

# JUCM<sup>®</sup>

THE JOURNAL OF URGENT CARE MEDICINE<sup>®</sup>

JANUARY 2025  
VOLUME 19, NUMBER 4

**UCA** URGENT CARE  
ASSOCIATION

 COLLEGE OF  
URGENT CARE  
MEDICINE

 URGENT CARE  
COLLEGE OF  
PHYSICIANS

www.jucm.com

The Official Publication of the UCA, CUCM, and UCCP

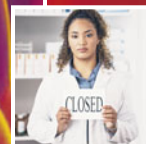


ORTHO CASE SERIES **cme**

## Finding the Fracture Shouldn't Be the Focus: Clinical Priorities for Rib Injury After Blunt Chest Trauma

### ALSO IN THIS ISSUE

- 23** **Case Report**  
An Unlikely Diagnosis in a Teenage Patient with a Prolonged Cough
- 29** **Case Report**  
A Lethargic Toddler – Don't Forget to Check The Glucose
- 33** **Original Research**  
Exploring Optimal Cephalexin Dosing For Cystitis



**43** Practice Management  
Retail Pharmacy's  
Decline Changes the  
Market for UC



# **2/3 of adults** hospitalized for flu and COVID-19 were 65+. Now that needs urgent care.

You can help prevent hospitalizations for your urgent care patients every day, even though you don't see them every day. Most adults say your recommendation is the #1 motivator for getting vaccinated, so you are essential in helping protect them

from severe illness. Use your voice; let your patients know how much vaccines help lower their risk.

Find patient resources at [RiskLessDoMore.hhs.gov](https://www.risklessdo-more.hhs.gov)

**RISK LESS.  
DO MORE.**  
Get this season's vaccines



Paid for by the U.S.  
Department of Health  
and Human Services.



# Managing Health Data Obsessive Disorder Presentation in Urgent Care

In a prior editorial, I described the case of Thomas, a young man among the “worried-well,” who presented to urgent care (UC) with anxiety related to an alarm that sounded on a malfunctioning continuous glucose monitor (CGM), which was prescribed for him despite his lack of a diagnosis of diabetes.<sup>1</sup> The underlying issue prompting his visit was not hypoglycemia but what I refer to as “health data obsessive disorder” (HDOD)—a novel behavioral health disorder diagnosis I propose we might adopt. HDOD is an increasingly common phenomenon in this era of increasingly affordable diagnostic and monitoring equipment available to patients for home use without clinician supervision.

Let’s briefly review the pathophysiology and diagnosis of HDOD and then turn our focus on how to manage situations in which patients present due to manifestations of this increasingly common phenomenon.



*“It is important to call out the dysregulated behavior in an effort to prevent further harm.”*

high) glucose reading occurring crossed his mind until I was discussing it with him in UC. This is because Thomas isn’t a clinician. He’s a lay person who is worried about his health and therefore highly susceptible to the allure of new technology and the corresponding promise of it offering a path to a longer, healthier life.

However, when the data collection is placed in the

hands of the patient, the patient is responsible for differentiating signal from noise. Armed with data acquisition technology, a worried patient is at high-risk for developing HDOD. Such patients use intellectualization<sup>2</sup> as a reflexive coping mechanism—believing that somehow, by amassing sufficient data, they will “hack” their health and reduce their concerns and risk for disease and death. However, what frequently happens is that the data is erroneously collected and/or interpreted.<sup>3</sup> Garbage in, garbage out (GIGO). Then, predictably, the human tendency towards negativity bias rears its ugly head, like with Thomas, who jumped to the worst-case scenario and immediately rushed to me to seek care.<sup>4</sup> This subsequently makes way for the intervention bias, which commonly presents as requests for questionably indicated additional testing or non-indicated treatments to ensure that a likely false positive is truly false.<sup>5</sup>

The pattern of behavior described here is not an anecdote. Increasingly, studies on the use of home health data tracking have shown that Thomas’ story is the rule and not the exception. For example, Rosman and colleagues have published on the consequences of what I would label HDOD in patients wearing smartwatches with a history of atrial fibrillation (AF).<sup>6,7</sup> Most recently, they published an observational study comparing the healthcare utilization of patients with AF who used wearable heart monitors with those who did not. They found that, ironically, the patients using monitoring devices reported both higher preoccupation with their heart rhythm and higher overall anxiety compared with similar patients who abstained from wearable use. Simultaneously, nearly two-thirds of these same patients also reported that their smartwatch “helped them to feel safe.”<sup>6</sup>

Equally unsurprisingly, patients using wearable heart monitors contacted their clinicians much more frequently and had more diagnostic testing and ablation procedures than similar, non-monitor wearing controls.<sup>6</sup> While the Rosman et al. study did not specifically examine the long-term outcomes of the subjects, cardiologists understand which patients with AF will benefit from ablation. Increased monitoring and requests for testing almost cer-

tainly produced a form of indication creep (and most likely the negative associated outcomes associated with this) for the device-wearing patients in this study, whereby the procedures were done outside of standard parameters to address the worries of concerned patients.

### Tips for UC Management of HDOD

In UC, where we usually have no prior relationship with patients and often feel beholden to meeting their expectations, it can be tempting to order more involved testing or place specialist referrals when patients, like Thomas, present with the manifestations of HDOD. However, this reflexive response, while understandable, only adds fuel to the fire. Instead, it is important to call out the dysregulated behavior in an effort to prevent further harm. Below are some practical principles and guidelines that can be useful when faced with well-appearing patients reporting abnormal findings from their outpatient health data monitoring devices:

1. Most importantly, trust your clinical assessment over the device. Despite improvements in the simplicity and accuracy of wearable devices, user error can (and often does) occur.
2. Conversely, it's important that all alarms be presumed as true positives until proven otherwise. Despite the high probability of false alarms in the well-appearing, asymptomatic patient, beware of premature closure and alarm fatigue. Avoid dismissing the patient's concern without due diligence. Collect a reasonable history and review the data available, however, do not be surprised if you conclude that the overwhelmingly likely diagnosis is that the alarm was due to device or, more likely, user error.
3. Try to determine the source of any false alarm to prevent it from recurring. Just as we would confirm the accuracy of a patient's device and measuring technique if they came in with concerns over home blood pressure readings, we should make an effort to troubleshoot false alarms from other devices. The issue creating the false alarm will often be obvious by simply having the patient demonstrate how they're using the device.
4. Approach patients with HDOD with a non-judgmental attitude and avoid assigning blame to them for seeking care. Put yourself in their shoes. They invested in the acquisition of health data because they care about their health, and they're likely dealing with significant anxiety. Instead, reassure patients that they did the right thing to come in to create a therapeutic alliance. Without this, your teaching efforts will largely be dismissed.

5. Use the visit as a teachable moment to discuss the hidden downsides of hyperfixation on excessive monitoring of their health data. Explain the risks of false positives, like the one that brought them to your UC center, and how overabundant data, especially if not recommended by a clinician, is more often hazardous than helpful. The inconvenience, embarrassment, and expense at hand will make this lesson palpable.

6. Acknowledge and affirm that anxiety about health is normal and discuss how they might divert this nervous energy more productively. For example, instead of compulsive self-monitoring, you might suggest they invest that energy into better health habits, like playing sports with friends or developing a mindfulness practice.

In the future, improvements in artificial intelligence (AI) may offer more solutions for ensuring that patient-collected health data is reliable and beneficial for patient outcomes. In the meantime, we must figure out how to manage this current stage while we incrementally progress towards finding where the true value may lie in home-based health data monitoring devices.

Regardless, without defining and labeling this unhealthy perseveration on metrics of well-being, our patients will not only continue to suffer psychologically, but they will also continue to seek unnecessary medical attention. Most importantly, when faced with such a worried-well individual who demonstrates the hallmark features of health data obsessive disorder, don't let their anxieties compel you towards collecting more unnecessary data. Instead, try taking a moment to highlight how an abundance of data actually seems to be the source of their issues, rather than the solution. ■

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

Editor-in-Chief, *JUCM*, *The Journal of Urgent Care Medicine*  
Email: editor@jucm.com • X: @UCPracticeTips

### References

1. Russell JW. 'Health Data Obsessive Disorder'—A Modern Epidemic. *J Urgent Care Med.* 2024; 19(3):1-5
2. Cramer P. Understanding Defense Mechanisms. *Psychodyn Psychiatry.* 2015 Dec;43(4):523-52
3. Perez MV, Mahaffey KW, Hedlin H, et al. Large-Scale Assessment of a Smartwatch to Identify Atrial Fibrillation. *N Engl J Med.* 2019;381(20):1909-1917. doi:10.1056/NEJMoa1901183
4. Kahneman D, Tversky A. Prospect Theory: An Analysis of Decision Under Risk. *Econometrica.* 1979; 47 (2): 263–291.
5. Foy AJ, Filippone EJ. The case for intervention bias in the practice of medicine. *Yale J Biol Med.* 2013;86(2):271-280. Published 2013 Jun 13.
6. Rosman L, Lampert R, Zhuo S, et al. Wearable Devices, Health Care Use, and Psychological Well-Being in Patients With Atrial Fibrillation. *J Am Heart Assoc.* 2024;13(15):e033750. doi:10.1161/JAHA.123.033750
7. Rosman L, Gehi A, Lampert R. When smartwatches contribute to health anxiety in patients with atrial fibrillation [published correction appears in *Cardiovasc Digit Health J.* 2021 Mar 31;2(2):150-151. doi: 10.1016/j.cvdhj.2021.03.006]. *Cardiovasc Digit Health J.* 2020;1(1):9-10. doi:10.1016/j.cvdhj.2020.06.004

**URGENT CARE:**

# WE'VE GOT YOU COVERED

## Core Content in Urgent Care Medicine

Earn CME your way with the only comprehensive self-study training program in urgent care medicine. Created by urgent care professionals and based upon the full breadth of core competencies in Urgent Care medicine, physicians and non-physician practitioners will appreciate content focused on common urgent care complaints/diagnoses.

Access your course anytime, anywhere using a computer, tablet, or smartphone — to fit your life and **learn your way.**

- 62 hours of *AMA PRA Category 1 Credits*<sup>™</sup>
- 7 core modules containing 68 lectures
- Unlimited access for one year
- Group pricing available, with training and onboarding included

Begin your journey or sharpen your skills while earning your CME credits with IUCM — the proven leader in practical mastery for urgent care professionals.



LEARN MORE



#### 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 Case Western Reserve University School of Medicine and Institute of Urgent Care Medicine. Case Western Reserve University School of Medicine is accredited by the ACCME to provide continuing medical education for physicians.

Case Western Reserve University School of Medicine designates this enduring material for a maximum of 62 AMA PRA Category 1 Credits<sup>™</sup>. Physicians should claim only the credit commensurate with the extent of their participation in the activity.



# READY FOR THE **MOMENT OF CARE**

## **RAPID MOLECULAR RESULTS. INFORMED DECISIONS.**

Each patient encounter is a chance to provide necessary care, build trust, and make a lasting impression. Prioritize the **moment of care** with test results in-hand during the patient visit.

### **EASILY TEST**

based on clinical need  
with minimal training  
and flexible test options

### **TIMELY RESULTS**

for informed clinical  
decision making and  
increase patient satisfaction

### **STREAMLINE**

practice  
efficiencies

## **ID NOW™ RESPIRATORY ASSAY MENU**

**COVID-19:** 6–12 mins

**Influenza A&B:** 5–13 mins<sup>1</sup>

**Strep A:** 2–6 mins<sup>2</sup>

**RSV:** ≤13 mins



**CONTACT YOUR DISTRIBUTOR REPRESENTATIVE TODAY OR VISIT [GLOBALPOINTOF CARE.ABBOTT](https://globalpointofcare.abbott)**

1. Abbott. Data on file. ID NOW™ Influenza A & B 2 clinical trial data. 2. Abbott. Data on file. ID NOW™ Strep A 2 clinical trial data.  
© 2024. All rights reserved. All trademarks referenced are trademarks of their respective owners. RDx-24000163-01 12/24



## ORTHOPEDIC CASE SERIES

# 13 Urgent Care Considerations for the Patient with Suspected Rib Fracture

Identification of a rib fracture is less a critical diagnosis than it is a marker for significant blunt force to the torso. The priorities for urgent care management center around considering serious associated injuries as well as ensuring appropriate analgesia to prevent subacute complications.

*Dustin M. Nelson, BS; Shering Torres, MAS, MD;  
Michael Weinstock, MD*

## CASE REPORT

### 23 Uncovering the Unexpected: A Case of Chronic Cough in an Adolescent with an Unusual Etiology



A cough lasting longer than 4 weeks in children and adolescents should prompt revision of the differential diagnosis to reduce delays in diagnosing serious etiologies, including Hodgkin lymphoma.

*Daniel Moscato, MS, PA-C;  
Joshua W. Russell, MD*

## CASE REPORT

### 29 A 2-Year-Old Girl With Tachypnea and Lethargy: A Case Report



Diabetic ketoacidosis is the most common initial presentation of type 1 diabetes mellitus in young children. Capillary blood glucose measurement should be used in children with alterations in level of consciousness.

*Ramiro Rodriguez, MD;  
Samantha Reis, MSN, FNP-BC, CEN*

## ORIGINAL RESEARCH

### 33 Comparing Outcomes for Outpatients Treated With Cephalexin for Uncomplicated Cystitis: Is QID Dosing Necessary?



Cephalexin is frequently prescribed for urinary tract infections, however, dosing regimens lack standardization. In this study, similar rates of clinical cure and adherence were observed with cephalexin 500 mg dosed every 12 hours vs every 6 hours in patients with cystitis.

*Cassandra Lopane, PharmD;  
Erica Reed, PharmD, MBOE;  
Elizabeth Rozycki*

## PRACTICE MANAGEMENT

### 43 Reimagining Retail Pharmacy Offerings as Major Chains Downsize



As retail pharmacies reinvent themselves, urgent care has an opportunity to grow within the shifting market dynamic.

*Alan A. Ayers, MBA, MAcc*

## FOLLOW JUCM ON SOCIAL MEDIA

### LinkedIn

JUCM: Journal of Urgent Care Medicine



### X

@TheJUCM



## DEPARTMENTS

- 1 Letter from the Editor-in-Chief
- 7 Urgent Interactions
- 9 From the UCA CEO
- 10 Continuing Medical Education
- 48 Abstracts in Urgent Care
- 53 Insights in Images
- 59 Revenue Cycle Management
- 61 Developing Data

## TO SUBMIT AN ARTICLE:

JUCM utilizes the content management platform Scholastica for article submissions and peer review. Please visit our website for instructions at <http://www.jucm.com/submit-an-article>

## JUCM EDITOR-IN-CHIEF

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

Clinical Educator, University of Chicago Pritzker School of Medicine  
Legacy-GoHealth Urgent Care

## JUCM EDITOR EMERITUS

**Lee A. Resnick, MD, FAAFP**

President/Chief Growth Officer  
WellStreet Urgent Care  
Assistant Clinical Professor, Case Western Reserve University,  
Department of Family Medicine

## JUCM EDITORIAL BOARD

**Alan A. Ayers, MBA, MAcc**

President of Urgent Care Consultants

**Jasmeet Singh Bhogal, MD**

Medical Director, VirtuaExpress Urgent Care  
President, College of Urgent Care Medicine

**Jeffrey P. Collins, MD, MA**

Conviva Physicians Group  
Part-Time Instructor,  
Harvard Medical School

**Tracey Quail Davidoff, MD, FCUCM**

Attending Physician  
Baycare Urgent Care  
Assistant Professor, Family Medicine, Florida State University School of Medicine

**Thomas E. Gibbons, MD, MBA, FACEP**

Medical Director  
Lexington Medical Center  
Northeast Urgent Care

**William Gluckman, DO, MBA, FACEP, CPE, FCUCM**

President & CEO, FastER Urgent Care  
Clinical Assistant Professor of Emergency Medicine at Rutgers New Jersey Medical School

**Glenn Harnett, MD**

CEO, No Resistance Consulting Group

**Lou Ellen Horwitz, MA**

CEO, Urgent Care Association

**Sean M. McNeeley, MD, FCUCM**

University Hospitals Urgent Care  
Clinical Instructor, Case Western Reserve University School of Medicine  
UCA Immediate Past President

**Christian Molstrom, MD**

Chief Medical Officer, AFC Urgent Cares, Portland

**Joseph Toscano, MD**

Chief, Emergency Medicine  
Medical Director, Occupational Medicine  
San Ramon Regional Medical Center  
Board Member, Board of Certification in Urgent Care Medicine

**Ben Trotter, DO**

Medical Director of Emergency Services  
Adena Regional Medical Center

**Kelvin Ward, MBChB (Auckland), FRNZCUC**

Chair, Royal New Zealand College of Urgent Care

**Janet Williams, MD, FACEP**

Medical Director, Rochester Regional Health Immediate Care  
Clinical Faculty, Rochester Institute of Technology

## UCA BOARD OF DIRECTORS

**Scott Prysi, MD**

President

**Gerald Cvitanovich, MD**

President-Elect

**Alicia Tezel, MD, FCUCM**

Treasurer

**Jackie McDevitt, PA-C, FCUCM**

Secretary

**Cassandra Barnette Donnelly, MD**

Director

**Heather Fernandez, MBA**

Director

**Tracey Davidoff, MD, FCUCM**

Director

**Danielle Bynum, OMC**

Director

**Boyd Faust**

Director

**Darek Newell**

Director

**Payman Arabzadeh, MD, MBA**

Immediate Past President

**Luis de la Prida, MBA**

Ex-Officio

**Cesar Jaramillo, MD, FAAFP, FCUCM**

Ex-officio

**Lou Ellen Horwitz, MA**

CEO

# JUCM®

## EDITOR-IN-CHIEF

**Joshua W. Russell, MD, MSc, ELS, FCUCM, FACEP**  
[editor@jucm.com](mailto:editor@jucm.com)

## MANAGING EDITOR

**Julie Miller**  
[jmiller@jucm.com](mailto:jmiller@jucm.com)

## SENIOR EDITOR, PRACTICE MANAGEMENT

**Alan A. Ayers, MBA, MAcc**

**SENIOR EDITOR, CLINICAL**  
**Michael B. Weinstock, MD**

## SENIOR EDITORS, RESEARCH

**Albert Botchway, PhD**  
**Ariana M. Nelson, MD**

## EDITOR, PEDIATRICS

**Brittany Wippel, MD**

## EDITOR, IMAGES

**Lindsey Fish, MD**

## EDITOR, ECG IMAGES

**Benjamin Cooper, MD, MEd, FACEP**

## CONTRIBUTING EDITOR, ABSTRACTS

**Ivan Koay, MBChB, FRNZCUC, MD**

## SENIOR ART DIRECTOR

**Tom DePrenda**  
[tdeprenda@jucm.com](mailto:tdeprenda@jucm.com)

**BRAVEHEART**  
PUBLISHING

11 E Sundial Circle, PO Box 5156, Carefree, AZ 85377

## PUBLISHER AND ADVERTISING SALES

**Stuart Williams**

[swilliams@jucm.com](mailto:swilliams@jucm.com) • (480) 245-6400

## CLASSIFIED AND RECRUITMENT ADVERTISING

**Danielle McDade**

[danielle.mcdade@communitybrands.com](mailto:danielle.mcdade@communitybrands.com) • (860) 579-1221

## Mission Statement

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

## Publication Ethics and Standards

*JUCM* adheres to industry standards for academic medical journals regarding ethical behavior on the part of authors, editors, reviewers, and staff. Authors should review and understand these guidelines to avoid misconduct in manuscript preparation and submission. The following definitions are provided to guide individuals in adhering to these declarations.

## Study Design and Ethics of Research Involving Human Subjects

Research must be conducted to appropriately address the research question while strictly adhering to ethical standards for investigations involving human subjects. *JUCM* affirms the standards for research ethics outlined by the World Medical Association (WMA) in the Declaration of Helsinki, 1964 and its subsequent amendments (last updated 2018). Prospective authors are encouraged to review the Declaration prior to undertaking research, with consideration for conducting appropriate informed consent and whether intended subjects are considered a vulnerable population. Submissions to *JUCM* must comply with the principles of the Declaration ([www.wma.net/policies-post/wma-declaration-of-helsinki-ethical-principles-for-medical-research-involving-human-subjects](http://www.wma.net/policies-post/wma-declaration-of-helsinki-ethical-principles-for-medical-research-involving-human-subjects)). Research involving human subjects must comply with the respective Institutional Review Board (IRB) standards. Use of an independent IRB is acceptable for authors within an organization without an IRB. To determine if planned investigations fall within the definition of "human subjects research," consult the National Institutes of Health (NIH) decision tool for clarification: <https://grants.nih.gov/policy/humansubjects/hs-decision.htm>. Manuscripts describing research involving human subjects must include a statement of approval or exemption for the study from an appropriate IRB or other research ethics committee. *JUCM* conforms to standards for research misconduct laid forth by the Office of Research Integrity (ORI) within the U.S. Department of Health and Human Services (HHS). The ORI specifies the following as instances of misconduct in proposing, performing, or reviewing research, or in reporting research results with the definitions cited on its website "Research Misconduct" accessed June 29, 2020, <https://ori.hhs.gov/definition-misconduct>

(a) Fabrication is making up data or results and recording or reporting them.  
(b) Falsification is manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research is not accurately represented in the research record.  
(c) Plagiarism is the appropriation of another person's ideas, processes, results, or words without giving appropriate credit.  
(d) Research misconduct does not include honest error or differences of opinion.

## Editorial Decision-Making

*JUCM* aims to publish original manuscripts relevant to urgent care practice. Decisions regarding publication are made by multilevel editorial review with consideration for clarity, originality, and audience value. Publication decisions must subsequently be corroborated through the process of peer review. Authors may appeal rejections by resubmitting a revised manuscript with a detailed description of the changes and their grounds for appealing. In the event of publication of a manuscript where errors are subsequently identified, *JUCM* will promptly issue a written correction as appropriate. Concerns regarding errors can be addressed to [editor@jucm.com](mailto:editor@jucm.com).

## Disclaimer

*JUCM The Journal of Urgent Care Medicine (JUCM)* makes every effort to select authors who are knowledgeable in their fields. However, *JUCM* does not warrant the expertise of any author in a particular field, nor is it responsible for any statements by such authors. The opinions expressed in the articles and columns are those of the authors, do not imply endorsement of advertised products, and do not necessarily reflect the opinions or recommendations of Braveheart Publishing or the editors and staff of *JUCM*. Any procedures, medications, or other courses of diagnosis or treatment discussed or suggested by authors should not be used by clinicians without evaluation of their patients' conditions and possible contraindications or dangers in use, review of any applicable manufacturer's product information, and comparison with the recommendations of other authorities.

## Advertising Policy

Advertising must be easily distinguishable from editorial content, relevant to our audience, and come from a verifiable and reputable source. The Publisher reserves the right to reject any advertising that is not in keeping with the publication's standards. Advertisers and advertising agencies recognize, accept, and assume liability for all content (including text, representations, illustrations, opinions, and facts) of advertisements printed, and assume responsibility for any claims made against the Publisher arising from or related to such advertisements. In the event that legal action or a claim is made against the Publisher arising from or related to such advertisements, advertiser and advertising agency agree to fully defend, indemnify, and hold harmless the Publisher and to pay any judgment, expenses, and legal fees incurred by the Publisher as a result of said legal action or claim.

## Copyright and Licensing

© Copyright 2025 by Braveheart Group, LLC. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or any information storage and retrieval system, without written permission from the Publisher. For information on reprints or commercial licensing of content, please contact the Publisher.

## Address Changes

*JUCM* printed edition is published monthly except for August for \$50.00 by Braveheart Group LLC, 11 E Sundial Circle, PO Box 5156, Carefree, AZ 85377. Standard postage paid, permit no. 372, at Lancaster, PA, and at additional mailing offices. POSTMASTER: Send address changes to Braveheart Group  
PO Box 5156  
Carefree, AZ 85377

Email: [address.change@jucm.com](mailto:address.change@jucm.com)





# URGENT INTERACTIONS



*“Ask about medications. Don’t trust the med list because it is almost always wrong.”*

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



*“History is free.”*

— **Michael Weinstock, MD**  
JUCM Senior Clinical Editor



*“RSV is not the only thing on the rise this winter. Beware the vague symptoms of carbon monoxide poisoning, especially following winter storms. Fatigue, dizziness, headache, and nausea are the earliest signs. In infants look for increased fussiness, poor feeding, or somnolence. A thorough exposure history can help prevent fatalities.”*

— **Brittany Wippel, MD**  
JUCM Pediatric Editor



*“Billing for telemedicine visits is already complex with multiple places of services and modifiers. Each payer has required different combinations of these coding elements. Unfortunately, adding specific CPT codes to the mix will not simplify this. The challenge in 2025 is to learn which payers want office visit codes and which require the new telemedicine codes.”*

— **Phyllis Dobberstein, CPC, CPMA, CPCO, CEMC, CCC**  
Experity Revenue Integrity Manager



## SEE YOU THERE

Connect with the JUCM team at these leading industry events in 2025

### Urgent Care Connect

UCC25 features the Experity Guru Zone and Limelight Awards

**March 3-5, 2025**

Omni Louisville  
Louisville, Kentucky

Find out more:  
[experityhealth.com/events/urgent-care-connect/](https://experityhealth.com/events/urgent-care-connect/)

### Evolve: The 2025 Urgent Care Convention

Evolve features the Urgent Care Foundation Annual Celebration, Shoot For the Stars

**May 3-6, 2025**

Hilton Anatole  
Dallas, Texas

Find out more:  
[urgentcareassociation.org/events/](https://urgentcareassociation.org/events/)



Have a comment? Interested in sharing your perspective on a topic that appeared in JUCM? Not all letters will be published. Letters may be edited for length and clarity.

