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COLLEGE OF URGENT CARE MEDICINE

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Schools, Kids, and COVID-19: When Is It Safe to Return?

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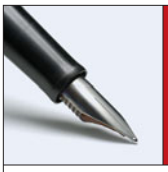

National Urgent Care Clinical Quality Metrics: 'This Is the Way'

NEAL SHIPLEY, MD, MBA, FACEP

Every system is perfectly designed to get the results it gets.

This quotation, commonly attributed to Dr. W. Edwards Deming,[1] has never been more relevant for urgent care (UC) than right now. Considered the original guru of quality improvement, Dr. Deming was explaining why systems must be redesigned if the desired outcomes are not being achieved.

The existing "system" for measuring clinical quality in UC needs an overhaul. It is fragmented and underdeveloped, and lacks the infrastructure required to allow for data aggregation and analysis at a national level, which is necessary before true progress in quality improvement can be expected.

By the Urgent Care Association's count, there are more than 9,000 UC centers in the U.S., collectively experiencing almost 90 million visits annually.[2] This is comparable in scale to the number of emergency departments (approximately 4,000) which experience roughly 145 million annual visits.[3] However, unlike EDs which use commonly agreed upon surrogate measures for quality, UC centers do not track metrics or patient outcomes in any systematic way.

And yet, demonstrating our clinical competence has never been more important. COVID-19 has placed UC centers at the "tip of the spear" for testing and treating millions of patients. Regardless, UC centers have largely not been part of the discussion for a national vaccine distribution program. To take our place at the table with other ambulatory specialties such as Emergency Medicine and Family Practice, we need to advance how we think about quality.

A recent UCA publication entitled *The Quality of Care at Urgent Care Centers* outlined some of the challenges UC facilities face because the existing measures developed for the ambulatory care setting or hospital setting cannot be easily applied to UC centers. However, the real problem, as noted by the authors, is that *"....46% of UC centers assess quality using measures they have developed themselves, and 16.5% do not measure the quality of the care they provide [at all]."*[4]

EDs have developed agreed-upon national benchmarks for clinical quality for multiple conditions such as heart attacks (ACS), strokes (CVA), sepsis, and unplanned readmissions, just to name a few. These have evolved over time to include other measures of high-quality care for serious conditions, efficient use of resources, and diagnostic accuracy. The American College of Emergency Physicians has worked to incorporate several quality measures into the national Physician Quality Reporting System. These comparative data are now widely available to the public and to payers. Prior to this commitment to national standards for clinical quality and transparency, there was no way for those stakeholders, including the clinicians and clinical leaders themselves, to really know how they were doing.

UC, as a burgeoning specialty, would do well to follow the lead of Emergency Medicine. The Institute of Medicine (IOM) has defined six domains of quality:[5]

1. Safety of Care (SC)
2. Effectiveness of Care (EC)
3. Patient-Centered Care (PCC)
4. Timeliness of Care (TC)
5. Care that is Efficient (EFC)
6. Equitable (EQC)

As a specialty, we must embrace this framework and look for opportunities to define these metrics for ourselves—before others are allowed to choose the metrics for us.

One of the lessons from the early days of quality metric use in Emergency Medicine is that there can be unintended consequences (ie, metric use can help one population at the expense of others). This was a "side effect" of the community-acquired pneumonia (CAP) metric, where EDs were graded on their ability to draw blood cultures and start antibiotics within 4 hours of arrival for patients who were ultimately admitted for CAP.[6]

Neal Shipley, MD, MBA, FACEP is Medical Director, Northwell Health—GoHealth Urgent Care.

In an attempt to respond to this metric, EDs began to administer antibiotics for almost any patient with respiratory symptoms, resulting in antibiotic overuse and subsequent resistance without any appreciable positive effect on patient outcomes. At the same time, this also commonly pulled resources away from the care of other patients whose conditions may actually have been more serious simply because they did not have a condition that was part of an arbitrarily and externally defined cohort.

To kickstart this conversation for UC centers across the U.S., I would like to propose several clinical quality metrics to consider. This is not intended to be an all-inclusive list, but we need to start the conversation somewhere. Structural, process, and outcomes measures will all be necessary to fulfill the goal of a national comprehensive quality program.

Some of the metrics proposed below are already widely accepted measures of clinical quality in other domains of healthcare; others have yet to be validated by serious research efforts. Some will be harder to measure than others. However, from our UC organization's experience, many of these metrics can be measured and tracked without excessive effort; we've been doing it for years.

Measuring others still presents a challenge. What we are lacking is a consensus opinion on metrics, which, in turn, would allow for the creation of a national comparative data warehouse for outcomes research. This needs to change. As the expression goes, "If we don't start somewhere, we're going to go nowhere."

So, to begin the brainstorming, I humbly submit a list of proposed quality metrics to consider (with the corresponding domain of quality in parentheses).

- (SC) Appropriate use of EKGs in patients >35 years of age who present with a chief complaint of chest pain
- (SC) Appropriate use of UHCG testing in females between the age of 12 and 55 with a chief complaint of abdominal pain
- (SC) Inappropriate use of oral antibiotics in adult (> 18) and pediatric (<18 years of age) patients
- (SC) Inappropriate use of oral steroids in adult (over 18) and pediatric (under 18) patients
- (SC) Percent of patients who leave UC centers with unaddressed abnormal vital signs
- (PCC) Patient satisfaction measures
- (PCC) Rate of patients whose care plan is communicated back to their PCP
- (PCC) Rate of eligible patients who receive smoking-cessation counseling
- (PCC) Rate of eligible patients who receive obesity counseling
- (EC) Rate of ED transfers from the UC center to the ED
- (EC) Rate of patients seen in UC who present to an ED within 72 hours of urgent care
- (EFC) Rate of imaging misreads that result in a change in management
- (EFC) Appropriate use of urine cultures in patients with UTI
- (EFC) Appropriate use of throat cultures in patients with acute pharyngitis
- (EFC) Appropriate use of imaging studies in selected conditions (eg, asthma, low back pain, knee and ankle injury)
- (TC) Percent of patients seen within 30 minutes of arrival to UC
- (TC) Percent of patients discharged within 60 minutes of arrival
- (EQC) Rate of analgesic prescriptions by race/ethnicity/socio-economic status
- (EQC) Rate of seasonal flu vaccine by race/ethnicity/socio-economic status
- (EQC) Percent of patients with chronic disease (HTN, DM, COPD, CHF) who have a PCP by race /ethnicity/socio-economic status

If we, as an industry, do not pursue continuous quality improvement at a national level, with agreed-upon benchmarks, robust data, structural measures, and outcomes research with full transparency to the public and payers alike, we risk losing our opportunity to take charge of building a better system for UC delivery.

Whether you are a part of a deeply integrated network of urgent cares within a large healthcare system or a small independent practice, it is incumbent upon all of us to seek ways to incorporate clinical quality improvement into our business model.

To make quality improvement a priority, we need to pull on the all the levers we have by engaging the full array of stakeholders: the general public, local, state, and federal regulators, the UC accrediting and certifying bodies, and the owners and operators of our centers. Without a national database into which we can all submit our quality data and set thresholds for performance improvement, this goal will be virtually impossible to achieve. Now is the time to demand this system at a national level; otherwise, we will continue to have "the system" we have and we will continue to "get the results we get."

Our patients deserve better. We deserve better, too. ■

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ORIGINAL RESEARCH

NEXT MONTH IN *JUCM*

If you wanted to be a dentist, you would have gone to dental school. The fact that you didn't doesn't preclude patients who really do need urgent medical care from presenting with possible odontogenic infections, however. If you're not prepared, the outcome could be catastrophic. Read the lead clinical article in the March issue of *JUCM* to get a better understanding of what you can do to prepare yourself and your team.

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Mission Statement
JUCM The Journal of Urgent Care Medicine (ISSN 19380011) supports the evolution of urgent care medicine by creating content that addresses both the clinical practice of urgent care medicine and the practice management challenges of keeping pace with an ever-changing healthcare marketplace. As the Official Publication of the Urgent Care Association and the College of Urgent Care Medicine, *JUCM* seeks to provide a forum for the exchange of ideas regarding the clinical and business best-practices for running an urgent care center.

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We are all well aware at this point that the COVID-19 pandemic is going on much longer than we ever could have anticipated. What we're still learning, among many other things, is the complex way the virus affects children. For one thing, can we count on telltale symptoms to indicate when a child is no longer "sick" with the virus? Is a test even able to tell us that?

These essential questions are part of a new study we're happy to share with you in this issue. Prolonged Duration of Pediatric COVID-19 (page 23), by **Katharine Miao, MD, FACEP; Frank Illuzzi, MD, FACEP, CPE;** and **Alexander Hwang** uses data culled from cases presenting to CityMD locations in the New York metropolitan area to determine the mean length of time children may continue to test positive for SARS-CoV-2 via PCR after an initial positive test. It's a groundbreaking study.

All three of the authors are affiliated with SummitCityMD.

Speaking of vexing questions, what is your comfort level when it comes to discharging a patient who presented with chest pain? Even if they came through your assessment with flying colors, there's probably at least a seed of doubt about whether they need further assessment.

You're not alone, as the second original research article in this issue shows. Most Clinicians Are Still Not Comfortable Sending Chest Pain Patients Home with a Very Low Risk of 30-Day Major Adverse Cardiac Event (MACE), which starts on page 17, was contributed by **Michael B. Weinstock, MD; Michael Pallaci, DO; Amal Mattu, MD; Cameron Berg, MD; Paul Jhun, MD;** and **Jeff Riddell, MD**

Dr. Weinstock works at Adena Health System; in the Department of Emergency Medicine, Wexner Medical Center at The Ohio State University; and in the Ohio Dominican University Physician Assistant Studies Program. He also lends his expertise to Emergency Medicine Reviews and Perspectives (EM RAP), Urgent Care Reviews and Perspectives (UC RAP) and to *JUCM* as our senior editor, clinical content. Dr. Pallaci also works at Adena Health System. Dr. Mattu is at the University of Maryland, Dr. Berg at North Memorial Health Care, Dr. Jhun at the University of California San Francisco and Dr. Riddell, at the Keck School of Medicine of the University of Southern California.

Our lead clinical article this month addresses a less dramatic, but far more common presentation in the urgent care setting. *Children presenting with ear pain* is one of the quintessential answers to the question of when it's appropriate to visit an urgent care center. It's a mistake to assume the cause is otitis media or otitis externa, however, as **Sadia Ansar, MD** (Department of Urgent Care, Division of Primary Care, Children's Wisconsin); **Timothy Martin, MD** (Department of Otolaryngology, Children's Wisconsin; Medical College of Wisconsin); and **Elizabeth Flasch, MSN, APNP, PNP** (Department of Urgent Care, Division of Primary Care, Children's Wisconsin; Marquette University College of Nursing) explain in If Not Otitis Externa...Then What? It starts on page 11.

In this month's case report, A Diagnosis Suspected by Mechanism of Injury: Soft Tissue Infection Due to *Aeromonas hydrophila* and *Enterobacter asburiae* Following Human Wastewater Exposure (page 31), we get a reminder that context is everything when trying to determine both the extent of an injured patient's wounds and the possible consequences on which you will base your treatment decisions. Authors **Cayla Baker, PA-C** and **Christina Gardner, DHSc, MBA, PA-C** are both affiliated with Carilion Clinic; Dr. Gardner also works at Jefferson College of Health Services.

Trouble of a different sort could befall urgent care operators who trust the wrong third-party labs. Are you going to be on the hook for mistakes they make? This is the central question of Liability of an Urgent Care Center for Third-Party Labs (page 27), by **Alan A. Ayers, MBA, MAcc**. Mr. Ayers is vice president of strategic initiatives for Experity.

If you got this far without seeing this issue's Urgent Perspectives editorial, we suggest you turn back to page x and read National Urgent Care Quality Metrics: 'This is the Way.' It addresses the dire need for urgent care-specific benchmarks that can be shared with payers, the general public, and any party with whom urgent care operators strive to strike up partnerships. It was contributed by **Neal Shipley, MD, MBA, FACEP**, medical director, Northwell Health – GoHealth Urgent Care.

Something else of key importance when working with payers: ensuring you receive every penny of reimbursement for the services you provide. The challenge is that they're constantly changing. Fortunately, **Monte Sandler**, executive vice president, revenue cycle management for Experity provides an update in Revenue Cycle Management (page 45). This is especially timely information as rollout of the COVID-19 vaccines continues.

Finally, in Abstracts in Urgent Care (page 35), **Avijit Barai MBBS, MRCS, MSc (Critical Care), PgCertCPU, FRNZCUC** shares insights into new literature on septic knee joints in adults, recurrent cellulitis, assessing for MACE with and without a troponin, and various aspects of the COVID-19 that relate well to urgent care. Dr. Barai works in the ED at Christchurch Hospital in New Zealand. ■

Call for Peer Reviewers

If you would like to support the advancement of urgent care-specific literature by serving as a peer reviewer for *JUCM*, please send an email, including your CV, to editor@jucm.com.

Love Will Keep Us Together

LOU ELLEN HORWITZ, MA

Urgent care people are a competitive bunch, but that wasn't always the case. In the very early days of urgent care it was quite different. Everyone was so new at this that no one knew anything, so everyone shared everything. "Education" in those days meant that someone shared a thing they had tried that had worked. No one worried about competing with each other because there weren't enough of us yet to get in each other's way.

Over the next decade, as urgent cares multiplied across the land and we became the private equity flavor of the month (for 120+ months and counting), that trust and sharing slowly eroded.

It was exciting to be part of that growth, but as we all grew up there was also a sense of loss. We lost some of our innocence, our love of a good time, and our willingness to share our Secret Sauce recipes.

After a few years I think we grew to realize there isn't actually such a thing as Secret Sauce. We came to understand that we each continued to struggle with the same things as our peers, and that our industry as a whole could benefit from collaborative problem-solving—but we didn't know how to do that anymore. We didn't know how to find our way back to each other.

Coronavirus took care of that, in spades. Once again, we knew nothing. Once again, we were the underdogs of the healthcare industry. Once again, you needed each other, and once again you came through for each other, also in spades. By mid-January you were even vaccinating each other's teams for nothing, because no one else remembered we were out here. You found your way back to each other.

If you were part of the COVID-19 Listserv, you had a front-row seat to the outpouring of confusion, frustration, experimentation, solutions, and connections that were reforged as all of urgent care navigated through the continual uncertainties. Even if you weren't on the Listserv, you've lived it every day—urgent care leaders coming together across towns, counties, states, regions, and the nation as we've fought to get our contributions and needs acknowledged, our questions answered, and our voices heard. We're still fighting, but we are fighting TOGETHER—as we should be.

Of course, we're still a competitive bunch, and eventually we're going to get COVID-19 managed...so then what? Do you really want to return to the manners we devolved into over the past decade—or can we grow into our next phase in a better way? Competition is here to stay—from within and without—and demanding investors are here to stay. Urgent care's outstanding responsiveness to COVID-19 has only *increased* our value.

I believe the only way urgent care can meet its true potential is for us to come back together, re-fertilize our entrepreneurial roots, and challenge ourselves as an industry to let go of our fears about the future. If we can do that, we can be free enough to return to a place of true leadership in how healthcare should be delivered.

It's scary in the vanguard, but I know that all of you belong there. UCA belongs there. The vanguard is the place for the brave, the creative, and the determined. The disrupters, the independents, and the mavericks who have nonetheless chosen to be up front *together*. Know what else is important for the vanguard? Trust in your fellow mavericks. Trust that they won't turn on you, or turn and run. Trust that even though you are making new friends, forming new partnerships, bringing in new investors, and trying new opportunities...underneath you all believe in the same thing. You all believe in urgent care.

For those of us that love it, there's a part of us that longs for the day everyone else figures out how great it is. We will sit contentedly (perhaps a *bit* smugly) amongst our fellow mavericks witnessing it all click into place. Watching patients finally get the right care at the right time in the right place for the right price. Reading news stories marveling at urgent care providers keeping nonemergencies out of the emergency room. Hearing payers finally understand how we help them *and* their customers.

I know that day will come. I know it because I have the privilege of knowing you. I know it because I have seen, once again, what we can do together. ■

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

CONTINUING MEDICAL EDUCATION

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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.

