

# JUCM<sup>®</sup>

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# Don't Forget about the Road Behind



If you're reading this, you've survived 2020. Congratulations!—although it probably doesn't feel like there's much success to revel in at the moment. Indeed, this has been a year of hardship for everyone in some form and certainly, for many, it still may feel like there's no end in sight. And it doesn't seem like much cause for celebration to have dodged a bullet when you're still staring down the barrel of a loaded gun. However, any glass that is half empty is also half full and I think it can prove instructive, if not therapeutic, to remind ourselves of just how far we've come this year.

In keeping with tradition, rather than looking forward for any prospect of a “return to normalcy,” allow me to take this time at year's end to reflect a bit on some of the positives that have come from the last 12 months.

I assumed the role of Editor-in-Chief of *JUCM* at the beginning of 2020 and never could've dreamed of the plots twists which would unfold over just 12 months. It was, in fact, in the same month that I took over at the *Journal*, that the first case of COVID-19 was diagnosed in the U.S. Then, less than 2 months later, COVID-19 was declared a pandemic. Since then, we have been battered by no less than three “waves” of COVID case surges—each heartbreakingly arriving just when the prospect of reprieve seemed within reach. As I write, we are facing renewed austerity measures and shutdowns throughout the city of Chicago and nation, and, indeed, throughout the world.

While the road ahead seems long (and likely is), I'm amazed when I look in the rearview mirror at just how far we've come this year in medicine and in the specialty of UC specifically. Just 10 months ago, we had no understanding of how the novel coronavirus was spread, how to prevent it, how to test for it, and how to treat the more serious complications of it. I can clearly recall the early days of the pandemic, when we'd run a flu swab and call it COVID if the influenza test was negative, but “seemed like the flu.” Now, who among us couldn't rightfully claim to be a de facto COVID-ologist? By comparison, it took over 20 years after the first case of HIV before we had any clinical test to detect infection.

We're undoubtedly fortunate that this pandemic arrived in an era of more advanced technology. This allowed for the sequencing of the SARS-CoV-2 genome within weeks of its discovery. Additionally, through various online communities, we have been able to communicate the findings from our clinical experiences with affected patients instantly and throughout the world. In pre-COVID times, clinical studies often took many years from planning to publication. The former pace of scientific progress seems positively glacial compared with what researchers tackling the pandemic have accomplished thus far: going from 0 to over 64,000 hits in a PubMed search for “COVID.”

I'm proud to report *JUCM*'s contribution on this front as well. Prior to 2020, there had been only a handful of original research studies published in the *Journal*. However, in this trying time, our fellow members of the UC community felt an obligation to share critical findings they had learned while caring for the massive numbers of COVID-19 patients who presented to UC centers around greater New York City. We also recognized the relevance and timeliness of these findings and worked closely with the authors to expedite several COVID-related original research publications. At the time of release, these studies were the largest examinations of chest x-ray findings in COVID patients ever published and subsequently have been cited by other investigators hundreds of times.

The UC community at-large has also risen to the challenge. As volumes plummeted during the spring months, many UC centers pivoted quickly and adopted novel telehealth platforms that allowed them to continue to deliver timely and convenient care to millions of sick patients and the “worried well” alike. This allowed many patients to stay home when seeking in-person care was unnecessary, which certainly mitigated the spread of infections—an undeniable service to public health.

In many communities, UC centers have functioned as primary sites for much of the COVID testing as well. Despite many uncertainties and hurdles in obtaining reliable PPE and testing supplies, we have not been deterred. Rather, we have lived up to our stated mission of providing convenience of access and

## EDITOR-IN-CHIEF

have accommodated, and continue to serve, patients with COVID-related concerns in dramatic quantities every day.

And, while it is true that we haven't yet found the ideal antiviral or a safe and effective vaccine, our progress is hopeful. Since the pandemic began in March, we have gone from gasping for breath to treading water to confidently swimming the backstroke. All the while, I have been constantly amazed by the ingenuity and perseverance I've seen in the UC community as we've supported the nation and world through this impossibly difficult moment.

There remains a long road ahead for us, but I am sure we are up to the challenge. And with a new year comes revived energy—the phenomenon behavioral psychologists refer to as the "fresh start effect." After seeing all we've done over the last

9 months, combined with the full head of steam we will undoubtedly bring to 2021, I can't wait to see what we will accomplish together over the next 12 months.

Happy New Year,



Joshua W. Russell, MD, MSc, FAAEM, FACEP  
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### We want to hear from you!

Every issue of *JUCM* is packed with information for urgent care professionals, written by urgent care professionals. And we're happy to deliver it to you. But we'd like to make this a two-way conversation. So, if you read something here you find especially interesting, helpful, or thought-provoking, let us know. If there's a topic you'd like us to consider (or that you'd like to write about yourself), let us know. And by all means if you think we've missed the mark on something, let us know that as well. Feel free to write to us any time at [editor@jucm.com](mailto:editor@jucm.com). We look forward to hearing from you.



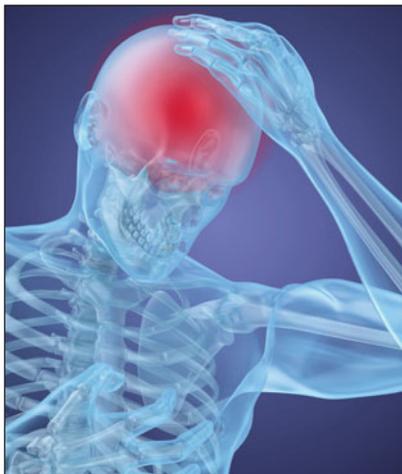
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**ORIGINAL RESEARCH**

## 17 Urgent Care Provider Awareness of the Canadian Computed Tomography Head Rule: A Descriptive Cross-Sectional Survey Study

Patients with possible traumatic brain injury presentations are becoming more common in the urgent care setting—leaving providers to decide who truly needs a CT and who does not need to be exposed to unnecessary radiation (and incur unnecessary cost). How well does the Canadian Computed Tomography Head Rule help the process?

Jessicah Ray, DHSc, MS, PA-C and  
Jeffrey L. Alexander, PhD, FAACVPR, ACSM-CEP

**ORIGINAL RESEARCH**



## 13 Necessity (or Not) for Patient Transfer from Urgent Care to the ED Following Traumatic Brain Injury

Once it's been determined that a patient sustained a minor traumatic brain injury, the next step is to assess the need for a higher level of care. This retrospective study examined when that was actually necessary for mTBI patients at a multisite, community concussion clinic—and which patients could be managed at the urgent care level safely and cost-effectively.

Anthony P. Doran, PsyD; Robert G. Graw, Jr., MD; Marc Weber, MD; Stanford Coleman, MD; Kevin Crutchfield, MD; and Daniel Pokrifka, ATC

**HEALTH LAW AND COMPLIANCE**



## 25 A New Wrinkle in the Debate Over Providing PrEP in Urgent Care

A powerful tool in combating the spread of HIV comes with significant precautions—to which the specter of litigations might also be added.

Alan Ayers, MBA, MAcc

**CASE REPORT**



## 29 Left Eye Pain in an Overall Healthy 19-Year-Old Female

While eye pain is a common complaint in urgent care, its source can be both uncommon and foreboding. Starting the patient on the right course begins with emphasis on particular components of the history and physical.

Lindsey E. Fish, MD

**NEXT MONTH IN JUCM**

With so much attention focused on the COVID-19 pandemic and related lung damage, it may be surprising to learn that people (especially young people) continue to take up use of electronic smoking devices. Yet, they do—and many will wind up with e-cigarette or vaping-associated lung injury (EVALI). Would you be able to discern what symptoms might be attributed to EVALI? Read the original article we have planned for the January issue of JUCM and you will.

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# JUCM CONTRIBUTORS

Quantifying the occurrence of concussions in the United States is a dicey proposition. Clearly, the data show it has grown in recent years, but is that because there are more head injuries occurring, or because concern over short- and long-term effects has grown?

Either way, more patients are seeking care in urgent care after sustaining a blow to the head. So, we're pleased to bring you a pair of original research articles this month that will foster greater understanding of mild traumatic brain injury in general, and how it should be approached in the urgent care setting in particular.

Urgent Care Provider Awareness of the Canadian Computed Tomography Head Rule: A Descriptive Cross-Sectional Survey Study (page 17), was contributed by **Jessicah Ray, DHSc, MS, PA-C** and **Jeffrey L. Alexander, PhD, FAACVPR, ACSM-CEP**, both of the College of Graduate Health Studies, A.T. Still University. Their study dug into the question of how the CCHR can best be employed, especially in figuring out which head injury patients truly need to undergo a CT scan.

Once a patient has been diagnosed with mTBI, the next question is whether they can be treated safely and efficiently in the urgent care center, or whether they need to a higher level of care. **Anthony P. Doran, PsyD; Robert G. Graw, Jr., MD; Marc Weber, MD; Stanford Coleman, MD; Kevin Crutchfield, MD;** and **Daniel Pokrifka, ATC** tackle that issue in Necessity (or Not) for Patient Transfer from Urgent Care to the ED Following Traumatic Brain Injury, starting on page 13.

Dr. Doran practices with HeadFirst Sports Injury and Concussion Care in Crofton, MD, as do Drs. Graw, Weber, Coleman, and Mr. Pokrifka. Dr. Crutchfield is with LifeBridge Comprehensive Concussion Clinic.

Urgent care providers are likely to have varying degrees of expertise and comfort when it comes to providing care for patients with eye-related complaints. Comfortable or not, however, they're coming your way when the need arises for immediate evaluation. Such was the case with a 19-year-old woman with sudden pain of no obvious origin in her left eye. Where would you start, and what would you expect the outcome to be? In Left Eye Pain in an Overall Healthy 19-Year-Old Female, **Lindsey E. Fish, MD** recounts a real-life case that could help you answer those questions. It begins on page 29.

Dr. Fish is medical director, Denver Health's Pena Southwest Urgent Care Clinic and an assistant professor of medicine at the University of Colorado School of Medicine.

Not all urgent care patients come in with such textbook complaints, of course. One subject that has been controversial for years is the relative wisdom, or lack thereof, of offering pre-exposure prophylactic medications for patients at heightened

risk for HIV. On the one hand, the lifesaving potential of PrEP is beyond discussion. On the other hand, the complicated nature of the regimen, likelihood of side effects, and the need for regular follow-up could leave operators vulnerable to litigation in the event of bad outcomes. **Alan Ayers, MBA, MAcc** evaluates the pros and cons from a medicolegal perspective in A New Wrinkle in the Debate over Providing PrEP in Urgent Care, starting on page 25. Mr. Ayers is CEO of Velocity Urgent Care and senior editor, practice management content, for *JUCM*.

In keeping with our coverage of concussion-related topics this month, **Ivan Koay, MBChB, FRNZCUC, MD** has contributed summaries of literature on long-term outcomes in patients with mTBI, the proper length of time athletes should be advised to stay away from their sport after a concussion, identification of a new biomarker helpful in assessing adolescents for mTBI, whether all warfarin-taking patients with head injuries need a CT, and more. You can read these, and more, in Abstracts in Urgent Care (page 31). Dr. Koay is an urgent care physician based in Dublin, Ireland, as well as an Examiner and Trainee Supervisor for the Royal New Zealand College of Urgent Care Education Faculty for the Urgent Care Medicine Fellowship, Royal College of Surgeons, Ireland.

Finally, **Monte Sandler**, vice president, revenue cycle management for Experity, brings us invaluable new information on coding for COVID-19 tests. As the pandemic heats up (again), you're likely to continue seeing greater numbers of patients who want/need to be tested. Be sure you're being fairly compensated for it with the correct codes. You can read all about it in Revenue Cycle Management on page 46.

## Thanks to Our Peer Reviewers

In every issue of *JUCM*, there are select articles on which we ask members of our peer review panel to comment. It's one step we take in trying to ensure that all the content we publish is relevant, clearly communicated, and free of bias. For their contributions in reviewing content for the October, November, and December issues, we thank:

**Tracey Quail Davidoff, MD, FACP, FCUCM**

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# The Irony of Urgency

■ LOU ELLEN HORWITZ, MA

**M**y friends, we have almost made it through 2020. This is typically the time of year we give thanks for all we've been given, reflect a bit on what we've accomplished, and prepare ourselves for what's next. Or at least that's what we think we are supposed to be doing.

I'm guessing your reality isn't full of time for reflection. Even if the "twindemic" has not fully materialized by the time this is published, it's been a long time since things were slow in urgent care, and it will be a long time before they are again.

So where does that leave us? Is it simply our lot in urgent care to run headlong into the future and figure it out as we go? We pride ourselves—and rightfully so—in our ability to respond quickly to the changing world around us, but there are consequences to that being our only *modus operandi*.

If you read Stephen Covey's *Seven Habits of Highly Effective People* you read his admonishment that a constant focus on what's urgent (oh, the irony), whether important or not, will have you and your teams spending all of your time fighting fires. The consequences of constant firefighting are all around us: stress, burnout, and feelings of no control of our lives.

Only a prioritization of the "not urgent, but important" work will help you begin to develop systems and fix broken processes and cultures. But that work doesn't happen fast. We don't get to cross it off a list at the end of the day. If you want to move your system exponentially forward, the terrible irony is that you have to slow down, not move faster.

But the problem with slowing down—especially in comparison with urgent care's normal rhythms—is that it feels like stopping, and stopping is anathema to our industry's culture. Even when the country screeched to a halt, we kept going.

We've been wrestling with this concept at UCA for the last 6 months, and the current conclusion is this: urgent care isn't ready to truly slow down, but we can probably do better.

We can do better at remembering that urgent care does have

"seasons" so we can do better at getting you ready for those seasons. We can do better at ensuring fundamental skills are mastered by your new providers and staff so they can do better at their jobs. We can do better at helping you staying connected with your peers all year instead of once-a-year.

We made several big moves recently to *start* to do better, and I want to make sure you saw them:

1. We moved the date of UCA2021, the annual convention, from April to October 9–13. It's just for 2021, but we recognize that urgent care's role in COVID likely won't normalize by April, and we want to see you next year.
2. We strengthened the relationship between UCA and the College of Urgent Care Medicine—all UCA members will also be College members, with no additional dues. We also added a new member benefit by partnering with UpToDate—check it out on [ucaoa.org](http://ucaoa.org).
3. We launched a members-only private Facebook group so you can have a place to hang out with your urgent care peers when you need it.
4. We republished the *Benchmarking Report* to include a new chapter on your COVID response. This report is frequently purchased by investors, and that addition tells a fantastic story about the capabilities of urgent care in the face of uncertainty.

We are going to report on industry data differently in 2021, no longer relying solely on direct surveying, and reporting in a season-sensitive way. We are also working on a seasonal approach to our educational programs and our tools and resources. Our goal is to have them in your hands about a month before you need them, so you don't have to hunt them down yourself. We are also reorganizing the website so when you do have a fire to put out, it's easier to find the right extinguisher. Look for rollouts in Q1 2021.

And of course, there will be more....