Send your letters to: [editor@jujm.com](mailto:editor@jujm.com)



# EVOLVE

## DRIVING CHANGE

2025 URGENT CARE CONVENTION

**MAY 3-6, 2025**  
HILTON ANATOLE | DALLAS

LEARN ● MEET ● EVOLVE ● CELEBRATE

Experience unparalleled, hyper-focused education and connections as we Evolve together at the 2025 Urgent Care Convention.



## SAVER RATE

Register before **JANUARY 31** to secure the best rate.



2025  
FOUNDATION CELEBRATION  
**SHOOT FOR THE STARS**

MAY 5, 2025

**AND DON'T FORGET**  
to Shoot for the Stars with your sparkles and boots at the Urgent Care Foundation Celebration.

# It's the Most Wonderful Time of the Year!

■ Lou Ellen Horwitz, MA

I hope you have had a wonderful holiday season and that your centers are full of patients...but also that you and your colleagues have managed to stay healthy! For the Urgent Care Association (UCA), the College of Urgent Care Medicine (CUCM), the Urgent Care College of Physicians (UCCOP), and the Urgent Care Foundation (UCF), Q1 is Urgent Care Convention ramp-up time, leading toward our favorite time of year when we all get to gather and see each other in person. There's nothing like those few days together.

This year from May 3-6 we are in Dallas, Texas, at the absolutely gorgeous Hilton Anatole. The Anatole is a marvelous place full of original artwork and enormous sculptures and tree-filled spaces—and is easy to get to from either of Dallas's 2 airports. The meeting and exhibit hall areas are close to the guestrooms so there are no long walks from point A to point B, and everything is on one floor. There are also lots of spaces to gather informally with friends or customers and just hang out together after hours or during breaks. The health club, pools, and spa on the property are wonderful, so bring your family because there's plenty for them to do while you are in sessions. It's going to be a great place to connect and talk about where we are all taking Urgent Care in the future.

In addition to the great location, there is a lot happening during the Convention! And as with every year, we've added and upgraded to make sure you have a great learning and networking experience. So, what's *new*?

Let's talk about content first. We have 3 "journeys" in operations advancement: growth & investment, staffing, and leadership. We have 2 journeys in clinical advancement: high acuity/high performance, and evolving practice—with 25 hours of CME available! You can choose 1

journey or mix and match to fit your unique role. We're also bringing back the popular Quality workshop.

Next, let's talk about fun. One of our keynote speakers is Brad Nieder, MD, a healthcare humorist who will give us all those deep healthy laughs we need to keep doing what we do. At the Foundation Celebration, the band Diamond West will be performing. Between the band and the action on the dance floor, it will be a fantastic fundraising night! We'll also have a new UC Café to hang out in and talk shop outside the classrooms.

Of course, we will have an amazing Solutions Expo hall full of all of the solutions vendors that you don't have time to talk to during your regular day. You will have time to slow down, ask the questions you need to ask and learn about solutions you didn't know existed. There will be time for 1:1 meetings, spaces for live demos, and there's even going to be a scavenger hunt. If you are exhibiting, we have created a new package so you can experience aspects of the Convention outside of the exhibit hall!

As great as all of that is going to be, the real reason I'm comfortable calling the Urgent Care Convention the "most wonderful time of the year" is because of the people who come to it. Urgent Care people are special, and being part of that group of hundreds and hundreds of Urgent Care people is a wonderful experience that you owe to yourself. Friendships of a lifetime begin there. It is refreshing and reinvigorating, problems get solved, and barriers fall down while momentum is built. The return on investment for yourself and your company or practice is immeasurably large – immediately and into the future.

It's also the place where all the new things are unveiled by vendors and by UCA. This year will be no different (hint, hint) so don't miss it. It's also UCA's 20<sup>th</sup> year, so that says something pretty cool about Urgent Care and about our association. Register early and invite your friends (and your competitors...tomorrow they could be your collaborators)! Can't wait to see you all there and celebrate Urgent Care's ongoing evolution together. ■



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



# CONTINUING MEDICAL EDUCATION

**Release Date:** January 1, 2025

**Expiration Date:** December 31, 2025

## Target Audience

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

## Learning Objectives

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

## 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 Institute for

Medical and Nursing Education (IMNE) and the Institute of Urgent Care Medicine. IMNE is accredited by the ACCME to provide continuing medical education for physicians. The IMNE designates this journal-based CME activity for a maximum of 3 *AMA PRA Category 1 Credits*<sup>™</sup>.

Physicians should claim only the credit commensurate with the extent of their participation in the activity.

## Planning Committee

- **Joshua W. Russell, MD, MSc, ELS, FCUCM, 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.*
- **Steve Weinman, MSc, RN, CEN, TCRN**  
*Member reported no financial interest relevant to this activity.*

## Disclosure Statement

The policy of IMNE requires that the Activity Director, planning committee members, and all activity faculty (that is, anyone in a position to control the content of the educational activity)

disclose to the activity participants all relevant financial relationships with ineligible companies. Where disclosures have been made, conflicts of interest, real or apparent, must be resolved. Disclosure will be made to activity participants prior to the commencement of the activity. IMNE also requires that faculty make clinical recommendations based on the best available scientific evidence and that faculty identify any discussion of “off-label” or investigational use of pharmaceutical products or medical devices.

## Instructions

To receive a statement of credit for up to 1.0 *AMA PRA Category 1 Credit*<sup>™</sup> per article, you must:

1. Review the information on this page.
2. Read the journal article.
3. Successfully answer all post-test questions through UrgentCareCME.com.
4. Complete the evaluation.

## Estimated Time to Complete This Educational Activity

This activity is expected to take 3 hours to complete.

## Fee

There is an annual subscription fee of \$145.00 for this program, which includes up to 33 *AMA PRA Category 1 Credits*<sup>™</sup>.

**Email inquiries to [info@urgentcarecme.com](mailto:info@urgentcarecme.com)**

## Medical Disclaimer

As new research and clinical experience broaden our knowledge, changes in treatment and drug therapy are required. The authors have checked with sources believed to be reliable in their efforts to provide information that is complete and generally in accord with the standards accepted at the time of publication.

Although every effort is made to ensure that this material is accurate and up-to-date, it is provided for the convenience of the user and should not be considered definitive. Since medicine is an ever-changing science, neither the authors nor IMNE nor *The Journal of Urgent Care Medicine* or any other party who has been involved in the preparation or publication of this work warrants that the information contained herein is in every respect accurate or complete, and they are not responsible for any errors or omissions or for the results obtained from the use of such information.

Readers are encouraged to confirm the information contained herein with other sources. This information should not be construed as personal medical advice and is not intended to replace medical advice offered by physicians. IMNE and *The Journal of Urgent Care Medicine* will not be liable for any direct, indirect, consequential, special, exemplary, or other damages arising therefrom.



JUCM CME subscribers can submit responses for CME credit at [UrgentCareCME.com](http://UrgentCareCME.com). Post-test questions are featured below for your convenience. This issue is approved for up to 3 AMA PRA Category 1 Credits™. Credits may be claimed for 1 year from the date of this issue.

### Urgent Care Considerations for the Patient with Suspected Rib Fracture (page 13)

**1. What is the median age of patients with rib fractures?**

- a. 12 months
- b. 12 years
- c. 51 years
- d. 61 years

**2. A single or 2-view chest x-ray has what level of sensitivity for the diagnosis of a single rib fracture?**

- a. 1%
- b. 20%
- c. 50%
- d. 70%

**3. Which patient population is at highest risk for complications after rib fracture?**

- a. Patients with multiple rib fractures
- b. Patients with underlying pulmonary disease
- c. Patients age 65 years and older
- d. All of the above

### Uncovering the Unexpected: A Case of Chronic Cough in an Adolescent with an Unusual Etiology (page 23)

**1. When is a cough defined as chronic?**

- a. Persisting 7-10 days
- b. Persisting 10-14 days
- c. Persisting 14-21 days
- d. Persisting 4 weeks or more

**2. Hodgkin lymphoma accounts for what percentage of all cancer diagnoses in children and young adults in the United States?**

- a. 8%
- b. 18%
- c. 28%
- d. 38%

**3. What is the 5-year survival rate for Hodgkin lymphoma for adolescents in the developed world?**

- a. 85-90%
- b. 80-83%
- c. 75-79%
- d. 70-74%

### A 2-Year-Old Girl With Respiratory Distress And Altered Mental Status: A Case Report (page 29)

**1. Diabetic ketoacidosis tends to be more severe in children of which age group?**

- a. Under 5 years
- b. 5-10 years
- c. 10-15 years
- d. 15-18 years

**2. What are the most common symptoms of diabetic ketoacidosis in children?**

- a. Fever and mild cough
- b. Bruising and tactile sensitivity
- c. Dry skin and rhinorrhea
- d. Vomiting and abdominal pain

**3. The risk of developing type 1 diabetes mellitus is higher after which condition?**

- a. Viral infection
- b. Concussion
- c. Septic shock
- d. Accidental intoxication/ingestion

# PATIENT-CENTERED HEALTHCARE BEGINS WITH INTEGRATED PATIENT ENGAGEMENT

## EXPERITY PATIENT ENGAGEMENT

With scheduling, registration, reputation management, and reporting tools designed with on-demand healthcare in mind, Experity Patient Engagement helps you turn one-time patients into repeat patients.

- Efficient patient registration
- Optimized clinic operations
- Patient-friendly real-time transparency
- Balance and appointment text reminders
- Improved patient satisfaction
- Streamlined Experity EMR/PM integration





# Urgent Care Considerations for the Patient with Suspected Rib Fracture

**Urgent Message:** Rib fractures most commonly occur after blunt chest injury. Consider serious associated injuries such as pneumothorax, hemothorax, and pulmonary contusion when assessing patients with suspected rib fractures. Ensuring appropriate analgesia is critical for reducing the risk of complications.

Dustin M. Nelson, BS; Shering Torres, MAS, MD; Michael Weinstock, MD

**Citation:** Nelson DM, Torres S, Weinstock M. Urgent Care Considerations for the Patient with Suspected Rib Fracture. *J Urgent Care Med.* 2025; 19(4): 13-21

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

## Abstract

Rib fractures typically occur after blunt trauma to the thoracic region. The identification of a rib fracture is a marker for potential significant blunt force to the torso as well as an opportunity to decrease the risk for complications including pneumonia, which is more likely in elderly patients. The recommended initial imaging study of choice is plain chest radiography (CXR). Rib x-ray series, conversely, are not recommended as they do not affect patient outcomes or management. The priorities for urgent care (UC) management of patients with suspected blunt chest injuries and suspected rib fractures center around considering and excluding serious associated injuries (eg, pneumothorax, pulmonary contusion, etc.) and ensuring appropriate analgesia to prevent subsequent complications.

## Clinical Scenario

A 56-year-old man presented to the urgent care with sharp right thoracic pain, which began after he fell down the stairs in his home earlier that day. He said he feels pain

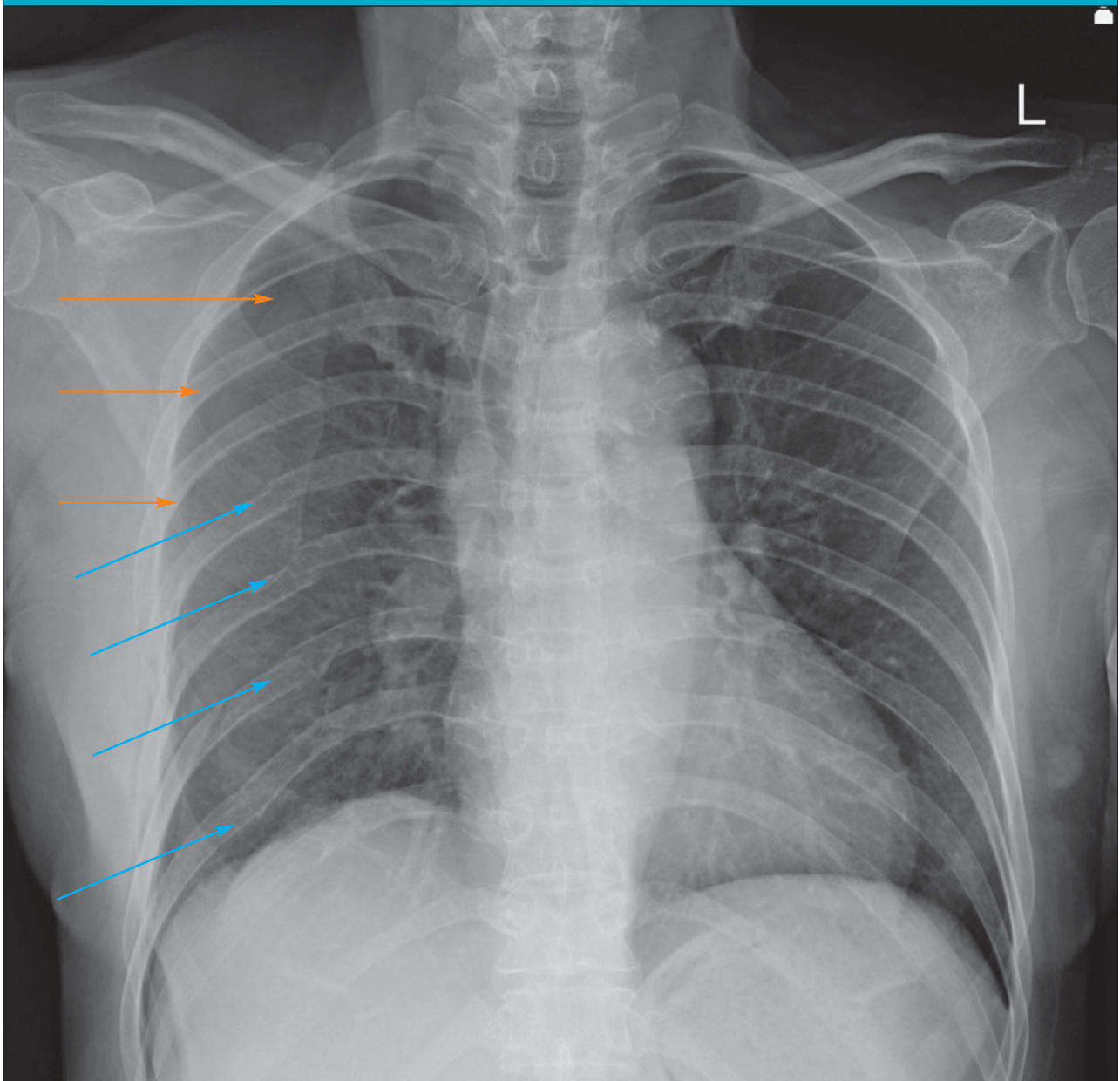
## Questions for the Clinician at the Bedside

1. When should rib fractures be suspected?
2. Which patients with rib fractures should be referred to the emergency department?
3. What associated injuries should be considered in patients with blunt chest injury?
4. What are the most critical aspects of excellence in the urgent care management of rib fractures?

when taking deep breaths and pain with any movement of his torso. He denied head trauma, head or neck pain, vomiting, numbness, tingling, dizziness, abdominal pain, hematuria, hematochezia, or melena.

The patient was afebrile. The remainder of his vitals revealed a heart rate 106 beats per minute (bpm), respiratory rate of 24 breaths per minute, and blood pressure of 138/92 mmHg. His oxygen saturation was 94% on room air. On exam, the patient appeared generally uncomfortable. He was splinting and holding his right side. On pulmonary exam, he was tachypneic with shallow breathing, but his lung sounds were clear and symmetric. His abdomen was soft and non-tender to palpation. He was tachycardic with a regular rhythm. Visual examination of the chest wall revealed a small area of ecchymosis of the right lateral posterior chest, which was tender to palpation with crepitus.

**Author Affiliations:** Dustin M. Nelson, BS, Lincoln-Memorial University in Knoxville, Tennessee. Shering Torres, MAS, MD, Department of Emergency Medicine, The Ohio State University in Columbus, Ohio. Michael Weinstock, MD, Department of Emergency Medicine, Adena Health System and Department of Emergency Medicine, The Wexner Medical Center, at The Ohio State University, Chillicothe, Ohio. Authors have no relevant financial relationships with any ineligible companies.

**Image 1. Multiple Right Sided Rib Fractures (blue arrows) with Pneumothorax (orange arrows)**

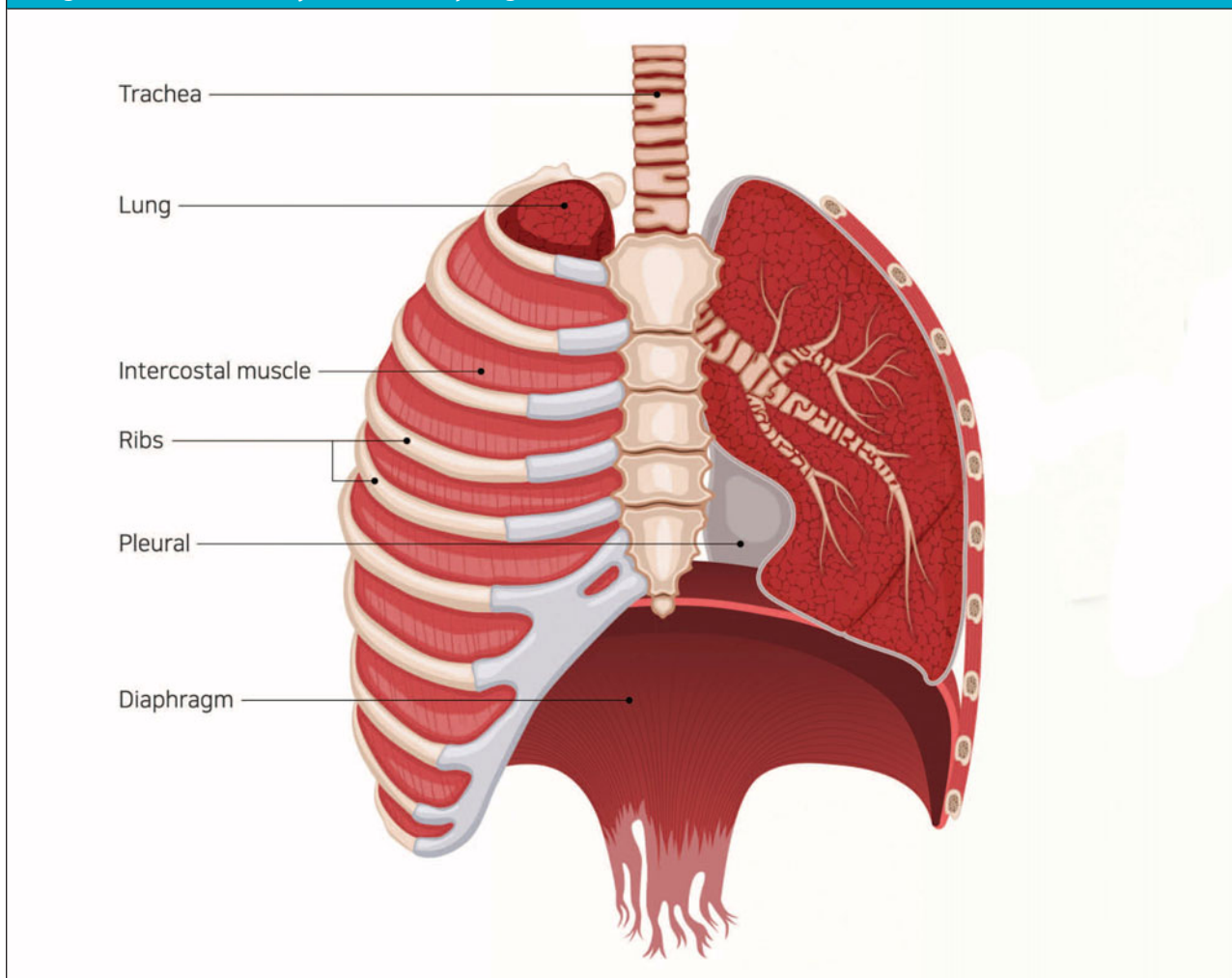
An upright chest x-ray (CXR) was performed, which demonstrated multiple posterior right-sided rib fractures as well as a right-sided pneumothorax (**Image 1**).

#### Epidemiology

Rib fractures are frequently encountered among patients after sustaining blunt thoracic trauma presenting to the emergency department (ED) or UC, with falls and motor vehicle collisions (MVC) accounting for the largest proportion of cases.<sup>1,2</sup> As patients age, rib fractures can

occur with progressively less force. In older patients, rib fractures commonly occur with low mechanism injuries such as falls from standing.<sup>3</sup> Based on aggregate data from the National Trauma Data Bank, rib fractures have been found to occur more frequently in Caucasian and male patients with a median age of 51 years at the time of diagnosis.<sup>4</sup> The most common ribs fractured are ribs 5-9,<sup>1</sup> with a median number fractures being 2.<sup>5</sup> Fracturing ribs 1-3 requires higher force mechanisms as they are anatomically well-protected by the larger tho-



**Image 2. Thoracic Anatomy: Ribs and Diaphragm**

racic muscles and shoulder girdle, and such fractures are a marker of more significant mechanism.<sup>1</sup>

Blunt chest trauma can produce myriad serious and potentially life-threatening injuries. In many ways, rib fractures serve primarily as an indicator that the thoracic region has sustained significant blunt mechanical forces, and therefore, heightened vigilance in evaluating for associated injuries is warranted. Morbidity and mortality associated with rib fractures increases linearly with the number of fractured ribs.<sup>5</sup>

Importantly, to date, there have been no studies published describing the prevalence of rib fractures and associated injuries in patients presenting to UC centers after thoracic trauma. In a large retrospective ED-based study of patients with rib fractures, the most frequent complication encountered was pneumothorax (PTX) (37.2% of cases) followed by hemothorax (HTX) (26.8%

of cases), pulmonary contusion (17.2% of cases), and flail chest (5.8% of cases).<sup>6</sup> A flail chest occurs when the chest wall moves paradoxically with inspiration and is associated with scenarios where there are multiple consecutive rib fractures on the ipsilateral side of the chest with multiple sites of fracture in the affected ribs.<sup>7,8</sup> Less commonly, other serious associated injuries may occur such as tracheobronchial tree injury, blunt aortic injury, intra-abdominal solid organ injury, injury to the great vessels (particularly with 1-3 rib fractures), sternal fracture, and cardiac contusion.<sup>7,9,10</sup>

A systematic review of 73 studies on patients with chest injury revealed the most significant risk factors for mortality associated with blunt chest wall trauma:<sup>11</sup>

- Age >65 years
- Presence of 3 or more rib fractures
- Presence of comorbid cardiopulmonary disease

### Understanding The Anatomy

The thoracic cavity contains many vital organs and structures including the heart, lungs, great vessels, and esophagus; these structures are protected by 12 paired ribs and the associated musculature of the chest wall. Respiratory inspiration is created by diaphragmatic contraction, which leads to depression of the diaphragm, expansion of the thoracic cavity and negative intrathoracic pressure. The diaphragm's movement is innervated by the phrenic nerve. During expiration, the diaphragm elevates to the level of the 4th intercostal space (approximately the nipple line) and depresses to the level of the 12<sup>th</sup> intercostal space with maximal inspiration.<sup>12</sup> (Image 2) Therefore, depending on the phase of the respiratory cycle, intra-abdominal organs may variably be susceptible to the forces of blunt thoracic trauma as well. While this is more significant in cases of penetrating thoracic trauma, it is important to consider injuries to abdominal contents with rib fractures from blunt trauma inferior to the 4th intercostal level as well. Intra-abdominal injuries and hemoperitoneum may present with shoulder pain due to the phrenic also providing nerve's sensory innervation of the diaphragm.<sup>13</sup>

*“Pain from thoracic trauma is generally pleuritic in nature, and this historical feature does not distinguish rib fracture from chest wall contusions or deeper injuries such as PTX or HTX.”*

### History

Before taking a history, begin with an assessment of the patient's stability by reviewing vital signs and general level of distress. As with all trauma histories, attention should be paid to understanding the timing and mechanism of the injury. Consider and inquire about injuries to the head, spine, abdomen, and/or extremities as patients may have sustained multiple other injuries after falls or MVCs. If there was an altercation, inquire about other injuries such as a closed fist injury, head or neck injury; explore if the patient may be a victim of criminal assault such as intimate partner violence or elder abuse. In young children, rib fractures are a conspicuous finding and are highly correlated with non-accidental trauma (NAT).<sup>14</sup>

Have the patient indicate where the area of maximal pain is located. Pain from thoracic trauma is generally pleuritic in nature, and this historical feature does not distinguish rib fracture from chest wall contusions or deeper injuries such as PTX or HTX. Patients may complain of inability to take a deep breath (ie, “splint”) because the pain is exacerbated with movement of the chest wall.<sup>7</sup> Similarly, pain from blunt thoracic trauma is typically exacerbated by body movement. While pain being exacerbated by movements does suggest that the chest wall sustained injury, it does not exclude the possibility of associated injuries to deeper structures (eg, pulmonary contusion, PTX).<sup>15</sup>

While significantly less common, atraumatic rib fractures, known as stress fractures, can occur in certain populations as well. In patients with bone diseases—such as osteoporosis or cancer metastatic to the ribs—fractures can occur without blunt force after coughing or sneezing.<sup>16</sup> Athletes who row can sustain stress fractures of the lower ribs and baseball players (particularly adolescents) can have upper rib fractures from throwing or forcefully swinging the bat.<sup>17,18</sup>

### Physical Exam

As with all trauma evaluation, begin with assessing the patient's clinical status and ensure they are breathing and mentating adequately and in no acute distress. Patients with hypotension, significant tachycardia, or hypoxemia after thoracic trauma warrant immediate activation of emergency medical services (EMS). It is important to not postpone EMS activation for interventions such as CXR as this can result in unnecessary delays to receiving definitive care among patients with time-sensitive diagnoses.