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CONTINUING MEDICAL EDUCATION

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If Not Otitis Externa...Then What? (page 11)

1. **First-line treatment of abscess related to preauricular sinuses is:**
   a. Incision and drainage (I&D)
   b. Oral antibiotics
   c. IV antibiotics
   d. I&D with oral antibiotics
   e. I&D with IV antibiotics

2. **The most common pathogen in auricular abscess/perichondritis is:**
   a. *Pseudomonas aeruginosa*
   b. *Staphylococcus aureus*
   c. *Serratia marcescens*
   d. *Aggregatibacter*

3. **Which of the following should be included in the differential diagnosis for patients presenting with a chief complaint of "ear infection" or "ear pain"?**
   a. Acute otitis media
   b. Acute otitis externa
   c. Perichondritis
   d. All of the above

Liability of an Urgent Care Center for Third-Party Labs (page 27)

1. **When it comes to using third-party labs, urgent care operators are responsible for all but which of the following?**
   a. Collecting the specimen
   b. Packaging the specimen (including necessary paperwork)
   c. Appropriate storage of specimens until they're in the possession of the courier or carrier
   d. Verifying results through independent analysis, or arranging such

2. **Negligence on the part of a third-party lab would most likely include:**
   a. Paperwork mix-ups
   b. Faulty lab equipment
   c. Errors in recording the results
   d. Delays in delivering results
   e. All of the above

3. **It is important for the urgent care operator to understand the Public Readiness and Emergency Preparedness (PREP) Act because it provides almost total immunity:**
   a. For drug and device manufacturers, distributors, administrators, under certain circumstances
   b. For physicians and other clinical staff
   c. For the owner or operator of a medical facility
   d. For third-party labs

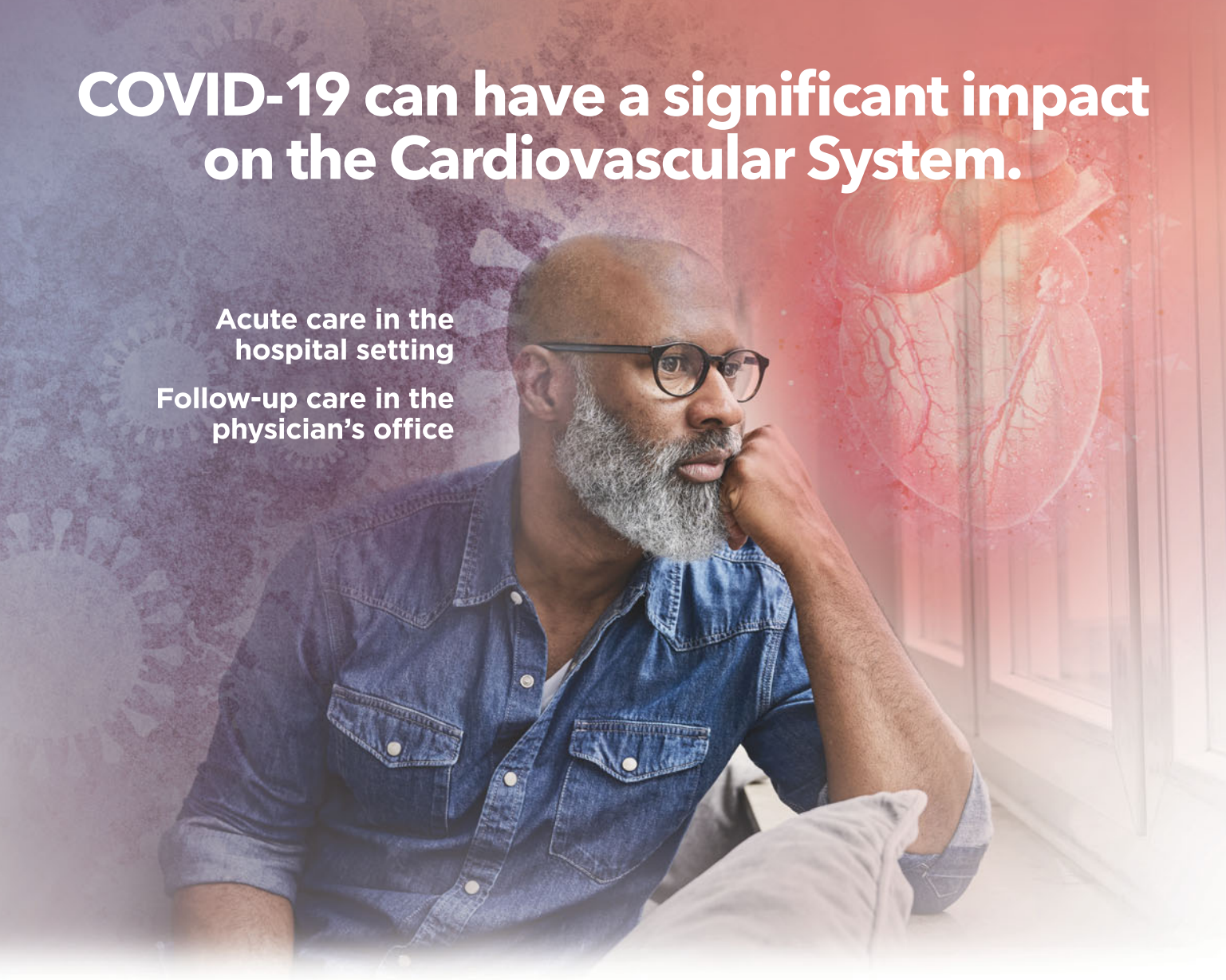
A Diagnosis Suspected by Mechanism of Injury: Soft Tissue Infection Due to *Aeromonas hydrophila* and *Enterobacter asburiae* Following Human Wastewater Exposure (page 31)

1. **It is important to know the mechanism of injury in lacerations sustained in water because such injuries are at higher risk for:**
   a. Hypothermia
   b. Chemical burns
   c. Infection from Gram-negative bacteria
   d. Trench foot

2. **In order to reach hemostasis and minimize scarring without increasing risk for infection, laceration repair should include all but which of the following:**
   a. Wound cleansing
   b. Removing devitalized tissue
   c. Removing foreign bodies
   d. Sufficient irrigation
   e. Immediate skin grafting

3. ***A hydrophila* is susceptible to:**
   a. Fluoroquinolones
   b. Third-generation cephalosporins
   c. Fourth-generation cephalosporins
   d. Aminoglycosides
   e. All of the above

COVID-19 can have a significant impact on the Cardiovascular System.



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See **CME Quiz Questions** on page 9.

If Not Otitis Externa…Then What?

Urgent message: Complaints of ear pain in children are among the most common presentations in the urgent care setting. While acute otitis media and acute otitis externa are high on the list of possible causes, it is essential that the urgent care provider be prepared to differentiate these from other possible etiologies.

SADIA ANSARI, MD; TIMOTHY MARTIN, MD; and ELIZABETH FLASCH, MD

Citation: Ansari S, Martin T, Flasch E. If not otitis externa…then what ? *J Urgent Care Med*. 2021;15 (5): 11-15.

Introduction

Ear pain is one of the most common presentations in urgent care, especially among pediatric patients. Further, acute otitis media (AOM) is the most common condition for which antibacterial agents are prescribed for children in the United States. There were 634 clinician visits per 100 children during 2005-2006. It is imperative that clinicians differentiate AOM from new onset of otorrhea not due to acute otitis externa (AOE), the most common diagnoses made by clinicians with regional variations based on age and geography.[1]

The majority of AOE-related visits occur during the summer months (June through August); visits occur most commonly in the South and least commonly in the West.[2-4]

Rosenfeld, et al noted that data from ambulatory care centers suggest there are about 2.4 million visits for AOE, affecting 1 in 123 persons in the United States. Just less than half of all visits for AOE were for children 5 to 14 years of age. Direct costs are estimated at half a billion dollars annually, and ambulatory care providers spent about 600,000 hours treating AOE.[2-4]

Clearly, urgent care providers must be able to distinguish AOE and AOM from other causes of otalgia, otorrhea, and inflammation of the external auditory canal. "Ear infections" that do not present as AOE or AOM make for a difficult case in an urgent care setting. In such cases, the treatment and management differ from AOE and AOM. In addition, coordination with a subspecialist is often necessary.

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Here, we offer three illustrative cases involving children who presented to Children's Wisconsin Urgent Care facilities with chief complaints of "ear infection" or "ear pain."

Case 1

A 3-year-old female presents with a complaint of "left ear infection" and facial swelling. Symptoms started 36 hours prior to presentation. While cleaning her hair,

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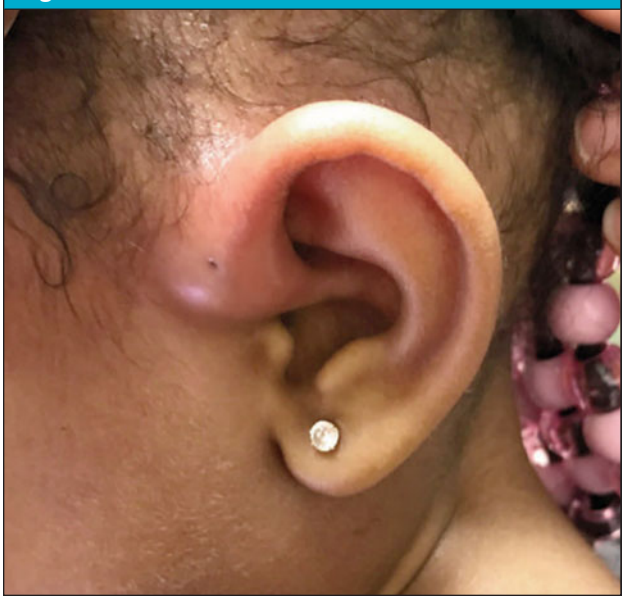
Figure 1.



parent noticed a swelling on outer left ear. The child had been diagnosed with right AOM 1 month prior and was treated with amoxicillin. Her right ear was not reassessed after completion of treatment. She had a past medical history significant for atopic dermatitis and shellfish allergy which were under good control with low-dose topical steroids as needed. Parent denied fever but stated presence of upper respiratory symptoms.

Exam – Case 1

Vitals

- Afebrile
- Within normal limits for age

Physical exam findings

- Left pinna with moderate-to-significant swelling and a visualized preauricular pit
- On palpation, mild to moderate tenderness and mild fluctuance

Ear canal

- No drainage with dry membranes
- Tympanic membranes were clear bilaterally

Nares

- Clear rhinorrhea bilaterally
- Remainder of the exam was benign
- Prior to examination, the mother was unaware of the definition of a pre-auricular pit

Decision-making/diagnosis

- Patient was diagnosed with an infected pre-auricular pit with clearance of the previous AOM

Treatment

The patient was discharged home on high-dose amoxicillin clavulanate with outpatient referral to otolaryngology for evaluation and possible excision of the preauricular pit. Unfortunately, as you will read, this was likely the incorrect choice for this patient.

Follow-up

The ENT nurses phoned the family the next day to set up an appointment for follow-up. Due to tactile fever and increasing ear pain, as relayed by the parents, the child was referred to the emergency department, where incision-and-drainage (I&D) was performed under sedation by ENT. Bacterial culture was ordered and sent. The patient was discharged from ED with oral clindamycin with outpatient ENT follow-up to be scheduled in 7-10 days. Culture was positive for *Serratia marcescens, Aggregatibacter,* and coagulase negative *Staphylococcus (CONS).* The oral amoxicillin clavulanate was recommended to be stopped by the ENT specialist.

Three days later, the family contacted ENT via telephone and reported bloody drainage and "new white patches" on the ear. The patient was evaluated in the outpatient ENT clinic, then admitted immediately after for surgical drainage of the pre-auricular pit. After drainage of the pit, she was discharged on clindamycin PO (30 mg/kg/day dosed three times daily) for an additional 7 days. Per parent report, this course was completed.

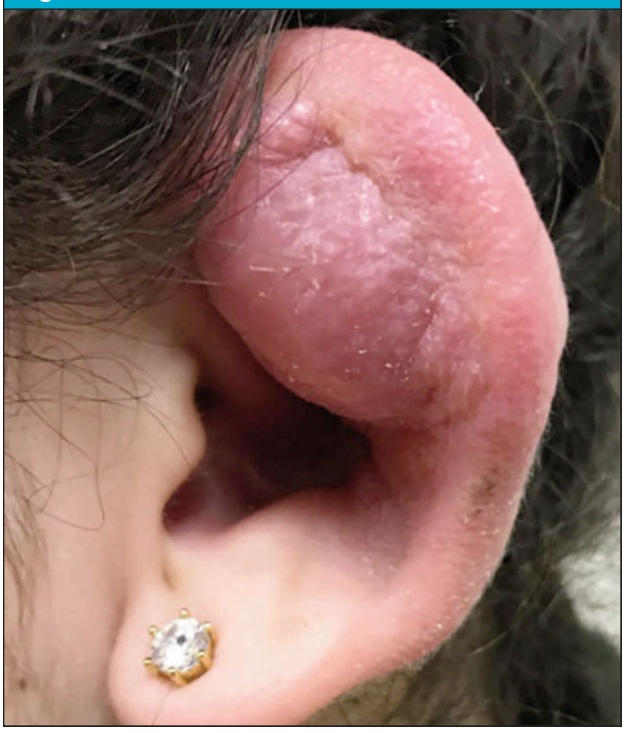
The patient returned to the ENT clinic with continued drainage 3 weeks later. She was started on 10 days of oral ciprofloxacin (40 mg/kg/day dosed twice daily). Due to recurrent infections, the decision was made to excise the pre-auricular pit. She had surgery 2 months postpresentation, with successful resection of the pit.

Discussion

Pre-auricular sinuses are distinct from first branchial cleft anomalies and derive from ectodermal inclusions formed during development of the external ear. They are quite common in pediatric patients and may present in 1% of Caucasians, 5% of African-Americans, and 10% of Asians. Infants born with pre-auricular pits should have formal audiologic evaluation.

The pre-auricular sinuses may be the first indication of branchio-oto-renal (BOR) syndrome—one of the most common hereditary causes of hearing loss. BOR is

Figure 2.



an autosomal dominant syndrome characterized by preauricular pits, branchial cysts or tracts, malformed ears, and renal anomalies, including renal dysplasia and bifid renal pelvises. They may present as cysts and frequently become infected to form abscesses.[5-10]

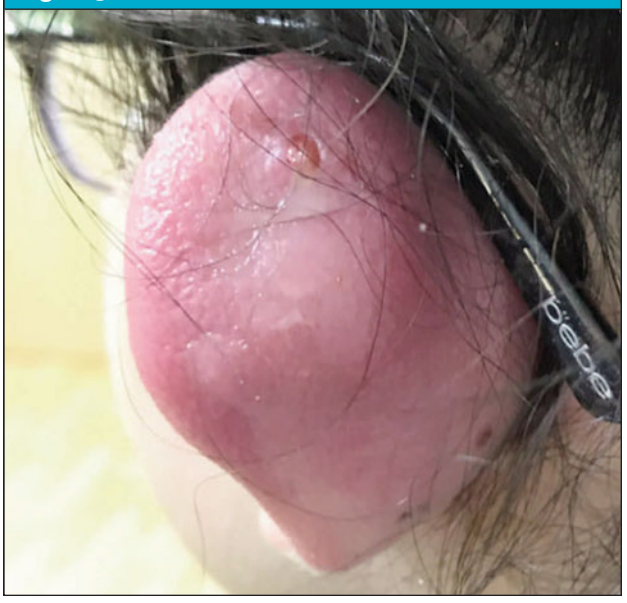
First-line treatment of abscess is I&D with oral antibiotics. Following resolution of inflammation, the sinus should be excised to prevent recurrence. Pits are most commonly infected with *Staphylococcus* species. Edema, erythema, fluid drainage, and pain are common signs infection.

For this case presentation, *Serratia* species is likely from an exogenous environmental source—water, soil, plants, animals, insects. *Serratia* species are generally susceptible to fluoroquinolones, aminoglycosides, trimethoprim-sulfamethoxazole, Zosyn (piperacillin and tazoabactam), Timentin (ticarcillin and clavulanate), fourth-generation cephalosporins, macrolides, tetracycline, nitrofurantoin, and colistin. CONS was presumed to be a contaminant.