But for now, I do want to stop and say *thank you*. We have had so many conversations with leaders at the federal and state level who leave those conversations amazed at what all of you have accomplished in your responses to COVID-19. It is an honor and a privilege to get to tell your stories and speak on behalf of our entire industry. ■



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

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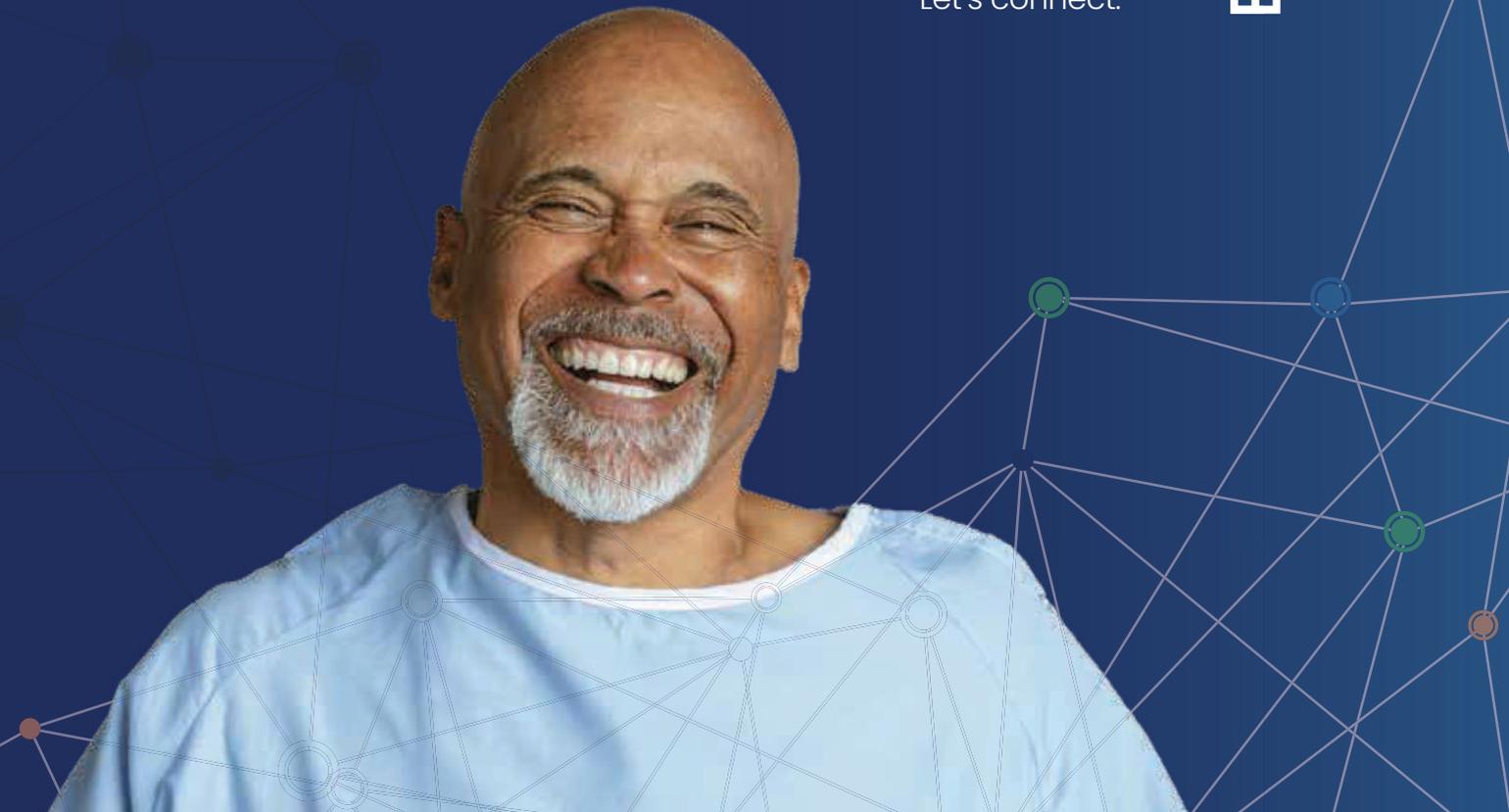
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# Overcoming the Trauma of Making a Medical Error: Self-Forgiveness Is an Important Skill for Recovery

■ KATHI NORMAN, MSBS, MAPP, DMSC, PA-C

Have you ever made a mistake while practicing medicine that negatively affected somebody's life? Even if you haven't yet, you probably will if you practice long enough. Have you thought of how you will recover afterwards? Fatal errors can affect healthcare providers all through their career.<sup>1</sup> Self-forgiveness after a medical error facilitates open mindedness, recovery from trauma, relief of mental and emotional anguish, re-engagement, growth, and regained appreciation for life.<sup>2</sup>

It is prudent for healthcare professionals to learn and practice the skill of self-forgiveness to allow for recovery from the trauma of medical errors, which are likely to occur as they care for patients.

Medical errors are inevitable, but how one traverses the events that follow can compound mental anguish.<sup>1,3</sup> In a heavily publicized case, 50-year-old Kim Hiatt, a seasoned nurse working in a neonatal intensive care unit at Seattle Children's Hospital, injected 1,400 mg of calcium chloride into to a critically ill 8-month-old (a 10-fold dosing error) in September 2010.<sup>4</sup> As a result, the infant died 5 days later. Ms. Hiatt was heavily sanctioned by the state nursing association and fired by her employer despite her appropriate response—immediately revealing the mistake and logging the error into the electronic medical record. Public investigative records revealed that it was her first known medical error.

Unfortunately, Ms. Hiatt committed suicide 7 months after the event.



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The *Journal of the American Medical Association* reported the results of a focus-group study in 2003 that physicians “experienced powerful emotions following a medical error [and] felt upset and guilty about harming the patient...the most difficult challenge was forgiving themselves for the error.”<sup>5</sup>

Ms. Hiatt's coping skills were likely diminished for many reasons after the death of her patient.<sup>4</sup> Her colleagues and employer failed to support her after her mistake. Without their support, she struggled and ultimately was unable to navigate the fallout of the trauma. With institutional support, she might have negotiated the aftermath without becoming another victim. Self-forgiveness is an important step in order to move past these unfortunate events.<sup>2</sup>

The authors of an article published in *Academic Medicine* asked 61 doctors, “What helps physicians after committing a serious medical error?”<sup>2</sup> One physician commented that “doctors have long been thought of as perfect.” However, perfection is clearly an unattainable standard. Because of this phenomenon, healthcare institutions are recognizing increasingly that providers are at risk of becoming “second victims” when medical errors occur, as in the case of Kim Hiatt.<sup>4,6,7</sup> And being a second victim is often exacerbated by a sense of responsibility for the patient's outcome, which is often faced alone and without institutional support.

While we can't go back and undo the errors, our response can allow opportunity for personal growth, assimilation back into the medical team, accountability to the patient's family, and instructive lessons for colleagues on how to avoid similar errors.<sup>3,5</sup> With the death of Ms. Hiatt came the loss of 25 years of nursing experience that could have continued to prove valuable in the care of many subsequent patients.

**Scope of the Issue**

A medical error is formally defined as a “preventable adverse effect of medical care, whether or not it is evident or harmful to the patient.”<sup>6</sup> Medical errors are responsible for an alarming 250,000 estimated deaths in the U.S. annually. Only heart disease and cancer kill more Americans.<sup>8,9</sup> The number of deaths attributed to medical errors is also very likely to be underreported for many reasons, and the total deaths related to medical errors have been estimated to be as high as 440,000 per year.<sup>10</sup>

According to the Agency for Healthcare Research and Quality, the eight most common medical errors involve communication problems, inadequate information flow, patient identification and assessment, human error, organizational transfer of knowledge, staffing patterns and workflow, inadequate policies, and technical failures.<sup>11</sup> And while most of us enter medicine with noble intentions and unbridled idealism, the inescapability of medical errors quickly becomes undeniable. Many providers, in their quest for perfection in clinical practice, understandably develop loneliness, depression, substance abuse, and shame.<sup>12,13</sup> Providers are taught to “suck it up” and “show no cracks.” So, the natural question becomes: How can providers navigate the negative emotions resulting from medical errors in such an unforgiving environment?

**How to Heal After the Error**

Clinical psychologists suggest that the ability to forgive is one characteristic of an emotionally healthy person.<sup>5</sup> However, self-forgiveness can be a process that takes significant time and effort. Self-forgiveness is necessary, though, because it enables medical providers to continue to practice effectively after errors.

Let’s, therefore, examine how self-forgiveness works.

Elements shared across the various models of forgiveness for others include choosing to forgive, committing to forgiveness, recalling the hurt and evaluating the feelings, dealing with the anger, seeking empathy toward the transgressor, and reflecting on how unforgiveness is affecting the victim’s wellbeing.<sup>14</sup>

We commonly are harder on ourselves than on others. But self-forgiveness is not about letting yourself off the hook. It is about accepting what has happened and finding the will to move past it. Self-forgiveness, therefore, requires self-acceptance and self-awareness. Various authors have proposed a four-stage therapeutic approach for self-forgiveness involving:<sup>15,16</sup>

- Responsibility
- Remorse
- Restoration
- Renewal

*Responsibility*

Taking responsibility for an error demonstrates compassion for the patient harmed by the error and fosters rebuilding trust for

the patient and their family. This is about accepting the mistake and moving past it. Taking responsibility is often the hardest step. It means we stop making excuses, rationalizing, and justifying what we did. It is the time when we face the error. Taking responsibility often can reduce the negative emotions after an error such as regret, shame, and guilt.

*Remorse*

After taking responsibility, showing remorse is the next step toward healing. Remorse can be a painful emotion that arises from regret of a past event. Without it, internal resolution and self-forgiveness will likely be difficult. By expressing remorse when one has erred, these feelings can become a springboard toward positive change.

Remorse is often tied together with guilt and shame, which commonly arise in the fallout after an error. To achieve self-forgiveness, it helps to sit with guilt and avoid shame. The difference between the two is subtle, but important. *Guilt* implies that the mistake was a bad action, whereas *shame* suggests that the mistake signifies the whole person is bad. Shame tends to be more pervasive and can lead to substance abuse and depression. Additionally, holding onto shame damages self-esteem and can, therefore, be counterproductive to doing self-work toward positive change.

*Restoration*

Restoration is an action step that follows responsibility and remorse. In this step, we must act sincerely to make amends and work to repair any damage. While it is natural to try to downplay the event or ruminate on how others might have been the cause, these thoughts do not move you forward.

Restoration involves adherence to a code of medical ethics—and to a sense of fairness and what’s right. After medical harm occurs, sound ethical practice demands disclosure of the error to patients and their families, apology, and fair compensation for damages. These are actions that help providers rectify their mistakes and restore trust.

*Renewal*

Negative emotions and self-judgment are expected after an adverse medical event. In the renewal phase, these negative emotions are released to allow for healing. In releasing the negative emotions, we are not forgetting. Rather, we are appreciating our intrinsic worth, stopping self-punishment, and embracing self-compassion, acceptance, and respect.

Renewal offers an opportunity to renew commitment to our values, as well. Providers are held to high standards and living up to them can be difficult. Accepting our limitations and weaknesses can provide an opportunity to approach our work with a renewed and more realistic set of expectations for our performance.

**Bringing It All Together**

Recovering from a medical mistake may take years.<sup>2</sup> Self-forgiveness is an important skill for healthcare providers to develop because we will all make an error at some point in our careers.<sup>1</sup> Society simply cannot bear to lose a provider every time a medical error is committed.

What if Ms. Hiatt had been able to forgive herself? Her 25 years of nursing expertise might have been salvaged, offering an opportunity to positively affect many more lives.

Care organizations and medical licensing boards must begin to accept some responsibility for their contribution to the current environment and the *second victim* syndrome. In the meantime, the one thing we as providers can control is our willingness to practice self-forgiveness, which is crucial for getting through the negative emotions that occur after a medical error.

Self-forgiveness is one step in the process of how we learn, heal, and move forward. Genuine self-forgiveness is not shallow grace. It is about making changes, getting past the event, and learning from it. By granting ourselves forgiveness, we can learn to accept what has happened and move on.

Bad things happen, but tragedy offers opportunity for positive change. After medical errors, we, as providers, can find ways to make some good come from them. Self-forgiveness is the critical first step in our response to medical errors and necessary in creating space for healing and growth. ■

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# Necessity (or Not) for Patient Transfer from Urgent Care to the ED Following Traumatic Brain Injury

**Urgent message:** With patients who have sustained head injuries due to both sports- and non-sports-related activities presenting to urgent care more than ever before, it's essential for the provider to have a nuanced understanding of which patients truly require transfer or referral to a high-acuity level of care, and which can be managed successfully and safely in the urgent care setting.

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## Abstract

**Background:** Urgent care, family practice, and pediatric clinicians and researchers have debated for years whether patients with a mild traumatic brain injury (mTBI) need immediate imaging after injury. HeadFirst is a community-based concussion clinic with locations throughout Maryland that evaluates an average of 1,300 mTBI patients per month. We reviewed data from patients who were diagnosed and treated from January 2016 through December 2018.

**Objective:** A constant question among primary care physicians and in urgent care centers is whether all patients seen with a head injury require CT or MRI imaging to assess for intracranial bleeding.

**Methods:** Researchers examined transfers of patients with a diagnosis of mTBI from 18 community-based urgent care centers to

local emergency departments between January 2016 and December 2018. A total of 17,451 consecutive urgent care patients with head injuries and mTBI were reviewed for evaluation, diagnosis, need for emergent neuroimaging and results of neuroimaging, using multiple validated assessment techniques.

**Results:** Of the 17,451 patients reviewed, 843 (4.8%) were transferred to the emergency department for imaging; only four (.02%) evidenced positive results on CT scan. Results suggest that urgent care clinicians can rely on their clinical evaluation in making decisions regarding need for higher level of care or brain imaging. A solid mTBI examination that includes a thorough history, neurological and physical exam, subcortical evaluation (examination of ocular, nerve and balance functioning), and neurocognitive testing can assist the clinician in making decisions about patient care.

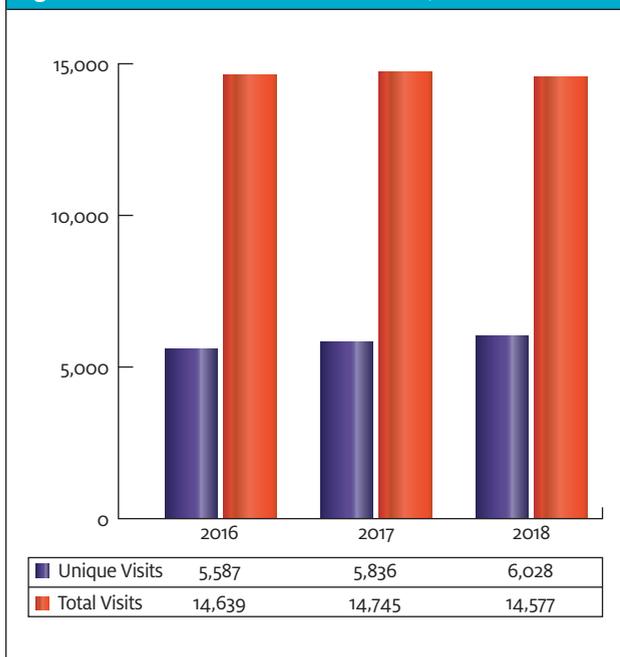
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## Introduction

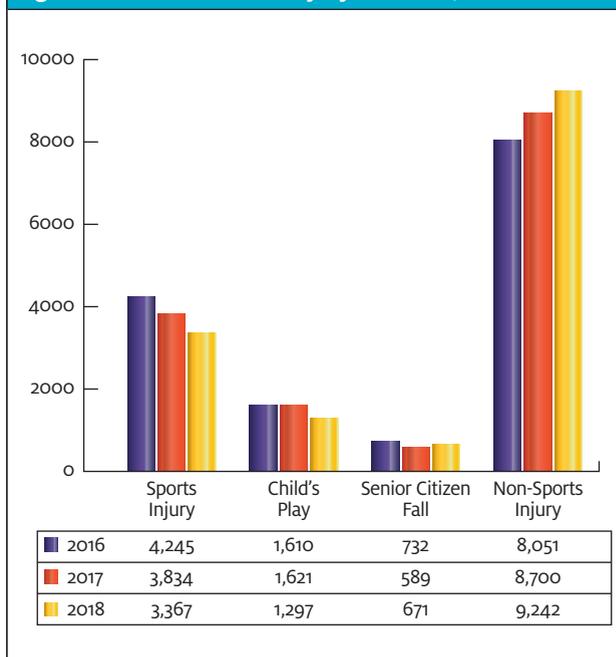
Traumatic brain injuries account for between 6% and 9% of all athlete injuries among United States high school and college athletes.<sup>1</sup> An mTBI is a blow to the head or body that causes axonal and rotational forces to the brain that can be observed by self-report of physical, cognitive, emotional, and sleep symptoms; subtle changes to cranial nerves; alterations in ocular-motor

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**Figure 1. Visits for Head Trauma Cases, 2016-2018**



**Figure 2. Mechanisms of Injury for mTBI, 2016-2018**



and balance functioning; or a change in neurocognitive functioning. Self-reported symptoms and changes in functioning from an mTBI can last days, weeks, months and in some cases much longer. With over 1.7 million people in the U.S. seeking medical attention for head injury each year, clinicians are challenged to identify the small subgroup of patients who possibly have sustained a potentially lethal intracranial bleed while minimizing radiation exposure and unnecessary cost from diagnostic testing and hospital admissions.<sup>2</sup> Researchers estimate there are over a million mTBI-related ED visits in the U.S. annually. Children aged 0–14 years were more likely to be seen in the ED; typically, males outnumber females 3 to 1.<sup>3</sup> Children (under 14) and the elderly (over 85) were the most frequently seen in the ED for mTBI.<sup>4,5</sup> The most common mechanisms of injury were falls, motor vehicle accidents (MVAs) and being struck by an object; only 20% were sports-related.