After a primary survey and review of the vital signs, assess for any external evidence of trauma to the head and neck before examining the torso. It is critical to expose the patient's chest, back, and abdomen, inspecting for signs of trauma such as ecchymoses, abrasions, or lacerations. Observe the patient's respiratory pattern noting if there is splinting, paradoxical chest wall movement, or significant tachypnea. For patient's presenting after a MVC, look for the presence of a “seatbelt sign”—bruising of neck, chest, or abdomen from pressure from the seat belt, as this has been found to be associated with a 4-fold higher likelihood of significant intrathoracic injury.<sup>19</sup>

Rib fractures are less common in children than adults as the ribs and chest wall are more pliable. Bruising of the chest in young children, while not pathognomonic for NAT, should raise suspicion for underlying rib frac-

tures. However, in 1 series of cases of NAT, 58% of children with underlying rib fractures did not show visible bruising.<sup>20</sup>

When palpating the chest, assess the area of greatest tenderness. Palpate the entirety of each rib from the spine to the sternum surrounding the area of the patient's pain paying attention to any signs of step-off irregularities or crepitus. Point tenderness or palpable deformity increases the likelihood of underlying rib fracture.<sup>21</sup> Careful auscultation of each hemithorax in comparison to the contralateral side may reveal decreased breath sounds. It is important to note that while decreased breath sounds can be present with PTX and/or HTX, this finding is insensitive, and normal breath sounds should not be used to rule out these diagnoses or as rationale to forego thoracic imaging. In one series of trauma patients with PTX and/or HTX, auscultation failed to identify any abnormality of breath sounds in 42% of cases.<sup>22</sup>

Because of the range of positions of the diaphragm through the respiratory cycle, patients with blunt chest trauma are also at risk for intra-abdominal organ injury. A 2017 article published in the *American Journal of Surgery* found that 77% of the patients with liver lacerations and 79% of patients with splenic lacerations had overlying fractures of the lower ribs.<sup>23</sup> As such, a thorough abdominal exam is a critical aspect of the physical exam after blunt chest injury. Begin with inspection for bruising (ie, seatbelt sign) or distention. Abdominal seatbelt sign is an even more ominous finding than chest seatbelt sign and has been found to be associated with an eight-fold higher likelihood of intra-abdominal injury.<sup>19</sup> Palpate the abdomen for focal tenderness and signs of peritonitis (eg, rebound tenderness or guarding). Patients with significant abdominal tenderness and/or bruising from a seatbelt injury should be referred to the ED as they have a high likelihood of requiring surgical intervention.<sup>24</sup>

## Imaging

### Plain Radiography

When there is clinical suspicion for rib fractures, an upright CXR is the most critical initial study.<sup>1</sup> While a single or 2-view CXR is only 50% sensitive for the diagnosis of a single rib fracture, definitive identification of rib fractures rarely affects management. In fact, in a 2021 study reviewing over 1,700 patients who underwent rib series radiography, there were no cases of changes in any patient's management related to findings of dedicated rib films.<sup>25</sup> Similarly, a recent study of over 400 trauma patients who underwent both CXR

and rib x-ray series found that the addition of the rib radiographs changed management in only 1 patient (0.2%).<sup>26</sup> The dramatic and reproducible evidence of rib series' lack of impact on patient management provides the evidential support for the American College of Radiology (ACR) Appropriateness Criteria guidelines on blunt chest injury which do not recommend obtaining dedicated radiographs rib series after blunt chest injury.<sup>1</sup>

*“When there is clinical suspicion for rib fractures, an upright CXR is the most critical initial study.”*

The ACR guidelines for the initial imaging study after blunt chest injury instead strongly support the utility of a standard CXR as a screening tool for complications of chest wall injury, such as PTX, HTX, and pulmonary contusion.<sup>1</sup> This recommendation is based on the test characteristics of standard CXR, which has a greater sensitivity for the injuries that affect management; CXR also has significantly less ionizing radiation when compared to that of a rib series.<sup>1</sup> Although the diagnosis of multiple rib fractures has certain prognostic implications, there is no evidence that performing dedicated rib studies affects patient outcomes.

When assessing the CXR, evaluate for signs of rib fractures. Fractures may appear as a discontinuity in the bone's cortices and/or disruption in the trabecular pattern. Examine for evidence of serious complications. PTX can be identified as an area of lucency without pulmonary markings and the presence of a pleural line separated from the thoracic wall. Upright films are more sensitive than supine films for PTX identification as the intrapleural air will tend to move cephalad and be detectable in the superior most portion of the affected hemithorax.<sup>27</sup> The sensitivity of upright CXR for detection of PTX is approximately 70%.<sup>28</sup> Tension PTX occurs when air trapped in the pleural space exerts sufficient pressure to impair cardiac venous return. Tension PTX is a clinical diagnosis and should be suspected in patients with evidence of significant PTX, hypoxemia and/or hypotension.<sup>29</sup> Immediate treatment for tension PTX consists of EMS activation and needle decompression of the hemithorax.<sup>30</sup>

Similarly, HTX can be identified as a pleural effusion, and gravity effects will make this most apparent in an upright film. CXR is approximately 63% sensitive for

identification of HTX.<sup>28</sup> Pulmonary contusions may be delayed in their radiographic appearance and appear as air space opacities. A widened mediastinum should prompt consideration for blunt aortic injury.<sup>31</sup> Importantly, with these sensitivities, a normal CXR is far from adequate in excluding complications of blunt chest injury in patients in whom there is high clinical pre-test probability of significant injury (ie, severe pain, abnormal vital signs, high energy mechanism of injury).<sup>27</sup>

Special consideration is warranted for patients with first or second rib fractures as these patients have a high risk of concomitant great vessel injuries.<sup>2</sup> In pediatric patients, costochondral junction fractures are highly specific for NAT, but CXR is not sufficiently sensitivity to exclude thoracic NAT in cases of high clinical suspicion.<sup>32</sup>

#### **Point-of-Care Ultrasound**

Point-of-care ultrasound (POCUS) has gained increasingly wide adoption in recent decades as a useful adjunct to the bedside assessment of trauma patients. With appropriate equipment and training, POCUS is an ideal tool for screening assessment of trauma patients.<sup>33</sup> There is little published data on the prevalence of POCUS use in UC centers. However, given the increasing affordability and portability of POCUS devices, it is reasonable to expect that equipping UC clinicians with such technology and appropriate training would have a meaningful impact on resource utilization and patient outcomes. Additionally, in the hands of experienced clinicians, POCUS has superior sensitivity to CXR for both PTX (85% vs. 71%) and HTX (79% vs. 63%).<sup>28</sup> POCUS also has superior sensitivity to CXR (85% vs. 56%) for the detection of rib fractures, especially in cases where multiple rib fractures are present.<sup>34,35</sup>

#### **Computed Tomography**

While not commonly available in the UC setting, chest computed tomography (CT) is the gold standard for both identification of rib fractures and associated intrathoracic injuries related to blunt chest trauma.<sup>1,36</sup> While chest CT is much more sensitive for rib fractures and other post-traumatic complications, the majority of UC patients with blunt chest injury do not require chest CT. The NEXUS Chest CT Rule was derived and validated to help clinicians determine which patients with blunt chest injury are likely to have findings on chest CT that affect management. The rule is >99% sensitive excluding serious intrathoracic injury if a patient has a normal CXR and has no distracting injury, chest wall tenderness, or high-risk mechanism of injury.<sup>37</sup> Given

many patients will have some degree of bony chest tenderness, however, this rule unfortunately cannot be used in many patients and is poorly specific. However, emergency physician gestalt has also proven highly reliable for excluding clinically significant injuries that might only be diagnosed on chest CT.<sup>38</sup> Unfortunately, there are no studies on the efficacy of UC clinician gestalt in ruling out significant intrathoracic injury. Patients presenting to UC, however, are typically much lower acuity/risk than patients with similar complaints in an ED setting. Given this set of circumstances and until more evidence is available, it seems most reasonable for UC clinicians to use a combination of clinical judgment and CXR findings to determine who will benefit from thoracic CT imaging. Unless immediate CT is available, such patients warrant ED referral.

#### **Urgent Care Management of Rib Fractures**

Management of rib fractures in UC includes: risk stratification for complications; assessment of respiratory status; appropriate pharmacologic and non-pharmacologic interventions to ensure pain is adequately managed; and measures to reduce subsequent complications. Indications for immediate ED referral include the following:

- Evidence of (or suspicion for) associated pneumothorax, hemothorax, hypoxemia, tracheobronchial injury, injury to the great vessels, intraabdominal injury, flail chest, and/or sternal fracture
- Hypoxemia (O<sub>2</sub> saturation <92% on room air)
- Intractable pain
- Significant hypotension or tachycardia

Suggested discretionary criteria include:

- Elderly patients (>65 years) and those with suspected barriers to adequate pain control
- 3 or more rib fractures or displaced fractures
- Decreased pulmonary function, such as chronic obstructive pulmonary disease (COPD) or other comorbid conditions (eg, sleep apnea, obesity hypoventilation syndrome, alcohol use disorder) that predispose patients at risk for respiratory failure.

As the rib cage is necessarily moving continuously to support adequate respirations, the pain associated with rib fractures can be severe and pervasive. The Western Trauma Association guidelines for care of patients after sustaining rib fractures recommend providing appropriate pain management, encouraging frequent pulmonary hygiene exercises, such as coughing, deep breathing, and avoiding prolonged sitting or bedrest with frequent ambulation.<sup>39</sup>

### Non-Pharmacologic Intervention

Splinting devices, such as rib belts, have not been shown to reduce pain and may decrease lung excursion, thereby increasing the risk of subacute complications (eg, atelectasis, pneumonia).<sup>15</sup> Pulmonary toilet (or pulmonary hygiene) describes practices that encourage maximal diaphragmatic excursion; common pulmonary toilet/hygiene practices include coughing and deep breathing exercises. Incentive spirometry devices, traditionally felt to improve outcomes after rib fractures, have not been shown to reduce complications.<sup>40</sup> However, early mobilization and frequent ambulation have proven very effective in reducing morbidity and subacute complications after rib fractures.<sup>41</sup>

Respiratory rate has not proven effective as a means of predicting respiratory failure after rib fracture.<sup>42</sup> However, patients with fractured ribs who cannot achieve incentive spirometry (IS) volumes >1,000 mL have been found to have a higher likelihood of respiratory failure. Therefore, while of questionable utility for pulmonary hygiene, IS may serve some clinical utility for the determination of need for ED referral.<sup>43,44</sup>

### Pharmacologic Interventions

Pain control should be individualized for patients with chest wall injury. The goals of pain management should be to alleviate pain, rather than expect it can be eliminated entirely.<sup>45</sup> Pain management is especially critical after chest trauma to allow for deep breathing, coughing, and ambulation, which may decrease the risk of splinting and pneumonia.<sup>41</sup>

As with the treatment of any source of acute traumatic pain, the risks and benefits of medications should be carefully weighed. Opioid analgesics, while highly effective for the treatment of acute fracture-related pain, are associated with respiratory depression at highly variable doses based on many patient factors.<sup>46</sup> Therefore, it is important that opioids are used sparingly and not as a sole class of analgesics. Increasingly, multimodal analgesia approaches have gained evidential support, including as they pertain to rib fractures.<sup>47</sup>

Stepwise use of oral analgesics in a multimodal approach can minimize opioid requirements in patients with acute pain. Oral acetaminophen (paracetamol) at the maximum daily dose accompanied by appropriate dosing of non-steroidal anti-inflammatory agents (eg, ibuprofen, naproxen) as first and second-line agents with opioids reserved for breakthrough pain is a sensible analgesic strategy.<sup>48,49</sup> Early administration of parenteral NSAIDs has been shown to decrease opioid requirements, length of stay, pneumonia incidence, number

of ventilator days, and intensive care length of stay.<sup>50</sup>

Topical pharmacotherapy should not be overlooked as well. Topical NSAIDs (eg, diclofenac) can be used in patients who cannot safely take oral NSAIDs. Additionally, lidocaine patches have an excellent safety profile and have been shown to reduce opioid requirements in patients with acute rib fractures.<sup>51</sup> With these considerations for first and second-line agents, it is important to note that in most patients discharged from UC, several days of opioid therapy for breakthrough pain is generally appropriate.<sup>48</sup>

*“Pain control should be individualized for patients with chest wall injury.”*

### Considerations For Follow-Up

For patients discharged from UC after rib fracture, ensuring close follow-up and clear return precautions is essential. Worsening shortness of breath and/or fever, for example, could indicate the presence of pneumonia. These precautions should be emphasized most in patients with underlying lung disease (eg, asthma, COPD) as they are at the highest risk of developing pneumonia after chest trauma.<sup>52</sup>

When 3 or more rib fractures are present, there is an increased morbidity and mortality, particularly among patients >65 years of age or displaced fractures.<sup>11,53,54</sup> Poor functional status, regardless of age, is also a strong predictor of complications.<sup>55</sup> UC clinicians should have a low threshold for referring such patients immediately to the ED.

### Next Level Urgent Care Pearls

Increasingly, regional anesthesia techniques have been found to offer significant pain relief for patients with acute rib fractures. These techniques require appropriate training and equipment (ie, POCUS). An intercostal nerve block with the use of a long-acting anesthetic has been shown to provide up to 12 hours of analgesia, however, can result in PTX or HTX as potential.<sup>56</sup> The serratus anterior and erector spinae plane blocks have also proven effective for providing immediate and significant reductions in pain scores in patients with rib fractures. With appropriate training and equipment, these regional anesthetic approaches could be offered

to provide safe and effective adjunctive pain relief and reduce the risk of hospitalization and/or intensive care unit admission.<sup>57,58,59</sup>

### Red Flags and Legal Pitfalls

- Patients at the highest risk of significant morbidity and mortality are elderly patients (age >65 years) and patients with multiple rib fractures.
- The initial evaluation in a patient with suspected rib fracture(s) is to assess for life-threatening injuries such as pneumothorax, hemothorax, flail chest, or great vessel injury.
- Injury to the 1<sup>st</sup> and 2<sup>nd</sup> ribs are generally the result of a large amount of force, with consideration of great vessel as well as bronchial injury.<sup>1</sup>
- Injury to the lower ribs may be associated with intra-abdominal injury.
- A child with multiple rib fractures or rib fractures at different stages of healing is concerning for NAT.
- The most common reason for return visits after rib fractures is pain, so ensuring adequate pain control before discharge is vital to prevent them from returning.<sup>60</sup>

### Clinical Scenario Conclusion

In addition to multiple rib fractures, a the right-sided PTX was also identified on the upright CXR. Because of the multiple fractures as well as PTX, the patient was sent to the ED via EMS as he did not have anyone to drive him and was felt to be in too severe of pain to drive. In the ED, he underwent chest CT which showed no HTX but redemonstrated a PTX and multiple rib fractures. He had a small gauge chest tube placed in the ED and was admitted to the trauma service for analgesic titration and monitoring.

For a similar patient without PTX or multiple rib fractures who might be discharged from the UC, an example of an appropriate outpatient plan would be oral acetaminophen 1000mg and NSAID (ibuprofen or naproxen) with a topical lidocaine patch (4%, over-the-counter) over the areas of pain as initial multimodal analgesic treatment. In addition, consider a prescription for 3-4 days of oxycodone 2.5-5mg every 4 hours as needed for breakthrough pain.

Additional instructions for pulmonary hygiene to be given at discharge could include coughing and deep breathing exercises and ambulation at least twice an hour to decrease the risk of atelectasis and pneumonia. Patients should be instructed to have follow up with primary care in 3-7 days and given strict return precautions for fever, increasing pain, shortness of breath, or lightheadedness.

### Takeaway Points

- Rib fractures can occur after blunt thoracic trauma, most commonly MVCs and falls.
- There is little necessity in identifying rib fractures; the management of chest wall contusions is not affected by whether rib fractures are present.
- Avoid the cognitive trap of excessive focus on identification of rib fractures. Instead, ensure adequate evaluation for other areas of injury and possible complications of blunt thoracic trauma such as PTX and HTX.
- Do not order rib radiograph films as they do not affect the management of patients with blunt chest trauma.
- While CXR is the initial recommended study of choice for blunt chest injury, with appropriate training POCUS is more sensitive for identification of PTX and HTX.
- Patients at the highest risk for complications after rib fracture include the elderly (>65 years), those with multiple rib fractures, and/or underlying pulmonary disease.
- Pulmonary toilet, multimodal analgesia (including topical agents), and close follow-up are the key components of outpatient management for reducing the risk of complications. ■

*Manuscript submitted November 23, 2024; accepted December 10, 2024.*

### References

1. Henry TS, Donnelly EF, et al. Expert Panel on Thoracic Imaging. ACR Appropriateness Criteria Rib Fractures. *J Am Coll Radiol*. 2019;16(5S):S227-S234.
2. Murphy CE, Raja AS, Baumann BM, et al. Rib Fracture Diagnosis in the Panscan Era. *Ann Emerg Med*. 2017;70(6):904-909.
3. Tignanello CJ, Rix A, Napolitano LM, Hemmila MR, Ma S, Kummerfeld E. Association Between Adherence to Evidence-Based Practices for Treatment of Patients with Traumatic Rib Fractures and Mortality Rates Among US Trauma Centers. *JAMA Netw Open*. 2020 Mar 2;3(3):e201316.
4. Peek J, Ochen Y, Saillant N, et al. Traumatic rib fractures: a marker of severe injury. A nationwide study using the National Trauma Data Bank. *Trauma Surg Acute Care Open*. 2020;5(1):e000441. Published 2020 Jun 10.
5. Hamilton C, Barnett L, Trop A, et al. Emergency department management of patients with rib fracture based on a clinical practice guideline. *Trauma Surg Acute Care Open*. 2017;2(1):e000133. Published 2017 Dec 22.
6. Sirmali M, Türüt H, Topçu S, Gülhan E, Yazıcı Ü, Kaya S, Taştepe İ. A comprehensive analysis of traumatic rib fractures: morbidity, mortality and management. *Eur J Cardiothorac Surg*. 2003;24(1):133-138.
7. Senekjian L, Nirula R. Rib Fracture Fixation: Indications and Outcomes. *Crit Care Clin*. 2017;33(1):153-165.
8. Pieracci FM, Leasia K, Bauman Z, Eriksson EA, Lottenberg L, Majercik S, Powell L, Sarani B, Semon G, Thomas B, Zhao F, Dyke C, Doben AR. A multicenter, prospective, controlled clinical trial of surgical stabilization of rib fractures in patients with severe, nonflail fracture patterns (Chest Wall Injury Society NONFLAIL). *J Trauma Acute Care Surg*. 2020 Feb;88(2):249-257.
9. Sammy IA, Chatha H, Lecky F, et al. Are first rib fractures a marker for other life-threatening injuries in patients with major trauma? A cohort study of patients on the UK Trauma Audit and Research Network database. *Emerg Med J*. 2017; 34(4):205-211.
10. Dennis BM, Bellister SA, Guillaumondegui OD. Thoracic Trauma. *Surg Clin North Am*. 2017 Oct;97(5):1047-1064.