CASE 2

A 16-year-old female with an insignificant past medical history presents with chief complaint of ear pain, swelling, and "ear infection" for the last 10 days. Cartilage pierced 17 days prior to urgent care visit. Seen at another hospital 10 days prior with erythema and purulent drainage from the piercing site. She was started on high-dose amoxicillin clavulanate 875-125 mg twice daily. Seen again at same hospital, 6 days prior to the visit with worsening symptoms. The patient was referred to a general surgeon's clinic immediately following her urgent care visit. There, I&D was performed and she was continued on amoxicillin clavulanate 875-125 mg twice daily. Instructions to follow up in 1 week were provided. She continued to have worsening swelling, erythema, and purulent thick drainage and thus presented to our urgent care.

Figure 3.



Exam – Case 2

Vitals

- Heart rate 64
- Respiratory rate 16
- Temperature 36.8° C
- Weight 108.2 kg

General

- Afebrile
- Mild distress with level of pain reported
- Patient tearful with examiner

Ear

- On inspection of left pinna: auricular erythema with significant swelling

Figure 4.

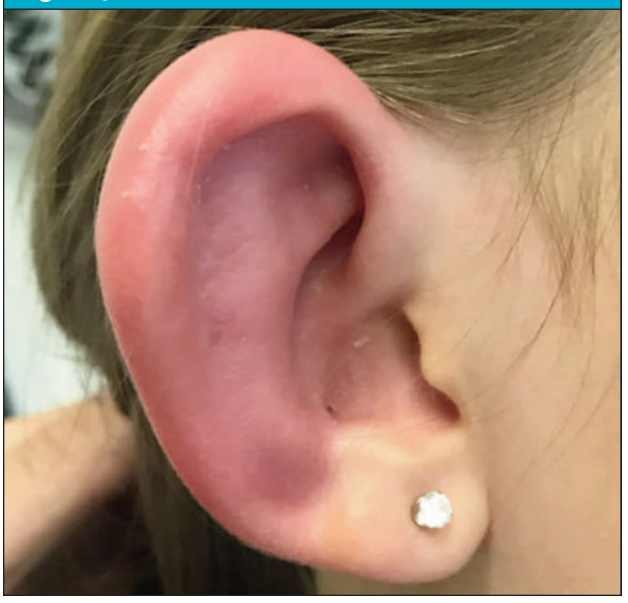
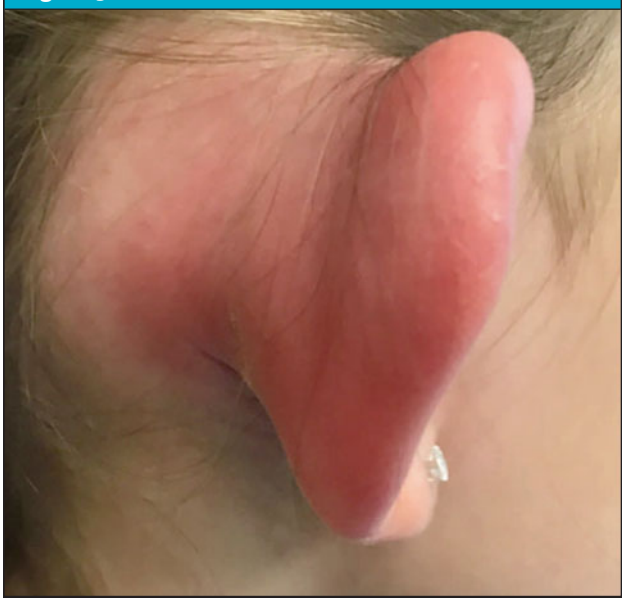


Figure 5.



- On palpation, moderate to severe tenderness with fluctuance noted

Decision-making/diagnosis

- Cellulitis of left ear with abscess, perichondritis of left ear
- Digital images taken via Haiku into EPIC
- ENT phone consult done during urgent care visit. ENT recommended admission with intravenous antibiotics
- After admission, she was started on IV ciprofloxacin (400 mg every 12 hours) with plans for I&D in the operating room

Follow-up

After successful I&D and short hospital stay (72 hours), the patient was discharged on 10 days of oral ciprofloxacin (500 mg every 12 hours). An aerobic and anaerobic culture was sent and grew few *Pseudomonas aeruginosa* which were susceptible to ciprofloxacin (pan-susceptible). She followed up in ENT clinic 2 weeks later. During that visit, her ear was noted to be healing well. Three months after the initial urgent care visit, the ear was healed with a residual defect in the cartilage.

Discussion

Auricular abscess/perichondritis complicating helical ear piercing is a frightening complication of the traumatized ear that can lead to a residual deformity. These piercings are associated with poor healing and more serious infection due to the avascular nature of auricular cartilage. Piercings are usually carried out by nonauthorized or untrained professionals with no consensus on asepsis techniques. The risk of developing infection is higher in the ear cartilage than in the lobe.[11-17]

Pathogens

The most common pathogen is *Pseudomonas aeruginosa*, followed by *Staphylococcus aureus*.[17] Symptoms usually develop between 3 days and 4 weeks after the ear piercing and include pain, erythema, edema, and abscess formation. Diagnosis is clinical; wound culture with antibiogram must be performed. Fluoroquinolones are the treatment of choice since they show antipseudomonal activity in addition to anti staphylococcal effect. Once an abscess develops, surgical I&D is often necessary. Good cosmetic preservation of the cartilage is difficult to maintain.[11-17]

Case 3

An 8-year-old female presented to urgent care with a 12-hour history of ear "redness." She complained that her ear felt "thick" and warm to the touch. She had minimal pain. She denied drainage, difficulty hearing, fever, URI, or trauma. She had been swimming quite a bit in the days leading up to the visit. There was no known injury or trauma to the ear. Past medical history and surgical history were negative.

Exam – Case 3

Vitals

- Heart rate 80
- Respiratory rate 20
- Temperature 37.7° C
- Weight 28.1 kg

Ear

- Significant and well-demarcated erythema
- No pain to mastoid process or the entire helix

Decision-making/diagnosis

- Digital images taken via Haiku into EPIC
- ENT consult via telephone during urgent care visit
- The patient was admitted for IV antibiotics. The ENT resident initially started nafcillin for *Staphylococcus* coverage; this was later changed to ceftazidime
- Diagnosis of perichondritis thought to be caused by a previous injury/laceration to the ear that had gotten infected
- Although the patient denied injury/trauma, the likely cause of the perichondritis was some injury with infection from her recent swimming

Follow-up

The patient was discharged home after 1 day of IV antibiotics. She was switched to 10 days of ciprofloxacin (500 mg twice daily for 10 days) and clindamycin (300 mg every 8 hours for 10 days).

Discussion

Perichondritis is an infection of the pinna. *Pseudomonas* and *Staphylococcus* species are the most common pathogens[6,13] (*Staphylococcus* species being the major pathogen in non-abscess perichondritis[6]). *Pseudomonas* is widespread in nature and thrives on most surfaces and is known to cause otitis externa, keratitis, hot tub folliculitis, postoperative abscesses, and burn infections. Double antibiotic therapy is recommended with a penicillin and fluroquinolone.[6,13]

Conclusion

There is a broad differential for outer ear infections. Patients presenting with a chief complaint of "ear infection" or "ear pain" automatically prompt the clinician to consider AOM and AOE. However, a detailed history and thorough examination can aid in assessing for preauricular sinus infection, infected piercing site, or perichondritis on the differential diagnosis list.

In these conditions, implicating pathogens are more likely to include *Pseudomonas* and *Staphylococcus* species. Antibiotic resistance rates are high. Intravenous antibiotics, hospitalization, surgical I&D, and culture may be necessary. Oral antibiotics may require double coverage. Amoxicillin is used often and is the incorrect choice. Consultation with ENT is often necessary to preserve the form and function of the ear. ■

"The fact that there is a broad differential for outer ear infections requires the clinician to look beyond acute otitis media and acute otitis externa when a child presents with a chief complaint of ear pain. Taking a detailed history and conducting a thorough examination can aid in assessing for other potential diagnoses."

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Original Research

Most Clinicians Are Still Not Comfortable Sending Chest Pain Patients Home with a Very Low Risk of 30-Day Major Adverse Cardiac Event (MACE)

Urgent message: Patients who present with chest pain but whose tests indicate there is little risk for a major event can leave providers uncertain as to what next steps are appropriate, and raise concerns for bad outcomes and litigation.

MICHAEL B. WEINSTOCK, MD; MICHAEL PALLACI, DO; AMAL MATTU, MD; CAMERON BERG, MD; PAUL JHUN, MD; and JEFF RIDDELL, MD.

Abstract

Introduction: Patients presenting with a chief complaint of chest pain often present a clinical conundrum for treating providers; after a negative evaluation for a missed major cardiac event (MACE), there is wide variation on the acceptable risk level by providers regarding disposition.

Objective: To determine the percent of clinicians who are comfortable with varying degrees of MACE after a negative chest pain evaluation.

Methods: During the Essentials of Emergency Medicine conference in 2018, a flash survey study was conducted using a convenience sample of attendees. Participants were asked to download an app to their electronic devices. An invitation to participate in a brief survey was sent to those who downloaded the app. The survey consisted of five demographic questions and one clinical opinion question.

Results: Of the 1,391 onsite and livestream attendees at the conference, 985 participants downloaded the app. Of those who downloaded the app, 547 started the survey, with 509 participants completing all six questions (93% response rate of those who started the survey and 52% of those who downloaded the app). Of the 509 participants who completed all six responses (study participants), 333 (65%) were attending physicians, 70 (14%) were residents/registrars/fellows, and 94 (18%) were physician assistants, nurses, or nurse practitioners. Most were from the United States or Canada (91%). A significant number of clinicians 241/509 (47%) would only feel comfortable with a 0.01%-0.1% acceptable miss rate. An acceptable miss rate of 1% to 2,% consistent with the current recommendation from the American College of Emergency Physicians was chosen by 148/509 (29%).

Conclusion: Most clinicians are not comfortable discharging chest pain patients with a 1%-2% rate of 30-day MACE.

Citation: Weinstock MD, Pallaci M, Mattu A, Berg C, Jhun P, Riddell J. Most Clinicians Are Still Not Comfortable Sending Chest Pain Patients Home with a Very Low Risk of 30-Day Major Adverse Cardiac Event (MACE). *J Urgent Care Med.* 2021; 15(5):17-21.

Introduction

Chest pain is the second-leading cause of presentation to the emergency department, accounting for 4.7% of all ED visits and totaling more than 6.5 million visits per year in 2017.[1] Patients presenting with chest pain

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Figure 1. Poll Question About Comfort Level with Missed MACE

What level of possibly missed major adverse cardiac event (MACE) within 30 days do you consider acceptable to allow discharge and cessation of investigation in a patient presenting to the emergency department with symptoms suggestive of acute coronary syndrome?

Most MACEs are NSTEMIs, but there are also a small but significant number of others (death, cardiac arrest, cardiogenic shock, ventricular arrhythmia, or AV block requiring intervention).

Assume an average fit person approximately 50–60 years old with no significant health issues.

__ Missed MACE of 0.01% (1 in 10,000)
__ Missed MACE of 0.10% (1 in 1,000)
__ Missed Mace of 0.25% (1 in 400)
__ Missed MACE of 0.50% (1 in 200)
__ Missed MACE of 1.0% (1 in 100)
__ Missed MACE of 2.0% (in 50)
__ Missed MACE of 4.0% (1 in 25)
__ Missed MACE of 5.0% (1 in 20)

are evaluated for multiple diagnoses including deadly conditions such as acute coronary syndrome (ACS), pulmonary embolism, and thoracic aortic dissection. However, after these diagnoses have been excluded with bedside evaluation and/or testing, the disposition often represents a clinical conundrum for treating providers; what is the acceptable miss rate for ACS?

In patients presenting with a clear diagnosis of ST elevation myocardial infarction (STEMI) by electrocardiogram or with positive biomarkers indicating myocardial damage (nSTEMI), the medical decision-making pathway is easily established; patients are sent emergently to the cardiac catheterization lab or admitted to a monitored bed. The difficulty in disposition arises when the initial clinical evaluation is reassuring, but subsequent testing reveals unexpectedly positive findings. In an attempt to stratify patients, clinical tools such as the HEART (H=history, E=ECG, A=age, R=risk factors, T=troponin) score have been used to determine additional testing and discharge endpoints.[2,3]

As with all clinical disposition decisions, the provider weighs the risks, including a missed major adverse coronary event (MACE), defined as death, MI, or revascularization, with the possible risk of harm from over testing and the inherent risks of hospital admission.[4] Additionally, there are possible legal implications for the provider; among medical litigation cases in the United States, missed MI is the condition associated with the highest number of claims.[5,6]

After a negative evaluation for MI, the question present in the mind of the clinician at the bedside is: *What level of a MACE is acceptable among practicing providers?* The 2018 American College of Emergency Physicians (ACEP) clinical practice guideline estimates an acceptable missed diagnosis rate of 1%–2% for a 30-day MACE in nSTEMI ACS.[7] Prior to release of the ACEP statement, this question was posed to participants at the Essentials of Emergency Medicine conference in Las Vegas in 2018. We sought to determine the percent of clinicians who are comfortable with varying degrees of MACE after a negative ED chest pain evaluation.

Methods

This study was approved by the Adena Health Systems IRB #18-05-024 prior to the poll. Essentials of Emergency Medicine is an annual, 3-day, continuing medical education conference certified by the American Medical Association for Physician's Recognition Award Category 1 CME credit. During the Essentials of Emergency Medicine conference in 2018, with 1,391 onsite and livestream attendees, a pilot survey was sent to a convenience sample of attendees. Conference participants were asked to download an app to their electronic devices. An invitation to participate in a brief survey was sent to those who downloaded the app. There were also announcements during the conference encouraging conference attendees to complete the survey. The survey consisted of five demographic questions and one clinical opinion question adapted from a similar study by Than, et al.[8] The survey was closed on the third day of the conference, before results were revealed to the attendees.

All data were collected electronically and anonymously and compiled on a Microsoft Excel spreadsheet. After collecting demographic data, including practice location, professional role, primary work environment, years of clinical experience, and practice setting, the participants were asked the single question detailed in **Figure 1** (identical to the final question in the study by Than, et al[8]).

Results

Respondents included practitioners from the United States (78%), Canada (13%), Australia/New Zealand

(4%), and other countries (4%). Most participants were attending physicians (65%), with the majority having 0 to 5 years of clinical experience post-residency (36%). A majority of the respondents (65%) were from nonacademic settings. Most respondents worked primarily in emergency medicine (94%), while 4% worked primarily in the urgent care setting. (See **Table 1**.)

Among the participants, 47% would accept a miss rate of 1/1,000 or 1/10,000 (0.01%–0.1%). Less than 1/3 of participants (29%) would accept a miss rate of 1%–2%. (**Table 2**).

When looking specifically at the 19 clinicians who work in urgent care (see Table 1), 14 were from the United States, four from Canada, and one from Australia. Attendings/specialists compromised 12, nurse practitioners five, physician assistants one, and EMS one. There were seven clinicians who considered a 1/10,000 (0.01%) level of MACE acceptable, six who considered 1/1,000 (0.1%) acceptable, two at 1/200 (0.25%), one at 1/200 (0.5%), and two at 1/100 (1%), and 1 at 1/50 (2%).

Table 1. Participant Demographics (N=509)

Country in which you practice	United States: 397 (78%) Canada: 68 (13%) Australia/New Zealand: 21 (4%) United Kingdom: 7 (1%) Other (Netherlands, Sweden, Chile, Saudi Arabia, Costa Rica, Brazil): 16 (4%)
Professional role	Attending/specialist: 333 (65%) Resident/registrar/Fellow: 70 (14%) PA: 54 (11%)NP + nurse: 40 (8%) Paramedic: 7 (1%)Student: 4 (<1%) Retired EM: 1 (<1%)
Years of clinical experience	0-5: 185 (36%) 6-10: 131 (26%) 11-15: 77 (15%) 16-20: 47 (9%) >20 years: 69 (14%)
Current work environment	Nonacademic: 330 (65%) Academic: 172 (34%) Military: 4 (1%) Other: 3 (1%)
Current practice setting	Emergency department: 477 (94%) Urgent care: 19 (4%) EMS/prehospital: 4 (1%) Student: 1 (<1%)

Discussion

Among the participants, almost half (47%) would only accept a miss rate of MACE of 1/1,000 or 1/10,000, far lower than the threshold established by the 2018 ACEP clinical policy[7] (released after this study was concluded). In fact, only 29% of the 509 participants in this study were comfortable with the 1%–2% level of MACE deemed to be acceptable by the ACEP statement.