Several studies have examined the presence of mTBI in the ED. Researchers examined data from U.S. hospitals that provide emergency services in the National Electronic Injury Surveillance System (1997–2007) and All Injury Program (2001–2005).<sup>6</sup>

Half of all ED visits involving concussion were sports-related, with 14–19 year-olds making up 60% of these visits. Of the sports-related injuries, only 25% were sustained during organized team sports (OTS). From 1997

to 2007, although participation in OTS during the study period declined, ED visits for concussions related to OTS in 8–13 year-old children doubled.<sup>6</sup>

Other researchers surveyed a sample of 522 athletes and found that 20% reported concussion-like symptoms after being hit in the head the previous year, yet 89% of patients did not recognize that they had a concussion. Headache was the most common symptom of mTBI.<sup>7</sup> Confusion/disorientation was second in recognized mTBI and dizziness was second in unrecognized mTBI. Nausea was the most common reason for someone to seek medical attention, followed by loss of consciousness and memory problems.<sup>7</sup>

Some scientists measured the number of pediatric patients with concussions in EDs and the treatment they received. Data collected from children’s hospitals in the Pediatric Health Information System show that ED visits for concussion more than doubled from 2001 to 2010 (2,126 vs 4,967; <.001),<sup>8</sup> while total admissions remained the same. Further, 60% of ED visits for concussion received a computed tomography (CT) scan and about 47.7% received medication (most frequently: non-narcotic painkillers) or IV fluids.<sup>8</sup>

Although a number of studies have examined primarily the epidemiology and incidence rates of mTBI in the ED, few have examined the efficacy of a clinician’s tools utilized in the examination of a patient’s head trauma

in making the determination whether the patient should receive imaging.

Righttime Medical Care is an urgent care facility with 18 locations in Maryland. HeadFirst is a community-based concussion clinic located within 12 of the Righttime Care Centers. The two provide a community-based continuum of care for mTBI. Righttime Medical Care began evaluating patients with head injury in 2011. A retrospective review was conducted to assess if clinicians (physicians, nurse practitioners, physician assistants, and neuropsychologists) in an outpatient urgent care facility could accurately and reliably predict (utilizing standard history and physical assessment skill) the need for radiological imaging in patients with suspected mTBI.

### Methodology

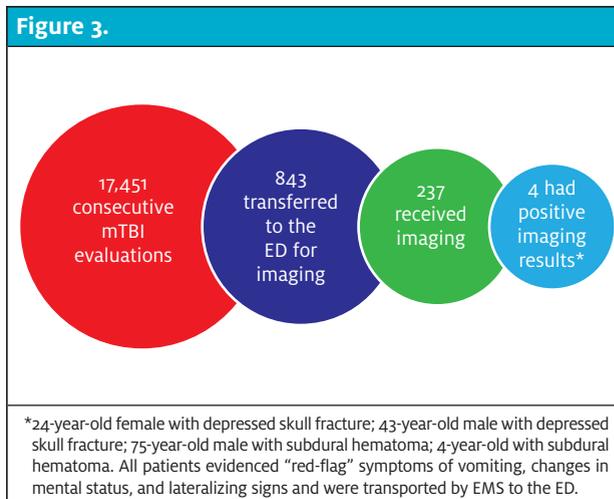
In this study, researchers examined emergency department transfers from 18 community-based urgent care clinics with a diagnosis of mTBI to surrounding area EDs from January 2016 to December 2018. During that span, 17,451 unique head trauma cases were seen at these urgent care clinics (**Figure 1**).

Clinicians used the Acute Concussion Evaluation (ACE)<sup>9</sup> to gather history and information about the patient's head trauma, present symptoms, comorbid diagnoses, and risk factors.

After performing a complete and thorough standard physical and neurological examination, clinicians further assessed cranial nerves, balance, and ocular-motor functioning. This assessment included consideration of the Canadian CT Head Rule (GCS score  $\leq 15$  at 2 hours after injury; suspected open or depressed skull fracture; any signs of basal skull fracture; vomiting  $\geq 2$  episodes; age  $\geq 65$ ; amnesia before impact  $\geq 30$  mins; dangerous MOI; Pediatric - GCS score  $\leq 15$  at 2 hours after injury; suspected open or depressed skull fracture; any signs of basal skull fracture; vomiting  $\geq 2$  episodes; dramatically worsening headache or irritability; large hematoma ( $>5\text{cm}$ ) on the scalp; dangerous MOI).<sup>10</sup>

Following the initial assessment of each patient by the assigned medical provider, the findings were discussed with a HeadFirst Medical Director before the transfer to the ED. Each and every head trauma is maintained in an electric record and manual spreadsheet for ease of patient identification and program improvement.

Per these sources of information, 843 patients were transferred to the ED. The ages of these ED transfer patients ranged from as young as 2 months to 96 years old. The average age was 40; 108 (12.8%) of the transfer patients were younger than 8 years of age; 353 (41.8%)



were 9 to 64 years of age; and the remainder were 65 or older ( $n=382$ , 45.3%). Each gender was nearly equally represented with 453 (53.7%) females and 390 (46.2%) males. An examination of the breakdown of all mTBIs in our sample is in **Figure 2**.

### Results

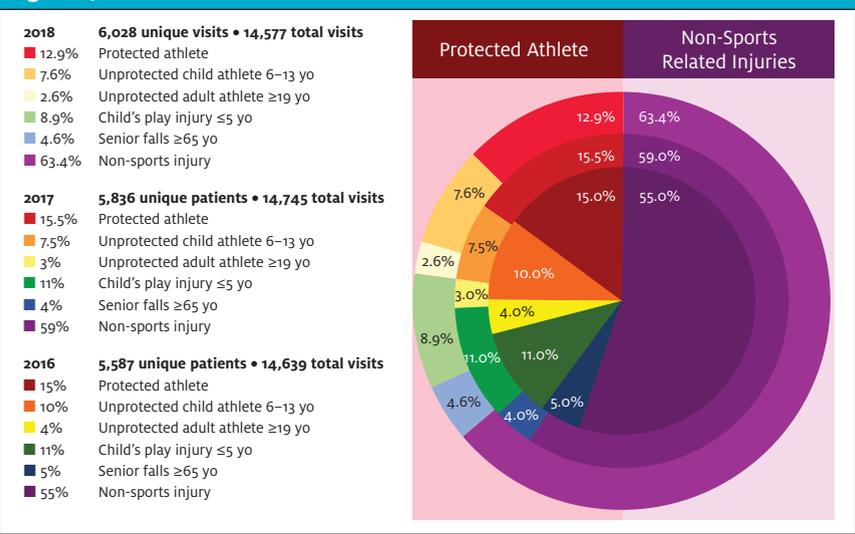
Of the available ED transfer patients that senior medical officer and clinical staff followed up with ( $n=743$ ), 247 (36%) reported being imaged in the ED; the remainder were monitored and released for outpatient follow-up. Of the patients that *did* receive imaging, two had CT scan due to depressed fracture (24-year-old and 43-year-old) and two subdural hematomas (one 75-year-old and a 4-year-old). These patients had abnormal findings on neurological and cranial nerve examinations and clinicians knew that neuroimaging would be positive (**Figure 3**).

Out of 843, 750 (89%) were non-sports-related and only 93 (11%) were sports-related. Of the non-sports-related injuries, the majority were falls or accidental in nature ( $n=581$ , 69%), and MVAs ( $n=118$ , 14%). A complete breakdown of all mTBIs from 2016 to 2018 is contained in **Figure 4**.

### Limitations

This program analysis has several limitations. This analysis is a retrospective observational study with a convenience sample. As that suggests, while data collection was relatively convenient this sample may not represent the general population. There was a fair amount of attrition in that 12% of patients who could not be reached by phone or email, even with multiple attempts by multiple staff. All such patients were sent a letter

Figure 4.



*“The data suggest that urgent care is a safe environment in which to assess mTBI, and that urgent care providers can make thorough and appropriate evaluations.”*

including clinic recommendations regarding imaging and following up with a concussion specialists and the risks of not following up with a medical professional. In theory, there could have been several patients with serious neurological complications but it is unlikely they would not have circled back to inform clinic staff or providers.

**Discussion**

Although sports-related concussions are more publicized, the majority of mTBIs self-referred or taken to the local ED are due to MVAs, falls (non-sports-related), and assaults. As can be seen from Figure 4, the percentage of “protected athletes” (those in programs with coaches, athletic trainers, and the support network of their school) has decreased over the years. This could be reflective of rule changes in youth sports, modification of play taught by coaches, or more athletic trainers, pediatricians, and family practice physicians being comfortable due to increased training and education in man-

aging noncomplicated concussion. Over the course of almost 3 years, with more than 5,000 new head traumas presenting to an urgent care clinic on a yearly basis, the transfer rate to the ED was 4.8%. The incidence rates seen in our sample is consistent with CDC data and research from other studies.

Overall, the data suggest that the urgent care setting is a safe environment in which to assess mTBI. Urgent care clinicians can make appropriate and thorough evaluations and observe patient functioning while assessing the need for referral to the next level of care due to more serious associated injury (ie, for evaluation of skull fracture, sub-

dural or intracranial hematoma).

This study suggests potential modification of the decision rules for outpatient facilities in obtaining costly neuroimaging studies may be warranted. Clinicians who are experienced in the thorough, rigorous assessment of traumatic brain injury can safely and accurately assess the need for further imaging and predict intracranial complication. ■

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# Urgent Care Provider Awareness of the Canadian Computed Tomography Head Rule: A Descriptive Cross-Sectional Survey Study

**Urgent message:** As visits to urgent care after possible traumatic brain injury continue to rise, so does the importance of understanding which patients require a CT scan. Assessing the value of the Canadian Computed Tomography Head Rule in making that determination can raise the urgent care provider's ability to make informed decisions in this regard, reducing the risk of unnecessary radiation exposure in patients who are determined to not need a CT.

JESSICAH RAY, DHSC, MS, PA-C and JEFFREY L. ALEXANDER, PHD, FAACVPR, ACSM-CEP

Abstract	
<p><b>Background:</b> Despite years of training of emergency department (ED) providers, rates of unnecessary head computed tomography (CT) scans after acute traumatic brain injury continue to increase internationally, exposing patients to unnecessary radiation and increased cancer risk.</p> <p><b>Objective:</b> The purpose of this descriptive, cross-sectional, correlational study was to quantify the awareness and use of the Canadian Computed Tomography Head Rule (CCHR) among American urgent care providers and to assess predictor variables of provider characteristics.</p> <p><b>Methods:</b> The current study used a modified self-administered online survey that was purposely distributed to active urgent care (UC) providers in the United States. Snowball methods were used</p>	<p>to increase distribution. Results were analyzed with descriptive and correlation statistics.</p> <p><b>Discussion:</b> Forty-eight of 70 surveys were analyzed. Twenty-two were rejected for not meeting inclusion criteria (ie, not medical providers) or not answering past the study exclusion questions. Almost half of providers had CCHR awareness (45%) and use rates (43%). They also had highly positive attitudes on the use, applicability, and desired training of the CCHR. Further, CCHR awareness was associated with familiarity with the survey's clinical case scenario (<math>P=.03</math>, <math>\Phi=0.34</math>).</p> <p><b>Conclusion:</b> The CCHR is an applicable and accepted tool that can be used by urgent care providers as a novel strategy to prevent overuse of head CT scans and decrease patient harm.</p>

Citation: Ray J, Alexander JL. Urgent care provider awareness of the Canadian Computed Tomography Head Rule: a descriptive cross-sectional survey study. *J Urgent Care Med.* 2020;15(3):17-24.

## Introduction

Traumatic brain injury (TBI) is a leading cause of global disability and death<sup>1</sup> and necessitates continued research to optimize identification and management.

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**Case Scenario**

A 23-year-old male who was playing football got struck to the temporal region with a ball during the game. He fell down to the ground with a brief (5-10 seconds) loss of consciousness (LOC) then he was helped up on his feet by other players. He was complaining of a headache, dizziness, and nausea without vomiting, and he could not recall the event of injury and he denied neck pain. He was brought to the urgent care for initial assessment. Primary survey was completely normal. The patient is alert, oriented and GCS is 15 but he could not recall the event.

Head computed tomography (CT) is the gold standard medical imaging test to identify intracranial hematoma that could require immediate intervention to prevent death or morbidity after acute TBI, but may unnecessarily subject the patient to substantial radiation exposure.<sup>2-4</sup> Notably, more than 80% of TBIs are classified as mild (mTBI or concussion) and rarely require a head CT.<sup>1</sup> When CTs are obtained for mTBIs, more than 90% are negative for clinically significant findings, and less than 1% require neurosurgical intervention.<sup>5-7</sup> Emergency medicine providers have been the primary audience for training on the appropriate use of medical imaging, but unnecessary head CT rates in the emergency department continue to increase worldwide.<sup>8,9</sup>

New prevention strategies are needed, and nonhospital providers who refer patients for head CT inappropriately are an ideal and novel target population to reduce overuse of CT.<sup>6,10</sup>

Overuse of CT is a public health problem; an estimated 12 preventable radiation-induced cancer deaths occur each day in the United States.<sup>11</sup> An individual's estimated increased lifetime cancer risk after a CT is influenced by multivariate factors. Radiation from head CT causes the equivalent amount of 8 months of natural radiation exposure or 115 chest x-rays.<sup>12</sup>

As global cancer rates increase, judicious limitations on imaging radiation exposure and enhanced clinical discretion are imperative,<sup>3,13</sup> especially in pediatric patients who have developing brains, increased radiation sensitivity, and more years to accumulate cancer-causing exposures.<sup>3,10</sup> Of CT scans performed, 10% have incidental findings that may result in repeat scans, causing additional radiation exposure.<sup>14</sup> Given these outcomes, research does not support the increased use of head CTs.<sup>7</sup>

To decrease the use of head CT, the Centers for Disease Control and Prevention, in conjunction with the American College of Emergency Physicians, developed clinical recommendations and initiated a TBI-tracking program

to reduce unnecessary CTs in mild head injury patients, inform clinical health policy, and improve TBI identification, which is currently at only 11% nationally.<sup>15</sup> Electronic clinical tools, such as interactive websites, online training, bedside tablets, mobile applications, and clinical decision prompts, were also developed to decrease unwarranted head CTs.<sup>14,16</sup>

A clinical decision tool (CDT) can be used to guide clinician decisions and involves three or more variables from the history, examination, and simple tests.<sup>5</sup> The Canadian Computed Tomography Head Rule (CCHR) is a CDT developed by Stiell, et al<sup>17</sup> to guide the ordering of head CT scans for patients with mild head injury. It is considered the most accurate CDT for ruling out the need for head CT by identifying clinically significant findings and cases requiring neurosurgical intervention.<sup>18,19</sup> The CCHR is 100% sensitive and has been consistently validated, has a demonstrated superiority over other head injury CDTs, and has shown global applicability and cost effectiveness in most hospital settings.<sup>2,3,6,7,13,17,18,20</sup> The CCHR has the potential to decrease head CTs by nearly 40%<sup>21,22</sup> and is an effective and easy tool for diverse healthcare providers triaging mild head injuries. It can be beneficial in the urgent care setting when there is no direct access to head CT. Further, research supports its use in multiple specialties.<sup>22,23</sup>

Over 80% of TBI medical care occurs in the outpatient setting.<sup>24</sup> Head injuries are regularly triaged and stabilized in urgent care centers, where providers frequently have to determine which patients require transfer to the ED or an imaging facility.<sup>17,19,25,26</sup> A visit to an urgent care center costs 10% as much as a trip to the ED—and the capabilities of urgent care centers are expanding. Further, urgent care centers outnumber EDs nationwide, and over 150 million patients visit UCs annually.<sup>25,27,28</sup>

Patients referred to the ED by non-ED providers can increase rates of inappropriate CTs.<sup>19,25</sup> Patient demand and a lack of economic deterrents, combined with a cultural perspective that more information is better, has encouraged imaging overuse.<sup>14</sup> In nearly 40% of ordered CTs, the patient's expectation of CT overrode CCHR determinations and influenced inappropriate CT.<sup>14,19,29,30</sup> However, research suggests reassuring patients can effectively prevent CT misuse.<sup>30</sup>

Given the persistent overuse of CT, studies investigating the use of the CCHR should be conducted in broader populations, new settings, and clinical practice.<sup>18,20,29,31</sup> To our knowledge, no studies have evaluated the CCHR in an urgent care setting, and only one study examined the CCHR in a non-ED setting.<sup>23</sup> Therefore, quantifying

urgent care provider awareness and use of the CCHR may highlight this population for targeted interventions to reduce unnecessary CT referrals.<sup>19,29,32</sup> In addition, investigating urgent care provider awareness and use of the CCHR may allow UC and ED providers to improve appropriate medical imaging and quality of care by reducing health resource waste, improving patient safety, and decreasing patient harm.<sup>8</sup> The purpose of the current study was to quantify the awareness and use of the CCHR among American urgent care providers and to assess predictor variables of provider characteristics.