11. Battle C, Carter K, Newey L, Giamello JD, Melchio R, Hutchings H. Risk factors that predict mortality in patients with blunt chest wall trauma: an updated systematic review and meta-analysis. *Emerg Med J*. 2023;40(5):369-378.
12. Kocjan J, Adamek M, Gzik-Zroska B, Czyżewski D, Rydel M. Network of breathing. Multifunctional role of the diaphragm: a review. *Adv Respir Med*. 2017;85(4):224-232. doi:10.5603/ARM.2017.0037
13. Petrone P, Asensio JA, Marini CP. Diaphragmatic injuries and post-traumatic diaphragmatic hernias. *Curr Probl Surg*. 2017 Jan;54(1):11-32.
14. Mulpuri K, Slobogean BL, Tredwell SJ. The epidemiology of nonaccidental trauma in children. *Clin Orthop Relat Res*. 2011 Mar;469(3):759-67.
15. Rogers FB, Larson NJ, Rhone A, Amaya D, Olson-Bullis BA, Blondeau BX. Comprehensive Review of Current Pain Management in Rib Fractures with Practical Guidelines for Clinicians. *J Intensive Care Med*. 2023 Apr;38(4):327-339.
16. Katrancioğlu O, Akkas Y, Arslan S, Sahin E. Spontaneous rib fractures. *Asian Cardiovasc Thorac Ann*. 2015 Jul;23(6):701-3.
17. Evans G, Redgrave A. Great Britain Rowing Team Guideline for diagnosis and management of rib stress injury: Part 1. *Br J Sports Med*. 2016;50(5):266-269.
18. Funakoshi T, Furushima K, Kusano H, et al. First-Rib Stress Fracture in Overhead Throwing Athletes. *J Bone Joint Surg Am*. 2019;101(10):896-903.
19. Velmahos GC, Tatevossian R, Demetriades D. The “seat belt mark” sign: a call for increased vigilance among physicians treating victims of motor vehicle accidents. *Am Surg*. 1999;65(2):181-185.
20. Peters ML, Starling SP, Barnes-Eley ML, Heisler KW. The presence of bruising associated with fractures. *Arch Pediatr Adolesc Med*. 2008 Sep;162(9):877-81.
21. Crandall J, Kent R, Patrie J, Fertile J, Martin P. Rib fracture patterns and radiologic detection—a restraint-based comparison. *Annu Proc Assoc Adv Automot Med*. 2000;44:235-259.
22. Chen SC, Markmann JF, Kauder DR, Schwab CW. Hemopneumothorax missed by auscultation in penetrating chest injury. *J Trauma*. 1997;42(1):86-89. doi:10.1097/00005373-199701000-00015
23. Rostas JW, Lively TB, Brevard SB, Simmons JD, Frotn MA, Gonzalez RP. Rib fractures and their association with solid organ injury: higher rib fractures have greater significance for solid organ injury screening. *Am J Surg*. 2017 Apr;213(4):791-797.
24. Biswas S, Adileh M, Almogy G, Bala M. Abdominal injury patterns in patients with seatbelt signs requiring laparotomy. *J Emerg Trauma Shock*. 2014;7(4):295-300.
25. Nishimura E, Finger A, Harris M, Yoon HC. One-View Chest Radiograph for Initial Management of Most Ambulatory Patients with Rib Pain. *J Am Board Fam Med*. 2021;34(1):144-150. doi:10.3122/jabfm.2021.01.200276
26. Shuaib W, Vijayasarithi A, Tiwana MH, Johnson JO, Maddu KK, Khosa F. The diagnostic utility of rib series in assessing rib fractures. *Emerg Radiol*. 2014 Apr;21(2):159-64.
27. Mowery N, et al. Practice Management Guidelines for Management of Hemothorax and Occult Pneumothorax. *Journal of Trauma: Injury, Infection, and Critical Care*. 70(2):p 510-518, February 2011. doi: 10.1097/TA.0bo13e31820b5c31
28. Aswin K, et al. Comparing Sensitivity and Specificity of Ultrasonography With Chest Radiography in Detecting Pneumothorax and Hemothorax in Chest Trauma Patients: A Cross-Sectional Diagnostic Study. *Cureus*. 2023;15(8):e44456. Published 2023 Aug 31. doi:10.7759/cureus.44456
29. Roberts DJ, Leigh-Smith S, Faris PD, et al. Clinical Presentation of Patients With Tension Pneumothorax: A Systematic Review. *Ann Surg*. 2015;261(6):1068-1078. doi:10.1097/SLA.0000000000001073
30. Gurney D. Tension Pneumothorax: What Is an Effective Treatment?. *J Emerg Nurs*. 2019;45(5):584-587. doi:10.1016/j.jen.2019.06.003
31. Bhavnagri SJ, Mohammed TL. When and how to image a suspected broken rib. *Cleve Clin J Med*. 2009;76(5):309-314.
32. Forbes-Amrhein MM, Gensel AJ, Cooper ML, Katmazyn B. Multi-modality imaging characteristics of costochondral fractures, a highly specific rib fracture for child abuse. *Pediatr Radiol*. 2022 May;52(5):910-923.
33. Hansen W, Mitchell CE, Bhattarai B, Ayutyanont N, Stowell JR. Perception of point-of-care ultrasound performed by emergency medicine physicians. *J Clin Ultrasound*. 2017;45(7):408-415. doi:10.1002/jcu.22443
34. Awais M, Salam B, Nadeem N, Rehman A, Baloch NU. Diagnostic Accuracy of Computed Tomography Scout Film and Chest X-ray for Detection of Rib Fractures in Patients with Chest Trauma: A Cross-sectional Study. *Cureus*. 2019;11(1):e3875. Published 2019 Jan 13. doi:10.7759/cureus.3875
35. Zarei Jelyani N, Mousavi-Roknabadi R S, Mohammadi R, Hosseini-Marvast S R, Goudarzi F, et al. Diagnosis of Rib Fracture and Related Complications in Patients with Blunt Chest Wall Trauma Using Point-of-Care Ultrasound vs. Computed Tomography Scan. *Shiraz E-Med J*. 2023;24(11):e138379
36. Oikonomou A, Prassopoulos P. CT imaging of blunt chest trauma. *Insights Imaging*. 2011;2(3):281-295. doi:10.1007/s13244-011-0072-9
37. Rodríguez RM, Langdorf MI, Nishijima D, Baumann BM, Hendey GW, Medak AJ, Raja AS, Allen IE, Mower WR. Derivation and validation of two decision instruments for selective chest CT in blunt trauma: a multicenter prospective observational study (NEXUS Chest CT). *PLoS Med*. 2015 Oct 6;12(10):e1001883. doi: 10.1371/journal.pmed.1001883. eCollection 2015.
38. Smith CB, Barrett TW, Berger CL, Zhou C, Thurman RJ, Wrenn KD. Prediction of blunt traumatic injury in high-acuity patients: bedside examination vs computed tomography. *Am J Emerg Med*. 2011;29(1):1-10.
39. Brasel KJ, Moore EE, Albrecht RA, deMoya M, Schreiber M, Karmy-Jones R, Rowell S, Namias N, Cohen M, Shatz DV, Biffi WL. Western Trauma Association Critical Decisions in Trauma: Management of rib fractures. *J Trauma Acute Care Surg*. 2017 Jan;82(1):200-203.
40. Dote H, Homma Y, Sakuraya M, Funakoshi H, Tanaka S, Atsumi T. Incentive spirometry to prevent pulmonary complications after chest trauma: a retrospective observational study. *Acute Med Surg*. 2020;7(1):e619. Published 2020 Dec 31. doi:10.1002/ams2.619
41. Weinberg BJ, Roos R, van Aswegen H. Effectiveness of nonpharmacological therapeutic interventions on pain and physical function in adults with rib fractures during acute care: A systematic review and meta-analysis. *S Afr J Physiother*. 2022;78(1):1764. Published 2022 Jun 28.
42. Butts CA, Brady JJ 3rd, Wilhelm S, et al. Do simple bedside lung function tests predict morbidity after rib fractures? *Am J Surg*. 2017;213(3):473-477. doi:10.1016/j.amjsurg.2016.11.026
43. Carver TW, Milia DJ, Somberg C, Brasel K, Paul J. Vital capacity helps predict pulmonary complications after rib fractures. *J Trauma Acute Care Surg*. 2015;79(3):413-416.
44. Warner R, Knollinger P, Hobbs G, Lilly C, Grabo D, Wilson A. Forced vital capacity less than 1: A mark for high-risk patients. *J Trauma Acute Care Surg*. 2018;85(2):271-274.
45. Dowell D, Ragan KR, Jones CM, Baldwin GT, Chou R. CDC Clinical Practice Guideline for Prescribing Opioids for Pain-United States, 2022. *MMWR Recomm Rep* 2022;71(No. RR-3):1-95.
46. Nadpara PA, Joyce AR, Murrelle EL, Carroll NW, Carroll NV, Barnard M, Zedler BK. Risk factors for serious prescription opioid-induced respiratory depression or overdose: comparison of commercially insured and Veterans Health Affairs populations. *Pain Med*. 2018;19(1):79-96.
47. Burton SW, Riojas C, Gesin G, et al. Multimodal analgesia reduces opioid requirements in trauma patients with rib fractures. *J Trauma Acute Care Surg*. 2022;92(3):588-596. doi:10.1097/TA.0000000000003486
48. Amaechi O, Mccann Human M, Featherstone K. Pharmacologic therapy for acute pain; *Am Fam Physician*. 2021;104(1):63-72
49. Van Zyl T, Ho AM, Klar G, et al. Analgesia for rib fractures: a narrative review. *Analgesie pour les fractures des côtes : une revue narrative. Can J Anaesth*. 2024;71(4):535-547. doi:10.1007/s12630-024-02725-1
50. Martin TJ, Eltorai AS, Dunn R, Varone A, Joyce MF, Kheirbek T, Adams C Jr, Daniels AH, Eltorai AEM. Clinical management of rib fractures and methods for prevention of pulmonary complications: A review. *Injury*. 2019 Jun;50(6):1159-1165.
51. Johnson M, Strait L, Ata A, et al. Do Lidocaine Patches Reduce Opioid Use in Acute Rib Fractures? *Am Surg*. 2020;86(9):1153-1158. doi:10.1177/0003134820945224
52. Chauny JM, et al. Patients with rib fractures do not develop delayed pneumonia: a prospective, multicenter cohort study of minor thoracic injury. *Ann Emerg Med* 60(6):726, December 2012.
53. Shi HH, Esquivel M, Staudenmayer KL, Spain DA. Effects of mechanism of injury and patient age on outcomes in geriatric rib fracture patients. *Trauma Surg Acute Care Open*. 2017 Mar 16;2(1):e000074.
54. Chien CY, Chen YH, Han ST, Blaney GN, Huang TS, Chen KF. The number of displaced rib fractures is more predictive for complications in chest trauma patients. *Scand J Trauma Resusc Emerg Med*. 2017;25(1):19. Published 2017 Feb 28.
55. Leichter SW, Pendleton A, Wang S, Torres B, Collins R, Aboutanos MB. Triage of Patients With Rib Fractures : Patient's Age and Number Don't Tell the Whole Story. *Am Surg*. 2020;86(9):1194-1199.
56. Witt C, Bulger E. Comprehensive approach to the management of the patient with multiple rib fractures: a review and introduction of a bundled rib fracture management protocol. *Trauma Surgery & Acute Care Open*. 2017;2:e000064.
57. Hwang EG, Lee Y. Effectiveness of intercostal nerve block for management of pain in rib fracture patients. *J Exerc Rehabil*. 2014 Aug 31;10(4):241-4.
58. King RM, Mackenzie DC, Wilson CN, Rappold JF, Strout TD, Croft PE. Ultrasound-Guided Serratus Anterior Plane Block (SAPB) Improves Pain Control in Patients With Rib Fractures. *J Ultrasound Med*. 2022;41(11):2695-2701.
59. Schneckeburger M, Mathew J, Fitzgerald M, Hendel S, Sekandarzad MW, Mitra B. Regional anaesthesia for rib fractures: A pilot study of serratus anterior plane block. *Emerg Med Australas*. 2021;33(5):788-793.
60. Armin E, Movahedi M, Najafzadeh MJ, Honarmand A, Rukerd MRZ, Mirafzal A. Comparison Of Ultrasound-Guided Erector Spinae Plane Block With Intercostal Nerve Block For Trauma-Associated Chest Wall Pain. *J Emerg Med*. 2022;63(4):520-527.

# CHOOSE THE ONLY EMR PURPOSE-BUILT FOR URGENT CARE EFFICIENCY

## EXPERITY EMR/PM

The Experity Operating System, with a powerful EMR/PM at its core, provides the holistic support you need to ensure your practice and your patients experience better outcomes.

Meet your community's on-demand healthcare needs with a partner that focuses exclusively on urgent care, just like you.

- Improve business and clinical efficiency
- Simplify charting
- Increase accuracy
- Leverage integrated practice management
- Dive deeper into business intelligence







# Uncovering the Unexpected: A Case of Chronic Cough in an Adolescent with an Unusual Etiology

**Urgent Message:** Chronic cough has a distinct differential diagnosis in different age groups. A cough lasting longer than 4 weeks in children and adolescents should prompt revision of the differential diagnosis to reduce delays in diagnosing serious etiologies.

Daniel Moscato, MS, PA-C, Joshua W. Russell, MD

**Citation:** Moscato D, Russell JW. Uncovering the Unexpected: A Case of Chronic Cough in an Adolescent with an Unusual Etiology. *J Urgent Care Med.* 2025; 19(4):23-26.

**Key words:** Pediatrics, cough, Hodgkin lymphoma

## Abstract

**Introduction:** Cough is an exceedingly common pediatric chief complaint in urgent care (UC) settings and is most often attributable to an infectious cause. However, clinicians must refine and alter their differential diagnoses when the cough persists to ensure serious etiologies are diagnosed in a timely fashion.

**Presentation:** A 14-year-old girl presented to UC with cough for 6 weeks. She had multiple presentations to UC for these symptoms over prior weeks; a viral upper respiratory infection (URI) diagnosis was assigned at each preceding visit. Symptomatic therapies were recommended. She was prescribed a short course of systemic steroids, which resulted in mild and transient improvement.

**Physical Examination:** The patient's vital signs were all normal and her physical examination was only remarkable for a persistent, dry cough. Auscultation of bilateral lungs revealed no adventitious lung sounds.



**Diagnosis and Resolution:** Due to the refractory and chronic nature of her cough, a chest x-ray (CXR) was obtained which revealed a mediastinal mass. The patient was referred to the emergency department (ED) for further specialist evaluation and management. She subsequently had a biopsy as an inpatient, which confirmed a diagnosis of Hodgkin lymphoma (HL).

**Author Affiliations:** Daniel Moscato, MS, PA-C, PM Pediatric Care in Massapequa, New York and New York Institute of Technology. Joshua W. Russell, MD, Legacy-GoHealth Urgent Care, University of Chicago Pritzker School of Medicine, *Journal of Urgent Care Medicine*. Authors have no relevant financial interests with any ineligible companies.

**Conclusion:** The differential diagnosis for children with cough lasting >1 month is broad, and more serious etiologies, beyond URI, should be considered to ensure timely diagnosis and optimal outcomes.

### Introduction

Cough is a common presenting symptom for pediatric UC visits. Of all cough etiologies, respiratory infection is the most frequent etiology and reason for antibiotic prescription in children.<sup>1</sup> Although the symptoms of respiratory infections typically resolve spontaneously over 7-10 days, cough persists not infrequently for up to 3-4 weeks.<sup>2</sup> The prevalence of chronic cough without respiratory tract infection increases with age in the pediatric population.<sup>3</sup> In children 14 years and younger, a cough is defined as chronic if it persists beyond 4 weeks. The leading causes of chronic cough in children are asthma, bacterial infections (eg, pertussis), chronic rhinosinusitis/upper airway cough syndrome, and gastroesophageal reflux disease (GERD).<sup>4,5</sup> It is especially important, given the prevalence of cough as a chief complaint, to consider etiologies beyond respiratory infections, particularly during the seasonal respiratory infection periods.

### Clinical Presentation

A 14-year-old girl presented to UC with a chief complaint of cough for 6 weeks. The visit presented was the 3rd UC visit during her illness. When the cough began, it was productive, however, at the time of the visit, the cough had become dry and was keeping her up at night. The patient had no associated fever, rash, headache, eye redness/discharge, nasal congestion, earache, sore throat, wheezing, dyspnea, chest pain, reflux type symptoms, abdominal pain, nausea, vomiting, diarrhea, changes in urination, or changes in appetite.

At each of the prior UC visits, the patient was diagnosed with a viral URI and associated bronchitis. Symptomatic treatments were recommended initially, including over-the-counter and prescription cough suppressants. Given insufficient relief, she was subsequently treated with trials of short acting inhaled bronchodilator (ie, albuterol sulfate), an inhaled corticosteroid, and finally systemic corticosteroids. The patient's parent reported that there was transient relief of the cough after the course of oral steroids, but the cough worsened again after stopping these. No imaging was performed at any of her prior visits.

The patient and parent denied that she had any significant past medical history. Specifically, they denied any known history of asthma or pneumonia. The pa-

tient denied any history of smoking/vaping as well.

### Physical Exam Findings

On presentation to UC, the patient's vital signs were all within normal limits. On examination, she seemed comfortable without signs of respiratory distress. The patient had a persistent, dry cough noted throughout the visit, which did seem somewhat worse when supine. On auscultation, there was good air movement throughout all lung fields without expiratory/inspiratory wheezing, crackles, rales, or rhonchi.

### Patient/Parent Perspective

The parent expressed concerns about the chronicity and persistence of the patient's cough, which she had never experienced before. The stated reason for the return visit was nominally to get a prescription for another course of oral steroids as that was the only thing that had helped, albeit transiently.

### Medical Decision Making/Differential Diagnosis

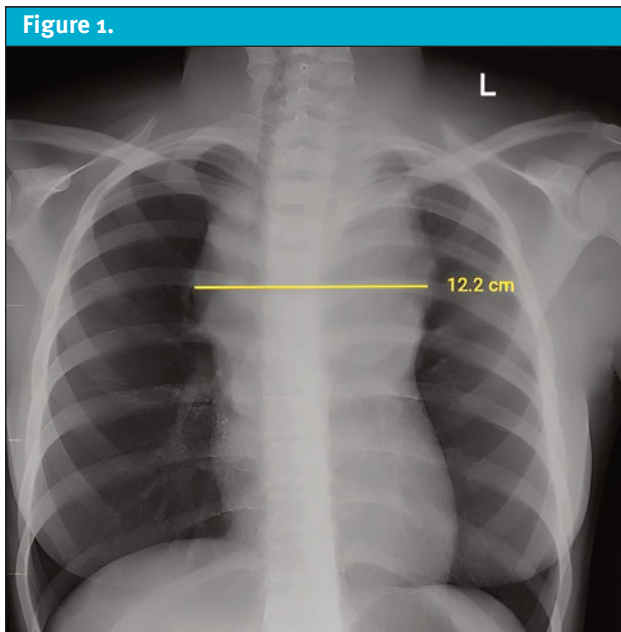
The patient presented was a previously healthy, adolescent female with 6 weeks of dry cough. Her vital signs and physical exam were reassuring, and the only finding was a prominent, dry cough. She had negative influenza and SARS-CoV-2 viral testing at her prior visits.

Given her refractory and persistent symptoms despite multiple approaches to treatment, the differential diagnosis was broadened. Diagnoses considered included persistent infectious etiology (pneumonia), post-infectious hypersensitivity or bronchitis, new-onset asthma, upper airway cough syndrome, GERD, and upper airway compromise/mass effect. As there were no preceding URI symptoms, a benign lung exam, and poor response to anti-tussive agents, an infectious/post-infectious and/or upper airway etiology seemed less likely. Additionally, the patient experienced no relief from a trial of inhaled bronchodilator or steroid, which suggested reactive airways disease was also somewhat less likely. There were no abdominal symptoms, burping, association with certain foods or timing of eating, so GERD was also felt to be unlikely.

As the patient's cough met the definition for "chronic" (ie, lasting >4 weeks), a CXR was ordered to screen for alternate diagnoses.

### Urgent Care Management and Disposition

The CXR revealed a prominent, left-sided, soft tissue mass in the superior mediastinum with right tracheal deviation (**Figure 1**). Results were discussed with the patient's caregiver, and the patient was subsequently



referred to the ED for further specialist evaluation and management.

At 24-hour follow up, the patient had been admitted to the oncology unit at the local children's hospital. She was admitted with a provisional diagnosis of lymphoma and high-dose steroids were started while awaiting biopsy results.

### Final Diagnosis

The mediastinal mass was determined to be related to Hodgkin lymphoma, which was confirmed by biopsy.

### Discussion

Cough is the most common presenting symptom in the pediatric population, especially during the respiratory viral infection season. Most acute coughs (ie, <4 weeks in duration) in children are related to viral/post-viral URIs and do not require further investigation.<sup>6</sup> Once a cough becomes chronic, investigations should include a thorough history, physical examination, CXR, and, when age-appropriate, spirometry (pre- and post- $B_2$  agonist treatment).<sup>7</sup> With prudent consideration and further work-up, more severe causes for a chronic cough, such as the case patient's final diagnosis of HL, can be identified in its earlier stages.

HL is one of the most common cancers in adolescents and accounts for 18% of all cancer diagnoses in children and young adults in the United States.<sup>8</sup> The incidence of HL follows a bimodal age distribution, peaking first during young adulthood and then again after 50 years

of age; HL is very rare <5 years of age.<sup>8</sup> Family history of HL is a significant risk factor with a reported 7-fold increased risk of HL in patients whose parent was afflicted and an 11-fold increased risk in patients <37 years with an affected sibling.<sup>9</sup>

Common presenting signs and symptoms of HL in children include lymphadenopathy, systemic complaints, and mediastinal mass. Most children with HL present with painless lymphadenopathy, commonly presenting as matted, firm masses of the cervical/supraclavicular or axillary regions.<sup>8</sup> Up to 75% of children with HL will also have a mediastinal mass on CXR at the time of presentation; approximately 30% of such masses are greater than one-third the diameter of the intrathoracic cavity.<sup>8,10</sup> These "bulky" masses, as was present in this case, can cause compressive symptoms resulting in dysphagia, orthopnea, cough, stridor, or superior vena cava syndrome.<sup>10</sup> Approximately 25% of patients will also develop systemic, or so-called "B" symptoms, such as fevers, unintentional weight loss ( $\geq 10\%$  of body weight within 6 months of diagnosis), and night sweats.<sup>8</sup>

If concerning lymphadenopathy is detected, children and adolescents undergo an excisional lymph node biopsy for histologic diagnosis. Biopsy of HL demonstrates the "classic" finding of Hodgkin/Reed-Sternberg cells.<sup>8</sup> Once the diagnosis of HL is confirmed, clinical staging, based on the Ann Arbor classification, is performed for risk stratification. Stage is classified based on the quantity and location of lymph nodes involved in addition to the absence/presence of concomitant symptoms.<sup>8</sup> While oncologists have made progress in the diagnosis and treatment of HL over time, survival rates, cancer-related quality-of-life, and long-term treatment-related morbidities continue remain largely unchanged.<sup>8</sup> Proposed hypotheses for such gaps include age-related differences in disease and host biology, diagnosis delays, lower rates of clinical trial enrollment, treatment at facilities without young adult experience, and high rates of loss-to-follow up after achieving remission.<sup>8</sup> Across all risk groups, pediatric HL treatment regimens historically have utilized a combination of conventional chemotherapeutic agents including alkylators and anthracyclines with or without radiation therapy.<sup>10</sup> Thankfully, however, the 5-year survival rate remains favorable and exceeds 85%-90% for adolescents diagnosed with HL in the developed world.<sup>9</sup>

Inclusion of mediastinal/intrathoracic mass (caused by HL or other malignancy) in the differential diagnosis of children presenting with chronic cough is paramount to early identification and treatment. In its limited/early

stages (stage I or II), treatment response and outcomes are excellent.<sup>8</sup> However, without a broader consideration of etiologies, clinicians may fail to consider alternative diagnoses in patients with common complaints, such as cough, and fall prey to premature closure. Premature closure, or settling on a diagnosis quickly and without consideration for alternate causes, is a frequent cognitive bias responsible for diagnostic errors.<sup>11</sup> Clinicians may diagnose based on their knowledge and past experiences to recognize a pattern from individual signs and symptoms—the heuristic approach—or they may rely on statistical models of likelihood—the Bayesian model.<sup>11</sup> Clinicians practicing in fast-paced, high-volume acute care settings like UC may be particularly prone to this cognitive error, and therefore must maintain vigilance in appropriate data gathering and creating a broad differential that accounts for the entirety of the patient's presentation.

Like many other patients, the patient described in this case presented to the UC setting during the height of the COVID-19 pandemic and respiratory season with a cough. However, because of the chronicity of the symptom, negative viral test results, and lack of response to anti-tussive agents, the differential diagnosis was appropriately broadened, and reasonable, low-risk, further testing (ie, CXR) was performed. This ultimately demonstrated the underlying cause of the patient's chronic cough and allowed for prompt oncological evaluation and definitive diagnosis.

### Ethics Statement

The patient and parent were unable to be contacted as the phone number on file was disconnected. Patient and case details have been changed to protect patient anonymity and confidentiality.

### Takeaway Points

- Cough is a common presenting chief complaint in the pediatric population, especially during the winter season. However, it is important to expand the differential diagnosis in patients with cough lasting longer than 4 weeks without improvement.
- The differential diagnosis for patients presenting to the UC setting with a chronic cough should be broadened to avoid delay in diagnosis of more severe, life-threatening pathologies, including Hodgkin lymphoma.
- When patients fail to follow the expected path of a provisional diagnosis and have multiple return visits, expanding the differential and work-up can mitigate the risk of serious diagnosis errors.

- Hodgkin lymphoma is one of the most common cancers in adolescents. It has excellent rates of cure with current therapies, particularly when diagnosed in early stages
- Clinicians practicing in UC settings must be cognizant of the possibility of falling subject to biases, such as premature closure. ■

Article submitted October 20, 2024; accepted November 15, 2024.

### References

1. Paalanne N, Honkila M, Mattila S, Pokka T, Renko M, Tapiainen T. Duration of clinical symptoms in children with acute respiratory infection. *Acta Paediatrica*. 2022;112(4):813-819. doi:10.1111/apa.16607
2. Murgia V, Manti S, Licari A, De Filippo M, Ciprandi G, Marseglia GL. Upper respiratory tract infection-associated acute cough and the urge to cough: New Insights for Clinical Practice. *Pediatric Allergy, Immunology, and Pulmonology*. 2020;33(1):3-11. doi:10.1089/ped.2019.113
3. Masson V, Kier C, Chandran L. Cough conundrums: A guide to chronic cough in the pediatric patient. *Pediatrics In Review*. 2022;43(12):691-703. doi:10.1542/pir.2021-005398
4. Kasi AS, Kameran-Kretzmer R. Cough. *Journal of the American Academy of Pediatrics*. 2019;40(4):157-167. doi:10.1542/pir.2018-0116
5. Marseglia GL, Manti S, Chiappini E, et al. Acute cough in children and adolescents: A systematic review and a practical algorithm by the Italian Society of Pediatric Allergy and Immunology. *Allergol Immunopathol (Madr)*. 2021;49(2):155-169. Published 2021 Mar 1. doi:10.15586/aei.v49i2.45
6. Alsubaie H, Al-Shamrani A, Alharbi AS, Alhaider S. Clinical practice guidelines: Approach to cough in children: The official statement endorsed by the Saudi Pediatric Pulmonology Association (SPPA). *Int J Pediatr Adolesc Med*. 2015;2(1):38-43. doi:10.1016/j.ijpam.2015.03.001
7. Chang AB, Oppenheimer JJ, Weinberger MM, et al. Use of management pathways or algorithms in children with chronic cough. *Chest*. 2017;151(4):875-883. doi:10.1016/j.chest.2016.12.025
8. Belsky JA, Hochberg J, Giulino-Roth L. Diagnosis and management of Hodgkin lymphoma in children, adolescents, and young adults. *Best Practice & Research Clinical Haematology*. 2023;36(1):101445. doi:10.1016/j.beha.2023.101445
9. Kahn JM, Kelly KM. Adolescent and young adult Hodgkin lymphoma: Raising the Bar Through Collaborative Science and Multidisciplinary Care. *Pediatric Blood & Cancer*. 2018;65(7). doi:10.1002/pbc.27033
10. Munir F, Hardit V, Sheikh IN, et al. Classical Hodgkin lymphoma: From past to future—a comprehensive review of pathophysiology and therapeutic advances. *International Journal of Molecular Sciences*. 2023;24(12):10095. doi:10.3390/ijms241210095
11. Kumar B, Kanna B, Kumar S. The pitfalls of premature closure: Clinical decision-making in a case of aortic dissection. *Case Reports*. 2011;2011(Octo3 1). doi:10.1136/bcr.08.2011.4594

# SHARPEN YOUR X-RAY VISION

## Clinical X-Ray Fundamentals for the UC Provider

Learn new, or improve existing x-ray skills — and boost your career — with basic training presented by leading radiology experts. This self-paced, online course features the most common urgent care case presentations and sets you up for success. Ideal for new or transitioning urgent care clinicians seeking guidance on x-ray fundamentals.