Though the participants who work in the urgent care were a minority of the participants in the study, 13/19 (68%) would only accept a miss rate of MACE of 1/1,000 or 1/10,000, higher than the 47% when looking at all participants in the study.

There is much practice variation in evaluation and management of patients with chest pain, based on the clinician's comfort with risk,[9] the possible risk to the patient (though not necessarily with being involved in a past malpractice action.)[10] Concern for malpractice is understandable; a 2010 study of closed malpractice claims, over a 23-year period, involving emergency medicine physicians found acute myocardial infarction (MI) and undifferentiated chest pain to be the two leading reasons for claims with associated indemnity.[6]

Historically, the rate of missed MI among patients presenting with chest pain to the emergency department is quoted as 2% based on a paper by Pope, et al, in which the authors conclude that those patients discharged with undifferentiated chest pain have higher mortality.[11] However, a review of the data in the Pope paper indicated that 19 of the 10,689 patients who were discharged from the ED were subsequently diagnosed with MI, which equates to 0.17% rather than the quoted 2%.[12] Additionally, the data are old, collected over a 7-month period of time in 1993 using CK-MB (before the use of conventional or high sensitivity troponin testing).[11]

More recent data from Backus, et al showed that in patients with a low-risk HEART score, the risk of MACE was 1.7% in the Netherlands.[3] An analysis of low-risk HEART patients in North America showed a much lower rate of 0.8%.[13] Mahler, et al examined over 8,474 adult chest pain patients and found that those with a low-risk HEART score had a 0.4% risk of MI or death.[3,14] Note that Backus, et al used only one troponin for 6-week outcomes and a MACE which included MI and death in addition to percutaneous coronary intervention, coronary artery bypass grafting, or coronary angiography revealing procedurally correctable stenosis managed conservatively.[3] Mahler, et al used two troponins performed 3 hours apart with a 30-day MACE outcome

Table 2. Acceptable Level of Missed MACE at 30 Days – All Participants (N=509)

Question: "What level of possibly missed major adverse cardiac event (MACE) within 30 days do you consider acceptable to allow discharge and cessation of investigation in a patient presenting to the emergency department with symptoms suggestive of an acute coronary syndrome?"

0.01% (1 in 10,000)	72 (14%)
0.01% (1 in 1,000)	169 (33%)
0.25% (1 in 400)	51 (10%)
0.5% (1 in 200)	67 (13%)
1% (1 in 100)	118 (23%)
2% (1 in 50)	30 (6%)
4% (1 in 25)	2 (<1%)

defined as MI or death.[14]

Weinstock, et al examined 7,266 ED cases with interpretable and nonischemic ECGs, nonconcerning vital signs, and two negative troponin tests admitted to the hospital, and found only four had a clinically relevant adverse cardiac event (CRACE) defined as MI, death, life-threatening arrhythmia, or inpatient STEMI during their hospital course.[15]

The bedside clinician is forced to grapple with risk assessment and stratification, personal risk threshold of acceptable missed MACE, and the perceived or actual risk of litigation based on case characteristics. The 2018 ACEP clinical practice guideline for management of ED patients with chest pain states that "the majority of patients and providers would agree that a missed diagnosis rate of 1% to 2% for 30-day MACE in NSTE ACS is acceptable." They further state that there are limitations to diagnostic testing and that there is a need to avoid harms associated with false-positive tests.[7]

While these ACEP guidelines are available to all (note that this ACEP Clinical Policy was not yet released at the time of the survey), the ultimate decision-maker of acceptable miss rate of MACE is the clinician responsible for the care of the patient. Our poll indicates that despite all of the clinical reference tools, available evidence, and statements from professional organizations, the threshold for what is an acceptable miss rate of MACE is as variable as this patient population.

The authors were surprised by how low the level of acceptable MACE is for many clinicians. In fact, almost half of clinicians would only accept a risk of MACE of 1/1,000 or 1/10,000. If all of these patients were admitted to the hospital, there would be a risk of significant harm. One study showed that 1/164 admitted patients had a preventable adverse event contributing to their deaths, in addition to nonfatal events such as deep vein thrombosis, nosocomial pneumonia, falls resulting in head injuries or hip fractures, sundowning syndrome (acute delirium in elderly hospitalized patients), and false positive tests, as well as expense to patients and the health care system.[4]

Brooker, et al showed with a hypothetical "acceptable miss rate" of 1%–2%, that 29% of the patients with chest pain in the ED would not be admitted.[16] At the bedside in the ED and the urgent care center, there are many techniques available to improve patient and clinician comfort with outpatient management; shared decision-making , demonstrated by Hess, et al in multiple studies, was an effective technique.[17-20]

This study furthers our current knowledge about the acceptable rate of missed MACE in chest pain patients. Next steps include attempting to discern if the 2018 ACEP policy statement has changed clinician's perceptions about the acceptable miss rate for MACE with a planned repeat survey at the 2021 EEM conference in Las Vegas.

Limitations

The attendees of the conference were likely comprised of clinicians motivated enough about their ongoing education to travel to Las Vegas to attend the conference, perhaps providing a sample that is not reflective of urgent care and emergency medicine clinicians nationally. Though the survey was available to everyone who attended the Essentials of Emergency Medicine course in Las Vegas in 2018, slightly more than half of those downloaded the app and completed the survey. This selection bias may limit the external validity of our findings.

There are different definitions and timelines of MACE, depending on whether revascularization is included, such as with the validation HEART study,[3] or if only MI and death are included, such as with the 2018 Mahler HEART pathway study.[14] If a patient is sent home with and subsequently has a MACE, this does not necessarily mean there was poor care. For example, if a patient is diagnosed with coronary disease and has appropriate follow-up and has a revascularization procedure, this will still be counted as MACE in some studies, even though there was not an adverse outcome.[21] It is possible that the participants had varied definitions or did not understand the definition and answered with varied understandings of definition of MACE.

Further research, since publication of the 2018 ACEP guidelines, will be needed to assess whether their recommendation for consideration of a 1%–2% acceptable miss rate leads to changes in practice patterns.

Conclusion

Most clinicians are not comfortable when discharging chest pain patients even with a possible 1%s–2% rate of MACE. ■

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Statement from Dr. Weinstock: *This author takes responsibility for all aspects of the reliability and freedom from bias of the data presented and their discussed interpretation. There was no funding provided for this study. This study is IRB approved by the Adena Health System IRB.*

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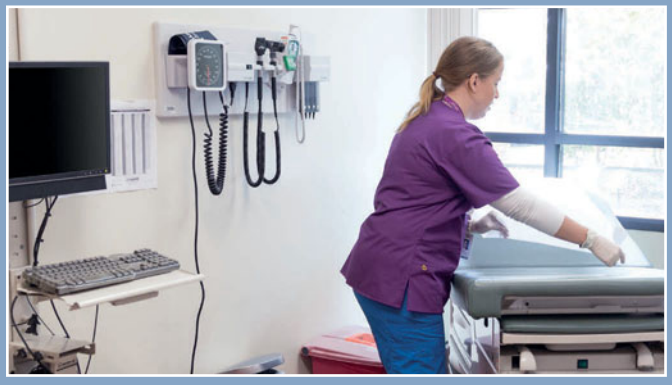

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Original Research

Prolonged Duration of Pediatric COVID-19

Urgent message: Many institutions have established guidelines regarding when individuals can return to their regular activities after recovering from COVID-19. Where children and schools are concerned, it's unclear what the role of testing is (or should be).

KATHARINE MIAO, MD, FACEP; FRANK ILLUZZI, MD, FACEP, CPE; and ALEXANDER HWANG

Abstract

Importance: Some children have been asked for a negative COVID-19 PCR test after an initial positive test in order to determine whether they may return to school or daycare.

Objective: To determine the mean length of time children may continue to test positive for SARS-CoV-2 via PCR after an initial positive test.

Design: Retrospective cohort analysis of anonymized charts of pediatric patients who tested positive for SARS-CoV-2 via PCR in CityMD locations in the New York City area from March 9, 2020 to September 7, 2020.

Participants: All pediatric patients (those between the ages of 0 and 17 years) who came to a CityMD location accompanied by a parent or guardian requesting a SARS-CoV-2 (COVID-19) PCR test.

Exposures: Pediatric patients who had been exposed or potentially exposed to SARS-CoV-2.

Main Outcome: Pediatric patients continued to have positive SARS-CoV-2 PCR for a mean of 17 days after an initial positive test.

Results: Out of 63 individuals who had more than one positive PCR test, the mean duration of positive test results was 17 days after the initial positive test.

Conclusions and Relevance: The current CDC guidelines recommend isolating for 10 days with the last 24 hours fever free, and not to test for cure after an initial positive SARS-CoV-2 test. Given that pediatric patients can have prolonged positivity beyond this timeframe, our findings support following these guidelines to minimize losing educational and childcare opportunities.

Citation: Miao K, Illuzzi F, Hwang A. Prolonged duration of pediatric COVID-19. *J Urgent Care Med.* 2021; 15(5):23-25.

Introduction

Since the outbreak of the SARS-CoV-2 virus within the United States early in 2020, the immediate impact of the pandemic was to trigger a wave of school closures in the initially hardest hit areas. School closures expanded across the country rolling into the traditional summer vacation. During this time period, most children were in an unprecedented state of social isolation in comparison to previous years. The mental health challenges children in isolation face have been raised by alarmed parents, physicians, and health officials.[1,2]

There has been extensive debate as to when children can safely return to school if they contract coronavirus, with some daycares and even schools requesting a negative PCR test as "a test for cure" after an initial positive test.

Current literature has reported extended time periods where patients may continue to test positive even if otherwise appearing healthy.[3] Requiring test of cure is not currently recommended by the Centers for Disease Control and Prevention and poses significant long-term

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Figure 1. COVID-19 Positivity Duration

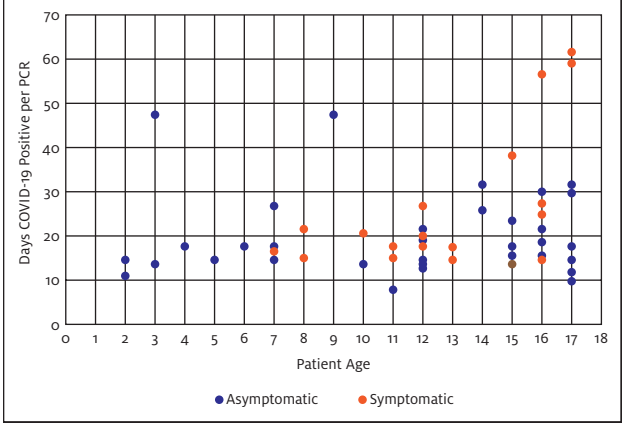
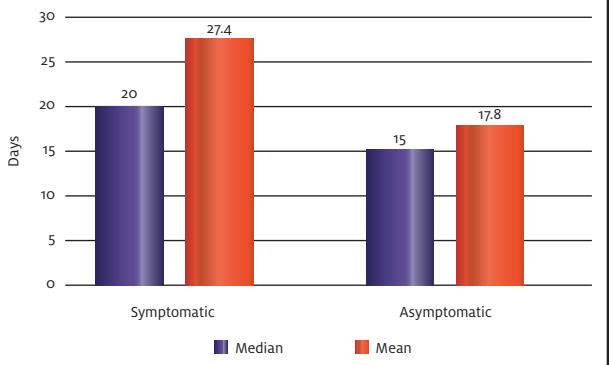


Figure 2. COVID-19 Positive Duration (Days, Symptomatic vs Asymptomatic)



social and economic risk both for the parents and the children who may lag behind their peers.

Objective

To determine the mean length of time a pediatric patient may continue to test positive for SARS-CoV-2 virus via a polymerase chain reaction (PCR) test after an initial positive test.

Data Source

Testing data were drawn from CityMD's 130 locations in the New York City metropolitan area.

Study Selection

A retrospective observational study using anonymized chart review of the pediatric population.

Methods

We examined testing results for COVID-19 via PCR in the pediatric population ages 0-17 years between March 9, 2020 and September 7, 2020.

All patients were accompanied by a guardian who requested a COVID-19 PCR test. All testing was performed at the discretion of the treating provider in accordance with local and state guidelines. Patients were examined by a clinician wearing an N95 and appropriate personal protective equipment (PPE). Tests were obtained from nasopharyngeal swab specimens, and transported in VCM (UTM) medium (green-top) tube, for SARS-CoV-2 RNA (COVID-19), Qualitative NAAT testing. All specimens were submitted to commercial laboratories for processing. All repeat positive PCR by medical record number were then sorted by age by the in-house data analytics team and stratified by ICD code. Anonymized charts were then validated to assess for any reports of symptoms which would suggest COVID-19-related illness. As this was a retrospective analysis on anonymized data, an IRB waiver was obtained from Solutions IRB.

Main Outcome and Measures

The primary finding was that the mean length of time patients continued to show positive PCR tests was 17 days. The median was 20 days. The maximum was 61 days. The range was 6 to 61 days.

Results

There were 1,282 positive tests out of a total of 45,373 pediatric PCR tests during the study period, for a total positivity of 2.8% in the pediatric population. For relative comparison, there were approximately 933,520 PCR tests done during the same time frame in all age categories. Of these, 43,268 were positive for an overall positivity of 4.6%. This is consistent with our previously reported research that during a time of school closure the pediatric positivity rate was significantly lower than that of the overall population.[4]

Of the 1,282 pediatric positives, 63 individuals were found to have more than one repeat positive PCR. We found a mean age of 12.0 years in the repeat positive pool compared with the overall pediatric population tested at 11.7 years of age. The median interval between two positive tests was 20 days, and the mean was 17 days. The maximum duration a patient continued to test positive was 61 days. (**Figure 1**.)

Discussion

This study was a retrospective analysis and chart review

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"It is inadvisable to potentially hold children away from school for months awaiting a negative test. As the symptomatic appear to remain positive for a longer period, it will be important to determine whether this subgroup needs a longer period of isolation to help mitigate transmission."

on a cohort of repeat PCR-positive pediatric patients during the period following the COVID-19 initial outbreak in the metro New York City region. This span included the April 2020 peak of the pandemic, during which there were almost 800 deaths per day in the New York City area.

At the early stages of the pandemic in the metro NYC area, testing was strictly limited to high-risk individuals. As testing access improved in late April and early May, guidelines were slowly relaxed, which allowed for testing in all patients who sought a test, whether they were symptomatic or not. There were no out-of-pocket charges to the patient (including all uninsured patients) for testing during this time frame. All patients who tested positive were advised to follow the CDC guidelines of 14 days of quarantine from the last known exposure to a COVID source, or 10 days of isolation and 24 hours fever free, if symptomatic.

In the repeat positive population, 71% (45 out of 63 individuals) were asymptomatic at their initial presentation. Our previous research over the 3-month period of March 5 through June 22, 2020 showed that 48% of all pediatric patients who tested positive at that time were asymptomatic. We surmise that the higher asymptomatic rate could be due to length of time since initial exposure, as the peak wave in New York ended in April 2020.

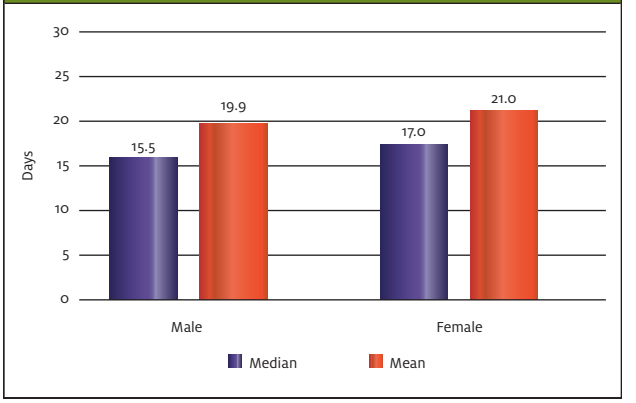
Eighteen of the 63 individuals who initially presented with symptoms consistent with COVID-19 had a significantly longer mean duration of 27 days of positivity compared with the mean of 20 days overall. (**Figure 2**.)

This difference may be due to an overall higher viral load at the beginning of the illness which is consistent with what other researchers have found.[5]

This cohort also skewed slightly older, with a mean of 13 years of age compared with the overall population with a mean of 12.0 years. Also of note is that the patient who had the longest period of positivity (61 days) was 17 years old at time of testing, and therefore at the upper age in the pediatric cohort. Females had a slightly longer mean time of positivity at 17 days when compared to male mean positivity of 15 days. (**Figure 3**.)