## Methods

### Study Design

The current study used a descriptive, cross-sectional, correlational study design. A modified version of an existing survey was distributed electronically to active urgent care providers in the U.S. Using models from previous studies,<sup>2,26,33</sup> we defined study predictor variables as urgent care provider characteristics and dependent variables as awareness and use of the CCHR. All medical providers (osteopathic and allopathic physicians, nurse practitioners, and physician assistants) actively working in an urgent care setting in the U.S. were invited to participate. However, providers were excluded if their urgent care facility had an in-house CT scanner or were attached to an ED that had a CT scanner. Purposeful sampling was used to target urgent care registries, provider organizational platforms, big chain UC managers, and open-access social platforms. Snowball sampling was also used to broaden the sampling pool. The A.T. Still University-Mesa Institutional Review Board approved the study protocol and waived the need for informed consent.

### Survey Development

The study survey was modeled after the data collection tool of Eagles, et al<sup>33</sup> and included the ED-designed concussion scenario of Bukhari,<sup>2</sup> where CT is not indicated. We received permission to use and adapt the data collection tool<sup>33</sup> from CCHR developer, Dr. Ian Stiell. For the current study, the demographic and case scenario content were modified to meet our urgent care target population. The data collection tool<sup>33</sup> underwent subject matter expert review for content validity and was piloted for internal reliability.

The modified survey assessed clinical judgment for the indication of head CT after mTBI; method of CCHR use and nonuser willingness to use the tool (acceptability); provider attitudes; and provider characteristics

**Table 1. Demographic Characteristics of Urgent Care Provider Participants of the Current Study (N=48)**

Demographic Characteristic <sup>a</sup>	No. (%) <sup>b</sup>
<i>Provider type</i>	
Allopathic physician	19 (40)
Physician assistant	14 (29)
Nurse practitioner	9 (19)
Osteopathic physician	6 (13)
<i>Sex (n=41)</i>	
Male	21 (51)
Female	20 (49)
<i>Age, y (n=41)</i>	49 (12.0) (28-69)
<i>Years of medical practice (n=41)</i>	19 (12.2) (1-40)
<i>State of practice (n=41)</i>	
MD	12 (29)
NC	6 (15)
NY	4 (10)
FL	3 (7)
CA, OH, TX <sup>c</sup>	2 (5)
AZ, CT, IL, LA, MI, MN, PA, SC, VA, WV <sup>c</sup>	1 (2)
<i>Urgent care employment status (n=41)</i>	
Full-time	26 (67)
Part-time	9 (22)
PRN (as needed)	5 (12)
<i>Years of urgent care practice (n=41)</i>	6 (2-15) (0-35)
<i>Current primary medical setting (n=40)</i>	
Urgent care	33 (83)
Primary care	3 (8)
Emergency medicine	2 (5)
Other	2 (5)
<i>Primary medical training (n=40)</i>	
Primary care	14 (35)
Emergency medicine	11 (28)
Urgent care	7 (18)
Other	5 (13)
Internal medicine	2 (5)
Pediatric medicine	1 (3)
<i>Patients seen/year by urgent care facility (n=40)</i>	
>30,000	14 (35)
15,000 – 30,000	13 (33)
5,000 – <15,000	10 (25)
<5,000	3 (8)
<i>Head injuries assessed/month (n=41)</i>	5 (4-10) (0-50)
<i>How often refer for head CT for head injuries (n=40)</i>	
Sometimes	16 (40)
Rarely	13 (33)
Most of the time	7 (18)
Always	2 (5)
Never	2 (5)

<sup>a</sup>Number of responses are N=48 unless otherwise specified. <sup>b</sup>Data for age and years in medical practice are reported as mean (SD) and range. Data for years of urgent care practice and head injuries assessed per month are reported as median (IQR) and range. <sup>c</sup>Each listed state had that reported frequency of responses. Abbreviations: AZ, Arizona; CA, California; CT, computed tomography; CT for state of practice, Connecticut; FL, Florida; IL, Illinois; LA, Louisiana; MD, Maryland; MI, Michigan; MN, Minnesota; NC, North Carolina; NY, New York; OH, Ohio; PA, Pennsylvania; PRN, *pro re nata* (as needed); SC, South Carolina; TX, Texas; VA, Virginia; WV, West Virginia.

Table 2. User and Nonuser Canadian Computed Tomography Head Rule (CCHR) Attitudes (N=48)		
Promoter or Barrier	Averaged Scores	
	Users (N=20)	Nonusers (N=27)
<b>Promoters</b>		
The rule is easy to use	2.56	2.04
The rule is easy to follow	1.53	1.7
The rule is useful in my practice	2.44	2.44
The wording of the rule is clear and unambiguous	2.13	1.81
My colleagues support use of the rule	1.75	0.59
Patients benefit from the use of the rule	2.56	2.15
<b>Barriers</b>		
Using the rule would increase the chance of lawsuits	1.36	-0.85
The evidence supporting the rule is flawed	-1.31	0
I'm already using another rule or similar strategy	-0.56	0.44
The rule does not account for an important clinical cue	-1.00	-0.04
The environment I work in makes it difficult to use the rule	-1.25	-0.89
<small>Averaged score for attitude regarding specific promoter or barrier divided by groups of responder users and nonusers. Weighted scores were summed (strongly disagree = -3, moderately disagree = -2, slightly disagree = -1, no opinion/don't know = 0, slightly agree = +1, moderately agree = +2, strongly agree = +3) and averaged (net score divided by the number of responders to the promoter or barrier).</small>		

modified from the data collection tool<sup>33</sup> with additions to meet urgent care demographics.

### Data Collection

The study survey was distributed electronically using SurveyMonkey and took about 5-10 minutes to complete. Potential urgent care provider participants were recruited through emails with an invitation letter sent to UC businesses and through posts on social media. No financial incentives were offered for participation. Providers were informed that participation was anonymous, and that aggregate reporting would be used to protect privacy. The survey was available for 10 weeks, and advertisement for participants was continuous during this time with repeated social media posts and reminder emails sent to urgent care chain leadership.

### Statistical Analyses

Analyses were conducted using IBM SPSS Statistics version 26.0. Shapiro-Wilk tests for normality were used to report mean and standard deviation or median and interquartile range for ratio level predictor variables. Awareness of the CCHR had a binary response of *yes* or *no* in the survey. Urgent care providers who reported they used the CCHR *always* or *most of the time* were regarded as users, and those who reported use as *some-*

*times* or *never* were regarded as nonusers. Likert scale questions were scored to determine the primary promoters and barriers for use by CCHR user or nonuser groups based on the level of agreement or disagreement with each of 11 statements about the CCHR.

To determine which predictor factors of provider characteristics were associated with awareness and use of the CCHR,  $X^2$  tests for association were used. Raw numerical data (such as age and number of head injuries evaluated per month) were converted into ranks, and ordinal data were converted to nominal variables to meet  $X^2$  assumptions.

## Results

### Urgent Care Provider Characteristics

Of the 70 respondents who participated in the online survey, 48 were included in our analysis. Twenty-one surveys were excluded because they did not meet inclusion criteria and one because the respondent did not complete the survey beyond the first four questions.

The urgent care provider demographic characteristics are presented in **Table 1**.

### Likert Scale Questions

Overall, urgent care provider responses to Likert scale questions were positive for use of the CCHR (**Table 2**).

Scores showed moderate agreement for the six promoters and mostly slight disagreement for the five barriers. Users and nonusers had consistent responses for the top three promoters: *the rule is useful in my practice*, *patients benefit from the use of the rule*, and *the rule is easy to use*. Of all grouped promoter scores possible, a predominant promoter was identified by nonusers: the CCHR is useful in their practice. The urgent care providers disagreed with all barriers, although nonusers generally agreed with the barrier of using another rule or similar strategy; there was also a neutral response score for the evidence supporting the rule is flawed.

*“Slightly less than half of urgent care providers, who were surveyed because they regularly assess acute head injuries, were aware of the CCHR.”*

### Correlational Results

When analyzing which predictor factors of provider characteristics were associated with awareness and use of the CCHR, awareness was associated with familiarity with the clinical case scenario.

### Case Scenario

Most providers (42/48, 88%) were clinically familiar with the case scenario (Table 3). When diagnosing the scenario, 65% (31/48) correctly identified the mTBI, yet 52% (25/48) incorrectly chose to refer for head CT. Over half (23/40, 58%) had received training on medical imaging radiation, and most (29/40, 73%) indicated interest in new or renewed CCHR training.

### Awareness and Use

Slightly less than half of urgent care providers (21/47, 45%) were aware of the CCHR (Table 4). Users of the CCHR (20/47, 43%) used the tool similarly. Of nonusers, all but one (26/27, 96%) would consider using the CCHR.

### Discussion

The current study assessed the awareness and use of the CCHR among urgent care providers and predictor vari-

**Table 3. Clinical Case Scenario Knowledge and Training Characteristics for the Canadian Computed Tomography Head Rule (CCHR) of Urgent Care Provider Participants of the Current Study (N=48)**

Knowledge and Training Responses <sup>a</sup>	No. (%)
Experienced the case scenario	
Yes	42 (88)
No	6 (13)
Diagnosis for the case scenario	
Concussion/mild TBI	31 (65)
Moderate TBI	15 (31)
Head injury, no TBI	2 (4)
Severe TBI	0 (0)
Refer for head CT for the case scenario	
Yes	25 (52)
No	23 (48)
Received training on imaging radiation (n=40)	
Yes	23 (58)
No	17 (43)
CCHR training status (n=40)	
Never had training but desire training	25 (63)
Have had training and feel confident	7 (18)
Have had training but desire additional training	4 (10)
Have never had training and do not desire training	3 (8)
No opinion/don't know	1 (3)

<sup>a</sup>Number of responses are N=48 unless otherwise specified.  
Abbreviations: CT, computed tomography; TBI, traumatic brain injury.

ables of provider characteristics using an electronic survey distributed to active urgent care providers in the U.S. We surveyed urgent care providers because they regularly assess acute head injuries and may contribute to overuse of CT. Slightly less than half of urgent care providers were aware of (45%) or used (43%) the CCHR, which was higher than previously reported awareness (31%) and use (12%) rates by ED providers in the U.S.<sup>33</sup> However, the previous international study<sup>33</sup> of ED providers (Australia, Canada, United Kingdom, and United States) had more participants (N=1297), with 239 ED providers from the U.S., which may explain the discrepancy (Table 5).

Results for the international providers tended to have higher CCHR awareness (range, 66%-86%), but results

**Table 4. Awareness and Use of the CCHR by Urgent Care Provider Participants of the Current Study (N=48)**

Awareness and Use Responses	No. (%)
Awareness of the CCHR (n=47)	
Yes	21 (45)
No	26 (55)
Use of the CCHR <sup>a</sup> (n=47)	
Always	10 (21)
Most of the time	10 (21)
Sometimes	5 (11)
Never	22 (47)
How the CCHR was used by users (n=19)	
By memory	7 (37)
Usually with memory aid	6 (32)
Memory aid occasionally	6 (32)
Would nonusers consider CCHR use (n=27)	
Yes	26 (96)
No	1 (4)

<sup>a</sup>Those who reported they used the CCHR always or most of the time were regarded as users, and those who reported they used it sometimes or never were regarded as nonusers.

*“Despite years of targeted ED provider training, the rarity of CT indication for mild head injury, and the sensitivity and wide applicability of the CCHR, the inappropriate use of CT continues to increase worldwide.”*

for use of the CCHR were more varied (range, 21%-57%).<sup>33</sup> A study of Saudi Arabian ED providers<sup>2</sup> found awareness (54%) and use (42%) rates similar to the current study. Awareness results from a Chinese study were also similar (42%).<sup>26</sup>

The current study also found urgent care providers overall had positive attitudes about the CCHR. Further, the acceptability by nonusers of the CCHR was higher among our urgent care providers (96%) than ED providers in the United States (63%).<sup>33</sup> Higher reported awareness, use, and acceptability of the CCHR among urgent care providers supports allocation of resources for targeted CCHR training in the UC setting that may otherwise be reserved for ED providers.

Most urgent care providers in the current study were clinically familiar with the case scenario, which suggested the addition of this ED-designed concussion scenario where CT is not indicated is pertinent for urgent care providers. However, even though most providers were familiar with head injury assessment, only 65% correctly identified the mTBI, and over half incorrectly referred for an unnecessary head CT, despite having received training on medical imaging radiation. When analyzing predictor factors, awareness of the CCHR was associated with familiarity with the case scenario.

Taken together, these results suggested that providers who reported awareness, training, or even use of the CCHR could still be misusing head CT.

Perhaps one reason for this outcome is cultural inertia acting as a barrier to CDT implementation even when awareness of these tools is high.<sup>23,33</sup> Therefore, more education and outreach programs are necessary to teach urgent care providers about the proper use of the CCHR and reduce use of CT. Despite years of targeted ED provider training, the rarity of CT indication for mild head injury, and the sensitivity and wide applicability of the CCHR, the inappropriate use of CT continues to increase worldwide, causing unnecessary patient harm and death.<sup>2,4,8,14,22,32</sup> Overuse of CTs by CCHR-trained ED providers has been associated with barriers of provider insecurities, litigation fear, peer or leadership pressure to order CT, lack of awareness of the radiation harm from CTs, and patient expectation or demand for CTs.<sup>19,26,30</sup> These insecurities overtax healthcare funds, decrease patient safety, and reduce provider confidence in clinical decision-making.<sup>20</sup> Unfortunately, literature regarding use of the CCHR seems to mostly focus on ED providers even though components of the tool apply to a variety of medical professionals who triage head injuries, such as athletic trainers, medics, and others.<sup>34-36</sup> Therefore, awareness and use of the CCHR should be expanded to broader populations of healthcare providers, new settings, and clinical practice.<sup>10,18,20,29</sup>

The importance of increasing awareness and use of the CCHR among urgent care providers cannot be stressed enough. Importantly, urgent care facilities offer timely medical care at a fraction of the cost of EDs.<sup>25,27,28</sup> Since most urgent care facilities lack CT scanners, those that triage and stabilize head injuries should use the CCHR to determine which patients actually require transfer to the ED for CT.<sup>17,19,26,27</sup> Remarkably, research suggests that when patients are reassured about the CCHR the misuse of CT can be prevented.<sup>15,30</sup> Therefore, patient health and safety can be protected by train-

**Table 5. Percentage Comparisons of Awareness and Use of the Canadian Computed Tomography Head Rule (CCHR) Between Urgent Care Providers of the Current Study and Emergency Department Providers from Saudi Arabian,<sup>2</sup> Chinese,<sup>26</sup> and International Studies**

Characteristic	Current Study (N=48)	Saudi Arabian (N=91)	Chinese (N=247)	International (N=1,297)			
				AU	CA	UK	USA
Male providers	51%	77%	70.9%	71%			
Awareness of the CCHR	45%	54.4%	41.7%	82%	86%	66%	31%
Use of the CCHR	42%	42.2%	24.7%	32%	57%	21%	12%

Abbreviations: AU, Australia; CA, Canada; UK, United Kingdom; USA, United States of America.

*“A driving goal of the current study was to acknowledge urgent care providers as vital partners in the U.S. healthcare system and to recognize the CCHR as a valuable and practical tool for head injury triage, assessment, and management in the UC setting.”*

ing urgent care providers to use the CCHR to reinforce clinical decisions and to educate patients about why CT is not indicated. Keeping patient care at the urgent care level when a diagnosis of concussion (mTBI) is more likely may encourage the education and reassurance necessary for optimal outcomes.<sup>17,23</sup>

The use of the CCHR also provides practical applications over medical devices. For instance, the clinical device market for acute TBI assessment has increased in recent years. However, the physical exam conducted during use of the CCHR supports the initial neurological exam, both of which narrow the differential diagnosis better than a TBI digital device. In addition, no TBI devices currently have 100% sensitivity identifying head CT indications.<sup>37</sup> So, because CTs have been used as a surrogate for clinical examination in the ED setting,<sup>14,38</sup> the temptation to substitute the physical exam for an unnecessary, expensive, and less informative test is real and should be a concern for all healthcare providers.

### Limitations

The current study had several limitations. We only assessed the awareness and use of the CCHR among urgent care providers in the U.S., so the generalizability of our results

### Canadian CT Head Rule

CT of the head is only required for minor head injury patients with any one of the following finding. Minor head injury patients present with a Glasgow Coma Scale (GCS) score of 13–15 after witnessed loss of consciousness, amnesia, or confusion.