Access this course anytime, anywhere using a computer, tablet, or smart phone — to fit your life and *learn your way*.

- Case reports with diagnostic tools, tips, and takeaways
- 25 AMA PRA Category 1 Credits™
- Additional 15 case bundle available annually
- Unlimited access for one year
- Group pricing available, with free training and onboarding

Begin your journey or sharpen your skills while earning your CME credits with IUCM — the proven leader in practical mastery for urgent care professionals.



LEARN MORE



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 Case Western Reserve University School of Medicine and Institute of Urgent Care Medicine. Case Western Reserve University School of Medicine is accredited by the ACCME to provide continuing medical education for physicians.

Physicians should claim only the credit commensurate with the extent of their participation in the activity.

[urgentcarecme.com](http://urgentcarecme.com) | 844-814-9135 | [ablachford@urgentcarecme.com](mailto:ablachford@urgentcarecme.com)

# REDUCE COMPLEXITIES. CONTROL YOUR BOTTOM LINE.

## EXPERITY BILLING

Reduce billing and collection complexities that come with urgent care-specific visits to ensure you get paid for the services you provide. With a proven model built for scale, you'll submit clean claims to speed up collections and control your bottom line.

- Reduce staffing fluctuation and burden
- Optimize contracting and credentialing
- Ensure claim accuracy and compliance
- Benefit from urgent care billing expertise
- Get more from Experity EMR/PM integration





# A 2-Year-Old Girl With Respiratory Distress And Altered Mental Status: A Case Report

**Urgent Message:** While children presenting to urgent care centers usually have minor illnesses, attentiveness to vital signs and behavior is crucial to avoid missing rare but serious diagnoses. Diabetic ketoacidosis is the most common initial presentation of type 1 diabetes mellitus in young children. Capillary blood glucose measurement is a universally available screening tool that should be used liberally in ill-appearing children with alterations in level of consciousness.

Ramiro Rodriguez, MD; Samantha Reis, MSN, FNP-BC, CEN

**Citation:** Rodriguez R, Reis S. A 2-Year-Old Girl With Respiratory Distress And Altered Mental Status: A Case Report. *J Urgent Care Med.* 2025; 19(4):29-32

**Key words:** pediatric diabetic ketoacidosis, lethargy, beta-hydroxybutyrate, respiratory distress, altered mental status

## Abstract

**Clinical presentation:** A 2-year-old girl with no significant past medical history presented to urgent care (UC) with her parent after he noted she was “breathing faster than normal.”

**Physical exam:** The patient was ill-appearing and lethargic. Her vitals revealed tachycardia and tachypnea. Her lungs were clear, but a deep, rapid respiratory pattern was noted with intercostal retractions.

**Case resolution:** A capillary blood glucose (CBG) measurement revealed a glucose of >400mg/dL. Emergency medical services (EMS) was activated, and the patient was transported to the local emergency department (ED). The patient was subsequently diagnosed with dia-



betic ketoacidosis (DKA) and admitted to the pediatric intensive care unit. During her hospitalization, a new diagnosis of type 1 diabetes mellitus (T1DM) was con-

**Author Affiliations:** Ramiro Rodriguez, MD, CareNow Urgent Care. Samantha Reis, MSN, FNP-BC, CEN, CareNow Urgent Care. Authors have no relevant financial relationships with any ineligible companies.

firmed, and she was discharged home after stabilizing on both long- and immediate-acting insulin; parental diabetic teaching also was provided prior to discharge. **Conclusion:** Identification of an abnormal respiratory pattern in combination with lethargy appropriately led the UC clinician to consider DKA and obtain a CBG. The critically high blood sugar in this setting led to timely referral to the ED and ultimately a favorable patient outcome.

## Introduction

**D**KA is a potentially life-threatening complication of diabetes, particularly T1DM, and tends to be more severe in children under 5 years of age.<sup>1</sup> Due to the limited verbal capacity and different ranges of normal vital sign values in toddlers, signs of DKA may be overlooked by caregivers and clinicians alike.<sup>2</sup> The case presented here highlights how non-specific signs and symptoms coupled with characteristic changes in respiratory patterns prompted the UC clinician to screen for DKA by CBG measurement and correctly identify severe hyperglycemia.

## Clinical Presentation

A 2-year-old girl presented to a UC center with her father after he noticed she was breathing more rapidly than normal when he picked her up from daycare. He reported that she was able to walk and was interactive earlier in the day. However, at the time of her UC presentation, she had become increasingly lethargic and was only arousable to tactile stimuli.

The father also reported that she had had a mild cough and nasal congestion for several days prior to her presentation. The mother offered additional history by phone stating that the patient had slept more than normal for several days prior. They denied noting any fever, changes in appetite, rash, diarrhea, or vomiting. The mother did report the patient seemed to have increased thirst, and urination (including nocturia) for 2 weeks prior to the visit but denied that her daughter experienced recent changes in weight or appetite.

The patient's social history was unremarkable; she lived at home with her parents. The parents reported that the patient was up-to-date with her routine well child visits and vaccinations. The mother had an uncomplicated pregnancy and delivery, and the patient was born at term. She had no known drug allergies and took no daily medications. Parents reported no significant family history of diabetes, autoimmune disorders, or other significant diseases in childhood.

## Physical Exam Findings

Vital signs included the following:

- Temperature: 36.4°C; oxygen saturation: 98%
- Blood pressure: 98/56 mmHg (normal for age: systolic 86-106 mmHg)
- Heart rate: 140 beats per minute (bpm) (normal for age: 90-125 bpm)
- Respiratory rate: 36/minute (normal for age: 22-36 bpm)<sup>3</sup>

The patient was generally thin and appeared lethargic in her parent's arms; the UC clinician noted an unusual odor to the patient's breath as well. The head and neck exam revealed clear rhinorrhea and slightly dry membranes. The cardiopulmonary exam was remarkable for mild, but regular tachycardia, and clear lungs with deep, rapid (ie, Kussmaul) respirations with intercostal retractions. The patient's capillary refill was slightly delayed. On abdominal exam, there was no distention or apparent tenderness. The neurologic assessment was limited due to lethargy, but the patient was able to withdraw to noxious stimuli in all extremities. She did not open her eyes but did moan with stimulation. The patient's skin was dry, and there was no mottling, bruising, or rashes noted.

## Urgent Care Management

Labs included the following:

- Point of care antigen COVID-19: negative
- Glucometer: >400mg/dL x 2 readings (machine numerical high limit is 400mg/dL)

## Differential Diagnosis

Altered mental status in toddlers has a broad differential. As such, it is helpful to characterize altered mental status more descriptively (eg, fussy, irritable, lethargic). This patient presented with decreased responsiveness (ie, lethargy). Etiologies considered included: head trauma, central nervous system infection, intracranial mass or hemorrhage, septic shock, intoxication/ingestion, hypoglycemia, seizure/non-convulsive status epilepticus, and DKA.

## Evaluation, Medical Decision Making, and Disposition

The UC clinician astutely identified the combination of lethargy/decreased responsiveness with a Kussmaul respiratory pattern. Kussmaul respirations are defined as a rapid, deep respirations which occur as physiologic compensation mechanism in the setting of metabolic acidosis to expel the excess carbon dioxide (CO<sub>2</sub>) and raise pH.<sup>4</sup> With the increase in respiratory rate and tidal



volume associated with Kussmaul respirations, minute ventilation and the rate of CO<sub>2</sub> elimination also increase proportionally. However, this resultant respiratory alkalosis response is limited by the capacity of the respiratory system and, in cases of severe acidosis, may become inadequate as the ventilatory musculature fatigues leading to respiratory failure.<sup>4</sup>

The patient's presentation in combination with the parents' reports of polyuria and polydipsia is also consistent with a new diagnosis of T1DM. The undetectably high blood glucose on CBG confirmed the clinician's suspicions of probable DKA.<sup>5</sup> Given the patient's decreased level of consciousness, EMS were activated immediately, and the patient was taken to the local pediatric ED.

### Case Resolution

In the ED, the patient had intravenous (IV) access established and isotonic crystalloid bolus of 10mL/kg was initiated while awaiting laboratory results. The basic metabolic panel results were significant for sodium of 131 mmol/L, bicarbonate of 3 mmol/L, glucose of 432 mg/dL, and an anion gap of 26.3 mEq/L. A complete blood count was normal except for mild leukocytosis with a white blood cell count of 18,400/mL. The serum beta-hydroxybutyrate (BHB) was 9.9 mmol/L (levels >3mmol/L is a sensitive indicator of DKA<sup>6</sup>). A venous blood gas showed a pH below the limit of detection of 6.97 with a partial pressure carbon dioxide measurement of 14. After verifying the patient was not hypokalemic, the ED clinician evaluating the patient initiated a weight-based insulin infusion.

The patient was subsequently admitted to the pediatric intensive care unit where insulin infusion was continued with close monitoring of blood glucose, anion gap, and electrolytes. During the hospitalization, the patient was seen by an endocrinologist who confirmed the presumptive diagnosis of T1DM. She was transitioned to subcutaneous insulin, and the family was given dietary counseling and diabetes education. The patient was discharged home in good condition and full return to normal behavior after a 3-day inpatient stay.

At a 2-year follow-up visit, the patient had subsequently been diagnosed with Graves' disease. Her mother reported that despite these diseases, the patient was doing well on the appropriate treatments for both autoimmune endocrine disorders.

### Discussion

The diagnostic criteria for DKA are: blood glucose >200mg/dl; venous pH <7.30 or serum bicarbonate

<18mmol/L; and ketonuria or ketonemia.<sup>6</sup> The diagnosis of DKA can be challenging in younger children, such as the patient presented. The barriers to clinical assessment of younger children commonly lead to delays in diagnosis and greater severity of DKA at the time of diagnosis.<sup>1</sup> A 2010 study published in *The Journal of Pediatrics* found that patients with new-onset T1DM had greater than twice the likelihood of older children for presenting in DKA at the time of diagnosis.<sup>7</sup>

When considering the possibility of DKA, the limited-scope diagnostic equipment in UC centers, in addition to an appropriate history and physical exam, can effectively screen patients of any age for DKA. A CBG is a rapid, accurate, and ubiquitous screening tool that can quickly determine if significant hyperglycemia, a requisite criterion for DKA, is present.<sup>6</sup> Urine dipstick tests detect the presence acetone and acetoacetate (rather than BHB) through a chemical reaction. The absence of urinary ketones on dipstick testing (ie, ketonuria) is 97% sensitive for excluding DKA.<sup>8</sup>

The non-specific symptoms associated with diabetes and DKA coupled with limited verbal abilities and the relatively rapid respiratory rate—which is normal in toddlers compared to older children and adults—are likely contributors to diagnostic delays. Consequently, many young children have multiple healthcare visits during the month of initial T1DM diagnosis before the condition is finally identified.<sup>9</sup> Additionally, DKA is often precipitated by another illness such as a viral upper respiratory infection (URI) or gastroenteritis. Given that vomiting and abdominal pain are the most common symptoms of DKA in children, it is understandable that early symptoms of DKA can be confused with residual symptoms of the triggering illness.<sup>10,11</sup> While Kussmaul respirations, lethargy, and tachycardia were present in this child, they can be late findings and may not be evident in mild-moderate DKA.<sup>10</sup>

The peak incidence of T1DM occurs between 8-12 years of age.<sup>12</sup> However, the incidence is increasing most rapidly among children under 5 years.<sup>13</sup> This group is also at the highest risk of delayed diagnosis, severe dehydration, and presentation with severe DKA.<sup>14</sup> The risk for T1DM is multifactorial with influences from environment, geography, genetics, diet, and predisposing viral illness.<sup>15</sup> The association with preceding viral infections is believed to partially explain seasonal increases in the incidence of T1DM in children.<sup>16</sup> COVID-19 infection has also been shown to increase the likelihood of developing T1DM even beyond the first month post-infection.<sup>17,18</sup> Therefore, it is of particular importance for UC clinicians to keep new-onset T1DM and

DKA in the differential for ill-appearing children, especially during peaks in the incidence of viral URI. This is crucial because the risk of developing T1DM is higher after viral infection, and UC centers tend to see higher volumes during these seasons.

Treatment for pediatric DKA is nuanced and begins with volume expansion to correct hypoperfusion/shock with isotonic crystalloid (eg, 0.9% normal saline or balanced solutions) beginning with a 10-20mL/kg bolus and reassessing. Close monitoring of electrolytes, particularly potassium, and blood glucose levels is critical, especially after beginning IV insulin treatment. Insulin is a less urgent therapy and should not be started for at least 1 hour and only after electrolyte levels are known.<sup>19</sup>

Given the risks of iatrogenesis (eg, cerebral edema, hypoglycemia, hypokalemia), it is generally most appropriate to activate EMS rapidly from UC and defer DKA management to personnel in the ED. Obtaining IV access in children, calculating infusion rates, and setting up IV pumps are uncommon UC procedures that can predispose to dosing errors and delays in definitive care.

### Ethics Statement

Informed written consent was obtained from the parent of the patient.

### Takeaway Points

- While the peak incidence of T1DM onset is 8-12 years, the incidence of T1DM in children under 5 years is increasing.
- Consider DKA in children who present with lethargy and/or rapid, deep respirations, even if there is no known history of diabetes, and consider a very low threshold to check a CBG level.
- Young children and toddlers are more likely to present with severe DKA and have delays in diagnosis due to limited verbal abilities and non-specific symptomatology (eg, vomiting and abdominal pain).
- Absence of classic symptoms of T1DM (eg, polyuria, polydipsia, and polyphagia) is common in younger patients with new-onset diabetes.
- The diagnostic criteria for DKA are hyperglycemia (>200mg/dL), acidemia, and ketonemia. A urine dipstick is a sensitive screening test for ketosis and Kussmaul respirations can serve as a useful clinical surrogate indicating acidemia.
- In children, both T1DM and DKA are most commonly precipitated by viral infections. It is therefore especially important during viral URI season

to remain attentive to children's behavior and vital signs to reduce the likelihood of missing cases of DKA. ■

*Manuscript submitted August 30, 2024; accepted November 25, 2024.*

### References

1. Iovane B, Cangelosi AM, Bonaccini I, et al. Diabetic ketoacidosis at the onset of Type 1 diabetes in young children Is it time to launch a tailored campaign for DKA prevention in children. *Acta Bio-Medica: Atenei Parmensis*. 2018;89(1):67-71. doi:10.23750/abm.v89i1.6936
2. Iovane B, Cangelosi AM, Bonaccini I, et al. Diabetic ketoacidosis at the onset of Type 1 diabetes in young children Is it time to launch a tailored campaign for DKA prevention in children <5 years? *Acta Biomed*. 2018;89(1):67-71. Published 2018 Jan 8. doi:10.23750/abm.v89i1.6936
3. Fleming S, Thompson M, Stevens R, et al. Normal ranges of heart rate and respiratory rate in children from birth to 18 years of age: a systematic review of observational studies. *Lancet*. 2011;377(9770):1011-1018. doi:10.1016/S0140-6736(10)62226-X
4. Gallo de Morales A, Surani S. Effects of diabetic ketoacidosis in the respiratory system. *World Journal of Diabetes*. 2019; 10(1):6-22. doi: 10.4239/wjd.v10.i1.16
5. El-Remessy AB. Diabetic Ketoacidosis Management: Updates and Challenges for Specific Patient Population. *Endocrines*. 2022; 3(4):801-812. doi:10.3390/endocrines3040066
6. Glaser N, Fritsch M, Priyambada L, et al. IPSAD Clinical Practice Consensus Guidelines 2022: Diabetic ketoacidosis and hyperglycemic hyperosmolar state. *Pediatric Diabetes*. 2022; 23:835-856. doi: 10.1111/pedi13406
7. Bui H, To T, Stein R, Fung K, Daneman D. Is Diabetic Ketoacidosis at Disease Onset a Result of Missed Diagnosis? *The Journal of Pediatrics*. 2010;156(3):472-477. doi: 10.1016/j.jpeds.2009.10.001
8. Hendej, Gregory W et al. Urine Ketone Dip Test as a Screen for Ketonemia in Diabetic Ketoacidosis and Ketosis in the Emergency Department. *Ann Emerg Med*. 1997; 29(6): 735 – 738
9. Muñoz, C, Floreen, A, Garey, C, Karlya, T, Jelley, D, Alonso, GT, & McAuliffe-Fogarty, A. Misdiagnosis and diabetic ketoacidosis at diagnosis of type 1 diabetes: Patient and caregiver perspectives. *Clinical Diabetes*. 2019; 37(3): 276–281. doi:10.2337/10088
10. Alhamdani YF, Almadfaa LO, AlAgha AE. Clinical variables influencing the severity of diabetes ketoacidosis. *Saudi Med J*. 2024 May;45(5):502-509. doi:10.15537/smj.2024.45.4.20240058.
11. Umpierrez G., Korytkowski M. Diabetic emergencies-ketoacidosis, hyperglycaemic hyperosmolar state and hypoglycaemia. *Nat. Rev. Endocrinol*. 2016; 12:222–232. doi: 10.1038/nrendo.2016.15.
12. Usher-Smith J A, Thompson M J, Sharp S J, Walter F M. Factors associated with the presence of diabetic ketoacidosis at diagnosis of diabetes in children and young adults: a systematic review. *BMJ*. 2011; 343: d4092 doi:10.1136/bmj.d4092
13. Mokashi A, Young M. When you suspect diabetes in a child. *Can Fam Physician*. 2018; Jan;64(1):32-35. doi: 10.1016/j.jpeds.2005.10.02
14. Quinn M, Fleischman A, Rosner B, Nigrin DJ, Wolfsdorf JL. Characteristics at diagnosis of type 1 diabetes in children younger than 6 years. *The Journal of Pediatrics*. 2006;148(3):366-371. doi: 10.1016/j.jpeds.2005.10.029.
15. Kyriaki Karavanaki, Korona A, Spyridon Karanasios, Kossiva L. Predictors of the clinical severity of T1DM presentation at diagnosis in children and adolescents with type 1 diabetes mellitus (T1DM). *Hormones*. 2023. Sep;23(3):395-405. doi:10.1007/s42000-023-00518-7
16. Bia Francis Rajsufus, Ronaldo Mohana Borges, Allonso D. Diabetogenic viruses: linking viruses to diabetes mellitus. *Heliyon*. 2023; 9(4): e15021-e15021. doi: 10.1016/j.heliyon.2023.e15021
17. Barrett CE, Koyama AK, Alvarez P, et al. Risk for Newly Diagnosed Diabetes >30 Days After SARS-CoV-2 Infection Among Persons Aged <18 Years — United States, March 1, 2020–June 28, 2021. *MMWR Morb Mortal Wkly Rep*. 2022; 71:59–65. doi:10.15585/mmwr.mm7102e2
18. Mefford, MT, Wei, R, Lustigova, E, Martin, JP, Reynolds, K. Incidence of diabetes among youth before and during the COVID-19 pandemic. *JAMA Network Open*. 2023; 6(9), 1–11. doi: 10.1001/jamanetworkopen.2023.34953
19. Karen E. Gripp, Evelyne D. Trottier, Sidd Thakore, Jonathan Sniderman, Sarah Lawrence; Canadian Paediatric Society, Acute Care Committee. *Paediatr Child Health*. 2023 28(2):128-32.

# Comparing Outcomes for Outpatients Treated With Cephalexin for Uncomplicated Cystitis: Is QID Dosing Necessary?

**Urgent Message:** Patients commonly seek unscheduled care for urinary tract infections (UTIs). Cephalexin is among the most frequently prescribed antibiotics for acute UTI treatment, however, dosing regimens lack standardization. In this small observational study, similar rates of clinical cure and adherence were observed with cephalexin 500 mg dosed every 12 hours vs every 6 hours in patients with cystitis, calling into question whether QID (4 times per day) dosing is necessary.

Cassandra Lopane, PharmD; Erica Reed, PharmD, MBOE; Elizabeth Rozycki

**Citation:** Lopane C, Reed E, Rozycki E. Comparing Outcomes for Outpatients Treated With Cephalexin for Uncomplicated Cystitis: Is QID Dosing Necessary? *J Urgent Care Med.* 2025; 19(4):33-39

## Abstract

**Background:** Cephalexin, a first-generation oral cephalosporin, is commonly prescribed for cystitis with various dosing frequencies; lower-frequency dosing can improve patient adherence. There is still incomplete consensus regarding the optimal dosing regimen when cephalexin is used for this indication.

**Methods:** This observational study included patients discharged from an emergency department (ED) and urgent care (UC) center from November 2023 to February 2024. All patients were diagnosed with cystitis with growth of a urinary organism with presumed or confirmed susceptibility to cefazolin, a surrogate marker for cephalexin susceptibility. Patients were treated with 500 mg every 12 hours (q12h) or 6 hours (q6h) for at least 5 days. Notable exclusions were reduced creatinine clearance, recently treated culture-confirmed urinary tract infection (UTI), select urinary tract abnormalities, or concomitant infection. Chi-square, Fisher's exact, Wilcoxon rank sum, or t-tests were used to compare



groups on selected baseline characteristics.

The primary objective was to compare clinical cure—defined as complete or near-complete resolution of symptoms upon finishing cephalexin—between groups, which was assessed via telephone survey 2-5 days post-antibiotics. Secondary outcomes included patient adherence, healthcare utilization due to worsening of symptoms within 14 days of prescription start, and adverse reactions. Healthcare utilization was defined as a patient presenting to an ED, UC, or medical clinic with complaints of urinary symptoms, UTI, cystitis, pyelonephritis, or bacteremia with urine source.

**Author affiliations:** Cassandra Lopane, PharmD, The Ohio State University Wexner Medical Center. Erica Reed, PharmD, MBOE, The Ohio State University Wexner Medical Center. Elizabeth Rozycki, The Ohio State University Wexner Medical Center.

**Results:** One hundred thirty-seven patients were screened, and 47 patients were included in the demographic and healthcare utilization analysis with 36 receiving q12h and 11 receiving q6h cephalexin dosing. Fifteen patients consented and were included for the telephone survey. Common reasons for exclusion included pyelonephritis (37.8%) and creatinine clearance <50mL/min (25.5%). Median ages in the q6h group and q12h groups were 56 (52–61) and 36 (22–55.5) years, respectively, and over 90% of patients in each group were female. Of those surveyed, clinical cure was achieved in all, and adherence was high in both groups. One patient returned to a healthcare facility within 14 days in the q12h group and 2 in the q6h group ( $p=0.13$ ). Adverse effects of nausea, vomiting, and diarrhea were similar between groups.

**Conclusions:** In this small observational study of patients treated for cystitis with cephalexin 500 mg q12h vs 500 mg q6h, clinical cure rates were similar, and adherence rates were overall high in both groups.