We posit that testing for cure is an unreliable method

Figure 3. COVID-19 Positive Duration (Days, by Gender)



to ascertain whether children should return to school. Children are generally known to have a milder course of symptoms when compared to adults.[6] Current CDC guidelines are that patients are considered fit to return to work after 10 days from the time of an initial positive test if they are asymptomatic, as there are no data to show replication of competent virus after a 10-day period.[7] Yet unknown is how long coronavirus remains viable and transmissible in children.

As a matter of practical concern, it is inadvisable to potentially hold children away from school for months awaiting a negative test. As the symptomatic appear to remain positive for a longer period, it will be important to determine whether this subgroup needs a longer period of isolation to help mitigate transmission. These data appear to further support current CDC guidelines that testing for cure is an unreliable method.

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The authors had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis. ■

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Liability of an Urgent Care Center for Third-Party Labs

Urgent message: While an urgent care center is responsible for the collection and safeguarding of clinical specimens, it's generally not liable for the activities of a third-party lab that it sends a specimen to.

ALAN A. AYERS, MBA, MAcc

Urgent care facilities regularly provide bloodwork and laboratory testing for their patients. These services may include allergy screening, diabetes testing, anemia screening, immunity testing, thyroid screening and monitoring, and hormone testing. Urgent care centers often collect specimens that are sent offsite to third-party labs for processing.

With the coronavirus pandemic, more customers are visiting urgent care locations for COVID-19 testing. This may include antibody testing (Coronavirus COVID-19 SARS-CoV-2 Antibody IgG) or diagnostic testing (an asymptomatic COVID-19 test to confirm negative status and the COVID-19 test when an individual has symptoms or has been exposed to someone with COVID). These two types of diagnostic tests, molecular tests, such as RT-PCR tests, that detect the virus's genetic material and antigen tests that detect specific proteins from the virus are processed on complex equipment.[1]

In diagnostic COVID-19 testing, the urgent care technician swabs the patient, obtains the specimen, and then submits a requisition to a nationally accredited laboratory. That lab reports the test results to the urgent care which, in turn, informs the patient. This process is performed thousands of times a day without incident. However, urgent care owners may question the extent of their liability for labs performed by third parties in the event that issues arise. This article will explore several common scenarios.

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Urgent Care Collection to Carrier

The urgent care is responsible for collecting the specimen, packaging it along with any required paperwork, and storing it until it is placed in the possession of a courier service or another carrier, such as DHL, UPS, or FedEx. The CDC provides guidelines for the storage and handling of clinical specimens during a respiratory disease outbreak when the pathogen is unknown.[2]

Carriers such as Fed Ex and UPS have terms and conditions of carriage,[3] in addition to government regulations that set out the standard for shipping lab samples.[4] As a result, the urgent care's responsibility for handling the sample generally ends when it is tendered to the carrier.

Urgent Care Collection to Drop Box

In another daily scenario, the urgent care places the day's specimens in a box outside to be collected by a lab

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courier. An urgent care owner may question which party is liable for the specimens and the attached personal health information (PMI) if the box is stolen.

While a lab may provide a "lock box" for specimens awaiting pick-up, the urgent care will generally be responsible for the security of the specimens. Typically, premise liability laws would apply, and the owner of the property and the urgent care would be responsible for theft or damage. The urgent care would have premises liability coverage as part of its commercial general liability policy.[5] This includes coverage for property damage related to the ownership or maintenance of a business premises.

Once the specimen is in the possession of the carrier, it would assume responsibility for safely delivering it to the lab.[6-8]

The Specimen at the Third-Party Processing Lab

Research shows that the results of common diagnostic tests, such as blood and urine tests, serve as the basis for up to 70% of all medical decisions made by U.S. healthcare providers.[9] However, a lab that is processing an urgent care specimen can make a variety of errors. Negligence can happen in several ways, including the following:

- Failing to take adequate time to perform the lab tests, causing inaccurate results and mistakes
- Lab order paperwork mix-ups
- Use of the incorrect or faulty lab equipment
- Ambiguous or ill-defined results
- Errors in the recording of results
- Losing results or failing to report results to the urgent care
- Delays in delivering results to the urgent care

Negligence at the processing lab may lead to misdiagnosis by the urgent care when interpreting the test results.

Urgent Care Responsibility for the Quality of the Lab Test Provided by a Third-Party Lab

An urgent care facility may also have concerns for its level of exposure for the quality of the actual lab test of a processing lab, such as in the event that a COVID-19 test performed by a third-party lab produced an erroneous result and the urgent care passed the result on to the patient. Moreover, what is the urgent care's potential liability if the urgent care provider engages in clinical decision making based on the erroneous result?

All labs must comply with federal and state statutes and regulations, such as the Clinical Laboratory Improvement Amendments (CLIA).[10] CLIA regulations establish the quality standards for lab testing performed on human specimens for diagnosis, prevention, or treatment of disease, or assessment of health.[11,12] If the third-party lab failed to comply with standards for quality, it would be generally be liable for its violations. Many labs warrant that the testing they perform for their clients will be performed in accordance with standard methodologies and professional standards. For instance, a lab will provide:

> In the event of error, omission, or other professional negligence or any breach of the […] warranty, the sole and exclusive responsibility of [the lab] shall be to re-perform the deficient work at its own expense, *and the laboratory shall have no other liability.*[12]

Further, continuing with the above example, the lab states that all costs associated with the laboratory's compliance to any subpoena for documents and/or court testimony for purposes relating to the client's samples are the client's responsibility.[13]

However, it's unlikely that this would prevent an urgent care or other healthcare provider from joining the lab in any litigation it was forced to defend based on an error with the third-party lab's testing of the specimen.[14,15] In fact, some states will not recognize waivers of liability. For example, under Massachusetts law, exculpatory contract clauses cannot shield a party from claims for gross negligence or responsibility for a statutory or a regulatory code violation.[16,17] Thus, an urgent care may bring a third-party complaint against the lab.[18]

Urgent Care Responsibility for Business Processes at a Third-Party Lab

In addition to actual mistakes with the testing, an urgent care facility may have concerns for its level of exposure for the back-office integrity of a third-party processing lab. These processes can include quality assurance, IT systems, and billing. If the third-party lab fails to comply with nationally defined standards for quality and is out of compliance in its data security, it would generally be liable for its violations.[19]

Again, an urgent care may bring a third-party complaint against the lab if it is named in a lawsuit for the negligence of the lab.

The Elements of Negligence

It is also important to point out that a plaintiff must prove all four elements of negligence in such a case against an urgent care facility.

The elements of a negligence claim law are (i) duty; (ii) breach; (iii) causation; and (iv) injury.[20] The failure to prove even one of the four elements will cause a negligence claim to be dismissed.[21] Further, a complaint must allege sufficient facts to show a claim that is plausible on its face.[22]

The plaintiff, critically, must establish *damages*. That means failure to demonstrate any quantifiable monetary damage—"an essential element of a negligence claim in our civil justice system—" requires that the case be dismissed.[23]

The PREP Act

As a part of this discussion as it pertains to COVID-19 and a pandemic, it's critical to understand that the Public Readiness and Emergency Preparedness, or PREP Act,[24] provides almost total immunity under specific circumstances for manufacturers, distributors, and administrators of certain drugs, medical devices, and biologics designed to counteract an epidemic or pandemic.[25,26]

> Immunity means that courts must dismiss claims brought against any entity or individual covered by the PREP Act. Claims that courts must dismiss include claims for any loss that is related to any stage of design, development, testing, manufacture, labeling, distribution, formulation, labeling, packaging, marketing, promotion, sale, purchase, donation, *dispensing, prescribing, administration,* licensing or use of a countermeasure recommended in a Declaration.[27]

Summary

While an urgent care has certain protections and defenses, this may not stop a party from bringing a lawsuit.[28]

The urgent care must make certain that its procedures for collecting specimens, packaging them with any required paperwork, and storing them until they are placed in the hands of a delivery service or carrier are completed in a safe and organized manner. The urgent care must comply with all state and local regulations concerning specimen collection and handling.

The carrier will have its own rules for the transport of biological substances, and any errors by a third-party lab resulting in action against an urgent care would most likely bring about a third-party complaint against the lab for its negligence, despite its attempts at contractual waver of liability. ■

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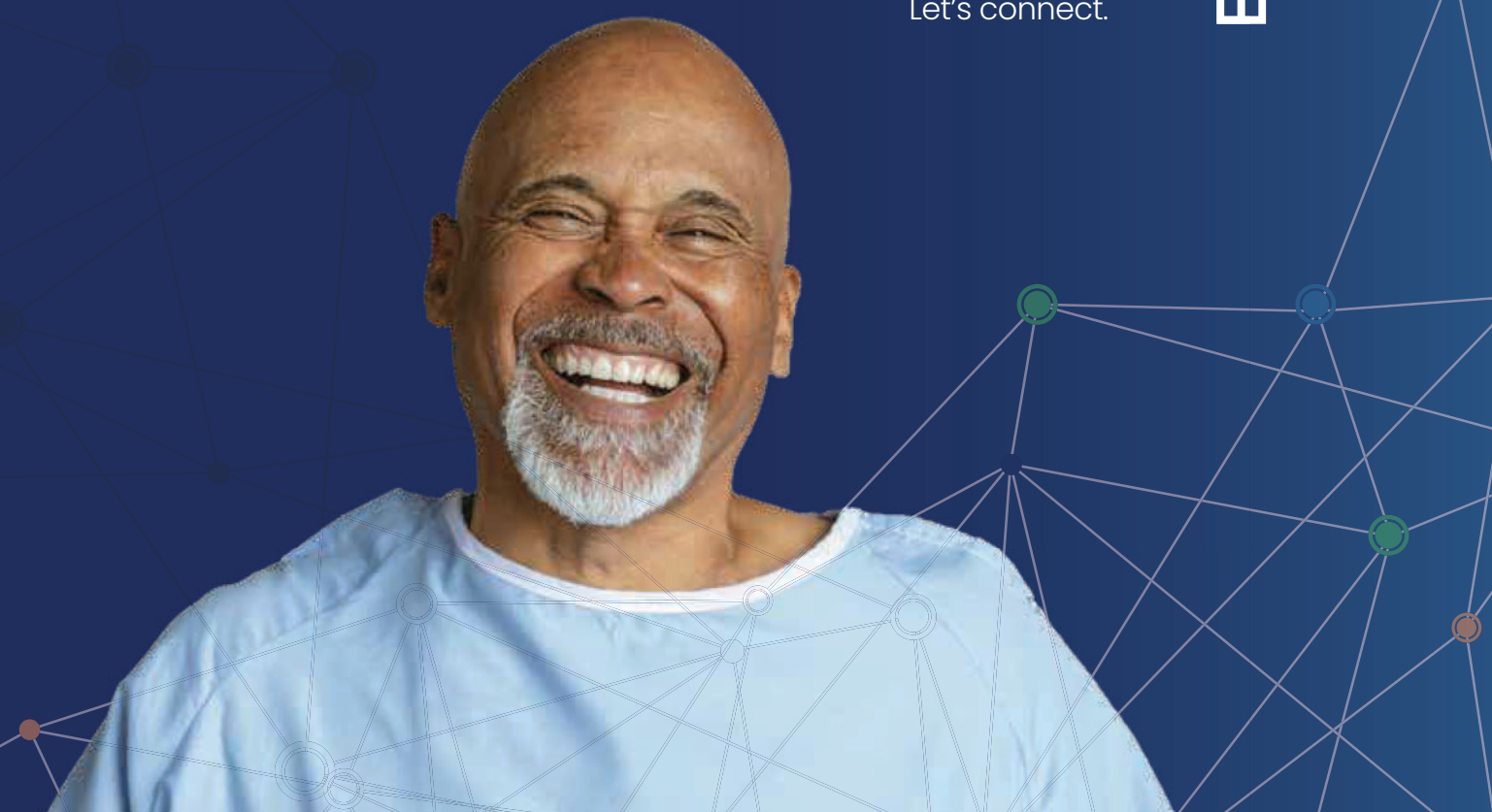

CME: This article is offered for *AMA PRA Category 1 Credit*.™
See **CME Quiz Questions** on page 9.

A Diagnosis Suspected by Mechanism of Injury: Soft tissue Infection Due to *Aeromonas hydrophila* and *Enterobacter asburiae* Following Human Wastewater Exposure

Urgent message: Knowing the mechanism of injury and presence of wound contamination is important in hand lacerations in order to avoid and anticipate skin and soft tissue infections and tissue necrosis, particularly in the setting of contaminated water sources.

CAYLA BAKER, PA-C and CHRISTINA GARDNER, DHSC, MBA, PA-C

Introduction

In 2018, the U.S. Bureau of Labor Statistics reported 77,340 work-related accidents resulting in lacerations, with 51,130 of those being to the hand.[1] It is important to know the mechanism of injury as lacerations sustained in contaminated water sources are at higher risk for infection from gram-negative bacteria; antibiotics commonly prescribed for skin and soft tissue infections (SSTIs) may not be effective against gram-negative bacteria.

Case Presentation

A 47-year-old male with no significant past medical history presented to urgent care with a laceration sustained to the dorsum of his right hand after "falling into a sewer tank" at work which contained human wastewater. He did not sustain any other injuries. He was unsure of his tetanus immunization status.

Physical Exam

Focused examination revealed a 4 cm "T-shaped" laceration to the dorsum of the right hand. The laceration

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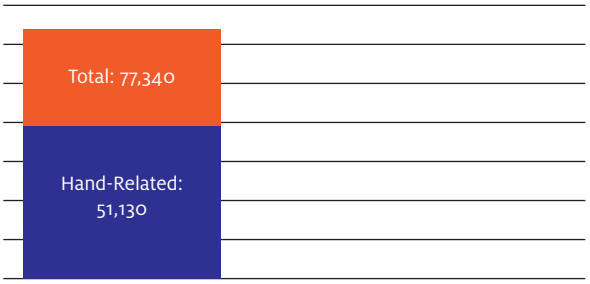
Figure 1. Work-Related Laceration Injuries



Data source: U.S. Bureau of Labor Statistics. Table R19. Number of nonfatal occupational injuries and illnesses involving days away from work by part of body and selected natures of injury or illness, private industry, 2018. Available at: https://www.bls.gov/web/osh/cd_r19.htm. Published November 7, 2019. Accessed July 16, 2020.

was approximately 2 mm deep and did not extend past the dermis. Hemostasis was achieved with direct pressure. Motor function and sensation remained intact. 2+ radial pulses were palpated bilaterally. There was no bone, ligament, or tendon involvement. No foreign bodies were visualized in the wound. Vitals were all within normal limits.

Initial Course and Treatment

The laceration was washed with Hibiclens and irrigated copiously with normal saline. It was then approximated with seven 4-0 Prolene sutures by simple interrupted technique. Tetanus immunization was updated and the patient was sent home on oral amoxicillin-clavulanate 875-125 mg twice daily for 10 days. He was educated regarding signs of infection, and given instructions to return immediately if any of these occurred.

The patient returned 3 days later with erythema and warmth with soft tissue swelling, tenderness, and clear drainage. There were no systemic signs of infection at that time. Motor function, sensation, and radial pulses were intact and equal bilaterally. A wound gram stain and culture were obtained. The patient was changed from amoxicillin-clavulanate to levofloxacin 750 mg orally once daily and clindamycin 300 mg orally four times daily for 10 days pending wound culture results and referred to an orthopedic hand specialist.

A wound culture grew 1+ *Aeromonas hydrophila*, 1+ *Enterobacter asburiae* and 1+ *Aeromonas hydrophila* STRAIN 2.

Five days later, before the outpatient hand specialist appointment could be made, the patient presented again, for concern of continued drainage and paleness around the infected site. He was seen by orthopedic surgery, who felt the wound was healing appropriately and that surgical debridement was not necessary. They removed the sutures and advised him to continue the antibiotic treatment prescribed at the urgent care. A follow-up appointment with an orthopedic hand specialist was made for the following week.

Discussion

The goal of laceration repair is to reach hemostasis and minimize scarring without increasing the risk of infection.[2] This includes cleaning the wound, removing any devitalized tissue and/or foreign body, copious irrigation, and proper wound closure. Tetanus immunization should also be updated as needed. Laceration repair of the hand with primary closure can be done if no underlying structural damage is suspected.[2]

Mechanism of injury and level of contamination play an important role in choosing the next steps. This patient was exposed to both an aquatic environment and human waste during his injury. The role of prophylactic antibiotics in the treatment of hand lacerations, or any laceration, is debated and their role for prevention of infection is unclear.