#### High-risk (for neurosurgical intervention)

1. GCS score <15 at 2 hours after injury
2. Suspected open or depressed skull fracture
3. Any sign of basal skull fracture\*
4. Vomiting  $\geq 2$  episodes
5. Age  $\geq 65$  years

#### Medium-risk (for brain injury on CT)

6. Amnesia before impact  $\geq 30$  minutes
7. Dangerous mechanism\*\*

\*Signs of basal skull fracture: hemotympanum, “raccoon” eyes, CSF otorrhea/rhinorrhea, Battle’s sign

\*\*Dangerous mechanism: pedestrian struck by motor vehicle, occupant ejected from motor vehicle, fall from elevation  $\geq 3$  feet or 5 stairs

Rule not applicable if: non-trauma case, GCS <13, age <16 years, warfarin or bleeding disorder, obvious open skull fracture

is limited. Also, we did not ask about the use of other head triage guidelines or CDTs, such as the Clinical Practice Guideline for Management of Concussion/Mild Traumatic Brain Injury<sup>39</sup> or the New Orleans Criteria for CT scanning.<sup>40</sup> However, nonusers of the current study identified use of another tool as a barrier to CCHR use, which may explain our results for that outcome.

Since the survey was self-administered, another limitation is self-report bias. However, participating urgent care providers were assured of their anonymity, and we used aggregate reporting to decrease self-report bias. Because we used snowball distribution of the survey, we could not determine participant nonresponse rate or perform a response bias analysis.

Another limitation is that our sample size was small, and we had some incomplete surveys. Therefore, our correlational analyses were unable to address the original research questions about associated characteristics.

A better understanding of the specific barriers and promoters of the awareness and use of the CCHR among urgent care providers in the U.S. (and worldwide) may lead to more effective education, training, and resource allocation. As a result, urgent care providers would be better equipped to use informed clinical decisions regarding head CT for acute mTBI. Additional studies of CCHR use among urgent care providers should be conducted.

## Conclusion

A driving goal of the current study was to acknowledge urgent care providers as vital partners in the U.S. healthcare system and to recognize the CCHR as a valuable and practical tool for head injury triage, assessment, and management in the UC setting. The current study demonstrated applicability of the CCHR in the urgent care setting as well as high UC provider CCHR awareness, use, and acceptability. However, most urgent care providers reported overuse of head CT, indicating the need for CCHR training to improve proper use and adherence. Results of the current study suggested the CCHR can be immediately adopted by urgent care providers as a key clinical tool to guide clinical decisions, reassure patients, and prevent harm. ■

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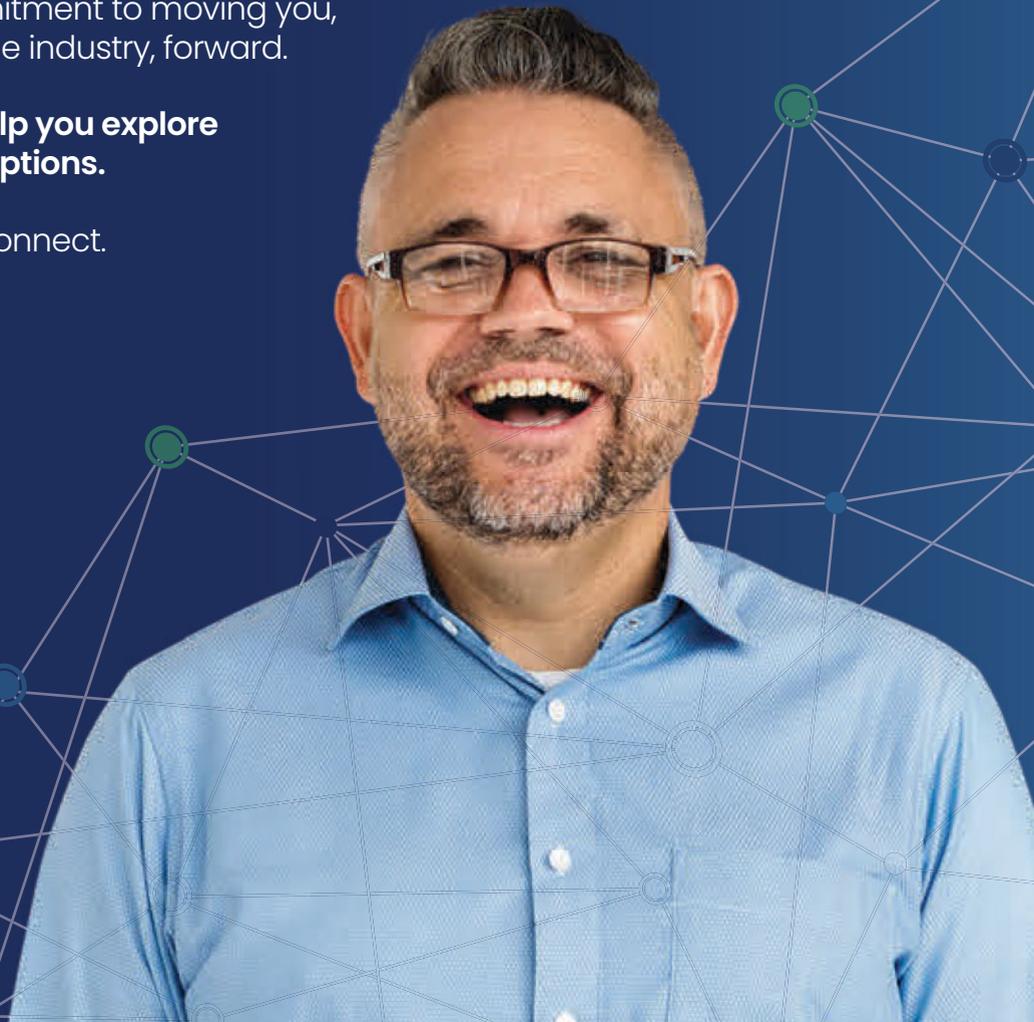
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# New Lawsuits Re-Examine Prescribing of PrEP in Urgent Care

**Urgent message:** Urgent care providers should take note of emerging class-action lawsuits when helping patients decide if PrEP is right for them.

ALAN A. AYERS, MBA, MAcc

Few diseases ravage the body like HIV. As such, the healthcare world has been working for decades to develop treatments and methods to protect patients against it.

One of the most promising treatments is pre-exposure prophylaxis (PrEP), approved in 2012 as a way to prevent HIV infections in high-risk patients. The brand-name drug Truvada has become well known in the medical field since then.

This has become a gray area for urgent care, however.<sup>1</sup> Some providers believe that urgent care centers are the perfect place to initiate PrEP treatment due to their contact with vulnerable individuals and their high frequency of STI treatment. Others contest that the episodic nature of urgent care doesn't provide adequate opportunity for the frequent monitoring and management needed by patients undergoing PrEP treatment.

Further, issues like nonadherence and increased risk behaviors can lead to negative health outcomes for patients taking PrEP drugs if they are not carefully monitored.

Recently, the number of class-action lawsuits filed against Gilead, the maker of Truvada, over serious side effects of the medication has been on the rise. Law firms are using aggressive marketing campaigns and scare tactics to recruit plaintiffs. Whether or not these lawsuits will hold up in court remains to be seen. However, they are something to consider for urgent care owner/operators who are looking to make decisions about offering PrEP treatment in their clinics.

## What Is PrEP?

As it stands today, there is no cure for HIV, the virus that causes AIDS. Once a patient is diagnosed with HIV, they will deal with the infection for the rest of their life.



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Although medical management of HIV has improved greatly in the past few decades, prevention is still key.

PrEP treatment—proactive taking of antiretroviral drug—has been suggested for those who aren't currently infected with HIV but whose behaviors put them at higher risk. For instance, HIV-negative individuals having sex with an HIV-positive partner are prime candidates. Gay or bisexual men who engage in condomless sex with multiple partners, sex workers, and intravenous drug users may also be candidates.

PrEP medications like Truvada are taken in pill form once a day. It is important that these drugs are taken consistently as prescribed since PrEP therapy loses its effectiveness if doses are skipped. Meanwhile, failure to adhere to the prescribed regimen can lead to drug-resistant strains of HIV.

According to a study in the journal *Science Translational Medicine*, PrEP is 99% effective in preventing HIV

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**Table 1. Truvada Lawsuit Claims**

The first individual Truvada injury lawsuits were filed in California in May 2018, and others followed. The common assertion in these claims is that Gilead failed to warn about the drug's side effects.<sup>7</sup>

Serious Complications	Common Side Effects
<p><i>Kidney Problems</i></p> <ul style="list-style-type: none"> <li>• Acute kidney injury or acute renal failure</li> <li>• Chronic kidney disease or declining kidney function</li> <li>• Fanconi's syndrome — a disorder where certain substances normally absorbed into the blood are excreted in urine instead</li> <li>• Kidney tubular dysfunction</li> </ul> <p><i>Bone Density Problems</i></p> <ul style="list-style-type: none"> <li>• Osteopenia</li> <li>• Osteoporosis</li> <li>• Osteomalacia</li> <li>• Bone fractures</li> </ul>	<ul style="list-style-type: none"> <li>• Abdominal pain</li> <li>• Liver problems</li> <li>• Nausea</li> <li>• Diarrhea</li> <li>• Headache</li> <li>• Dizziness</li> <li>• Fatigue</li> <li>• Depression</li> <li>• Muscle pain</li> <li>• Cold extremities</li> <li>• Rash</li> </ul>

infection when the dosing regimen is strictly followed. This makes it a crucial tool in the fight against HIV.<sup>2</sup>

While California has enabled PrEP without a prescription, and Colorado and Oregon are expected to follow, all other states require a provider's evaluation before a patient may start a PrEP regimen. Providers can prescribe a Truvada regimen for a minimum of 30 days, up to a maximum of 90 days. The patient then needs additional testing before their prescription can be renewed.

**What Are the Side Effects of PrEP?**

Unfortunately, PrEP drugs do come with side effects. While most of them only persist through the initial phase of treatment and are mild, the potential for more serious side effects is real.

At the beginning of PrEP treatment, patients may experience symptoms of nausea, headaches, and diarrhea. These side effects typically wear off after a few weeks as the body adjusts to the drug.

PrEP medications like Truvada do carry a risk for serious side effects that can affect the patient's health over an extended period of time. Liver and kidney health both need to be monitored closely while the patient undergoes PrEP therapy, as these organs can be adversely affected. In rare cases, PrEP drugs can cause a loss of bone mineral density, which increases the risk of osteoporosis and fractures.

Other side effects include electrolyte imbalances, pancreatitis, lactic acidosis, persistent flu-like symptoms, elevated triglyceride levels, increased creatinine phosphokinase levels, strange dreams, and hyperpigmentation.

**Unpacking the Moral Hazards**

As stated, preventing HIV infections is the best course of "treatment" for patients at high risk for exposure. When only considering that fact, PrEP therapy seems like a perfect solution. Unfortunately, things aren't so clear-cut in the real world.

Studies have consistently shown that patients taking PrEP medications are more likely to engage in risky behavior than those not taking the drugs. Given the perceived protection of medications like Truvada, patients are more prone to engage in sexual activity with new partners, forgo the use of condoms, and share needles.

Although PrEP protects patients against HIV, it doesn't protect against other STDs. By engaging in riskier behaviors, these individuals increase their chances of contracting gonorrhea, chlamydia, syphilis, and more. With STDs already on the rise nationwide, this is a problem that public health agencies want to avoid.<sup>3</sup>

To combat it, patients being treated with PrEP medications should be educated about safe sex practices and receive routine STD screenings. Unfortunately, urgent care centers aren't always equipped to provide this education since they may not encounter the patient after starting them on a PrEP regimen.

**Nonadherence Is a Major Concern**

Alongside the possibility of increased risk behaviors is the issue of nonadherence. Due to the unwanted side effects of PrEP medications, patients are often tempted to skip a dose or multiple doses.

Nonadherence can also occur for nonmedical reasons. For instance, patients could feel stigmatized by the medications, be unable to afford prescription refills, or be dealing with substance abuse issues that cause them to forget to take their medication.

For the wider healthcare world, this is an issue similar to antibiotic resistance. When patients don't adhere to their PrEP regimen, the likelihood of drug-resistant HIV strains evolving skyrockets. This ultimately limits the effectiveness of PrEP drugs and could one day render them useless, potentially setting the fight against HIV back by decades.<sup>4</sup>

**Class Action Lawsuits on the Rise**

A simple Google search for "Truvada lawsuit" will yield

multiple law firms advertising class-action suits on social media and traditional media outlets, and who are actively looking for plaintiffs.

The first case was brought against Gilead in May 2018, alleging that the company waited to release an alternative form of PrEP medication to maximize profits from Truvada.<sup>5</sup> Since then, more lawsuits have been levied against the company. Most participants cite the many side effects—some harmful—of the medication in their complaints. Others argue that drugs like Truvada should be reserved for those most at-risk and not advertised to populations as a whole.

While no legal decisions have been made surrounding the lawsuits, the cases themselves can have negative health impacts. For instance, surveys conducted after the lawsuits were advertised found anecdotal cases of people stopping their PrEP regimen or changing their minds about starting it.<sup>6</sup> While both of those actions are within the patient's rights, doing so without a medical consult can lead to issues discussed previously related to nonadherence.

### What Does This Mean for Urgent Care?

Many urgent care owner/operators and providers may now be thinking “so what?”

If patients want to engage in a lawsuit against a drug company, it likely doesn't affect the facility where they initiated PrEP therapy. Nonetheless, the conditions underlying the lawsuits are an issue that should be noted.

Not every urgent care center will choose to offer PrEP services. As mentioned, urgent care isn't naturally the perfect fit for a drug regimen that must be closely monitored. While it is possible for an urgent care business to create some form of PrEP monitoring program, this isn't feasible for many operations that have rotating providers and see patients on an episodic basis. The decision to offer PrEP treatment in urgent care must be made based on a variety of factors considering a facility's capabilities.

Ultimately, the issue with Truvada lawsuits comes down to patient education. PrEP medications have done incredible things in the fight against HIV. When used correctly, they are one of our best tools for fighting the disease by preventing individuals from getting infected in the first place. Lawsuits—which are often filled with misinformation—can cause serious harm by steering high-risk HIV candidates away from PrEP. On the other hand, these medications are known to cause unpleasant side-effects—some long-term—and have a high rate of nonadherence and increased risk behaviors.

As such, urgent care centers that offer PrEP services

**Table 2. Truvada Lawsuit Damages**

According to trial lawyers, successful plaintiffs may be entitled to economic, noneconomic and punitive damages, which include:

#### Economic Damages

- Current and future medical costs
- Physical therapy
- Dialysis treatments
- Prescription medications
- Travel costs for doctors' appointments
- Lost benefits and wages for missing work
- Future lost wages

#### Noneconomic Damages

- Pain and suffering
- Mental anguish
- Loss of enjoyment
- Depression and anxiety
- Wrongful death

Punitive damages up to three times the amount of economic damages or \$500,000, whichever is greater.

Source: <https://www.chaliklaw.com/defective-drugs-lawyer/truvada/how-much-can-i-win-in-my-lawsuit-against-truvada/>

must take care to educate patients about both the risks and benefits of the medication. Likewise, resources and information about safe sex practices, needle use, and other health-promoting behaviors should be included with every visit.

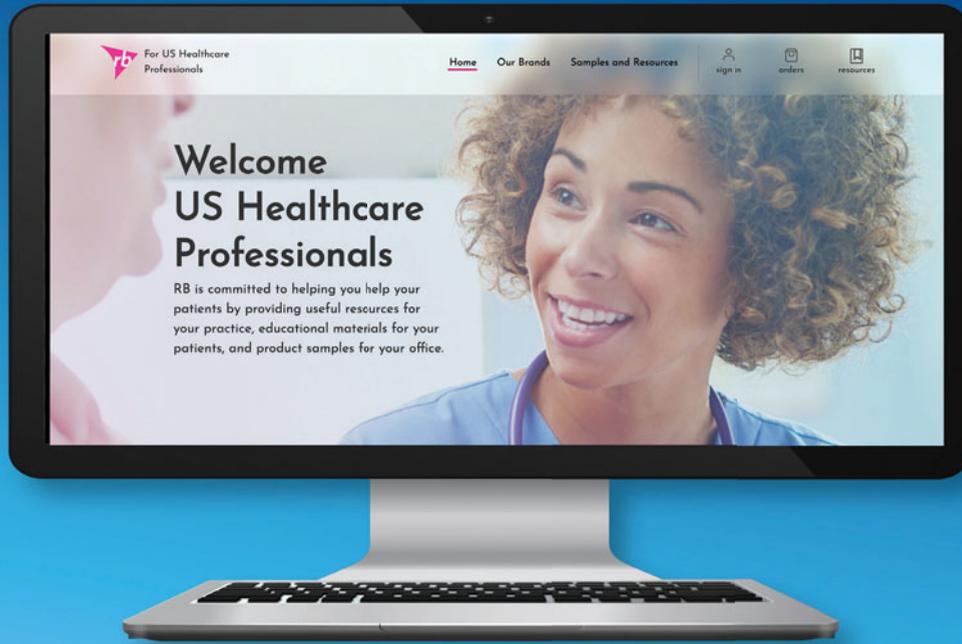
By staying aware of recent PrEP-related trends in the legal world, urgent care operators can provide better education to their patients and help them decide if PrEP is a good choice for them. ■

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# Eye Pain in a Healthy 19-Year-Old

**Urgent message:** Eye pain is a common presentation to the urgent care clinic. A provider needs to be able to recognize which components of the history and physical require further evaluation.

