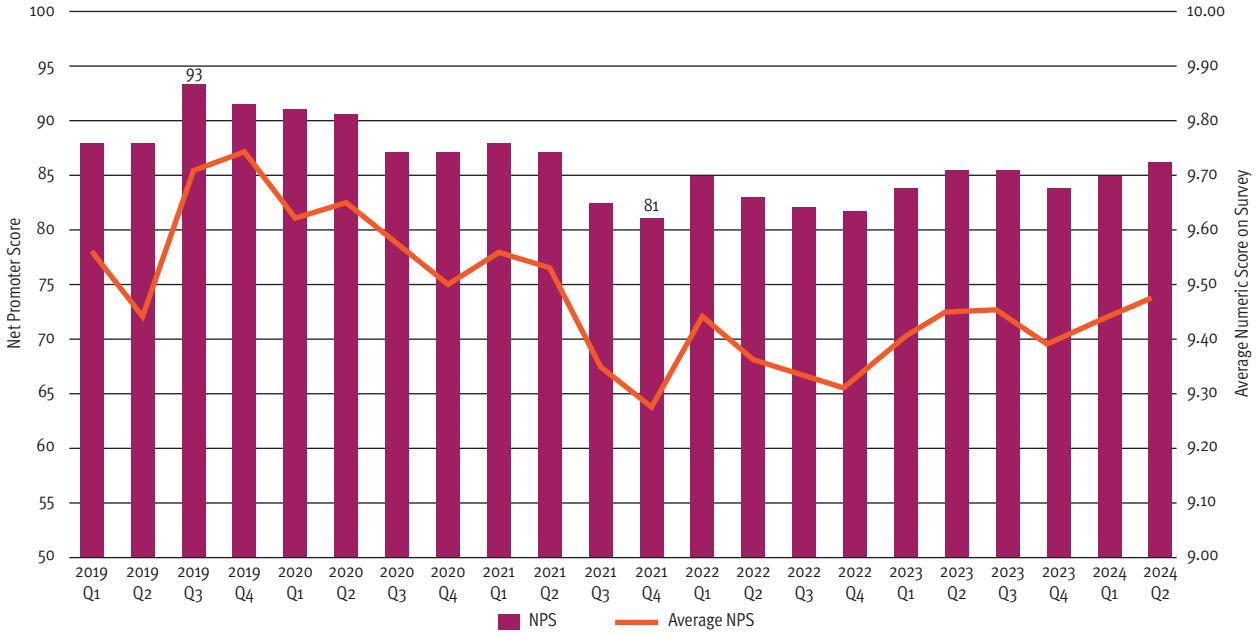
Patients expect their local urgent care to accept their network health benefits. As a consumer-focused healthcare delivery channel, it's nearly impossible for an urgent care to succeed long-term without contracting with the leading health plans in its market from day one.

To mitigate a potentially risky start-up phase, urgent care clinic operators should consider engaging experts to accurately assess the payer landscape, prioritize payers, present contracting alternatives, and devise a workplan that coordinates contracting and credentialing activities to coincide with a timely opening. Leveraging experienced guidance can save time and money. ■

NPS Predicts Success in UC

Alan A. Ayers, MBA, MAcc

URGENT CARE NET PROMOTER SCORES



The net promoter score (NPS) is a customer experience metric devised by business researcher Fred Reichheld, MBA, which measures how likely customers are to recommend a product or service on a scale of 0-10. His 2006 book, *The Ultimate Question: Driving Good Profits and True Growth,* describes NPS as the most predictive metric of a company's future success. As a benchmark, NPS scores are reported on the world's leading brands.

A review of more than 928,000 surveys collected through Experity Patient Engagement demonstrates the movement in NPS for urgent care centers since 2019. Results are reported both as an average and/or combined into a single number between -100 and +100 representing the "net" of "promoters" over "detractors." Promoters are those patients offering highly positive scores of 9 and 10. Detractors are those offering scores of 6 or lower. Obviously, a higher score is more desirable for the average and the net.

Although there has been fluctuation correlated to pandemic visit volume, the average NPS score of 86 indicates patients are still likely to recommend urgent care versus other healthcare options. Looking at the bigger picture, the average healthcare NPS is 58.[1]

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

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