## Introduction

Urinary tract infections are one of the most common bacterial infections for which patients seek acute care, with cystitis being more common than pyelonephritis.<sup>1</sup> For patients with cystitis, the most recent 2010 Infectious Diseases Society of America guidelines recommend the use of nitrofurantoin and trimethoprim-sulfamethoxazole as first line therapies.<sup>2</sup> However, in recent years, there has been an increase in the use of beta-lactams, including first generation cephalosporins like cephalexin, for the treatment of UTIs based on evidence of urinary penetration and coverage of *Enterobacteriales* (eg, *E. coli*), the most frequent cause of UTIs in the United States.<sup>2,3,4</sup> Cephalexin is a generally well-tolerated, cost-effective oral antibiotic, however, despite its common use for the treatment of cystitis, the ideal dosing regimen remains unknown.<sup>5</sup>

Beta-lactams exert time-dependent antimicrobial activity, so efforts are made to maximize the time above the minimum inhibitory concentration of the causative pathogen by using more frequent dosing intervals, which is the basis for q6h dosing of cephalexin. However, the US Food and Drug Administration's (FDA) recommendation for cephalexin dosing in the treatment of cystitis is 500 mg q12h, based on results from a single study from the 1980s.<sup>6,7</sup> Since then, no high-quality studies addressing the ideal dosing frequency of cephalexin for cystitis have been published. While a dosing frequency of q6h for the treatment of cystitis

may present a more ideal pharmacokinetic profile, it may make adherence more difficult in the outpatient setting.<sup>8,9</sup> Patient adherence is an important consideration when evaluating antibiotic treatment regimens. Poor adherence may result in treatment failure or contribute to antimicrobial resistance. For other indications, there are conflicting results on whether decreasing the frequency of administrations impacts adherence; some studies have shown no difference while others have shown improved adherence.<sup>10,11,12</sup>

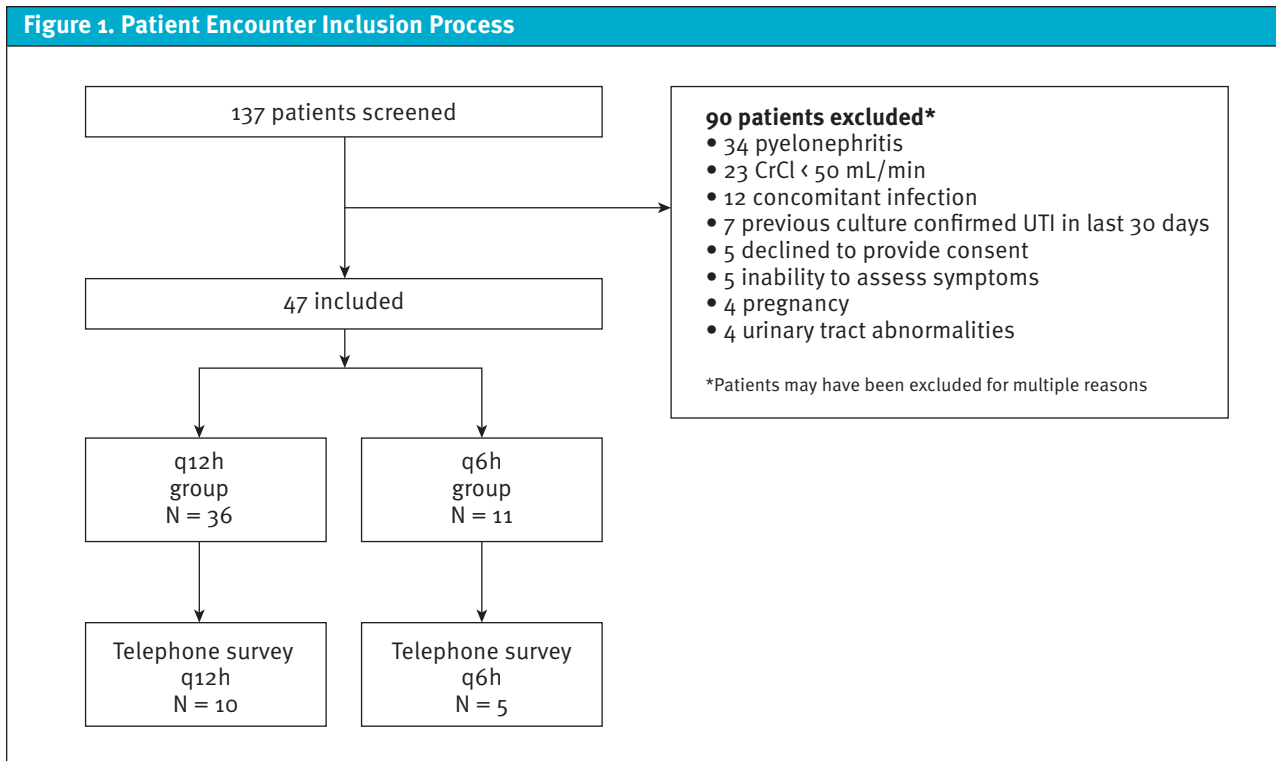
Several recent studies have described higher rates of treatment failure when using q12h dosing. However, due to these studies' retrospective, observational designs, adherence was not able to be assessed, and the populations studied were restricted to uncomplicated cystitis.<sup>7,13,14</sup> The purpose of this research was to assess differences in clinical cure for culture-confirmed cystitis with 2 different dosing regimens of cephalexin and assess patient adherence.

*“The purpose of this research was to assess differences in clinical cure for culture-confirmed cystitis with 2 different dosing regimens of cephalexin and assess patient adherence.”*

## Methods

### Selection and Description of Participants

This was an observational, survey-based study evaluating patients discharged from an ED or UC center associated with The Ohio State University Wexner Medical Center in the metropolitan area of Columbus, Ohio, with an encounter diagnosis of “cystitis” or “UTI” who were prescribed a course of cephalexin of at least 5 days duration between November 3, 2023, and February 28, 2024. Patients were screened twice weekly using an automatically generated report in the electronic health record (EHR). Patients were considered for inclusion if they were empirically treated with cephalexin for cystitis or were determined to have cystitis and then treated with cephalexin after urinary culture was finalized via an existing pharmacist culture-call-back process. Patients were only included if they had growth of a urinary organism with presumed or confirmed susceptibility to cefazolin, a surrogate marker for cephalexin susceptibility. Cephalexin regimens prescribed were 500 mg either



q12h or q6h for at least 5 days in duration and were chosen at the discretion of the initial diagnosing prescriber or the culture-call-back pharmacist.

The first encounter meeting inclusion criteria per patient during the study timeframe was included in the study. Exclusion criteria were: current pregnancy; incarcerated status; diagnosis of upper tract UTI (ie, prostatitis or pyelonephritis); history of previous culture-confirmed cystitis or pyelonephritis within the past 30 days; known urinary tract abnormalities or obstructions as documented in the EHR (hydronephrosis, nephrostomy tubes, indwelling urinary catheters, nephrolithiasis, urinary tract tumors); and current treatment for a concomitant infection at a different site. Patients were additionally excluded if the cephalexin prescription was not picked up, there was an inability to assess patient symptoms at follow-up (such as history of dementia), or if there was renal impairment with calculated creatinine clearance (CrCl) <50 mL/min.

#### Data Collection and Measurements

The primary outcome was rate of clinical cure among patients with cystitis who were discharged from either the ED or UC with either q6h or q12h cephalexin dosing frequencies. Clinical cure was defined as complete or near complete resolution of UTI symptoms upon

finishing a course of cephalexin lasting at least 5 days in duration, which was assessed 2-5 days post-antibiotic therapy. Safety endpoints included adverse events reported or documented during therapy. Secondary outcomes included patient adherence, adverse effects, and additional healthcare visits within 14 days of the prescription start date. Additional healthcare system utilization was defined as a patient presenting to an ED, UC, or physician's office within 14 days with chief complaint of urinary symptoms, UTI, cystitis, pyelonephritis, or bacteremia with a urinary source. Attempts to contact all included patients were made 2-5 days post-antibiotic therapy. If patients were unable to be contacted after 3 attempts, they were still assessed for demographics and utilization of the healthcare system within 14 days.

The telephone survey incorporated validated tools to assess clinical cure and adherence. For clinical cure, a modified version of the Urinary Tract Infection-Symptom and Impairment Questionnaire (UTI-SIQ-8) was utilized to assess symptom severity. The UTI-SIQ-8 is a comprehensive questionnaire that assesses severity of dysuria, urgency, urinary frequency, and lower abdominal pain, including the impairment it may have on a patient's life.<sup>15</sup> Adherence was assessed through the utilization of a validated Brief Medication Questionnaire

**Table 1. Baseline Characteristics and Patient Demographics**

Characteristic	q12h group (n = 36)	q6h group (n =11)	P-value
Female, n (%)	35 (97.2)	10 (90.9)	0.417
Age, median [IQR], yr	36 [22 – 55.5]	56 [52 – 61]	0.39
Weight, median [IQR], kg	75.8 [62.3 – 88.5]	87.6 [70.5 – 88.9]	0.27
Creatinine Clearance, mean (SD), mL/min	109 (36.8)	87.4 (19.2)	0.11
Duration of therapy, median [IQR], days	5 [5 – 7]	7 [5 – 7]	0.02
UC encounter, n (%)	24 (66.7)	9 (81.8)	0.46
<b>Complicating Factors</b>			
Complicated Patients, n (%)	7 (19.4)	3 (27.3)	0.43
Renal Transplant, n (%)	1 (2.78)	0 (0.00)	0.99
Nephrolithiasis, n (%)	3 (8.33)	0 (0.00)	0.99
Diabetes, n (%)	2 (5.56)	3 (27.27)	0.076
Immunocompromised, n (%)	1 (2.78)	0 (0.00)	0.99
<b>Bacteria</b>			
	<b>q12h group (n = 36)</b>	<b>q6h group (n = 11)</b>	<b>Total, n (%)</b>
<i>E. Coli</i> , n (%)	24 (66.6)	9 (81.8)	33 (70.2)
<i>S. saprophyticus</i> , n (%)	1 (2.8)	0 (0.0)	1 (2.1)
<i>Group B Strep. Species</i> , n (%)	3 (8.3)	0 (0.0)	3 (6.4)
<i>K. pneumoniae</i> , n (%)	4 (11.1)	1 (9.1)	5 (10.6)
<i>Proteus Species</i> , n (%)	0 (0.0)	1 (9.1)	1 (2.1)
Other, n (%)	2 (5.6)	0 (0.0)	2 (4.3)
Multiple species, n (%)	2 (5.6)	0 (0.0)	2 (4.3)

N - number; IQR – interquartile range; SD – standard deviation; q12h – every 12 hours; q6h – every 6 hours

(BMQ), which is a self-report tool for adherence screening.<sup>16</sup> The BMQ also includes a section regarding barriers to adherence, such as patient’s specific concerns with medication efficacy, which was not the focus of this research study, so it was omitted.

The Ohio State Biomedical Sciences Institutional Review Board approved this protocol (Study ID 2023H0336) and necessary amendments on October 29, 2023. Patient consent was obtained verbally upon contact for the telephone survey 2-5 days after finishing antibiotics. For patients who were unable to be contacted for the telephone survey, they were included based on waiver of consent for retrospective review of demographic characteristics and healthcare utilization.

**Statistics**

Categorical variables were examined utilizing a chi-square test unless tests of categorical variables had cells with numbers less than 5, of which a Fisher’s exact test was used. A Shapiro-Wilk test was utilized to test for data distribution of continuous variables. T-tests were

used to examine continuous outcomes between the 2 groups and Wilcoxon rank-sum was utilized when these variables were not normally distributed. Study data were collected and managed using REDcap electronic data capture tools.<sup>17</sup> Data analysis was completed using Stata Statistical Software, version 16 (StataCorp LLP, College Station, Texas, USA).

**Results**

A total of 137 patient encounters were screened for potential inclusion with 47 patients included and assessed via chart abstraction (36 in the q12h group and 11 in the q6h group). The most common reasons for exclusion were pyelonephritis, CrCl < 50 mL/min, and concomitant infections (Figure 1). All included patients were contacted for the telephone survey, and 15 were successfully reached and consented to the telephone survey assessing clinical cure.

Baseline characteristics were similar between groups (Table 1). Median age tended to be lower in those receiving a q12h regimen, while these patients also tended

**Table 2. Outcomes**

	q12h group (n = 10)	q6h group (n = 5)	P-value
Clinical Cure, n (%)	10 (100)	5 (100)	0.99
Adherence, %, mean (SD)	97.0 (6.7)	98.6 (3.2)	0.63
Any Adverse Events, n (%)	5 (50)	1 (20)	0.301
Nausea, n	3	1	0.999
Vomiting, n	0	0	-
Diarrhea, n	4	0	0.231
	q12h group (n = 36)	q6h group (n = 11)	
Healthcare utilization, n (%)	1 (2.8)	2 (18.2)	0.13

N – number; q12h – every 12 hours; q6h – every 6 hours

to have a higher CrCl. There were differences in duration of therapy between groups with those in the q12h group having a lower median therapy duration of 5 (5-7) days as compared to the q6h group at 7 (5-7) days

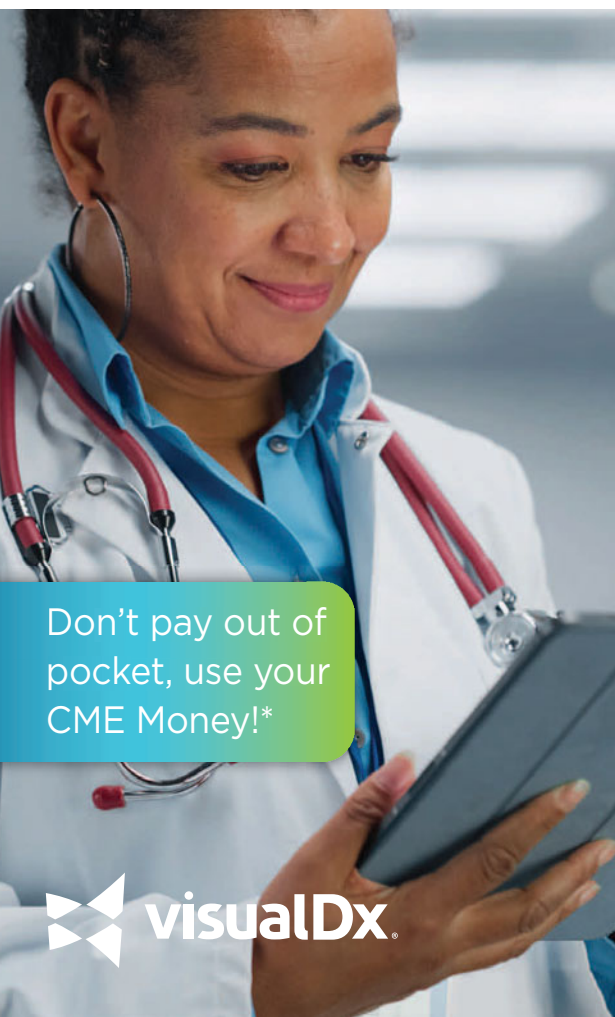
(p=0.02) utilizing a Wilcoxon rank-sum test. Most patients were female, and the most common urinary pathogen was found to be *Escherichia coli* (*E.coli*) with a majority of patients included from a UC encounter.

Of those patients included in the telephone survey (n=15), clinical cure was similar between the groups with all patients in the q12h (n=10) and q6h group (n=5) reporting near complete or complete resolution of symptoms (p=0.99) determined through a Fisher’s exact test. Of these patients, all had calculated adherence rates of at least 80% with adherence overall high in both groups with mean adherence of 97% in the q12h group and 98.6% in the q6h group. Adverse effects of nausea, vomiting, and diarrhea were found to be similar between groups with the most common side effect of nausea (Table 2).

Regarding the outcome of healthcare utilization within 14 days of prescription start date, 1 patient (2.8%) had a healthcare utilization visit in the q12h group and 2 (18.2%) in the q6h group, but results were not found to be statistically significant (p=0.13) through a Fisher’s exact test.

**Discussion**

In this small observational study comparing those with



# Solve Challenging Cases Quickly

## How VisualDx Can Help:

- Save time
- Improve operational efficiency
- Reduce unnecessary referrals

Don't pay out of pocket, use your CME Money!\*

JUCM Readers Get  
**\$50 OFF**  
[visualdx.com/jucm](http://visualdx.com/jucm)



\*We accept CME reimbursement, as long as your employer allows it. Check with them to confirm. Learn more: [visualdx.com/earn-cme](http://visualdx.com/earn-cme)

cystitis receiving regimens of cephalexin q12h vs q6h, there were equal rates of clinical cure with similar rates of healthcare utilization, adverse events, and adherence. Previously published studies focus on outcomes of treatment failure and exclude those who did not fit in the traditional definition of uncomplicated cystitis with similar treatment durations.<sup>13,14</sup>

The FDA approved dosing of cephalexin cites some of the first evidence comparing the dosing regimen of cephalexin for cystitis to the recommended q12h dosing, however despite this recommendation there remains variation in practice. The previous study by Kostas and colleagues compared 500 mg q12h to 250 mg q6h in male and female patients with UTI and found equal rates of symptomatic response and bacteriologic cure.<sup>7</sup> Similar to this current study, Kostas and colleagues also found high rates of symptomatic response with both groups (94% in q12h vs 93% in q6h) regardless of the regimen selected.<sup>7</sup>

As the use of cephalexin for cystitis has become more common in recent years, there has been renewed interest in researching the ideal regimen. A single-centered retrospective observational study from Benning and colleagues described clinical efficacy of q12h dosing in patients discharged from an ED with uncomplicated UTI through an outcome of clinical success.<sup>13</sup> It was determined that 81.1% of patients who received cephalexin 500 mg q12h met the criteria for clinical success, which is much lower than what was previously noted by Kostas and colleagues and this current study.<sup>7,13</sup> The study by Benning and colleagues posed some limitations and did not have a comparator group. Given the retrospective design, clinical success was evaluated based on subsequent presentation to a healthcare provider within the system or a change in antibiotic therapy, both of which have limitations in assessing clinical outcomes. Return visits may underestimate true clinical failure. Patients in whom culture growth was non-susceptible to empiric cephalexin therapy would not be expected to have clinical success based on the organism's resistance and may overestimate clinical failure in the study design. Given these considerations, this present study was designed to include a patient interview for clinical response as well as excluding patients who had an organism that was non-susceptible to cephalexin to account for these limitations in previous literature.

More recently, Yetsko et al. conducted a retrospective, multicentered study comparing clinical treatment failure between patients receiving cephalexin 500 mg dosed q12h vs q6h in the setting of uncomplicated UTIs.<sup>14</sup> The primary outcome was treatment failure, de-

*“Within this current study, a high rate of clinical cure was observed in both groups (100%) with low rates of healthcare utilization ranging from 2.8–18.2% in the subsequent 14 days.”*

defined as continuing or non-resolving symptoms, and was assessed retrospectively via EHR. Female patients who received 5–7 days of cephalexin for a cefazolin-susceptible urine culture with documented symptoms of UTI were included. With a population size of 261 (173 in the q12h group and 88 in the q6h group), the investigators found that there was no difference in treatment failure between groups (12.7% in q12h group vs 17% in q6h group).<sup>14</sup> Although this study did include a comparator group, with similar baseline characteristics between groups, due to the retrospective chart review used in this study, adherence was unable to be assessed, and only patients who met the traditional definition of uncomplicated cystitis (ie, young, healthy, non-pregnant, and female) were included. This present study focused on the patient-oriented outcomes of reported clinical cure and adherence while including a more real-world population of patients with cystitis, such as males, immunocompromised patients, or those with more frequent UTIs.

Within this current study, a high rate of clinical cure was observed in both groups (100%) with low rates of healthcare utilization ranging from 2.8–18.2% in the subsequent 14 days. This is in line with previous literature that sought to evaluate treatment failure and was assessed at 28 and 30 days. Although limited by a small sample size, strengths of this study included that it assessed patient-oriented outcomes and adherence in the treatment of cystitis with varying cephalexin dosing frequencies. In addition, this study included patients who did not meet criteria for simple cystitis (eg, those with diabetes, history of nephrolithiasis, and renal transplant).

### Limitations

This study does have a number of important limitations. Though it sought to concurrently evaluate clinical cure by patient interview immediately after completing cephalexin, a small patient population met inclusion criteria, so the study was not powered to detect a difference. With a small population of only 15 patients included in



the final analysis, no differences were found between the groups in clinical cure, and adherence overall was found to be high. Importantly, the sample size was too small to determine if there were important subgroup differences based on patient age, organism, and co-morbidities. Additionally, due to the nature of the telephone survey, there may be recall bias and subject bias among those included, both in terms of clinical cure and adherence. It may be possible that patients in each group who may have not taken the prescription as prescribed or taken the entire course as directed were less likely to respond to a telephone survey. There were attempts to control for this by also reviewing rates of return to health-care facilities within the study institution. Selection bias of patients may also be present in those included in the study due to the inherent patient population of the study institution and its associated care locations.

Given that this study was conducted in the ED and UC settings at a single institution, there is a potential the results might not be able to extrapolate to populations that differ. The treatment was left to the discretion of the clinician evaluating the patient; there may have been characteristics of patients in whom specific cephalexin dosing was chosen and other agents were avoided that could have meaningfully affected rates of cure. Furthermore, the sample size was inadequate to assess for potential differences in patient populations. Additionally, the decision on which cephalexin dosing regimen used was determined by the prescriber and may introduce selection bias. Adherence was similar between q6h and q12h groups, but this similarity may be predominantly attributable to small sample size, as it is likely patients will have less difficulty adhering to twice daily dosing. Overall, a majority of patients were seen in urgent care settings (66.7% in q12h group vs 81.8% in q6h group) and given the smaller sample of patients seen in the ED setting, we did not assess for differences between the ED and UC populations. As such, it is unknown if there are inherent differences in those populations that would impact clinical cure or patient adherence.

Due to the inclusion of patients who fall outside of the traditional definition of uncomplicated cystitis, this study's findings add to the knowledge base of utilizing cephalexin q12h for the treatment of cystitis. A prospective, multi-site, randomized controlled trial with a larger study population would be of great value to corroborate these findings and clarify in which patients with UTI is cephalexin 500mg q12h sufficient and for what duration of therapy.

## Conclusion

In this small observational study of patients treated for cystitis with cephalexin 500 mg q12h or 500 mg q6h, rates of clinical cure as assessed by post-treatment interview were similar, and most patients were 100% adherent to the regimen they received. Post-treatment health-care utilization was overall low in both groups. ■

*Manuscript submitted June 27, 2024; accepted November 15, 2024.*

## References

- Kranz J, Schmidt S, Lebert C, et al. The 2017 Update of the German Clinical Guideline on Epidemiology, Diagnostics, Therapy, Prevention, and Management of Uncomplicated Urinary Tract Infections in Adult Patients. Part II: Therapy and Prevention. *Urol Int*. 2018;100(3):271-278. doi:10.1159/000487645
- Gupta K, Hooton TM, Naber KG, et al. International Clinical Practice Guidelines for the Treatment of Acute Uncomplicated Cystitis and Pyelonephritis in Women: A 2010 Update by the Infectious Diseases Society of America and the European Society for Microbiology and Infectious Diseases. *Clin Infect Dis*. 2011;52(5):e103-e120. doi:10.1093/cid/ciq257
- Nguyen HM, Graber CJ. A Critical Review of Cephalexin and Cefadroxil for the Treatment of Acute Uncomplicated Lower Urinary Tract Infection in the Era of Bad Bugs, Few Drugs. *Int J Antimicrob Agents*. 2020;56(4):106085. doi:10.1016/j.ijantimicag.2020.106085
- Dunne MW, Aronin SI, Yu KC, Watts JA, Gupta V. A multicenter analysis of trends in resistance in urinary Enterobacterales isolates from ambulatory patients in the United States: 2011-2020. *BMC Infect Dis*. 2022;22(1):194. Published 2022 Feb 28. doi:10.1186/s12879-022-07167-y
- Herman TF, Hashmi MF. Cephalexin. [Updated 2023 Aug 17]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK549780/>
- Keflex [package insert]. Locust Valley, NY: Pragma Pharmaceuticals, LLC; 2018
- Kostas CI, Mobley DF, Rous SN, Schneider RE, Burt RA. Treatment of urinary tract infection with cephalexin. *J Fam Pract*. 1983;17(1):135-140.
- Cephalexin. Lexi-Drugs online. [Internet Database]. [http://online.lexi.com/lco/action/doc/retrieve/docid/patch\\_f/6569?cesid=8PLUY2mLgk6&searchUrl=%2Ffco%2Faction%2Fsearch%3Fq%3Dcephalexin%26t%3Dname%26acs%3Dfalse%26acq%3Dcephalexin#doa](http://online.lexi.com/lco/action/doc/retrieve/docid/patch_f/6569?cesid=8PLUY2mLgk6&searchUrl=%2Ffco%2Faction%2Fsearch%3Fq%3Dcephalexin%26t%3Dname%26acs%3Dfalse%26acq%3Dcephalexin#doa). Accessed June 1, 2024.
- Phamnguyen TJ, Murphy G, Hashem F. Single centre observational study on antibiotic prescribing adherence to clinical practice guidelines for treatment of uncomplicated urinary tract infection. *Infect Dis Health*. 2019;24(2):75-81. doi:10.1016/j.idh.2018.10.005
- Gerber MA, Spadaccini LJ, Wright LL, Deutsch L, Kaplan EL. Twice-daily penicillin in the treatment of streptococcal pharyngitis. *Am J Dis Child*. 1985;139(11):1145-1148. doi:10.1001/archpedi.1985.02140130083035
- Kruse W, Eggert-Kruse W, Rampmaier J, Runnebaum B, Weber E. Dosage frequency and drug-compliance behaviour—a comparative study on compliance with a medication to be taken twice or four times daily. *Eur J Clin Pharmacol*. 1991;41(6):589-592. doi:10.1007/BF00314990
- Falagas ME, Karagiannis AK, Nakouti T, Tansarli GS. Compliance with once-daily versus twice or thrice-daily administration of antibiotic regimens: a meta-analysis of randomized controlled trials. *PLoS One*. 2015;10(1):e0116207. Published 2015 Jan 5. doi:10.1371/journal.pone.0116207
- Benning M, Acosta D, Sarangarm P, Walraven C. Revisiting  $\beta$ -Lactams for Treatment of Urinary Tract Infections: Assessing Clinical Outcomes of Twice-Daily Cephalexin for Empiric Treatment of Uncomplicated Urinary Tract Infections. *J Clin Pharmacol*. 2023;63(3):358-362. doi:10.1002/jcph.2179
- Yetko A, Draper HM, Eid K, Jameson AP, Dumkow LE. Two Times Versus Four Times Daily Cephalexin Dosing for the Treatment of Uncomplicated Urinary Tract Infections in Females. *Open Forum Infect Dis*. 2023;10(9):ofad430. Published 2023 Aug 11. doi:10.1093/ofid/ofad430
- Gágyor I, Rentzsch K, Strube-Plaschke S, Himmel W. Psychometric properties of a self-assessment questionnaire concerning symptoms and impairment in urinary tract infections: the UTI-SIQ-8. *BMJ Open*. 2021;11(2):e043328. Published 2021 Feb 15. doi:10.1136/bmjopen-2020-043328
- Svarstad BL, Chewing BA, Sleath BL, Claesson C. The Brief Medication Questionnaire: a tool for screening patient adherence and barriers to adherence. *Patient Educ Couns*. 1999;37(2):113-124. doi:10.1016/S0738-3991(98)00107-4
- Harris PA, Taylor R, Minor BL, et al. The REDCap consortium: Building an international community of software platform partners. *J Biomed Inform*. 2019;95:103208. doi:10.1016/j.jbi.2019.103208.