LINDSEY E. FISH, MD

## Case Presentation

### History

A 19-year-old female with past medical history significant only for scoliosis presents complaining of 3 days of left eye pain. She reports that the pain feels like it is in the eyeball itself and the back of the eye, and is worse when she moves the eye upwards or laterally. She states that today she noticed a little redness in the inside corner. She denies trauma, change in vision, eye discharge, foreign body sensation, or recent cold or allergy like symptoms.

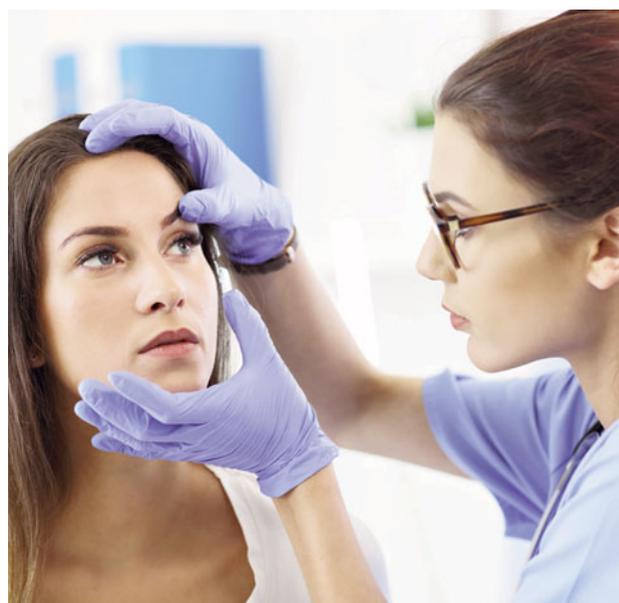
### Physical Examination

The patient's vital signs are all within normal limits. The pupils are round, reactive to light bilaterally, and without a relative afferent pupillary defect. Extraocular movements are intact. Eyelids and periorbital areas are without erythema or swelling. There is mild conjunctival injection of the medial left eye. Visual acuity is 20/20 in both eyes. Fluorescein is negative on the left eye. Intraocular pressure performed by a TonoPen showed eye pressure of 20 mmHg (right) and 18 mmHg (left).

### Differential Diagnosis

- Orbital cellulitis
- Orbital myositis
- Optic neuritis
- Graves' disease
- Scleritis
- Episcleritis
- Uveitis

*Orbital cellulitis* is defined as infection involving the ocular muscles and fat; however, it does not include the globe itself. Orbital cellulitis is caused by bacteria a majority of the time (*Staphylococcus aureus* and streptococci). Clinical manifestations include pain with eye movements, proptosis, and diplopia. Orbital cellulitis can be sight- or even life-threatening.<sup>1-4</sup> Imaging modality of choice is CT scan of the orbits.



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*Orbital myositis* is an idiopathic inflammation of an extraocular muscle. It appears to be most common in the distribution of cranial nerve III. Clinical presentation includes orbital pain and usually horizontal diplopia, as well as conjunctival injection, ptosis, and proptosis. This may be unilateral or bilateral.<sup>5</sup> Imaging modality of choice is CT scan of the orbits with contrast.

*Optic neuritis* is a broad term to describe disease of the optic nerve, usually resulting in acute vision loss. While it may refer to various rare inflammatory or infectious etiologies, it generally refers to a demyelinating condition, most commonly associated with multiple sclerosis. Besides vision loss, clinical presentation frequently includes subclinical visual deficits and eye pain associated with eye movement.<sup>6,7</sup> Imaging modality of choice

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Figure 1.



is MRI of the brain and orbits with gadolinium.

*Graves' disease* is an overproduction of the thyroid hormone as a result of autoantibodies that bind to the thyrotropin receptor. Clinical presentation includes ophthalmopathy (inflammation of extraocular muscle and orbital fat and connective tissue) which may cause proptosis, impairment of eye muscle function, and periorbital edema. Patients may also complain of diplopia or gritty feeling or pain in the eyes.<sup>7,8</sup> Diagnostic workup includes serum thyroid function tests, as imaging is only occasionally helpful.

### Patient Outcome

The patient was transported to the ED for further evaluation. A CT scan of the orbits identified asymmetric thickening and mild enhancement of the left medial rectus muscle without significant surrounding fat stranding or fluid collection (**Figure 1**). Differential for the CT findings include orbital myositis, Graves'-related orbitopathy, orbital pseudotumor, orbital lymphoma, and orbital sarcoidosis. Ophthalmology consult was obtained and the patient was diagnosed with orbital myositis of the left medial rectus muscle. Workup for underlying etiology was negative, including rheumatoid factor, chest x-ray, ANCA, syphilis studies, thyroid studies, and antistreptolysin O (ASO). The patient was started on prednisone and had resolution of her pain within 5 days. She remained on a prolonged prednisone taper.

### Discussion

The diagnosis for this patient was idiopathic orbital

myositis, defined as a subtype of nonspecific orbital inflammation which involves the extraocular muscles (specifically the left medial rectus muscle). This presents most frequently in young to middle-aged adults and affects women more often than men.<sup>9</sup> This patient had the cardinal clinical feature which included orbital pain made worse by eye movement, specifically in directions mediated by the involved extraocular muscle. It is most often acute and unilateral.<sup>10</sup> The patient also had some mild conjunctival injection; however, she did not have other common findings such as diplopia, proptosis, or periorbital edema. Her imaging supported this diagnosis.

The proposed pathophysiologic mechanism for this disease is unknown; however, it is suspected to be via an immune-mediated pathway. Initial therapy is systemic corticosteroid treatment to suppress the presumed immune response. This is usually successful, though in one study, there was a 50% recurrence rate.<sup>11</sup> In these cases, more aggressive treatment options including immunosuppressant medications or radiation therapy may be indicated.<sup>10</sup> There is some indication that rapid diagnosis and treatment may decrease the rate of recurrence and minimize risk for prolonged motility defects and proptosis.<sup>12</sup>

### Conclusion

Eye pain with movement should increase the level of suspicion for orbital etiologies and warrant consideration of advanced imaging and further evaluation. Urgent care providers must maintain rarer diagnoses on the differential. ■

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# ABSTRACTS IN URGENT CARE

- Projecting Outcomes in mTBI
- Concussion Recovery in Athletes
- A New Tool in Assessing Adolescent Concussion
- Head Injury in Patients Taking Warfarin

■ IVAN KOAY, MBChB, FRNZCUC, MD

- Infants with Scalp Haematoma
- To CT or Not to CT Low-Risk Peds Head Injury?
- Posttraumatic Headache in Children
- Out-of-Hospital Cardiac Arrest

## Identifying mTBI Patients with Long-Term Poorer Outcomes

- **Key point:** Patients with a history of psychiatric disorder, racial minorities, and those with lower level of education are most likely to have ongoing functional disabilities after minor traumatic brain injury (mTBI).
- **Citation:** Madhok DY, Yue JK, Sun X, et al. Clinical predictors of 3- and 6-month outcome for mild traumatic brain injury patients with a negative head CT scan in the emergency department: a TRACK-TBI pilot study. *Brain Sci.* 2020;10(5):269.
- **Relevance:** Identifying the predictors of negative outcomes for patients with mTBI can be helpful in informing emergency and urgent care management strategies and improve patient outcomes, decrease ED utilization, and bouncebacks to UC.
- **Study summary:** This was a subset analysis from the TRACK-TBI pilot study conducted at three U.S. Level 1 trauma centers via convenience sampling from 2010 to 2012. Patients were assessed for ongoing functional disabilities—cognition, independence, employability, and social/community participation post-TBI and had a negative CT head at the time of ED visit. Three- and 6-month Glasgow Outcome Scale-Extended assessment was used to evaluate the participants. The authors found poorer outcomes in patients with a history of psychiatric disorder (anxiety, depression, PTSD, bipolar, schizophrenia, sleep disorders). Additionally, patients with fewer years of education were also more likely to have ongoing functional disabilities. Racial minority status (namely, Asian, Native American/Alaskan, Hawaiian or Pacific Islander) was also associated with poorer outcomes compared with Cau-

casians. These disabilities were noted to continue at the 6-month review, as well. ■

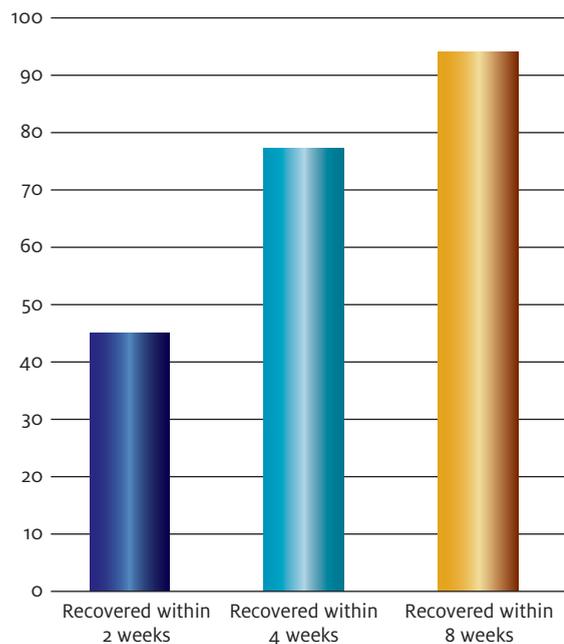
- **Limitations:** This was a convenience sample study and may not be representative of all patients with mTBI. Attrition bias was evident in this study, as follow-up was reliant on patients returning. Both were acknowledged by the authors.

## Do Athletes with Concussion Take Longer to Recover than Previously Suggested?

- **Key point:** Athletes with sports-related concussion often take longer than 2 weeks to recover. Therefore, a staged return to play approach may be beneficial with longer projected return-to-play programs potentially necessary.
- **Citation:** Kara S, Crosswell H, Forch K, et al. Less than half of patients recover within 2 weeks of injury after a sports-related mild traumatic brain injury: a 2-year prospective study. *Clin J Sport Med.* 2020;30(2):96-101.
- **Relevance:** The ability to identify patients with concussions who will have longer recovery will enable clinicians to better prepare patients and families for realistic return-to-play timelines and, therefore, also inform the return-to-play protocols for them.
- **Study summary:** This was a prospective observational cohort study looking at patients referred to a community-based sports concussion clinic in Auckland, New Zealand. Patients were initially assessed with the SCAT-5 screening tool. Neurological and vestibular assessments were also performed. Subsequent follow-up with the SCAT-5 screening was done along with assessment of any previous abnormal physical findings. Patients were educated regarding cognitive and physical loading after a prescribed period of rest. From January 2017 to December 2018, 594 patients were recruited and analyzed (out of a total of 822 participants who presented to the clinic.) Most of the patients were rugby ath-

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**Recovery from Sports-Related Concussion with Staged Return-to-Play**



letes (54%) and the age spread was from 7 to 64 years (average 20.2 years).

The investigators found that 45% of participants had clinical recovery within 2 weeks, 77% by 4 weeks, and 94% by 8 weeks. Female patients took longer on average to recover. There were similar timelines for recovery regardless of age. Vestibular, with or without cervical, rehabilitation was more likely required in adults. Results also suggested that patients seen earlier in the clinic tended to have a faster recovery.

- **Limitations:** This was a single-center study with referrals from the community (therefore, with potential for selection bias). There was a high attrition rate due to incomplete data. The authors acknowledge the lack of pre-injury comparison neurocognitive scores and the discharge criteria used. It is unclear how well the patients did on returning to sports compared to their pre-injury state. ■

**A New Biomarker for Concussion Assessment in Adolescents?**

- **Key point:** Pupillary light reflex metrics may be a suitable marker for identifying adolescents with concussion.
- **Citation:** Master CL, Podolak O, Ciuffreda KJ, et. al. Utility of pupillary light reflex metrics as a physiologic biomarker for adolescent sport-related concussion. *JAMA Ophthalmol.*

2020;24; e203466.

- **Relevance:** Finding new and innovative biomarkers to assess concussion can improve our understanding, assessment, and management of the condition.
- **Study summary:** This was a prospective observational study of the pupillary light reflex (PLR) in adolescents with sports-related concussion and control individuals recruited from a private suburban high school within the Philadelphia area. Measurements were conducted with a hand-held pupilometer device. Metrics measured were pupillary diameter, percent constriction, latency (time to maximum constriction in response to the light stimulus), peak and average constriction velocity, average dilation velocity, and T75 (time for pupil re-dilation from minimum diameter to 75% maximum diameter).  
The authors found there were significant differences between athletes with concussion and controls for all PLR metrics except latency. Athletes with concussion had larger maximum pupil diameter, minimum pupil diameter, greater percentage constriction, higher average constriction velocity, peak constriction velocity, average dilation velocity, peak dilation velocity, and T75.

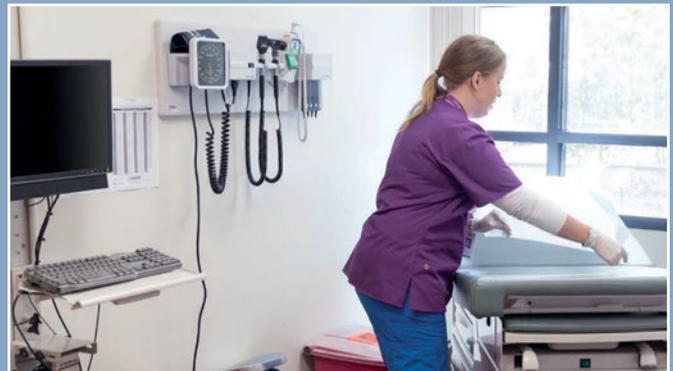
- **Limitations:** The authors acknowledge limitations of a study where participants were only adolescents and affirm results cannot yet be extrapolated to adults. Diurnal changes in PLR were not considered. There were also no baseline measurements recorded for the participants. ■

**Do All Patients Taking Warfarin with Head Injuries Require CT Head Scans?**

- **Key point:** Clinical decision rules are there as a guide for clinicians, however decisions regarding investigations should be tailored to the individual being treated.
- **Citation:** Mason SM, Evans R, Kuczawski M. Understanding the management of patients with head injury taking warfarin: who should we scan and when? Lessons from the AHEAD study. *Emerg Med J.* 2019;36(1):47–51.
- **Relevance:** Understanding which patients with head injuries who are also anticoagulated would benefit from head CT will support better decision-making and resource utilization. Most present clinical decision rules have not incorporated patients on anticoagulation in their analyses.
- **Study summary:** This study was a review of the AHEAD study, a prospective observational study that recruited patients taking warfarin with head injuries across 33 EDs in England and Scotland. In the study, 3,534 adults taking warfarin who suffered nonpenetrating head injuries were recruited between

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September 2011 and March 2013. The investigators discovered that Glasgow Coma Scale (GCS) <15 was the strongest predictor of adverse outcomes. Patients with head injury-related symptoms such as loss of consciousness, vomiting, and amnesia were associated with adverse outcomes even if presenting with a GCS of 15. The presence of headache in patients with a GCS of 15 was weakly associated with adverse outcomes. Patients with a GCS of 15 and no neurological symptoms were less likely to have adverse findings. The authors therefore suggest in this group, shared decision-making regarding their management and investigations may be considered.