Most skin and soft-tissue infections are caused by streptococcal and staphylococcal bacteria.[3] However, there are other organisms that more commonly cause SSTIs following aquatic injuries. These organisms are typically gram-negative and include *Aeromonas* species, *Vibrio* species, and *Pseudomonas*, in addition to *Mycobacterium*.[4]

Aeromonas hydrophila, as seen in this patient, is a commonly isolated organism in wound infections on an extremity following a traumatic aquatic injury.[4] *A hydrophila* is an anaerobic, gram-negative bacillus found worldwide in freshwater environments. Infection typically occurs within 24 hours and can mimic a streptococcal or staphylococcal cellulitis, which often leads to incorrect treatment initially[5].

When untreated, these infections can go on to cause necrotizing fasciitis and osteomyelitis—again, illustrating the importance of knowing if the injury is water-related. *Aeromonas* is resistant to penicillins and first-generation cephalosporins; therefore, typical antibiotics used for SSTIs would not be effective. *A hydrophila* is susceptible to fluoroquinolones, third- and fourth-generation cephalosporins, and aminoglycosides. In patients with localized symptoms of erythema, edema, and purulent drainage, outpatient management with oral antibiotics is appropriate as long as there is no involvement beyond the skin and subcutaneous tissues.[3,5]

Patients who present with systemic symptoms require inpatient management with intravenous antibiotics and

possible surgical debridement in the operating room.[4-6] For patients who present without signs of infection but who sustained a traumatic injury in an aquatic environment, there is some debate about whether to initiate antibiotics. Noonburg[5] reports that because water-related injuries create an entry for aquatic microbes, the injured site should be treated as already infected and antibiotic therapy should be initiated with proper antibiotics that target gram-negative microbes.

"In patients with localized symptoms of erythema, edema, and purulent drainage, outpatient management with oral antibiotics is appropriate as long as there is no involvement beyond the skin and subcutaneous tissues."

In addition, while most uncomplicated wounds do not require systemic antibiotics, they are generally recommended for patients with increased risk of infections such as those in immunocompromised hosts, bite wounds, puncture wounds, grossly contaminated wounds, wounds involving tendons or cartilage, crush injuries, and wounds with delayed presentation (>18 hours).[7-9] In this case, the contamination with feces would constitute this wound as high risk.

Vibrio species is another common gram-negative organism found in saltwater environments, and can cause necrotizing skin infections. *Vibrio* can be treated with a third-generation cephalosporin or a fluoroquinolone plus doxycycline.[4]

Enterobacter species are not common causes of soft tissue infections.[10] Similar to *A hydrophila*, they are anaerobic gram-negative bacilli and are typically resistant to penicillins and first-generation cephalosporins. *Enterobacter asburiae*, as seen in our patient, is a normal gastrointestinal tract organism, which could account for its presence in this patient due to his contact with human fecal matter. These organisms are treated similarly to *A hydrophila*, so it did not have a huge impact on the treatment of this patient.

Case Conclusion

The patient was reseen by the hand specialist in follow-up and was healing well with only residual stiffness of the right index finger, which subsequently resolved.

In summary, injuries sustained in and around water sources are at risk of infection by organisms that are resistant to penicillins and first-generation cephalosporins. On initial presentation, copious irrigation of the wound and removal of devitalized tissue should be done to decrease risk of infection. Prophylactic antibiotics should be considered on a case-by-case basis, but would likely be considered in a wound that is highly contaminated from a water source.

If a patient presents with an infection of a wound sustained in an aquatic environment, it is important to cover for gram-negative bacteria such as *A hydrophila*. If sustained in seawater, *Vibrio* should also be covered. Hand infections, specifically, should be followed closely, and providers should have a low suspicion for referral to orthopedic surgery to avoid permanent disability, particularly with joint, muscle, or tendon involvement, deep infections, or infections that are not improving despite antibiotic treatment. ■

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Summary

- The goal of laceration repair is to reach hemostasis and minimize scarring without increasing the risk of infection. This includes cleaning the wound, removing any devitalized tissue and/or foreign body, copious irrigation, and proper wound closure.
- Tetanus immunization should be updated as needed.
- Most skin and soft-tissue infections are caused by streptococcal and staphylococcal bacteria. However, SSTIs following aquatic injuries are more likely to be caused by gram-negative organisms, including *Aeromonas* species, *Vibrio* species, and *Pseudomonas*, in addition to *Mycobacterium*.
- *Aeromonas* is resistant to penicillins and first-generation cephalosporins; therefore, typical antibiotics used for SSTIs would not be effective.
- *A hydrophila* is susceptible to fluoroquinolones, third- and fourth-generation cephalosporins, and aminoglycosides.

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ABSTRACTS IN URGENT CARE

- Septic Knee Joints in Adults
- Recurrent Cellulitis
- Analgesics and Risk for Fracture Nonunion
- Assessing for MACE with and without a Troponin
- IV Fluids in Headache Management
- COVID-19 and Telemedicine
- COVID-19: The Second Wave

DR AVIJIT BARAI, MBBS, MRCS, MSC (CRITICAL CARE), PGCERTCPU, FRNZCUC

Diagnostic Dilemma: Septic Arthritis of Knee Joints in Adult Patients

- **Key point:** Synovial fluid white cell count and gram stain are the most useful laboratory markers for septic arthritis. Clinical evaluation, synovial lactate, and PCR do not substantially aid in diagnosis.

- **Citation:** Carpenter CR, Vandenberg J, Solomon M, et al. Diagnostic accuracy of synovial lactate, polymerase chain reaction, or clinical examination for suspected adult septic arthritis. *J Emerg Med*. 2020;59(3):339-347.

- **Relevance:** Septic arthritis is a challenging diagnosis that is typically made based on aggregate findings on clinical assessment, blood tests, synovial fluid aspirate, and culture results.

- **Study summary:** This was a prospective cross-sectional convenience sampling conducted on 71 adult patients who presented to a midwestern emergency department from 2013 to 2016 with features concerning for septic arthritis of the knee. The researchers found that 7% of the patients were confirmed to have septic arthritis of the knee joints based on synovial fluid culture.

  The sensitivity and specificity of clinical assessment were poor, whereas synovial fluid white blood cell counts (WBC) and gram stain had much better test characteristics (Sp 80%, Sn 96% for synovial WBC count, and Sn 97%, Sp 100% for gram stain, respectively). In addition, a high-serum CRP (>100 mg/L) was found to have 100% sensitivity but only 75% specificity. Therefore, a very high CRP can be used for ruling out but not ruling in of septic arthritis of knee joints.

- **Limitations:** This was a small, single-center study. Only the knee joint was evaluated and, therefore, the applicability of the findings to other joints may be limited. The majority of the patients were African-Americans. ■

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Management of Recurrent Cellulitis

- **Key point:** The application of compression therapy reduces the recurrence of cellulitis in the legs.

- **Citation:** Webb E, Neeman T, Bowden FJ, et al. Compression therapy to prevent recurrent cellulitis of the leg. *N Engl J Med*. 2020;383(7):630-639.

- **Relevance:** Recurrent cellulitis in patients with chronic leg edema is common, and prevention is challenging. Little is known regarding the utility of compression therapy compared with standard care for prevention of recurrent cellulitis.

- **Study summary:** This is a single center, nonblinded trial conducted in Australia between June 2017 and February 2019. Eighty-four adult patients were divided into two groups: 1) compression group (n=41), which received compression therapy and education about cellulitis and 2) the control group (n=43), which received only education. Follow-up occurred every 6 weeks for a period of 3 years. The primary outcome was the recurrence of cellulitis; secondary outcomes were hospital admission due to cellulitis, changes in leg volume, and quality-of-life assessments.

  The researchers found that there was a lower incidence of recurrent cellulitis in the compression group (n=6, 15%)

than the control group (n=14, 40%) with a hazard ratio of 0.23, which was highly significant. The number needed to treat with compression to prevent one case of recurrent cellulitis was four. There were also fewer hospital admissions due to cellulitis among the compression group (three, 7%) than the control group (six, 14%).

- **Limitations:** This study was a small, single-center study. There was potential for bias due to the nonblinded methodology. ■

How Do Analgesics Affect Risk for Fracture Nonunion?

- **Key point:** COX-2 inhibitors have a higher association with fracture nonunion than the nonselective nonsteroidal anti-inflammatory drugs. Interestingly, opioid analgesics are also associated with impaired fracture healing.

- **Citation:** George MD, Baker JF, Leonard CE, et al. Risk of nonunion with nonselective NSAIDs, COX-2 inhibitors, and opioids. *J Bone Joint Surg Am*. 2020;102(14):1230-1238.

- **Relevance:** Nonunion of fractures is a cause of significant morbidity. Therefore, it is worthwhile to understand risk factors, including medications, which may predispose to malunion.

- **Study summary:** This is a retrospective cohort study conducted on the basis of the Optum Database of fracture patients in the United States between 2000 and 2015. Following rigorous inclusion and exclusion criteria, over 300,000 fracture episodes in adult patients were evaluated for association of the use of COX-2 inhibitors, nonselective NSAIDs, and opioids with fracture nonunion occurring between 3 and 12 months after the initial injury.

  Nonunion was rare and occurred in 0.9% of long-bone fractures (2,996 cases). The researchers found that the incidence of nonunion was higher among those taking COX-2 inhibitors (adjusted odds ratio = 1.84 [95% confidence interval = 1.38 to 2.46]) or opioids (adjusted odds ratio = 1.69 [95% CI= 1.53 to 1.86]). Interestingly, the incidence of the nonunion for long bones was relatively lower among those taking nonselective NSAIDs (adjusted odds ratio = 1.07 [95% CI = 0.93 to 1.23]).

  The researchers also noted that those filling multiple prescriptions for COX-2 inhibitors, NSAIDs, and opioids all had higher incidence of nonunion of long bones. Interestingly, patients who were taking COX-2 inhibitors or nonselective NSAIDs prior to their fractures had higher rates of nonunion.

- **Limitations:** This was a retrospective study using an Optum de-identified database, which may have incomplete data. The authors only investigated for nonunion in long-bone fractures. Therefore, the study may not be generalizable. It was not clear how the researchers classified patients who were co-ingesting other medications.

Can We Use the HEART Score without a Troponin?

- **Key point:** Troponin testing did not add any additional value in the risk stratification of low-risk patients with chest pain (ie, those with a HEAR (minus T) score of 0 or 1). Such patients had a risk of the major adverse cardiac event (MACE) <1% within 30 days of their initial chest pain presentation and can be safely discharged from UC for outpatient follow-up.

- **Citation:** Smith LM, Ashburn NP, Snavely AC, et al. Identification of very low-risk acute chest pain patients without troponin testing. *Emerg Med J*. 2020;37(11):690-695.

- **Relevance:** The HEART score is based on history, ECG findings, age, risk factors, and troponin measurement. The HEAR scoring system is based on the HEART score but does not include troponin testing. The HEAR scoring system is useful, as rapid troponin testing is often not available in the UC setting.

- **Study summary:** This is a preplanned secondary analysis of the HEART Pathway Implementation Trial which was conducted on nearly 5,000 adult patients (n=4,979) in three hospitals in North Carolina between 2013 and 2016. The authors included adult patients over 21 years with low-risk chest pain. Patients with ECG changes or other features of high-risk chest pain (eg, abnormal ECG and/or known coronary artery disease) were excluded. The primary outcome was MACE, which was defined by death, myocardial infarction, or need for re-vascularization within 30 days.

  The researchers found that 9% of the patients (447/4,979) had the HEAR score of 0 or 1. Among these patients, 0.9% (4/447) developed MACE in the subsequent 30 days (two deaths and two MIs). Among the patients with a HEAR score of 0 or 1, the sensitivity for MACE was 97.8% (95% CI 94.5% to 99.4%), which validates the HEAR score as a valuable tool to risk stratify low-risk patients in UC. Neither the sensitivity nor the negative predictive value was impacted by the troponin test results. Interestingly, both patients who died had cancer (lymphoma and lung cancer). The researchers concluded that among the patients with a HEAR score, ≤1 may not have benefited from the serial troponin testing.
- **Limitations:** Different troponin assays were used between sites. ■

Intravenous Fluids in Headache Management

- **Key point:** There was no statistically significant benefit of IV

fluids in the management of benign headaches in this study.

- **Citation:** Zitek T, Sigal T, Sun G, et al. I-FiBH trial: intravenous fluids in benign headaches—a randomised, single-blinded clinical trial. *Emerg Med J*. 2020;37(8):469-473.

- **Relevance:** Many clinicians administer IV fluids such as normal saline as part of a "cocktail" in the management of benign headache presentations (eg, migraine).

- **Study summary:** This is a randomized, single-blinded, clinical trial (RCT) conducted in a single center in Nevada. Fifty-eight patients between the ages of 10 and 67 years were evaluated. Subjects were divided into two groups: 1) a fluid bolus group (n= 35) who received 20 mL/kg of IV normal saline along with IV prochlorperazine 0.15 mg/kg up to 10 mg and diphenhydramine 1 mg/kg up to 50 mg, and 2) the control group (n=23), who received IV normal saline along with the same dose of IV prochlorperazine and diphenhydramine. The primary outcome was the mean reduction of pain scores within 60 minutes of the onset of treatment, as measured through a visual analogue score. The secondary outcomes were pain reduction in 30 minutes, nausea scores, use of rescue medications, and disposition.

  The researchers found no statistically or clinically different improvement in mean pain score reduction at 60 minutes between the fluid bolus group and the control group. In addition, the authors did not find any statistically significant differences between the groups in terms of the secondary outcomes. They concluded that there is no evidence to support routine use of IV fluids in the management of benign headache.

- **Limitations:** The study was dependent on the availability of the research assistants between 14:00 and 22:00, excluding patients presenting outside this window. ■

COVID-19 Literature Reviews

Telemedicine in the Era of COVID-19

- **Key Point:** COVID-19 has prompted a significant expansion of telemedicine services.

- **Citation:** Mann DM, Chen J, Chunara R, et al. COVID-19 transforms healthcare through telemedicine: evidence from the field. *J Am Med Inform Assoc*. 2020;27(7):1132-1135.

- **Relevance:** The number of patients with COVID-19 continues to rise and with it the associated health and safety concerns for staff. Telemedicine offers a solution for healthcare delivery that addresses these issues.

- **Study summary:** This is a retrospective observational study conducted in the New York University Langone Health between January 1, 2020 and April 14, 2020. Patients with COVID-19-related symptoms were included in the analysis. The application of video telemedicine services was divided into 1) urgent care and 2) nonurgent care practice.

  The researchers found a significant increase in the use of telemedicine services since the start of the COVID-19 pandemic in New York area. On March 2, 2020, the rate of telemedicine use in the health system was 369.1 visits per day; this increased to 866.8 per day (an increase of 135%) as the study period continued. The authors concluded that the COVID-19 pandemic has caused a significant increase in both COVID- and non-COVID-related presentations, as well.

- **Limitations:** This was a retrospective study. ■

The Second Wave of COVID-19

- **Key point:** The second wave of COVID-19 that has swept through the world notably had a lower case fatality ratio than the first wave.

- **Citation:** Grech V, Cuschieri S. COVID-19: a global and continental overview of the second wave and its (relatively) attenuated case fatality ratio. *Early Hum Dev*. 2020 Oct 3:105211.

- **Relevance:** COVID-19 continues to have a significant impact on urgent care and healthcare systems throughout the world. Following the initial surge, a second wave of COVID-19 occurred.

- **Study summary:** This is a retrospective observational study using COVID-19 data publicly available in the Our World in Data website. The authors analyzed the datasets published between December 2019 and September 2020. They found that there were two waves of the virus at the global level. The first wave peaked in mid-April followed by a plateau phase and subsequently a second wave in mid-June and beyond. Regionally, the second wave was different throughout the world. While the incidence of COVID-19 rose steadily in Asia, it had a bimodal distribution in Europe and a decline in North America. The authors also reported that the case fatality rate was 0.08 during the first wave, but fell to 0.02 during the second wave.