DON'T MISS



**URGENT CARE**  
**connect**  
AN EXPERTISE EVENT  
March 3-5, 2025



## **GUEST KEYNOTE** **Harvey Castro, MD, MBA**

A renowned AI expert and visionary in the medical field, Dr. Castro will lead you through the multifaceted impact of AI in healthcare. From revolutionizing patient care and operational efficiency, to navigating ethical dilemmas and unforeseen challenges, see how these technologies are reshaping the future of on-demand healthcare.

ON PACE FOR PROGRESS



# JOIN US MARCH 3-5, 2025 IN LOUISVILLE, KY

Urgent Care Connect is a great opportunity for a two-day deep dive into everything urgent care!

## BREAKOUT SESSION HIGHLIGHTS

- **Thinking Outside the Exam Room: Creating High-Quality Patient Experiences Through the Entire Patient Journey.** Learn how to provide a better patient experience outside the exam room with pre- and post-visit engagement strategies.
- **Adopting a Consumer-centric Approach for Changing Patient Demands.** Learn how incorporating an eCommerce-like mindset and new technology into your practice can improve outcomes without compromising quality of care.
- **Improve Patient Outcomes with Fast, Accurate, AI-Assisted Teleradiology Overreads.** Learn how providing radiology services and AI-assisted reads can improve the patient experience and make your clinic stand out from in-the-box retail clinics.
- **How to Use Data Like Cheat Codes for Better RCM Health.** Learn how to transform data and insights into a custom action plan toward RCM success.

SEE THE FULL AGENDA AT:  
[experityhealth.com/events/urgent-care-connect/agenda](https://experityhealth.com/events/urgent-care-connect/agenda)

REGISTER NOW



EXPERITY®

# BETTER DATA. DEEPER INSIGHTS. IMPROVED OUTCOMES.

## EXPERITY BUSINESS INTELLIGENCE

You have access to more data than ever before, but using it to inform your decisions is a challenge.

Experity BI simplifies that process—from teasing out the raw data, to analyzing and aggregating it into visual dashboards that empower owners, administrators, and clinicians with insights that drive action.

Save time using the data you have to achieve the results you want with Experity BI.

- Drive data-based decision-making
- Easily access metrics that matter for urgent care
- Monitor performance holistically
- Support accountability through transparency
- Clinical, operational, financial, and custom dashboards
- Add-on module to Experity EMR/PM



# Reimagining Retail Pharmacy as Major Chains Downsize Offerings

**Urgent Message:** As retail pharmacies reinvent themselves, urgent care has an opportunity to grow within the shifting market dynamic.

Alan A. Ayers, MBA, MAcc

**Citation:** Ayers AA. Reimagining Retail Pharmacy as Major Chains Downsize Offerings. *J Urgent Care Med.* 2025 19(4)43-47.

Retail pharmacies are at a crossroads. Once the go-to destination for prescriptions and over-the-counter health/beauty merchandise, major chains like Walgreens, CVS, and Rite-Aid have closed thousands of stores while also abandoning billion-dollar investments in virtual care and on-site clinics. At the same time, they're grappling with widespread pharmacist burnout and staffing shortages partially brought on by increasing expectations of the pharmacist's role in providing care.

These market realities have the potential to reshape the retail pharmacy's role in healthcare delivery, but they also raise important questions for urgent care about what its own role will be and how patient volume may be impacted.

## Major Struggles Persist for Retail Pharmacy

Recently, Walgreens has warned of "imminent changes" for underperforming locations, which account for 25% of its nearly 9,000 stores.<sup>1</sup> In October, 2024, the chain announced that 1,200 stores will be shuttered over the next 3 years as part of a \$1 billion cost-cutting strategy.<sup>2</sup> Meanwhile, CVS is set to close nearly 900 store locations, and Rite Aid, caught in a Chapter 11 restructuring, is closing more than 150 stores.<sup>3,4</sup>

Beyond shuttering underperforming locations, the country's largest pharmacy chains have also announced aggressive plans to abandon or cut back on billion-dollar investments in retail health (Table 1). After just 5 years in the business, Walmart sold its MeMD virtual



care subsidiary in early 2024.<sup>5</sup> The retail giant also announced plans to shut down 51 Walmart Health centers and end its Walmart Health Virtual Care offerings.<sup>6</sup>

Walgreens—which recorded a \$6 billion loss in the second quarter due in large part to losses from its VillageMD investment—as of August 2024 was considering selling its primary care division to rebalance the company under mounting financial pressure.<sup>7,8</sup> In the interim, the chain has already closed 140 VillageMD clinics (nearly half) and

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

Table 1: Recent Moves by Walmart, Walgreens, and CVS			
	Walmart	Walgreens	CVS
On-Demand Health Care	Closed all 51 Walmart Health locations and Walmart Health Virtual Care in April 2024.  Sold MeMD virtual care subsidiary to startup Fabric in July 2024.		Carbon Health rooftops have decreased to 120 from 125 since CVS' January 2023 investment.  In 2024, 2 MinuteClinics in Massachusetts were converted to full-service Carbon Health urgent cares.
Primary Care		Shuttered 160 VillageMD locations (over 50%) after recording a \$6 billion loss on the investment.	Sought private equity partner to help fund the growth of Oak Street Health after a \$10.6 billion investment.
Clinical Trials		Plans to expand clinical research capabilities after reaching more than 5 million patients to potentially recruit into trials since June 2022.  Walgreens has signed more than 35 clinical trial contracts.	Shutting down clinical trial business after 2 years, citing the need to realign long-term strategic priorities.
Infusion Services			Exiting infusion business and closing 29 related regional pharmacies.
Real Estate		Continues to profit from real estate investment, netting 21% return over the past 3 years.	With equity partners, continues to invest in tax-abated, tax-credit and/or rent-subsidized multi-family housing.

plans to shut down 20 more.<sup>9</sup> Even so, Walgreens' real estate business is booming, yielding a 21% return over the past 3 years through sale-leaseback transactions.<sup>10</sup> The retail pharmacy is also doubling down on its two-year-old clinical trial business and recently inked a 5-year, \$100 million partnership with the U.S. government.<sup>11</sup>

Walgreens rival CVS is experiencing primary care struggles of its own. Its Carbon Health arm has 125 locations, representing no net rooftop growth since CVS invested in the primary care brand in 2023.<sup>12</sup> CVS also sought a new private equity partner to help fund growth in its Oak Street Health business after acquiring it just over a year ago for \$10.6 billion.<sup>13</sup> Unlike Walgreens, CVS has moved away from clinical trials, shutting down its operations in this segment 2 years after launching, citing the need to realign its long-term strategic priorities.<sup>14</sup> CVS exited the infusion business in October, 2024 after acquiring Coram LLC for \$2.1 billion in 2013. The move will also result in the closure of 29 regional pharmacies.<sup>15,16</sup>

Overall, mass closures of retail pharmacies could create

pharmacy deserts in certain areas, leaving many communities without access to over-the-counter medications, vaccinations, and prescription refills.<sup>17</sup> For health-care consumers, particularly those with Medicare and Medicaid coverage, these shifts are a cause for concern.

The emergence of new pharmacy deserts also highlights an ongoing healthcare access problem. Regions where patients must travel significant distances to access pharmacy services often represent rural or underserved communities with existing health disparities. Patients may have the option to turn to urgent care not just for acute needs but also for routine vaccinations or prescription management, which could expand business opportunities for urgent care. Pharmacy downsizing of health services could also add seasonal pressure to urgent care clinics primarily designed to handle episodic care, however.

#### Changes to the Pharmacist's Role

In the 2010s, pharmacies proposed to head in a different direction by expanding the pharmacist's role to include diagnosis. In effect, the growth strategy of pharmacy

was transforming a pharmacist into a “provider.” Push-back followed from pharmacists who already felt overworked and overwhelmed by a growing number of responsibilities.<sup>18</sup> Particularly in large retail chains, pharmacists shoulder increasingly large workloads beyond dispensing medications.

Today’s pharmacists may be administering vaccines and point-of-care tests, promoting public health awareness campaigns and interventions, and assisting with chronic disease management—all on top of dispensing duties. The pressure to deliver both retail and clinical services simultaneously has left many pharmacists overwhelmed, leading to high turnover and widespread dissatisfaction within the profession.<sup>19,20,21</sup>

Unlike physicians, nurse practitioners, and physician assistants, pharmacists lack appropriate training and experience for making clinical decisions beyond medication-related issues. As a result, the expectation that pharmacists could replace urgent care providers in certain roles has largely failed to materialize. While pharmacists excel at managing medication therapy, expanding their roles further seems to have created more strains than solutions.

Indeed, since the pandemic, staffing levels have been slashed at the country’s largest retail pharmacies while remaining workers are left to shoulder the extra burden,<sup>20</sup> filling increasing prescription volumes and handling other duties.

The American Public Health Association estimates U.S. pharmacies make 54 million dispensing errors annually.<sup>22</sup> Given plummeting employment numbers among retail pharmacists—including a 6% drop between 2019 and 2021—the risk for errors seems evident.<sup>20</sup>

### The Public Health Impact of ‘Convenience Store’ Pharmacies

Retail pharmacies have long played a pivotal role in healthcare delivery. However, major pharmacy chains continue to stock and promote products like alcohol, tobacco, and sugary energy drinks—items linked to chronic disease and preventable deaths.

The fact these items are still featured on retail pharmacy shelves has sparked criticism from healthcare advocates, who argue that pharmacies have a duty to promote healthy interventions rather than products that increase mortality risks. Their arguments are founded on some alarming data. The U.S. has the highest rate of avoidable deaths among all wealthy nations, driven mainly by lifestyle-related diseases such as heart disease, diabetes, and respiratory illness brought on by smoking.<sup>23</sup> These conditions can be exacerbated by many of

the products retail pharmacies continue to sell.

Notably, research published in 2021 indicated that 94% of retail pharmacies in the U.S. participated in cigarette promotions, including discount pricing and cross-promotion. That was 12% higher usage of these tactics than any other type of retailer—including convenience stores and tobacco stores.<sup>24</sup> CVS ultimately adopted tobacco-free store shelves in 2014. Yet, the same type of promotions have been used to increase sales of alcohol and sugary beverages at many pharmacy retailers.<sup>23,25,26</sup>

Furthermore, the convenience store model adopted by many retail pharmacies has also made them frequent targets for crime, further eroding public trust in these locations as healthcare destinations.<sup>27</sup> In some cases, employees have been held at gunpoint or witnessed criminals escape through drive-thru windows.<sup>28,29,30</sup>

As the traditional pharmacy model erodes, the retail pharmacy sector now approaches a crossroads. Will chains like Walgreens, CVS, and Rite-Aid continue to pursue the same strategies against plummeting financial returns? Or will they adapt to a model more aligned with promoting public health and preventing disease?

### Embracing a Shift Toward Digital Health and Telepharmacy

Some industry experts and researchers have advocated to transform pharmacies from convenience stores into health promotion hubs.<sup>23,31</sup> This new model would lean into digital technology and focus on disease prevention and managing chronic health conditions.

This shift isn’t just about changing what pharmacies sell, though—it’s about rethinking the entire purpose of the retail pharmacy. By integrating digital health products and telemedicine services, pharmacies could become proactive centers for disease management and prevention. Rather than simply dispensing medications to treat diabetes or hypertension, for example, pharmacies could promote apps that monitor blood sugar levels in real time or sell wearable devices that assess heart health when recommended by a clinician. Such digital tools empower patients to take a more active role in managing their health, potentially reducing the need for downstream medical intervention.

Moreover, digital tools provide patients with actionable insights into their health. Wearable devices that track activity levels, sleep patterns, and vital signs can empower patients with chronic conditions like diabetes, hypertension, and heart disease to better manage their health when recommended by a clinician.

In addition to supporting self-management, digital therapeutics also help patients adopt healthier lifestyles. Mobile apps and wearables can guide users through ex-

ercise routines and promote regular sleep schedules. Placing these products near the pharmacy counter allows pharmacists to offer personalized recommendations and interventions, making it easier for patients to integrate digital health solutions into their daily routines and increasing sales that help the bottom line.

Another key aspect of this transformation is the rise of telepharmacy, which has the potential to impact how patients access medications and health consultations.<sup>32</sup> Telepharmacy allows pharmacists to offer remote services from anywhere, including virtual consultations, prescription management, and medication counseling.<sup>33</sup> This approach improves access for those in rural or underserved areas and increases convenience for patients who prefer remote interactions. It can also be a complement to urgent care in communities benefiting from expansion.

Moreover, pharmacies can use this opportunity to leverage omnichannel sales, combining physical store services with online platforms to cross-promote digital health technologies. This type of integration creates a seamless experience where patients receive personalized recommendations for both digital therapeutics and traditional pharmacological treatments.

### How a Shift to Digital Health Impacts Urgent Care

As retail pharmacy giants ponder new strategies, the potential impact of a more health-focused digital model carries significant ramifications for urgent care. Pharmacies of tomorrow may no longer just be places to pick up prescriptions or buy over-the-counter medications. Instead, they may be considered comprehensive hubs for disease prevention and holistic healthcare management. While promising for public health, this shift may lead to changes in how patients seek care and what role urgent care centers play in the broader healthcare ecosystem.

The push toward digital therapeutics is a prime example of how urgent care volumes could change. With pharmacies pushing mobile health apps, wearables, and telemedicine, patients may be more inclined to manage chronic conditions from the comfort of their homes. Why would patients visit urgent care for routine blood glucose monitoring check-ins when they can get 24/7 readings through a wearable monitor connected to their smartphone?

Telepharmacy further amplifies this trend. By offering virtual visits with providers or pharmacists, retail chains can market medication counseling, prescription refills, and even adjustments to treatment plans without the need for an in-person appointment. This shift could

lead to fewer patients turning to urgent care centers for these needs, especially in areas where primary care providers and other forms of non-episodic care are sparse. In addition to digital health tools and telepharmacy, pharmacy point-of-care testing (POCT) could also chip away at urgent care volumes. Many retail pharmacies already offer POCT services for conditions like diabetes, high cholesterol, and hypertension. While this makes care more convenient for the patient, it could also divert some routine visits away from urgent care.

The physical redesign of pharmacies to focus on health could also impact urgent care's image in the community. By removing unhealthy products like alcohol and tobacco from their shelves, pharmacies could position themselves as trusted partners for holistic care. This approach could make pharmacies the go-to destination for patients seeking care before a condition becomes serious enough to warrant an urgent care visit. This could spur a decline in visits for minor illnesses and routine health checks—2 sources of urgent care volume.

### Opportunities for Collaboration

Despite potential cannibalization of patient volume, a shift toward digital health and disease prevention paves the way for new collaboration opportunities between pharmacies and urgent care. Rather than viewing these changes as competition, urgent care operators can explore partnerships that enhance patient care and improve outcomes.

One key area for collaboration is chronic disease management. Pharmacies, through digital therapeutics and telepharmacy services, are well-positioned to help patients manage these conditions. However, urgent care centers can intervene when patients need episodic care for acute exacerbations or complications that can't be managed remotely. Through referral coordination, pharmacies and urgent care centers can ensure patients receive the right level of care at the right time, reducing unnecessary trips to the emergency room.

Another potential avenue for collaboration lies in POCT. Pharmacies offering POCT testing services could refer patients to urgent care centers for follow-up based on test results. They can also refer patients to a nearby urgent care center for tests they don't offer.

While the potential for collaboration between pharmacies and urgent care is promising, it's important to acknowledge that some urgent care chains or independent centers may face challenges forming partnerships with national retail pharmacy giants. Large chains like CVS and Walgreens have significant resources and established infrastructures, allowing them to implement



digital health solutions and telepharmacy services at scale. Smaller urgent care operators may need external resources to help them uncover avenues they are able to pursue.

Retail pharmacy is at a critical turning point. As major chains like Walgreens and CVS downsize, they must look toward new ways of serving patients and communities to rediscover their profitability.

The proposed pivot to a digital health-focused model emphasizing disease prevention and management through digital therapeutics, telepharmacy, and POCT could redefine pharmacies as proactive health hubs. Urgent care centers must prepare for the ripple effects of these changes.

Despite these challenges, urgent care will remain essential for acute, episodic care that digital solutions cannot replace. Operators should also recognize the potential for collaboration while seeking ways to maximize patient visits. ■

#### References

1. Valinsky J. Walgreens will close a significant number of US stores, shutting down many unprofitable locations. *CNN*. Published June 27, 2024. Accessed November 4, 2024. <https://www.cnn.com/2024/06/27/business/walgreens-closures/index.html>
2. Thorne EW. Walgreens to close 1,200 stores. *LinkedIn*. Published October 16, 2024. Accessed November 4, 2024. <https://www.linkedin.com/news/story/walgreens-to-close-1200-stores-6209132/>
3. Genovese D. CVS Health to close hundreds of drugstores. *Fox Business*. Published November 18, 2021. Accessed November 4, 2024. <https://www.foxbusiness.com/retail/cvs-health-close-hundreds-drugstores>
4. Genovese D. CVS, Walgreens, Rite Aid closing stores: A brick and mortar downfall? *Fox Business*. Published July 1, 2024. Accessed November 4, 2024. <https://www.foxbusiness.com/lifestyle/cvs-walgreens-rite-aid-closing-stores-brick-mortar-downfall>
5. Raths D. Walmart sells MEMD Virtual Care subsidiary to Startup Fabric. *Healthcare Innovation*. Published July 2, 2024. Accessed November 4, 2024. <https://www.hcinovationgroup.com/finance-revenue-cycle/mergers-acquisitions/news/55093030/walmart-sells-memd-virtual-care-subsiary-to-startup-fabric>
6. Walmart. Walmart Health is closing. *Walmart Corporate*. Published April 30, 2024. Accessed November 4, 2024. <https://corporate.walmart.com/news/2024/04/30/walmart-health-is-closing>
7. Pifer R. Walgreens to reduce stake in VillageMD, close stores. *Healthcare Dive*. Published June 27, 2024. Accessed November 4, 2024. <https://www.healthcarediver.com/news/walgreens-to-reduce-villagemd-stake-close-stores/719984/>
8. Morse S. Walgreens considering selling all its VillageMD business. *Healthcare Finance News*. Published August 12, 2024. Accessed November 4, 2024. <https://www.healthcarefinancenews.com/news/walgreens-considering-selling-all-its-villagemd-business>
9. Pifer R. Walgreens now set to close nearly half of its VillageMD clinics. *KFF Health News*. Published March 29, 2024. Accessed November 4, 2024. <https://www.healthcarediver.com/news/walgreens-to-reduce-villagemd-stake-close-stores/719984/>
10. Ayers A. Walgreens faces profitability challenges with primary care locations and employs sale-leaseback transactions to generate revenue. *LinkedIn*. Published April 22, 2024. Accessed November 4, 2024. [https://www.linkedin.com/posts/alanayers\\_primarycare-urgentcare-healthcare-activity-7188136978482106369-35Xm/](https://www.linkedin.com/posts/alanayers_primarycare-urgentcare-healthcare-activity-7188136978482106369-35Xm/)
11. Landi H. Walgreens eyes tremendous growth in clinical trials as part of transformation strategy. *Fierce Healthcare*. Published September 16, 2024. Accessed November 4, 2024. <https://www.fiercehealthcare.com/retail/walgreens-eyes-tremendous-growth-clinical-trials-part-transformation-strategy>
12. Landi H. Carbon Health nabs \$100M, CVS Health primary care partnership to pilot clinics in retail stores. *Fierce Healthcare*. Published January 9, 2023. Accessed November 4, 2024. <https://www.fiercehealthcare.com/providers/jpm23-carbon-health-nabs-100m-cvs-health-partnership-pilot-primary-care-retail-stores>
13. Hudson C. CVS Health, Oak Street, and private equity investment. *Modern Healthcare*. Published June 3, 2024. Accessed November 4, 2024. <https://www.modernhealthcare.com/providers/cvs-health-oak-street-private-equity-investment>
14. Minemyer P. CVS closing down clinical trials business after 2 years. *Fierce Healthcare*. Published May 15, 2023. Accessed November 4, 2024. <https://www.fiercehealthcare.com/retail/cvs-closing-down-clinical-trials-business-after-2-years>
15. Niasse A. Exclusive: CVS to exit core infusion services business, job cuts possible. *Reuters*. Published October 15, 2024. Accessed November 4, 2024. <https://www.reuters.com/business/healthcare-pharmaceuticals/cvs-exit-core-infusions-services-business-job-cuts-possible-2024-10-11>
16. Niasse A. CVS to exit core infusion services business, job cuts possible. *U.S. News & World Report*. Published October 11, 2024. Accessed November 4, 2024. <https://www.usnews.com/news/top-news/articles/2024-10-11/exclusive-cvs-to-exit-core-infusions-services-business-job-cuts-possible>
17. Kwan N. The impact of pharmacy deserts. *US Pharm*. Published April 18, 2024;49(4):32-36. Accessed November 4, 2024. <https://www.uspharmacist.com/article/the-impact-of-pharmacy-deserts>
18. Ayers AA. Pharmacists prescribing privileges. Alan Ayers Urgent Care. Published May 2015. Accessed November 4, 2024. [http://www.alanayersurgentcare.com/Linked\\_Files/2015\\_Articles/Pharmacists\\_Prescribing\\_Priviledges\\_May\\_2015.pdf](http://www.alanayersurgentcare.com/Linked_Files/2015_Articles/Pharmacists_Prescribing_Priviledges_May_2015.pdf)
19. The New York Times. Why doctors and pharmacists are in revolt. *LinkedIn*. Published December 8, 2023. Accessed November 4, 2024. [https://www.linkedin.com/posts/the-new-york-times\\_why-doctors-and-pharmacists-are-in-revolt-activity-7138999440228392961-V-Cb/](https://www.linkedin.com/posts/the-new-york-times_why-doctors-and-pharmacists-are-in-revolt-activity-7138999440228392961-V-Cb/)
20. Le Coz E. Prescription for disaster: America's broken pharmacy system in revolt over burnout and errors. *USA Today*. Published October 26, 2023. Accessed November 4, 2024. <https://www.usatoday.com/story/news/investigations/2023/10/26/pharmacy-chains-dangerous-conditions-medication-errors/71153960007>
21. Zanini M. The great pharmacist rebellion. *Michele Zanini Blog*. Published November 9, 2021. Accessed November 4, 2024. <https://www.michelezanini.com/the-great-pharmacist-rebellion>
22. American Public Health Association Pharmacy Section Task Force on System-Mediated Medication Safety Issues. Addressing community pharmacy system-mediated medication safety issues. Published October 2021. Accessed November 4, 2024. [https://cdn.yamaws.com/www.cshp.org/resource/resmgr/files/news/Task\\_Force\\_on\\_System-mediate.pdf](https://cdn.yamaws.com/www.cshp.org/resource/resmgr/files/news/Task_Force_on_System-mediate.pdf)
23. Bulaj G, Coleman M, Johansen B, et al. Redesigning pharmacy to improve public health outcomes: expanding retail spaces for digital therapeutics to replace consumer products that increase mortality and morbidity risks. *Pharmacy*. 2024;12(4):107. Published July 12, 2024. Accessed November 4, 2024. <https://www.mdpi.com/2226-4787/12/4/107>
24. Seidenberg AB, Henriksen L, Ribisl KM. Cigarette promotions in U.S. pharmacies. *Nicotine Tob Res*. 2022;24(4):612-616. Published October 8, 2021. <https://doi.org/10.1093/ntr/ntab204>
25. Kotecki JE. Sale of alcohol in pharmacies: results and implications of an empirical study. *J Community Health*. 2003;28:65-77. Published February 2003. <https://doi.org/10.1023/A:1021385206234>
26. Wilking C, Gottlieb MA, Rickles N. The role of chain pharmacies to promote healthy food retail: current trends, legal limits, and policy opportunities. *Health Mark Q*. 2019;36(4):291-306. <https://doi.org/10.1080/07359683.2019.1575058>
27. Chicago Editorial Board. Walgreens could join other major retailers fleeing high-crime parts of Chicago. *The Mercury*. Published July 3, 2024. Updated August 11, 2024. Accessed November 4, 2024. [https://themercury.com/editorial-walgreens-could-join-other-major-retailers-fleeing-high-crime-parts-of-chicago/article\\_1fd8c840-394d-11ef-ac11-3bc2d07259e6.html](https://themercury.com/editorial-walgreens-could-join-other-major-retailers-fleeing-high-crime-parts-of-chicago/article_1fd8c840-394d-11ef-ac11-3bc2d07259e6.html)
28. WHIO TV 7 and WHIO Radio. Latest attempted CVS robbery possibly linked to string of pharmacy robberies [video]. *WHIO*. Published March 23, 2020. Accessed November 4, 2024. <https://www.whio.com/news/latest-attempted-cvs-robbery-possibly-linked-string-pharmacy-robberies/BSStByEbynSun2Z6M8DyZO/>
29. Armstrong K. Florida crime files: Walgreens pharmacist robbed at gunpoint, man accused of stealing steaks at Walmart. *FOX 35 Orlando*. Published July 21, 2024. Accessed November 4, 2024. <https://www.fox35orlando.com/news/florida-crime-files-walgreens-pharmacist-robbed-gunpoint-man-accused-stealing-steaks-walmart>
30. Rees D. CVS robbery suspect fled through drive-thru window. *NBC4i*. Published August 3, 2023. Accessed November 4, 2024. <https://www.nbc4i.com/news/local-news/columbus/cvs-robbery-suspect-fled-through-drive-thru-window-video-shows>
31. Ayers AA. 'Big retail' pivots are a retreat from 'on demand' care. *J Urgent Care Med*. 2023;17(9):30-35. Accessed November 4, 2024. <https://www.jucm.com/wp-content/uploads/2023/05/2023-17930-35-Practice-Management.pdf>
32. Hefti E, Wei B, Engelen K. Access to telepharmacy services may reduce hospital admissions in outpatient populations during the COVID-19 pandemic. *Telemed J E Health*. 2022;28(9):1324-1331. <https://doi.org/10.1089/tmj.2021.0420>
33. Point of Care Testing Institute. Is telepharmacy the future of pharmacy services? *LinkedIn*. Published March 28, 2023. Accessed November 4, 2024. <https://www.linkedin.com/pulse/telepharmacy-future-pharmacy-services/>



### Hematoma Blocks Effective for Closed Forearm Reduction

**Take Home Point:** Hematoma blocks are an effective method of achieving analgesia to facilitate closed reduction of forearm fractures.