- **Limitation:** Complexity of the topic means that there may not be a “one size fits all” approach, acknowledged by the authors. Therefore, clinical judgement and acumen do play a role in the management and investigation of these patients. *[Editor’s note: Should this paper change our practice? Probably not. Patients on oral anticoagulation with nonpenetrative head injury should still be considered high risk. Therefore, it still makes sense to recommend head CT for all patients taking anticoagulation who suffer blunt head injury.]* ■

### Do Infants with Scalp Haematoma All Need CT?

- **Key point:** The Scalp Score is a potentially new risk-stratifying tool for the decision-making process when considering imaging of infants with scalp hematomas.
- **Citation:** Schutzman SA, Nigrovic LE, Mannix R. The Infant Scalp Score: a validated tool to stratify risk of traumatic brain injury in infants with isolated scalp haematoma. *Acad Emerg Med.* July 16, 2020. Epub ahead of print.
- **Relevance:** New ways to stratify risk of TBI in infants will enable better management strategies in treating patients presenting to UC with these injuries and enhance decision-making processes for clinicians.
- **Study summary:** A group of patients from the PECARN data set, children <1 year of age with infant scalp haematoma (ISH), was assessed. ISH was defined as scalp hematoma without other clinical findings on initial ED history. A Scalp Score was then constructed based on the original recordings to more pre-

Risk Points	Patient’s Age (months)	Haematoma-Size (cm)	Haematoma Location
0	>12	0	Frontal
1	6-11	<1	Occipital
2	3-5	1-3	Temporal/Parietal
3	0-2	>3	

cisely risk stratify head-injured children. The scoring as cited:

The researchers noted that no child with a score <5 had a clinically important traumatic brain injury (ciTBI) and no child with a score <4 had a radiographically evident TBI on CT. Scores >5 indicated increase risk of complications.

- **Limitation:** The study was retrospective in nature and therefore has some inherent limitations related to its design. However, it is reasonable to incorporate a Scalp Score into the PECARN pediatric head injury decision aid if a scalp hematoma is the only concerning finding. ■

### Reducing CT Head Use for Low-Risk Pediatric Head Injury Patients

- **Key point:** Implementation of a head injury assessment tool with buy-in from clinicians decreases the utilization of head CT in low-risk pediatric patients.
- **Citation:** Puffenbarger MS, Ahmad FA, Argent M, et. al. Reduction of computed tomography use for paediatric closed head injury evaluation at a nonpaediatric community emergency department. *Acad Emerg Med.* 2019;26(7):784-795.
- **Relevance:** Pediatric patients with low-risk head injuries can be safely discharged home without imaging with appropriate anticipatory guidance and follow-up instructions. Implementation of this rule can be achieved with appropriate training for ED and UC clinicians and staff.
- **Study summary:** This was a quality improvement study designed to reduce head CT use in a nonpediatric ED by the implementation of a pediatric closed head injury decision aid based on the PECARN assessment tool. Retrospective chart review was done pre-, during, and postimplementation of the assessment tool from March 2014 to August 2017. The ED was part of 13 partner regional hospitals spanning two states in the U.S. With the implementation of the tool following education of clinicians (physicians, physician assistants, and nurse practitioners), there was a significant decrease in head CT use for blunt head injury in children during the study, which persisted postimplementation. The largest decrease in usage was in the low-risk patients evaluated by physicians. The number of patients with high- and moderate-risk head injuries who underwent head CT did not decrease. There was also improvement in ED length-of-stay times after implementation. There were no ciTBIs missed with patient follow-up.
- **Limitation:** This was a relatively small study involving a non-pediatric ED which may not be generalizable to other areas. The authors acknowledged potential selection bias due using

“Education about expected symptoms and symptom course following mTBI in the ED improved outcomes compared with those who did not receive education.”

physician assigned discharge diagnoses rather than ICD-10 coding in the EMR. ■

**Posttraumatic Headache in Pediatric Population—Review of Present Evidence**

■ **Key point:** Posttraumatic headache (PTHA) is common post-mTBI in the pediatric population. Increased understanding of this condition can help UC providers educate and help patients in their recovery.

■ **Citation:** Blume HK. Posttraumatic headache in pediatrics: an update and review. *Curr Opin Pediatr.* 2018;30(6):755-763.

■ **Relevance:** Mild head injury is a common presentation for pediatric patients in the ED and UC centers. The ability to perform accurate assessments and knowledge of the current best evidence will help clinicians guide patients with their recovery and are crucial in prevention of long-term morbidity.

■ **Study summary:** This was a review article collating present definitions and recent research regarding posttraumatic persistent headache syndrome and the current treatment strategies in children. ED-based studies have examined PTHA, specifically after pediatric mTBI, and described rates of PTHA were 69% at 1 week, 25% at 1 month, 5% to 7.8% at 3 months, and 1.2% at 1 year after injury. Prior history of migraine may be associated with prolonged recovery, but neither ADHD nor learning disabilities nor injury characteristics (amnesia and loss of consciousness) were consistently associated with increased risk for PTHA.

Education about expected symptoms and symptom course following mTBI in the ED improved outcomes compared with those who did not receive education. Use of ibuprofen or other NSAIDs following mTBI is recommended once acute structural brain injury has been excluded. The role of “rest” in the management of acute concussion and postconcussion syndrome is evolving. Several studies

demonstrated that “strict rest” in the days following head injury may be detrimental to recovery. Because repeated concussions in a short period of time are known to be dangerous, optimal levels of activity lie somewhere between full rest and full return to activity. Multidisciplinary care, with medical provider, psychologist, and other personnel is likely helpful for children with persistent symptoms. ■

**Which Strategy Is Best in Community Cardiac Arrests?**

■ **Key point:** Continued on-scene resuscitation may have better outcomes compared with intra-arrest transportation.

■ **Citation:** Grunau B, Kime N, Leroux B, et. al. Association of intra-arrest transport vs continued on-scene resuscitation with survival to hospital discharge among patients with out-of-hospital cardiac arrest. *JAMA.* 2020 Sep 15;324(11):1058-1067.

■ **Relevance:** There is an ongoing dilemma regarding care for out-of-hospital cardiac arrest (OHCA) situations as to whether it is advisable to continue resuscitation efforts on scene or to transport the patient immediately to a medical facility where more equipment and staff are available.

■ **Study summary:** This is a secondary analysis from the Resuscitation Outcome Consortium (ROC) Cardiac Epidemiologic Registry-Cardiac Arrest OHCA registry based on a prospective population-based registry of 10 North American study sites that included consecutive EMS assessed nontraumatic OHCA between April 2011 and June 2015.

The authors found that survival to hospital discharge and favorable neurologic outcomes were lower among patients treated with intra-arrest transport compared with continued on-scene resuscitation. Intra-arrest transport was associated with a significantly lower probability of survival to hospital discharge within the subgroups of ALS first, ALS second, EMS witnessed, not EMS witnessed, initial shockable cardiac rhythm, and initial non-shockable cardiac rhythm. There was no significant association seen in the BLS-only and mechanical CPR-treated subgroups. Further subset analysis was performed for patients with potentially favorable situations (shockable rhythm and EMS witnessed events). There were consistent adverse outcomes for intra-arrest transport in these patients as well, despite the smaller numbers analysed.

■ **Limitation:** There was no randomization of subjects and therefore the results may be affected by selection bias. The study population was based in North America and therefore may not be able to be generalized to all countries. The skills of the EMS staff may also differ from those available in other geographical locations. ■

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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](mailto:editor@jucm.com).

## A 52-Year-Old Male with Upper Arm Pain and Swelling of No Known Origin



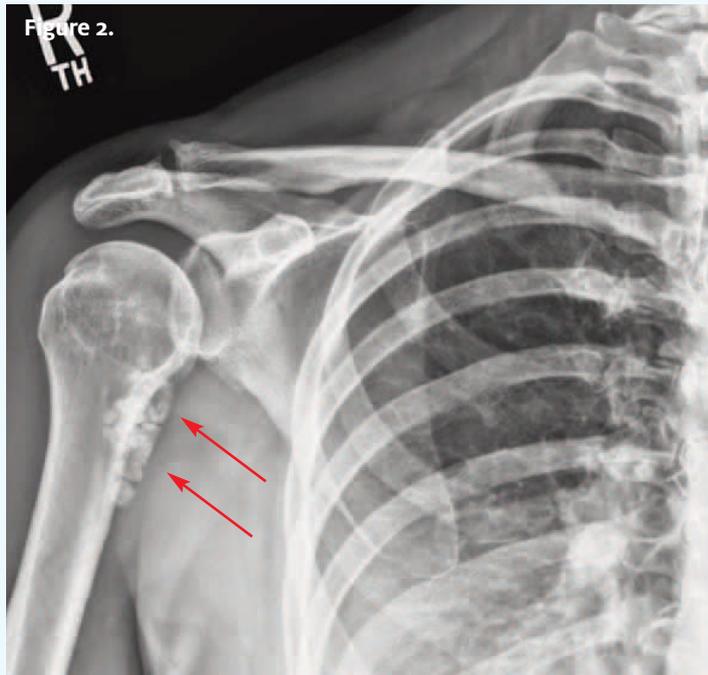
### Case

The patient is a 52-year-old male who presents with a chief complaint of 1 month of right shoulder pain.

He reports that the pain has gotten progressively worse since he first noticed it. He denies any trauma, and there is nothing remarkable in his history.

View the image taken and consider what your diagnosis and next steps would be.

## THE RESOLUTION

**Differential Diagnosis**

- Chondrosarcoma
- Osteoarthritis
- Osteochondritis dissecans
- Osteochondromatosis of the synovial sheath of the biceps tendon
- Synovial chondrosarcoma

**Diagnosis**

The x-ray shows multiple round or oval calcific/ossific bodies along the anterior surface of the humerus in the region of the bicipital groove and the biceps tendon. Also, single oval ossific body in the axillary recess of the shoulder.

This patient was diagnosed with osteochondromatosis of the synovial sheath of the biceps tendon and the axillary recess of the shoulder joint. Synovial osteochondromatosis is a proliferative disorder of the synovial lining of the joint, bursa, and tendon sheaths.

**Learnings/What to Look for**

- This diagnosis is characterized by synovial membrane proliferation and metaplasia, with development of multiple cartilaginous and osteocartilagenous bodies in the joint space, synovial bursa, or the tendon sheath
- Osteochondromatosis presents with painful swelling of the upper arm and a palpable tender mass in the region of the biceps tendon
- Radiographic findings include presence of multiple round or oval osteochondral bodies in the region of bicipital groove and the biceps tendon. There may or may not be accompanying shoulder joint osteochondromatosis with restricted joint movements

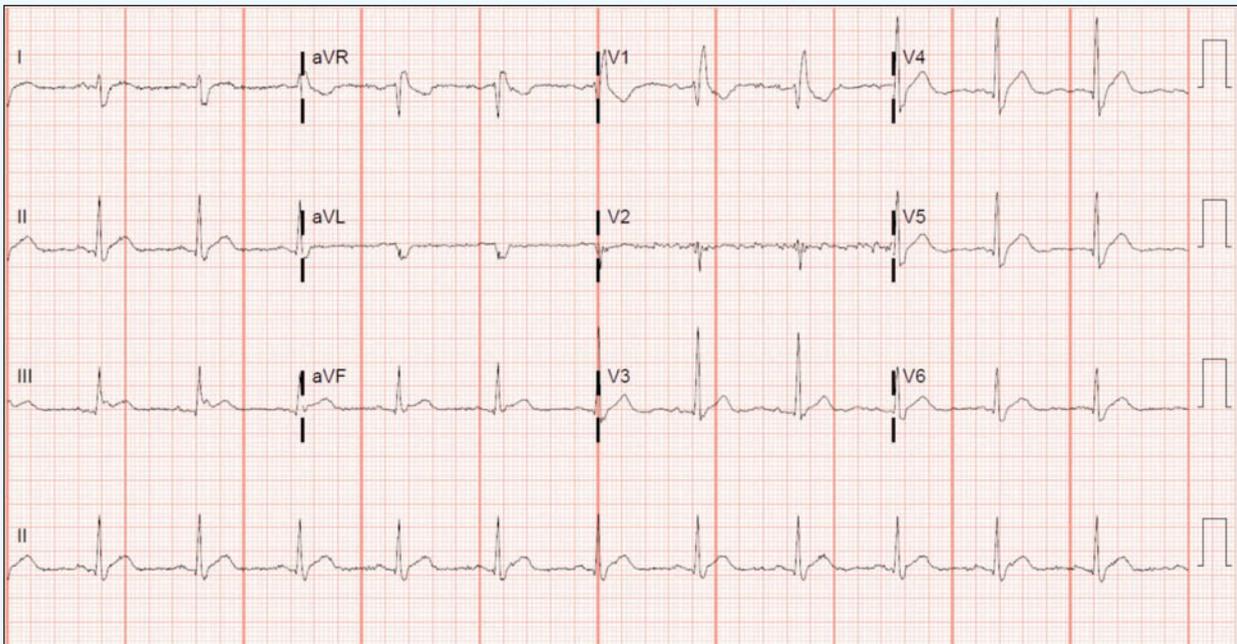
**Pearls for Urgent Care Management and Considerations for Transfer**

- Treatment is usually surgical, either open or arthroscopic with excision of the osteochondral bodies with or without resection of synovium. Recurrence is not uncommon

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



## A 48-Year-Old Female with Months of Fatigue, Nausea, and Body Aches—Including Chest Pain



### Case

The patient is a 48-year-old female with a family history of breast cancer who complains of 2 months of fatigue, nausea, and generalized body aches, including chest pain. She reports 40 pounds of unintentional weight loss during this time.

View the ECG and consider what your diagnosis and next steps would be.

*(Case presented by Tom Fadiel, MD, McGovern Medical School Department of Emergency Medicine.)*

## THE RESOLUTION

Figure 2.

**Differential Diagnosis**

- Hyperkalemia
- Hypercalcemia
- Acidosis
- Hyperthermia
- Digitalis toxicity
- Myocardial ischemia

**Diagnosis**

The ECG shows normal sinus rhythm at a ventricular rate of 75 bpm. The QT-interval, or the time between the start of the Q-wave and end of the T-wave, is shortened at 360 ms (nine small boxes at 40 ms each). This patient was diagnosed with hypercalcemia with shortened QT-interval.

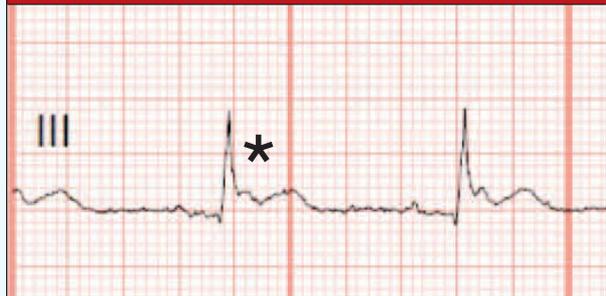
Shortening of QT interval ( $QT_c < 360\text{ms}$ ) and presence of Osborn J-waves are ECG findings commonly associated with hypercalcemia.<sup>1</sup>

The QT-interval varies based on the heart rate (lengthens at slower heart rates, shortens at faster heart rates) and should be corrected on this account. There exist several formulae for estimation of the corrected QT interval ( $QT_c$ ), of which the Framingham formula [ $QT_c = QT + 154 \times (1 - RR)$ ] may provide the most accurate estimation.<sup>2,3</sup> In this case, the  $QT_c$  is 391ms which is calculated as  $QT + 154 \times (1 - (60/HR))$ .

While other formulae exist for the estimation of lower bounds for normal  $QT_c$  intervals, a cutoff of around 360 ms is reasonable for distinction of abnormally shortened QT.<sup>4</sup> Though this patient's ECG does not yet meet this threshold, Osborn J-waves are present. The Osborn J-wave is a positive deflection at the J-point (junction point between QRS complex and T-wave). Osborn J-waves can also be seen in other conditions including hypothermia.<sup>5,6</sup>

Finally, the ECG demonstrates some ST-segment changes, including elevations most pronounced in lead III. Shortening of the QT interval can result in a "high-takeoff" of the ST-segment, mimicking myocardial ischemia or infarction. This finding is unreliable, however, and ST-segment changes can only be attributed to hypercalcemia after appropriate exclusion of an acute myocardial infarction.<sup>7-9</sup>

Figure 3.

**Learnings/What to Look for**

The identification of ECG changes associated with electrolyte derangements generally, and hypercalcemia specifically, is critical as these are manifestations of conduction abnormalities with a rare risk of progression to potentially fatal ventricular dysrhythmias (such as ventricular fibrillation).<sup>10</sup> The ECG findings commonly associated with hypercalcemia are:<sup>1</sup>

- Shortening of QT interval ( $QT_c < 360\text{ms}$ )
- Presence of Osborn J-waves
- In addition to ECG, appropriate laboratory tests include hemoglobin, chemistry panel, and cardiac enzymes

**Pearls for Urgent Care Management and Considerations for Transfer**

- In addition to emergency department transfer for symptomatic hypercalcemia with associated ECG abnormalities, initial management may include isotonic volume expansion

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

ECG STAMPEDE



## A 24-Year-Old Man with Excessively Odorous and Itchy feet



### Case

The patient is a 24-year-old man who presents with excessive foot odor that he describes as “worse than anything I could have imagined.” He denies pain or burning, but reports that the soles of his feet itch occasionally. He also says his feet sweat heavily when he plays recreational ice hockey a few nights a week. Upon examination, several shallow rounded pits are found on the pressure-bearing areas of the soles.