- **Limitations:** This was a retrospective observational study on the basis of publicly available data which was not validated. There have been subsequent waves of COVID-19 regionally, which were not analyzed as part of this study. ■

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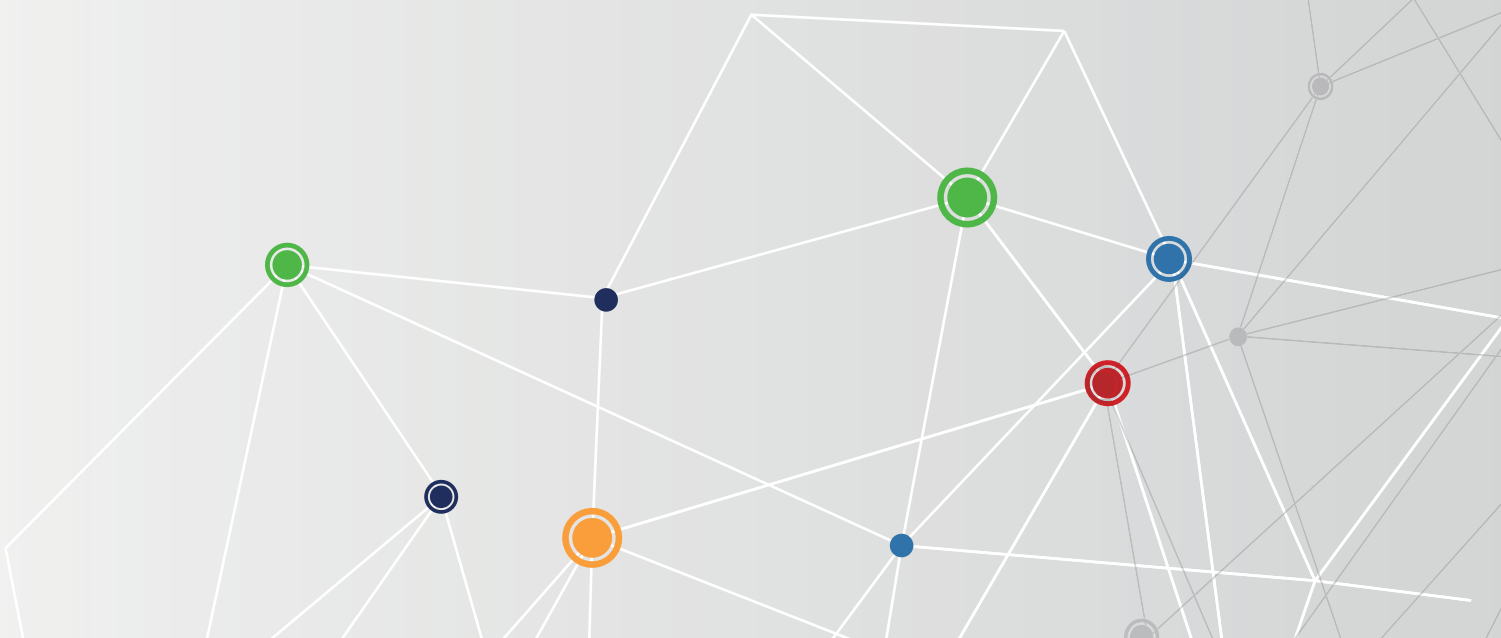


INSIGHTS IN IMAGES

CLINICAL CHALLENGE: CASE 1

In each issue, *JUCM* will challenge your diagnostic acumen with a glimpse of x-rays, electrocardiograms, and photographs of conditions that real urgent care patients have presented with.

If you would like to submit a case for consideration, please email the relevant materials and presenting information to *editor@jucm.com*.

A 32-Year-Old Male with Thumb Pain After a Ski Fall

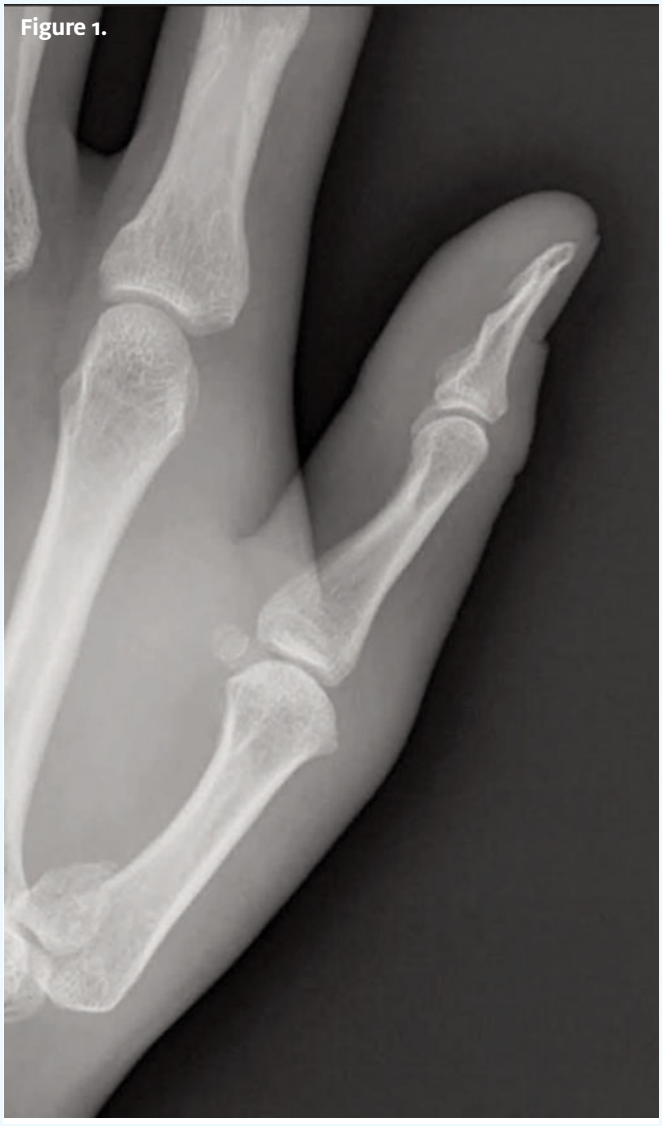


Figure 1.

Case

The patient is a 32-year-old man who presents with pain in his left thumb after skiing. He reports that he took a fall, instinctively extending his left arm out to cushion the blow.

View the x-ray taken and consider what your diagnosis and next steps would be. Resolution of the case is described on the next page.

THE RESOLUTION

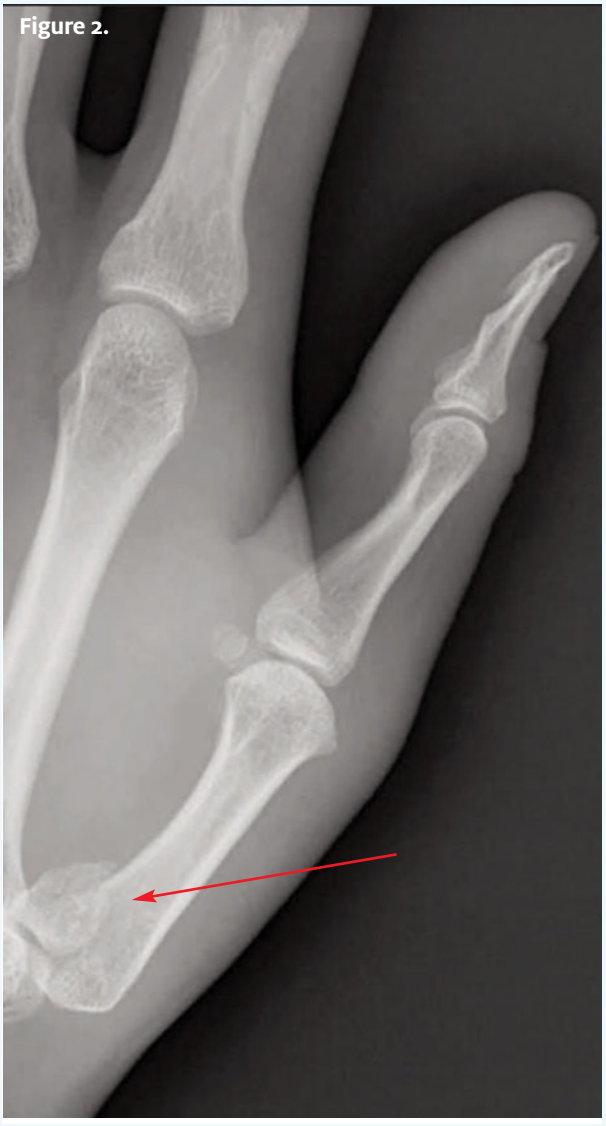


Figure 2.

Differential Diagnosis

- Bennett fracture
- Epibasal fracture
- Rolando fracture

Diagnosis

The x-ray shows a minimally displaced intraarticular fracture of the base of the first metacarpal, also known as a Bennett fracture.

Learnings/What to Look for

- Bennett fractures result from opposing traction forces by the anterior oblique ligament in combination with either axial loading onto a flexed thumb (eg, during a punch) or shearing force against the first web space ("motorcyclist thumb")
- Trapeziometacarpal joint avulsion can manifest as soft tissue injury, but more commonly manifests as a fracture. Two-part intraarticular Bennett fracture dislocations are the most common
- Bennett fractures are associated with thumb collateral ligament injuries and fractures of the trapezium

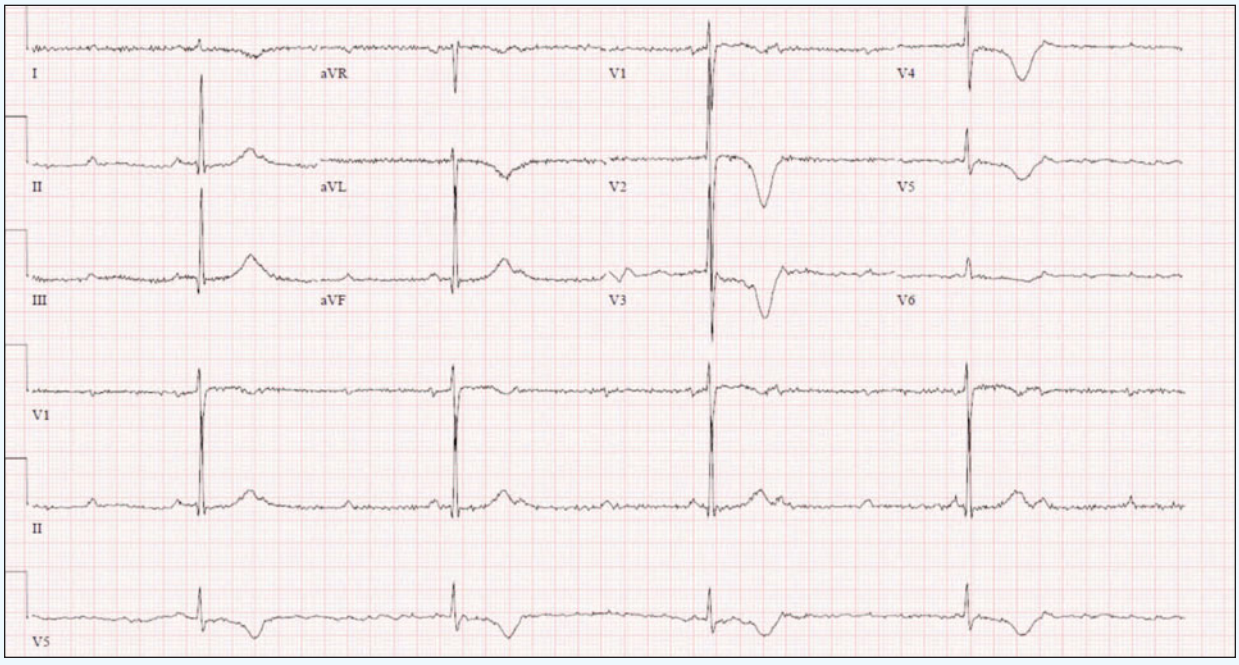
Pearls for Urgent Care Management

- Because of proximally and radially directed forces from multiple muscles, the larger radial-sided metacarpal fracture fragment is prone to proximal migration, while the ulnar-sided fracture fragment is anchored in place by the anterior oblique ligament attachment to the trapezium
- Closed reduction and thumb spica cast immobilization are effective in the treatment of Bennett fractures if the reduction can be maintained. This consists of thumb traction combined with metacarpal extension, pronation, and abduction
- If closed reduction is not possible, referral to an orthopedic surgeon is warranted. Operative repair typically consists of percutaneous pinning or open reduction with pins or interfragmentary screws

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

CLINICAL CHALLENGE: CASE 2

A 60-Year-Old Woman with Hypertension, Diabetes, and Sudden Fatigue and Weakness



Case

A 60-year-old female with a history of hypertension and diabetes presents to urgent care with fatigue and weakness for 1 day. Her son states she has not been able to get out of bed today because she's "too tired to walk." She denies any complaints of chest pain, nausea, vomiting, shortness of breath, or fever.

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

(Case presented by Catherine Reynolds, MD, The University of Texas Health Science Center at Houston McGovern Medical School.)

THE RESOLUTION

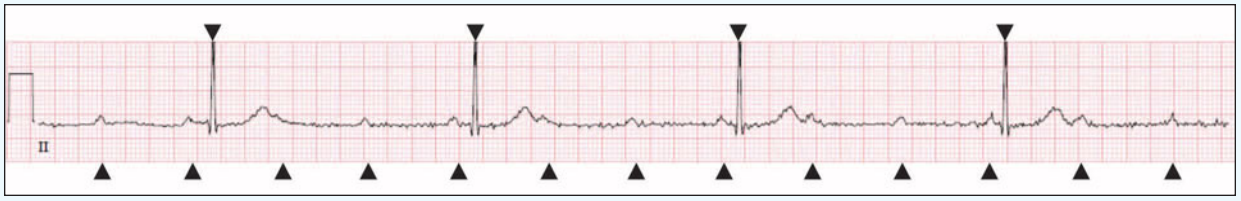


Figure 2. AV dissociation with completely independent ventricular (▼) and atrial (▲) rates.

Differential Diagnosis

- Sinus bradycardia
- Second-degree atrioventricular (AV) block
- Third-degree AV block
- Hyperkalemia
- Beta-blocker toxicity

Diagnosis

The ECG has an atrial rate of 80 bpm and a ventricular rate of 27 bpm. There are more P waves than QRS complexes, signifying the presence of an atrioventricular block. Both the P waves and the QRS complexes appear to be occurring regularly, but at different rates and with no relationship to each other.[1]

These findings support the ultimate diagnosis of a third-degree AV block, or complete heart block.

In complete heart block, the ECG will show complete atrioventricular dissociation. None of the atrial impulses are conducted to the ventricles, and perfusion is maintained only by a junctional or ventricular escape rhythm from an ectopic focus.

If the block is the result of a diseased atrioventricular node, a junctional focus emerges and produces a rate between 40 and 60 BPM. However, when infra-Hisian conduction disease exists (ie, below the bundle of His), the focus will be ventricular, and will be slower and less reliable.[1,2]

Because an escape rhythm may be transient, absent, or not generating enough cardiac output for perfusion, a third-degree AV block is life-threatening. It is typical for a patient with this condition to experience severe bradycardia and hypotension. If no escape rhythm is present, the patient will arrest due to cardiac standstill.

(*A note about isorhythmic complete heart block:* On initial inspection of this ECG, you may suspect the patient has a second-degree AV block, Mobitz type II, as it appears there is a P wave before each QRS complex, and the other beats have been "dropped." If this were the case, however, we'd expect the PR interval to stay consistent throughout. On closer examination of this patient's ECG, you'll notice that the PR interval varies, and in fact the apparent relationship between the P waves and QRS complexes is only by chance. This phenomenon is called *isorhythmic* complete heart block, and can be difficult to distinguish from a second-degree AV block, Mobitz type II. This patient was confirmed to have complete heart block via an electrophysiology study.)

Learnings/What to Look for

- When an ECG has more P waves than QRS complexes, consider the presence of an atrioventricular block
- A third-degree AV block will have no discernible relationship between P waves and QRS complexes
- An isorhythmic complete heart block can be difficult to differentiate from a second-degree AV block, Mobitz type II, but both represent conduction disease that needs emergent intervention

Pearls for Urgent Care Management

- Patients with third-degree AV block are at high risk of sudden cardiac death due to ventricular standstill, and should be immediately transferred for cardiac monitoring and insertion of a permanent pacemaker
- Patients with hemodynamically unstable bradycardia from an atrioventricular block should be transcutaneously paced and immediately transferred to an emergency department

References

1. Knabben V, Chhabra L, Slane M. Third-Degree Atrioventricular Block. [Updated 2020 Aug 8]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; January 2020. Available at: https://www.ncbi.nlm.nih.gov/books/NBK545199/. Accessed January 10, 2021.
2. Kusumoto FM, Schoenfeld MH, Barrett C, et al. 2018 ACC/AHA/HRS Guideline on the Evaluation and Management of Patients With Bradycardia and Cardiac Conduction Delay: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the Heart Rhythm. *Circulation*. 2019;140(8):e382-e482.