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

**Differential Diagnosis**

- Tinea pedis
- Palmoplantar keratoderma
- Clavus
- Pitted keratolysis

**Diagnosis**

This patient was diagnosed with pitted keratolysis, also known as keratoma plantare sulcatum and ringed keratolysis. This is a noninflammatory bacterial infection of the plantar stratum corneum caused by *Kytococcus sedentarius* (formerly *Micrococcus sedentarius*), *Dermatophilus congolensis*, or species of *Corynebacterium* or *Actinomyces*.

**Learnings/What to Look for**

- Predisposing factors are excessive sweating and prolonged occlusion in a warm, humid environment
- Affected areas are generally asymptomatic, but can emit a foul odor due to the production of isovaleric acid by the bacterial metabolism in the leucine in sweat
- Rarely, pruritis, pain, or burning may be present

**Pearls Urgent Care Management and Considerations for Transfer**

- Topical antibacterial medications, including erythromycin, clindamycin, mupirocin, fusidic acid, or benzoyl peroxide
- Aluminum chloride 20% may be used to treat excessive sweating, which may be a contributing factor in pitted keratolysis
- Patients should be counseled to wash their feet with soap or antiseptic cleanser twice daily; wear absorbent cotton or wool socks; and to avoid wearing the same shoes on consecutive days

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

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**Release Date:** December 1, 2020  
**Expiration Date:** November 30, 2021

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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.

## Learning Objectives

1. To provide best practice recommendations for the diagnosis and treatment of common conditions seen in urgent care
2. To review clinical guidelines wherever applicable and discuss their relevancy and utility in the urgent care setting
3. To provide unbiased, expert advice regarding the management and operational success of urgent care practices
4. To support content and recommendations with evidence and literature references rather than personal opinion

## Accreditation Statement



This activity has been planned and implemented in accordance with the accreditation requirements and policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint providership of the Urgent Care Association and the Institute of Urgent Care Medicine. The Urgent Care Association is accredited by the ACCME to provide continuing medical education for physicians.

The Urgent Care Association designates this journal-based CME activity for a maximum of 3 *AMA PRA Category 1 Credits™*. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

## Planning Committee

- **Joshua W. Russell, MD, MSc, FACEP**  
*Member reported no financial interest relevant to this activity.*
- **Michael B. Weinstock, MD**  
*Member reported no financial interest relevant to this activity.*
- **Alan A. Ayers, MBA, MAcc**  
*Member reported no financial interest relevant to this activity.*

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# CONTINUING MEDICAL EDUCATION

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## Urgent Care Provider Awareness of the Canadian Computed Tomography Head Rule: A Descriptive Cross-Sectional Survey Study (page 17)

**1. Radiation from head CT causes the equivalent amount of 8 months of natural radiation exposure, or how many chest x-rays?**

- a. 10
- b. 115
- c. 2,000
- d. 2,500

**2. The Canadian Computed Tomography Head Rule (CCHR) is:**

- a. 70% sensitive
- b. 75% sensitive
- c. 80% sensitive
- d. 100% sensitive

**3. Of the urgent care providers who participated in the survey described in this article, the largest number:**

- a. Always use the CCHR in assessing patients for mTBI
- b. Use the CCHR in assessing patients for mTBI most of the time
- c. Sometimes use the CCHR in assessing patients for mTBI
- d. Never use the CCHR in assessing patients for mTBI

## A New Wrinkle in the Debate Over Providing PrEP in Urgent Care (page 25)

**1. How effective is PrEP in preventing HIV infection in patients who strictly adhere to the dosing regimen?**

- a. 99% effective
- b. 90% effective
- c. 86% effective
- d. 73% effective

**2. Which of the following is *not* a commonly cited reason for nonadherence to a PrEP regimen?**

- a. Unpleasant side effects
- b. Stigmatization
- c. Substance abuse issues
- d. Cost

**3. Economic damages that could follow a successful lawsuit over PrEP treatment may include:**

- a. Current medical costs
- b. Future medical costs
- c. Physical therapy costs
- d. Travel costs for medical appointments
- e. All of the above

## Eye Pain in a Healthy 19-Year-Old (page 29)

**1. Differential diagnosis for idiopathic orbital myositis includes all but which of the following?**

- a. Graves' disease
- b. Orbital cellulitis
- c. Orbital myositis
- d. Secondary malignancy

**2. Idiopathic orbital myositis presents most frequently in:**

- a. Adolescents
- b. Young to middle-aged adults
- c. Older adults
- d. Patients of any age with a history of uncontrolled diabetes

**3. What should increase the level of suspicion for orbital etiologies?**

- a. Eye pain with movement
- b. Eye pain with exposure to bright light
- c. Excessive tearing in the morning
- d. All of the above



# What's New for RCM? Updates on Coding for COVID-19 Testing

■ MONTE SANDLER

As lab testing for COVID-19 continues to evolve, new products—and new CPT codes—continue to emerge. The latest tests combine COVID-19 testing with a test for influenza A and B. There are two types: one includes the polymerase chain reaction (PCR) test, the other includes the antigen test. The new CPT codes are:

- **87636:** Infectious agent detection by nucleic acid (DNA or RNA); severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (Coronavirus disease [COVID-19]) and influenza virus types A and B, multiplex amplified probe technique

This CPT is effective as of October 6, 2020. The *CPT Assistant* article can be found at <https://www.ama-assn.org/system/files/2020-10/cpt-assistant-guide-coronavirus-october-2020.pdf>.

- **87428:** Infectious agent antigen detection by immunoassay technique, (eg, enzyme immunoassay [EIA], enzyme-linked immunosorbent assay [ELISA], fluorescence immunoassay [FIA], immunochemiluminometric assay [IMCA]) qualitative or semiquantitative; severe acute respiratory syndrome coronavirus (eg, SARS-CoV, SARS-CoV-2 [COVID-19]) and influenza virus types A and B

CPT 87428 is effective as of November 10, 2020. This *CPT Assistant* article can be found at <https://www.ama-assn.org/system/files/2020-11/cpt-assistant-guide-coronavirus-november-2020.pdf>.

The new cobas SARS-CoV-2 & Influenza A/B Nucleic Acid Test for use on the cobas Liat System that is manufactured by Roche Molecular Systems, Inc. is reported with CPT 87636. Quidel Corporation has a test, Sofia 2 Flu + SARS Antigen FIA, that is reported with CPT 87428.

See **Table 1** for a CPT/lab test crosswalk. All the tests listed have a waived status, which means they can be billed by



clinics with a CLIA Certificate of Waiver. Modifier QW should be appended when the insurance plan requires it.

While these new CPT codes are needed in a timely fashion, they present unique problems for payers and the RCM team. These are payable codes by insurance plans, but payers are looking to Medicare to set a fee at the national level. Instead, CMS has made them contractor-priced until they undergo the Clinical Laboratory Fee Schedule annual payment determination process, meaning each Medicare carrier will set their own price and other payers are left trying to make their own determination on what to pay.

Take code 87426 for antigen testing as an example. Here is a summary of what we're seeing at Experity for reimbursement:

- Overall average reimbursement is in the high \$30s or low \$40s.
- Reimbursement is inconsistent, with some payers as low as \$9 (well below the cost of the test).
- The cost for most clients is in the low-to-mid \$20s, so profit is going to be driven by payer mix considering the variability in payer pricing.
- The HRSA Uninsured Portal is holding claims with CPT 87426 until a national allowable is set by CMS. It will be covered though payment is delayed.

Due to this confusion, practices are wondering if they can just have patients pay for the test instead of billing their insurance. The short answer is *no*. Providers under contractual



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**Table 1. CPT/Lab Test Crosswalk**

Test	Manufacturer	CPT
Assure COVID-19 IgG/IgM Rapid Test Device	Assure Tech (Hangzhou Co., Ltd)	86328
CareStart COVID-19 Antigen test	Access Bio, Inc.	87426
BinaxNOW COVID-19 Ag Card	Abbott Diagnostics Scarborough, Inc.	87426
LumiraDx SARS-CoV-2 Ag Test	LumiraDX UK Ltd.	87426
BD Veritor System for Rapid Detection of SARS-CoV-2	Becton, Dickinson and Company (BD)	87426
Sofia 2 SARS Antigen FIA	Quidel Corporation	87426
Cue COVID-19 Test	Cue Health Inc.	87635
ID NOW COVID-19	Abbott Diagnostics Scarborough, Inc.	87635
Xpert Xpress SARS-CoV-2 test	Cepheid	87635
Accula SARS-Cov-2 Test	Mes Biotech Inc.	87635
cobas SARS-CoV-2 & Influenza A/B Nucleic Acid Test for use on the cobas Liat System	Roche Molecular Systems, Inc.	87636
BioFire Respiratory Panel 2.1-EZ (RP2.1-EZ)	BioFire Diagnostics, LLC	0202U
Xpert Xpress SARS-CoV-2/Flu/RSV	Cepheid	0241U
Sofia 2 Flu + SARS Antigen FIA	Quidel Corporation	87428

agreement with a payer to provide covered services are contractually obligated to bill insurance for those services and to only collect allowable patient portions based on the individual member benefit. Example:

**4.5.2 Timeliness of Claim Submission.** You agree not to bill, charge, seek compensation or remuneration or reimbursement, or collect from the Member or us any amount for services or supplies provided to a Member for which a claim was not submitted to us in accordance with Section 4.2.2.

Additionally, payers paying off case rates/global rates/flat rates consider COVID testing to be not billable outside of the case rate. If COVID testing is done in the office as part of the office visit, the payer considers the case/global/flat rate as payment in full. Payers consider it a violation of the agreement if a provider charges the patient separately in this case. However, sending the patient out for testing is acceptable.

Experity is actively monitoring this situation.

**Vaccines**

In anticipation of a vaccine for COVID-19, the American Medical Association has worked with the Food and Drug Administration, Centers for Disease Control and Prevention, and the Centers for Medicare & Medicaid Services to create a new code set for these services. The plan is to use these for both billing and tracking. They can be found in a new Appendix Q, which will be updated as new vaccines become available (<https://www.ama-assn.org/system/files/2020-11/covid-19-immunizations-appendix-q-table.pdf>).



The structure is different from other vaccines. Each unique vaccine will have its own administration codes(s), depending on the number of doses. The manufacturer and name will be specifically listed in CPT, along with the NDC.

For example, Pfizer’s vaccine will be reported as follows:

First dose:	Second dose:
Vaccine: 91300	Vaccine: 91300
<b>Admin: 0001A</b>	<b>Admin: 0002A</b>
NDC: 59267-1000-01	NDC: 59267-1000-01
ICD: Z23	ICD: Z23

Those administration codes can only be used with CPT 91300 for the Pfizer product.

This Appendix Q will expand as new vaccines become available. If you change products, you need to change codes.

There is a lot we don’t know from an RCM perspective on what clinics will bill and to whom. Experity continues to monitor and will provide information as it becomes available.

Looking forward to a healthy and social 2021! ■

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# Will 2020 Go Down as the Year Telemedicine 'Took Hold' in Urgent Care?

If you surveyed Google data for 2020, you'd probably find that some of the most oft-used terms of the year were *pandemic*, *covid*, *coronavirus*, or even *social distancing*, *work from home*, and *new normal*. Let's just say it's been a year of seismic cultural change not only in the United States and across the globe, but also within the urgent care industry.

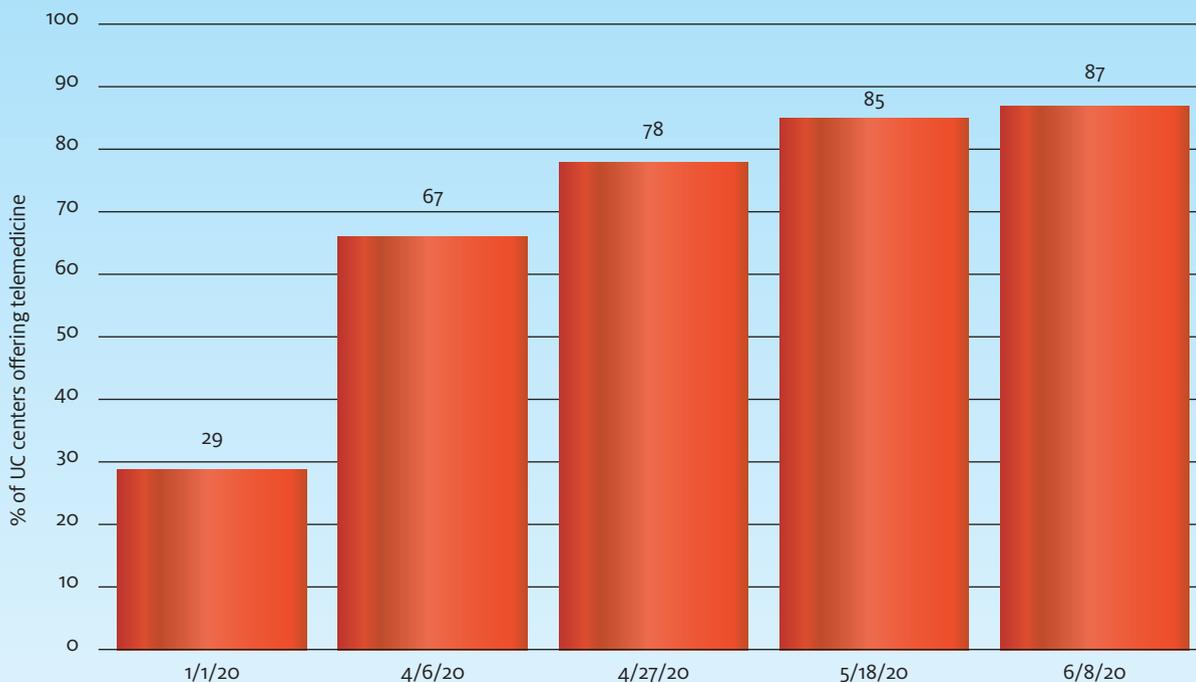
While, clearly, there have been many hardships and tragedies this year, urgent care has (again) proven that *resilience* ranks right up there with *convenience*, *quality*, and *cost effectiveness* as its own most-used terms.

The best example of that might be the strong upsurge in use

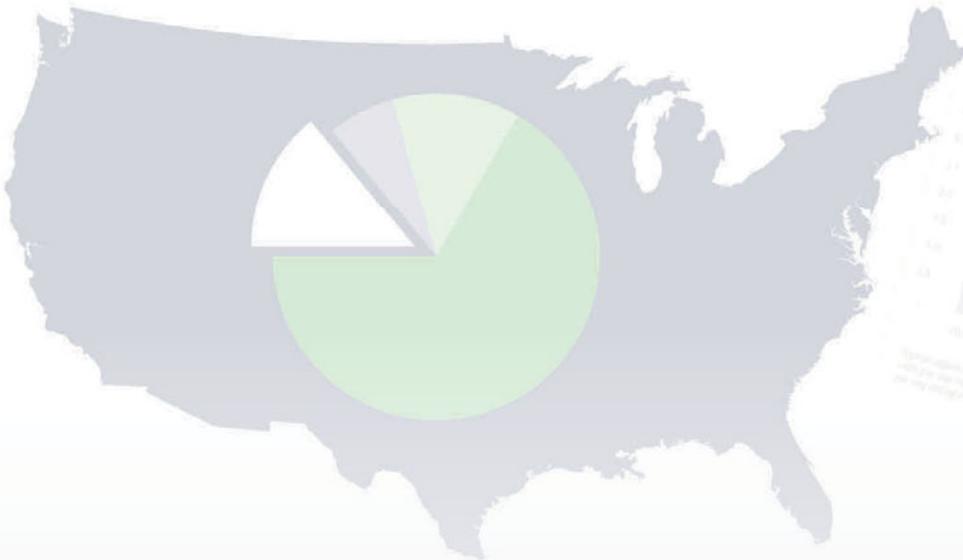
of telemedicine by urgent care operators. For years, it seemed like virtual visits were just not appealing to most urgent care companies. Those that did dive in reported good results, but that didn't really inspire the naysayers to give it a shot.

Faced with the reality of empty waiting rooms, though, many reconsidered their position—so many, in fact, that the number of urgent care centers offering some form of telemedicine service nearly tripled between January and June. Check out the graph below, courtesy of the Urgent Care Association, to see how the numbers jumped as the COVID-19 pandemic worsened. ■

### AS THE PANDEMIC GREW, SO DID USE OF TELEMEDICINE IN URGENT CARE



Data source: Urgent Care Association 2019 Benchmarking Report. (For more information or to purchase the report, visit [www.ucaoa.org/resources/industry-reports/benchmarking](http://www.ucaoa.org/resources/industry-reports/benchmarking).)



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