Acknowledgment: *JUCM appreciates the assistance of ECG Stampede (www.ecgstampede.com) in sourcing content for electrocardiogram-based cases for Insights in Images each month.*

ECG STAMPEDE

CLINICAL CHALLENGE: CASE 3

A 7-Year-Old Girl with White Patches on Her Toenails

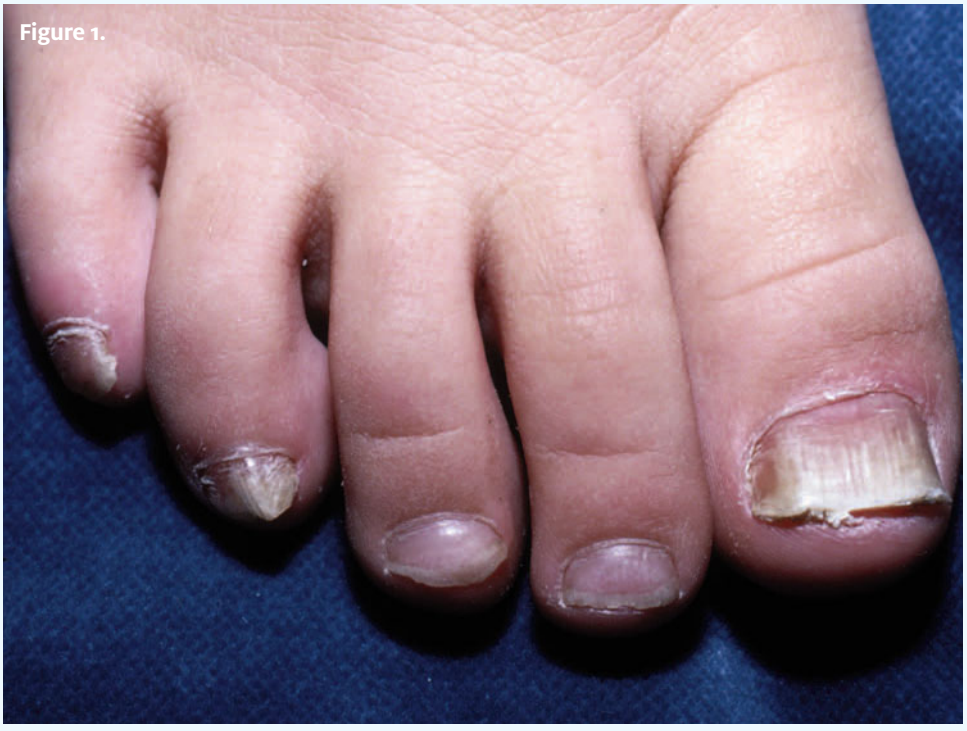


Figure 1.

Case

A mother brought her 7-year-old daughter to the pediatric urgent care center after noticing that several of the girl's toenails on each foot had white patches and appeared short and broken. They seemed to be lifting off the nail beds and looked thinner than usual.

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

THE RESOLUTION

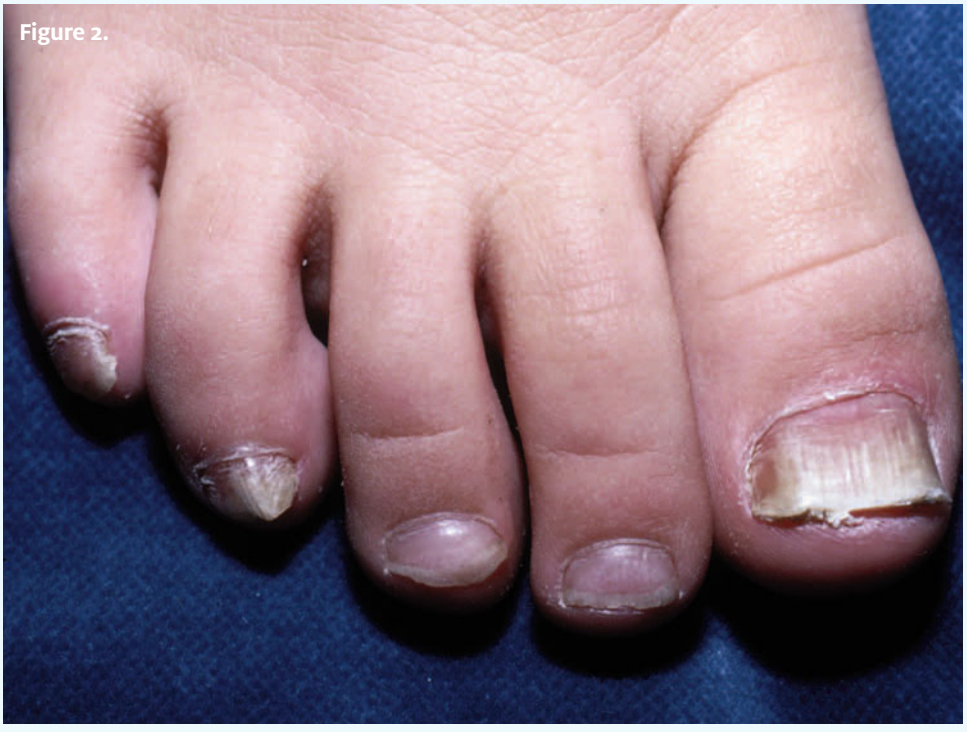


Figure 2.

Differential Diagnosis

- Onychomycosis
- Nail psoriasis
- Subungual wart
- Nail candidiasis

Diagnosis

This patients was diagnosed with onychomycosis, a fungal infection of the nail (tinea unguium) caused by dermatophyte fungi and, less frequently, by nondermatophyte molds or yeasts.

Onychomycosis is more frequent in men and is commonly associated with concurrent tinea pedis. The prevalence of onychomycosis in children varies from 0.2% to 2.6% (mean 0.3%). The low prevalence in children compared with adults is thought to be due to children's fast nail-plate growth and their lower incidence of tinea pedis, compared with adults.

Learnings/What to Look for

- Predisposing factors include diabetes mellitus, peripheral vascular disease, immunosuppression, genetic predisposition, atopic dermatitis, psoriasis, Down syndrome, occlusive footwear, obesity, malignancy, trauma, and older age
- Personal history of tinea pedis and/or contact with a household member with onychomycosis/tinea pedis are among the most common risk factors
- Toenails are more commonly affected than fingernails, and fingernail infection is typically preceded by or associated with toenail infection

Pearls for Urgent Care Management

- Topical antifungal applications are effective in theory, though penetrating the nail is challenging. Debridement or removing the infected part of the nail may be helpful
- Oral medications such as itraconazole, terbinafine, and fluconazole are effective but may require monitoring through blood tests and should be avoided in patients with liver disease
- Counsel parents to help children keep toenails short, to ensure shoes fit properly, and to encourage children to wash and dry their feet thoroughly
- With recurrence, families should be advised to consult a pediatric dermatologist

Acknowledgment: *Images and case presented by VisualDx (www.VisualDx.com/JUCM).*

Last Minute Coding Changes for 2021

MONTE SANDLER

December brought us some last-minute coding changes. In some cases, this caused a small claim delay as clearinghouses and payers scrambled to update their systems.

Condition	2020 ICD-10	2021 ICD-10
Encounter for screening for COVID-19	Z11.59	Z11.52
Contact with and (suspected) exposure to COVID-19	Z20.828	Z20.822
Personal history of COVID-19	Z86.19	Z86.16
Pneumonia due to coronavirus disease	U07.1 and J12.89	U07.1 and J12.82

New ICD-10 Codes for COVID-19

Effective January 1, 2021, there are new ICD-10 codes for reporting COVID-19-related diagnoses. These codes replace the existing codes we are using that are not as specific.

There are two other new codes:

- **M35.81** *(Multisystem inflammatory syndrome (MIS))*; and
- **M35.89** *(Other specified systemic involvement of connective tissue)*.

For patients diagnosed with MIS and COVID-19, report **U07.1** with **M35.81** as an additional diagnosis.

If MIS develops as a result of a previous COVID-19 infection, report codes **M35.81** and **B94.8**, *(Sequelae of other specified infectious and parasitic diseases)*.

If the provider does not document that the MIS is due to the previous COVID-19 infection, report codes **M35.81** and **Z86.16**.

If the patient has a known or suspected exposure to COVID-19, and no current COVID19 infection or history of COVID-19, report codes **M35.81** and **Z20.822**.

Additional codes should be assigned for any associated complications of MIS.

Monte Sandler is Executive Vice President, Revenue Cycle Management of Experity (formerly DocuTAP and Practice Velocity).

Practices were able to start using these new ICD-10 codes with date of service effective January 1, 2021.

As a reminder, per official ICD-10 guidelines, a screening diagnosis (ie, Z11.52) is "generally not appropriate" during a public health emergency. Instead, use the possible exposure code Z20.822, even for preoperative clearance. This is the same diagnosis code you would use to report actual exposure.

Changes to the E/M Add-on Codes

In addition to a 3.75% increase to the conversion factor, the Consolidated Appropriations Act, 2021 delayed implementation of the add-on code G2211 until 2024. This code would have been used for the additional complexity related to a patient's single, serious condition or a complex condition.

The Centers for Medicare & Medicaid Services (CMS) also created their own add-on code for prolonged services beyond the time defined by code 99205 and 99215. HCPCS G2212 should be used instead of CPT code 99417 to report these services.

+G2212 Prolonged office or other outpatient evaluation and management service(s) beyond the *maximum* required time of the primary procedure which has been selected using total time on the date of the primary service; each additional 15 minutes by the physician or qualified healthcare professional, with or without direct patient contact (List separately in addition to CPT codes 99205, 99215 for office or other outpatient evaluation and management services)

+99417 Prolonged office or other outpatient evaluation and management service(s) beyond the *minimum* required time of the primary procedure which has been selected using total time, requiring total time with or without direct patient contact beyond the usual service, on the date of the primary service, each 15 minutes of total time (List separately in addition to codes 99205, 99215 for office or other outpatient Evaluation and Management services)

The difference is that the American Medical Association recognizes "minimum time," and Medicare recognizes "maximum time" for the level 5 codes. As a result, there will be two different time ranges, and code selection will depend on which time definition an insurance payer follows.

New Patient		
AMA Time in Minutes	**CMS Time in Minutes**	**99417/G2212 Units**
Less than 75	Less than 89	0
75-89	89-103	1
90-104	104-118	2
More than 105	More than 119	3

Established Patient		
AMA Time in Minutes	**CMS Time in Minutes**	**99417/G2212 Units**
Less than 55	Less than 69	0
55-69	69-83	1
70-84	84-98	2
More than 85	More than 99	3

CPT 99417 would be reported to private payers unless their payer policies state otherwise.

More Vaccine Codes

The AMA continues to add codes for reporting COVID-19 vaccines as products receive Emergency Use Authorization (EUA) from the U.S. Food & Drug Administration or get closer to being approved.

The structure is different from other vaccines. Each unique vaccine will have its own administration codes(s), depending on the number of doses.

All vaccines are reported with diagnosis code Z23 *(Encounter for immunization)*.

Vaccine Administration	Manufacturer	Vaccine Code
0001A (1st dose) 0002A (2nd dose)	Pfizer, Inc.	91300
0011A (1st dose) 0012A (2nd dose)	Moderna, Inc.	91301
0021A (1st dose) 0022A (2nd dose)	AstraZeneca, Plc	91302

Billing comes with its own challenges. While providers will not be paid for the product if they received it for free, some payers want the product code on the claim and others do not. If the product must be reported, it should be billed at $0.00 or $0.01.

CPT 99211 should not be reported when that is the only service performed. The work for the visit is captured by the administration code. Also reporting 99211 would be considered "double dipping."

Private payers seem to be following Medicare's lead on reimbursement. The payment rate for administration of a single-dose vaccine is $28.39. If two or more doses are required, the initial administration would be reimbursed at $16.94 and the final administration at $28.39.

Look for more information as more vaccines become available. ■

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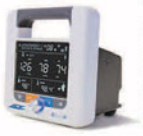

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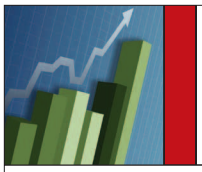


DEVELOPING DATA

Children Are Visiting Urgent Care in Growing Numbers—Does That Match Your Experience?

JUCM has devoted a lot more space to covering aspects of providing urgent care for children. In this very issue there's a new original research article on how long the SARS-CoV-2 virus lasts in children who may or may not be symptomatic (see page 23). And if you look at our Masthead, you'll notice we've even engaged a pediatric urgent care provider to provide guidance and to help us ensure we're conveying the right information when it comes to treating younger patients.

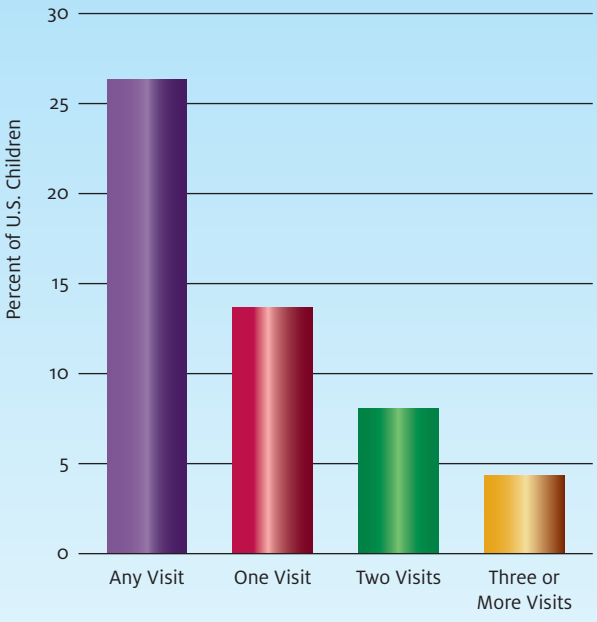
These are not random choices. They reflect changes we've observed in the urgent care industry—changes that are now being quantified by research by the Centers for Disease Control and Prevention.

Most recently, the CDC's National Center for Health Statistics published data revealing that more than a quarter of children in the United States visited an urgent care center or other walk-in facility in 2019. Many of those patients visited multiple times. And it stands to reason that their parents would become return visitors, as well.

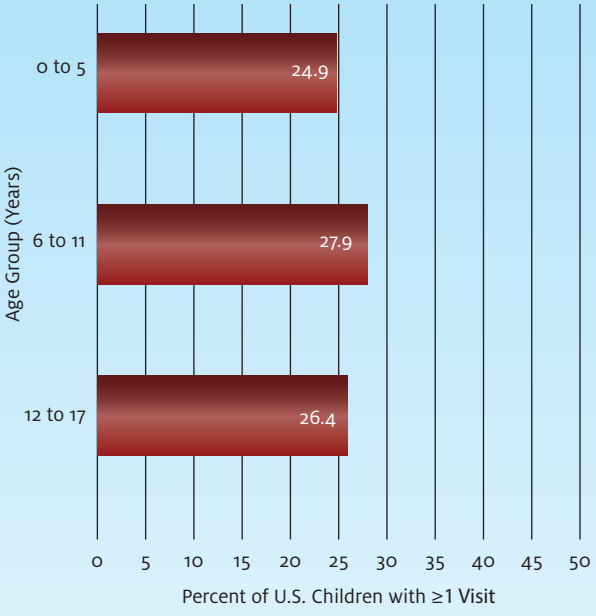
Check out the graphs below for more detail. ■

CHILDREN VISITING URGENT CARE AND RETAIL CLINICS

U.S. Children (Age 0–17 Years) with One or More Visits to an Urgent Care or Retail Clinic in 2019



Pediatric Visits to Urgent Care and Retail by Age Group



Data source: Black LI, Zablotsky B. Urgent care center and retail health clinic utilization among children: United States, 2019. Centers for Disease Control and Prevention. National Center for Health Statistics. Available at: https://www.cdc.gov/nchs/products/databriefs/db393.htm. Accessed January 8, 2020.

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