**Citation:** Pitman G, Soeyland T, Popovic G, et al. Hematoma block is the most efficient technique for closed forearm fracture reduction: a retrospective cohort study. *Emerg Med J.* 2024; 41:595–601.

**Relevance:** Adequate closed reduction of wrist and forearm fractures acutely after injury is important to reduce risk of complications and need for surgery. Closed wrist and forearm fractures are common urgent care (UC) presentations. Hematoma blocks are particularly well suited for use in the UC setting since they require the use of only existing human resources and medical supplies which are routinely available.

**Study Summary:** This was a multicenter, retrospective, emergency department (ED) based, Australian study. The primary end point was ED length of stay (LOS), which was defined as the time between the patient's first interaction with a doctor and the time they were discharged. Analgesia methods compared were hematoma block (HB), Bier block (BB), and procedural sedation (PS). In addition to the common definition, complications of each method of anesthesia were measured; the failure of a block technique was also considered to be a complication.

The authors included 226 patients in their analysis. Of these, 107 underwent PS, 35 BB and 84 HB to reduce their fractures. Overall, the mean ED LOS was 220.09 minutes. The mean LOS for the HB, BB, and PS groups were 187.72, 227.24, and 239.29 respectively. The authors found that difference in LOS between HB and PS was statistically significant ( $p=0.023$ ). Additionally, HB was associated with the lowest staff resource utilization compared. PS, while associated with longer LOS and higher resource utilization, did achieve higher first-attempt success rates, but PS was

also associated with highest rates of complications.

**Editor's Comments:** This was a relatively small, retrospective ED study. As there was no randomization, it's unclear to what extent clinician selection of anesthesia method may have biased results. Given that HB is usually the only option for anesthesia in UC settings, however, it is reassuring that it proved successful in many cases. Attempting HB may therefore reduce unnecessary ED referrals for displaced and angulated forearm fractures and is an easy skill that would be worthwhile for UC clinicians to develop comfort with. ■

### Can We Treat Bacterial Vaginosis Without Antibiotics?

**Take Home Point:** In this study, vaginal dequalinium chloride was non-inferior to oral metronidazole for the treatment of bacterial vaginosis (BV).

**Citation:** Raba G, Durkech A, Malik T, et. al. Efficacy of Dequalinium Chloride vs Metronidazole for the Treatment of Bacterial Vaginosis: A Randomized Clinical Trial. *JAMA Netw Open.* 2024 May 1;7(5): e248661. doi: 10.1001/jamanetworkopen.2024.8661.

**Relevance:** BV is a common, distressing, and recurrent condition affecting predominantly women of reproductive age. Oral antibiotic regimens include metronidazole and clindamycin, however, increasing rates of bacterial resistance and the adverse consequences of repeat antibiotic use make finding therapeutic alternatives a worthwhile objective.

**Study Summary:** This was a multicenter, triple-blind, parallel, double-dummy, noninferiority randomized clinical trial, of patients with symptomatic BV recruited from 11 gynecological practices and 1 hospital in Poland, the Czech Republic, and Slovakia. Participants were randomized to receive vaginal tablets (containing either 10mg dequalinium chloride (DQC) or placebo) applied once daily for 6 days or oral tablets (containing 500mg metronidazole or placebo) taken twice daily for 7 days. Follow-up visits were performed between 7-11 days (visit 1) and 20- 40 days (visit 2) after the start of treatment. Vaginal samples were



**Ivan Koay MBChB, MRCS, FRNZCUC, MD**, is an Urgent Care Physician and Medical Lead for Kings College Hospital Urgent Treatment Centre, London, United Kingdom. He is also the Convenor for the Ireland and UK Faculty of the Royal New Zealand College of Urgent Care.

taken and the occurrence of adverse events recorded at each visit.

The authors randomly assigned 151 women to receive DQC (n=73) or metronidazole (n=78). They found the clinical cure rate at visit 1 in the intention to treat (ITT) population analysis was 92.8% for the DQC group and 93.2% for the metronidazole group. The patient reported rate of clinical improvement was 88.1% for the DQC group and 92.9% for the metronidazole group. These results were not statistically different indicating non-inferiority of dequalinium chloride to metronidazole in treating BV.

**Editor's Comments:** This study supports the evidence of prior studies demonstrating similar efficacy of dequalinium chloride to traditional oral antibiotic regimens for the treatment of BV. Given the recurrent nature of BV, non-toxic, vaginal treatment options are a highly desirable alternative to oral antibiotics. DQC is not FDA approved and is not available over-the-counter or by prescription in U.S. currently. Vaginal DQC tablets are available, however, in Europe and in other parts of the world. This was a very well-designed trial which showed similar improvement in microbial and clinical response to DQC as oral metronidazole. For clinicians practicing in countries where vaginal DQC tablets are available, there seems to be little justification for not implementing this therapy instead of oral antibiotics for this very common UC condition. ■

## Pediatric Pneumonia: Are Antibiotics Always Necessary?

**Take Home Point:** This study's results suggest that there is a cohort of children with pneumonia that may be managed without antibiotic treatment.

**Citation:** Shapiro D, Hall M, Hersh A, et. al. Outpatient Antibiotic Use and Treatment Failure Among Children with Pneumonia. *JAMA Netw Open*. 2024 Oct 1;7(10): e2441821. doi: 10.1001/jamanetworkopen.2024.41821.

**Relevance:** Present guidelines from the Infectious Diseases Society of America (IDSA) do not recommend antibiotic use routinely for preschool-aged children with mild pneumonia and reassuring vital signs in the outpatient setting. This is a strong recommendation based on high-quality evidence, owing to the reality that the vast majority of cases of pneumonia in this age group are viral in etiology. However, evidence suggests that the majority of such children are prescribed antibiotics. This study examines whether antibiotic outcomes differ between children with pneumonia based

on whether or not antibiotics are prescribed.

**Study Summary:** This was a retrospective cohort study using data from a U.S. Medicaid database which included insurance claims from hospitals, ambulatory care settings, and pharmacies in ten states. The primary exposure was receipt of oral antibiotics on the day or the next day of the index visit. The primary outcome was "treatment failure," which was defined as hospitalization from a diagnosis of pneumonia, visit and dispensation of antibiotics for pneumonia to an ED or UC center and complication from a diagnosis of pneumonia. The secondary outcome was "severe outcomes" defined as hospitalization or diagnosis of "complicated pneumonia."

The authors analyzed 103,854 children with pneumonia with a median age of 5. Among patients included 80.3% received antibiotics. They found children aged 1-4 years had the lowest proportion of receiving an antibiotic. Those visiting UC centers and outpatient clinics were more likely to receive antibiotics than those visiting ED. Treatment failure was uncommon and severe outcomes were rare, occurring in approximately 10% and 1% of all children, respectively. Antibiotic treatment was associated with an approximately 2.0 percentage point risk difference (10.7% antibiotic group vs 8.7% no antibiotic group) for treatment failure and 0.4 percentage point risk difference (1.1% antibiotic group vs 0.7% no antibiotic group) for severe outcomes. Children who experienced treatment failure commonly had chronic conditions (34%) and were seen in an ED setting in the majority of cases (56% of cases).

**Editor's Comments:** This was an entirely Medicaid (public insurance) cohort and results may not be generalizable to other populations. The authors presumed antibiotic prescribing equated to taking antibiotics which could not be confirmed based on the study design. The clinical reasoning and use (or lack thereof) of imaging to diagnose pneumonia was not included. This study does suggest that the vast majority of school aged children with pneumonia will do well with or without antibiotics. The children most likely to receive antibiotics were seen in outpatient settings, such as UC centers. This offers an opportunity to improve on stewardship when diagnosing pneumonia in school-aged children by either withholding antibiotics or prescribing them in a "wait-and-see" fashion with shared decision making with parents, especially when we have a low suspicion for bacterial etiology. ■

## ChatGPT Provides Patient-Specific Answers

**Take Home Point:** ChatGPT, a large language model (LLM), may offer an effective solution for providing patient-specific information to parent's questions regarding clinical reasoning in the treatment of children.

**Citation:** Hunter R, Thammasitboon S, Rahman S, et al. Using ChatGPT to Provide Patient-Specific Answers to Parental Questions in the PICU. *Pediatrics*. 2024;154(5):e2024066615.

**Relevance:** Parents of sick children can be overwhelmed by medical terminology and may struggle to understand communication from clinicians, especially in complex cases. Clinicians struggle with finding sufficient time to answer parents' questions and ensure adequate understanding. Using an LLM (a form of generative artificial intelligence [AI]) may help parents to better understand the care of their child.

**Study Summary:** This was a cross-sectional study using simulated clinical scenarios to evaluate ChatGPT's ability to provide answers to common questions which arise from parents with children hospitalized in a pediatric intensive care unit (PICU) setting. The authors evaluated ChatGPT's answers through PICU physician assessments of accuracy, empathy, understandability, and completeness. The AI used was the premium version of ChatGPT, and the authors selected the 3 most common PICU admissions for clinical scenarios: sepsis, respiratory failure, and status epilepticus.

The authors assessed 8 questions for each of the 3 scenarios, for a total of 24 prompt-response pairs. ChatGPT's responses revealed high scores in accuracy, empathy, understandability, and completeness. Additionally, 97% of all questions were judged to be answered completely. Understandability was exceptionally high. Less than 3% of physician reviews rated answers as more incorrect than correct, and follow-up assessments revealed no evidence that these inaccuracies would likely cause harm to patients.

**Editor's Comments:** This was a simulated PICU study, so it's unclear if these results will translate to real-world UC clinical scenarios. The main limitation of this study was that the quality of the answers provided by ChatGPT was assessed by doctors, not the target audience (ie, patients/parents). This is, however, a pervasive issue: clinicians being time-limited in explaining diagnostic and therapeutic reasoning and patients/parents asking similar

questions frequently. Future studies in other, real-world practice settings of the effectiveness of this practice and both clinician and patient satisfaction with the experience would be helpful to better assess if the use of LLMs for this task is practical. ■

## Barriers to Adopting New Evidence into Practice

**Take Home Point:** Multiple factors beyond knowledge and awareness of new evidence were found to affect the adoption of new evidence into clinical practice.

**Citation:** Alexander C, Purdy E, Reynolds A, et. al. The Buddy Study: Local reach, adoption and implementation following a randomized controlled trial of conservative management of fifth metacarpal neck fractures. *Emerg Med Australas*. 2024 Apr 16. doi: 10.1111/1742-6723.14412

**Relevance:** Widespread changes in clinical practice frequently lag many years behind the publication of persuasive new evidence. Many patients suffer less than ideal outcomes resulting from these delays in clinicians integrating new evidence into their practice.

**Study Summary:** This was a mixed methodology ED based study in Queensland, Australia. It was comprised of a review of uncomplicated fifth metacarpal fractures (ie, Boxer's fracture), a questionnaire sent to ED staff, and a semi-structured interview conducted with ED staff.

This specific ED had conducted and published a randomized controlled trial (called the "buddy study") that showed similar outcomes for patients with uncomplicated fifth metacarpal neck fractures treated with buddy taping (ie, taping the little finger to the ring finger) compared to plaster splint. This study's questionnaires and interviews were conducted three years after the publication of the "buddy study." The questionnaire had 17% response rate, and the 28 semi-structured interviews were conducted across a mix of clinicians.

The authors found that 6% of patients received buddy taping treatment for fifth metacarpal fractures prior to the publication of the "buddy study," compared to 28% after the publication. 69% of questionnaire respondents were aware of the study and its results and 57% considered buddy taping as part of their practice. Key barriers to adoption cited by respondents were related to lack of knowledge of the evidence. However, respondents also cited the lack of institutional endorsement of the evidence and lack of incorporation into guidelines and protocols as reasons for

not adopting the buddy taping practice.

**Editor's Comments:** The primary limitation of this study is a very low response rate of 17%. It is impossible to know anything about the opinions and practices of the 83% of clinicians who did not respond, who may be categorically unlike the respondents in many ways. The most interesting finding was that even among clinicians who were aware of the evidence, practice did not always change. The reasons they cite reflect the current reality and the double-edged sword nature of guidelines. As clinical guidelines have proliferated, clinicians are increasingly compelled to adhere them for a myriad of reasons ranging from insurance reimbursements to medico-legal liability. Therefore, this study alludes to the responsibility of professional societies and institutions to update their guidelines and recommendations frequently and incorporate new evidence to maximize the likelihood that such evidence will affect clinicians' practices. ■

## Management of Elevated Blood Pressure in the Acute Setting

**Take Home Point:** Presently, best available evidence suggests a practical, common-sense approach for the treatment of asymptomatic elevated blood pressure (BP) readings, including repeating the BP measurement with appropriate measurement technique and addressing all underlying conditions such as pain, anxiety, or other underlying illnesses.

**Citation:** Bress A, Anderson T, Flack T, et. al. The Management of Elevated Blood Pressure in the Acute Care Setting: A Scientific Statement From the American Heart Association. *Hypertension*. 2024 Aug;81(8): e94-e106. doi: 10.1161/HYP.000000000000238.

**Relevance:** The presence of asymptomatic, elevated BP in the acute care setting is extremely common and distressing for patients. The American Heart Association (AHA) therefore produced a synthesized scientific statement to address this issue.

**Study Summary:** This was a scientific statement produced by the AHA incorporating the best available evidence to address treatment of elevated BP readings in the acute setting. The authors defined elevated BP as  $\geq 130$  mm Hg systolic BP (SBP) or  $\geq 80$  mm Hg diastolic BP (DBP) recorded

with multiple readings in multiple settings. Hypertensive crisis, importantly, as well as hypertensive urgency are specifically recommended as terms that should be avoided to limit unnecessary treatment of asymptotically elevated BP. The authors now recommend referring to BPs in the range previously defined as "hypertensive urgency" (SBP/DBP  $\geq 180/110$ – $120$  mmHg) now be called "asymptomatic markedly elevated blood pressure;" they emphasize that regardless of the BP value, this does not require treatment in the absence of evidence of acute end organ damage.

Factors affecting BP measurements include the device type, validation and calibration status of the device, BP cuff placement, cuff size, patient position (eg, supine, seated), and situational factors (eg, anxiety, pain). Evaluation of elevated BP includes a thorough history and physical examination. The physical examination includes a focus on comparing bilateral pulses, auscultating the heart and lungs, and performing a fundoscopic examination. Other investigations suggested including a basic metabolic panel (CMP), a complete blood count (CBC), a chest radiograph (CXR), and a 12-lead electrocardiogram (ECG). Thankfully, the guidelines do not specifically recommend or compel these be ordered in the acute setting.

For patients presenting with asymptomatic elevated BP, initiating anti-hypertensive treatment can help address healthcare disparities, particularly in disenfranchised groups. Careful follow-up with primary care providers (PCP) is encouraged for ongoing management of hypertension to reduce associated complications and morbidity. Accessibility of primary and follow-up care also remains a challenge for specific groups of patients.

**Editor's Comments:** The authors of the statement identified several areas of future studies due to present gaps in evidence. These areas include improving the understanding of the risks versus benefits for short-term/immediate initiation of anti-hypertensive agents from the ED and UC setting for asymptomatic patients. Current evidence is conflicting about the short-term risks of deferring anti-hypertensive treatment to a primary care provider or specialist follow-up. The guidelines do make reference to obtaining a CBC, BMP, ECG, and CXR, however, they do not specifically recommend or suggest these are immediately necessary to obtain in the acute setting (ie, during an UC visit) unless there's concern for acute organ injury. ■

# FAST, QUALITY OVERREADS YOU CAN TRUST

## EXPERITY TELERADIOLOGY

Want to expand your x-ray services without the cost of a full-time radiologist? The teleradiology interpretation service you choose is an extension of your practice. Experity provides AI-assisted radiology overreads as reliable as the care you offer.

**Industry-leading routine results in 30 minutes or less**

**Stat reads in 15 minutes or less**

**99.9% read accuracy**

**Year-round coverage in 50 states**

**Direct access to 100+ U.S.-licensed radiologists**

**Improved quality of care**

**Service designed for your practice**



GET STARTED





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

## 29-Year-Old With Pain After Foot Inversion



A 29-year-old man presents to urgent care on a Saturday with pain in his left foot after playing tennis. A series of x-rays is ordered.

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

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



### Differential Diagnosis

- Midfoot sprain
- Avulsion fracture of the base of the 5th metatarsal
- Jones fracture (proximal 5th metatarsal fracture extending into the intermetatarsal joint)
- Os peroneum (ossicles in the peroneus longus)

### Diagnosis

The correct diagnosis is an avulsion fracture of the base of the 5th metatarsal. The x-ray shows transverse lucency at the base of 5th metatarsal, not involving the diaphysis. The Lawrence-Butte classification is a commonly used nomenclature for proximal 5th metatarsal fractures, which are categorized into zones. Zone 1 includes a tuberosity (styloid process) avulsion fracture. Zone 2 includes a Jones fracture. Zone 3 includes a diaphyseal stress fracture.

### What to Look For

- Pain located on the lateral midfoot at the 5th metatarsal tuberosity
- Does not always result from major trauma or injury and can happen with repetitive exercise

### Pearls for Urgent Care Management

- Treatment may include protected weight bearing in a stiff soled shoe, boot, or cast
- Besides rest, anti-inflammatory medications can be used for pain management
- Surgical intervention may be needed, which includes intramedullary screw fixation





## 16-Year-Old With Rash After Septoplasty



A 16-year-old girl presents to urgent care with complaints of fever, chills, and a diffuse sunburn-like rash that developed over the past day. The patient underwent septoplasty 2 days prior for a deviated septum, and nasal packing was utilized to manage her postoperative bleeding. On examination in urgent care, she was febrile to 104°F (40°C), tachycardic, and hypotensive. Widespread erythematous blanching macules and patches were seen.

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

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



### Differential Diagnosis

- Kawasaki disease
- Leptospirosis
- Rocky Mountain spotted fever
- Toxic shock syndrome

### Diagnosis

The correct diagnosis in this case is toxic shock syndrome (TSS), a severe exotoxin-mediated bacterial infection that is characterized by the acute onset of high fever, headache, conjunctival injection, erythema of the pharynx, vomiting, diarrhea, and hypotension. Two subtypes of TSS are defined by the bacterial etiology: *Staphylococcus aureus*; and group A streptococci. Patients with mild disease may rapidly progress to shock and organ failure.

In the 1980s, staphylococcal TSS most affected menstruating young White females using tampons, however, increased public education and the discontinuation of high-absorbency tampons has led to a decline in menstrual TSS cases since. Current staphylococcal TSS cases are seen in postsurgical interventions, burn patients, patients with dialysis lines, and those with nasal packing following nasal surgery, as in this case.

### What to Look For

- Dermatologic manifestations of staphylococcal TSS include: diffuse erythematous patches that begin on the trunk and spread toward the extremities; erythema and swelling of the palms and soles with or without generalized nonpitting edema; desquamation of the palms and soles usually 1-3 weeks after the initial onset of the rash; and erythema of the mucous membranes (strawberry tongue and conjunctival hyperemia)
- Laboratory examination may show leukocytosis, bacteremia, elevated blood urea nitrogen, and elevated creatinine

### Pearls for Urgent Care Management

- As this is a life-threatening condition, management includes immediate and rapid transfer to the emergency department for stabilization
- If available, IV fluids should be initiated while awaiting transport



## 27-Year-Old with History of Asthma

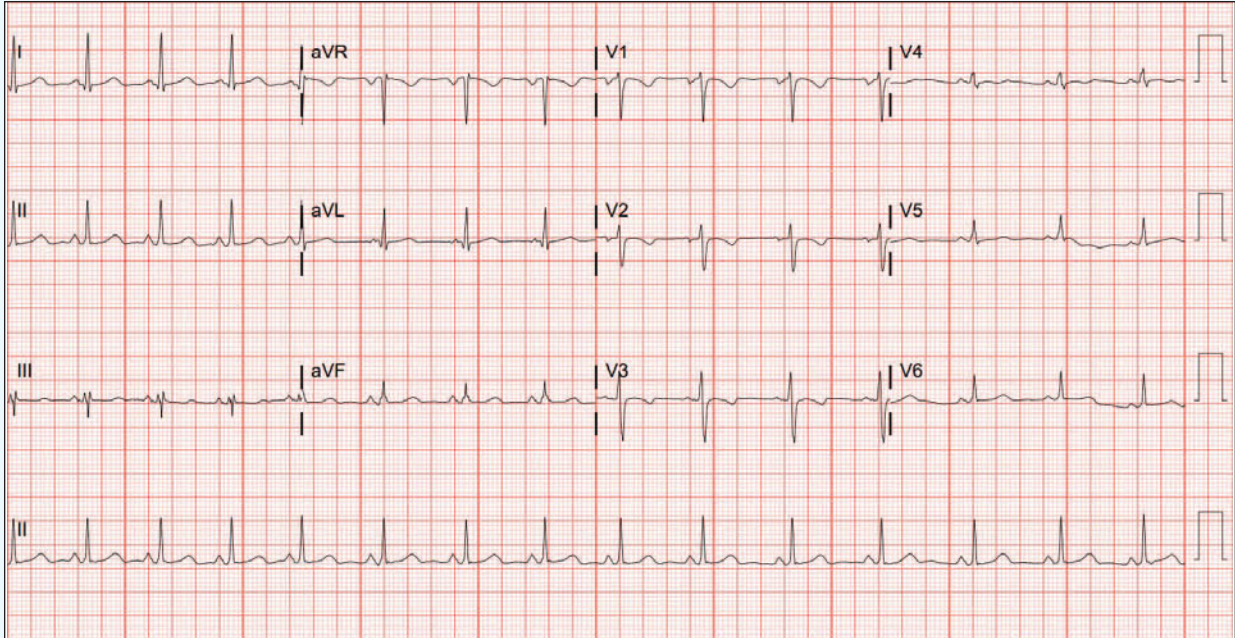


Figure 1: Initial ECG

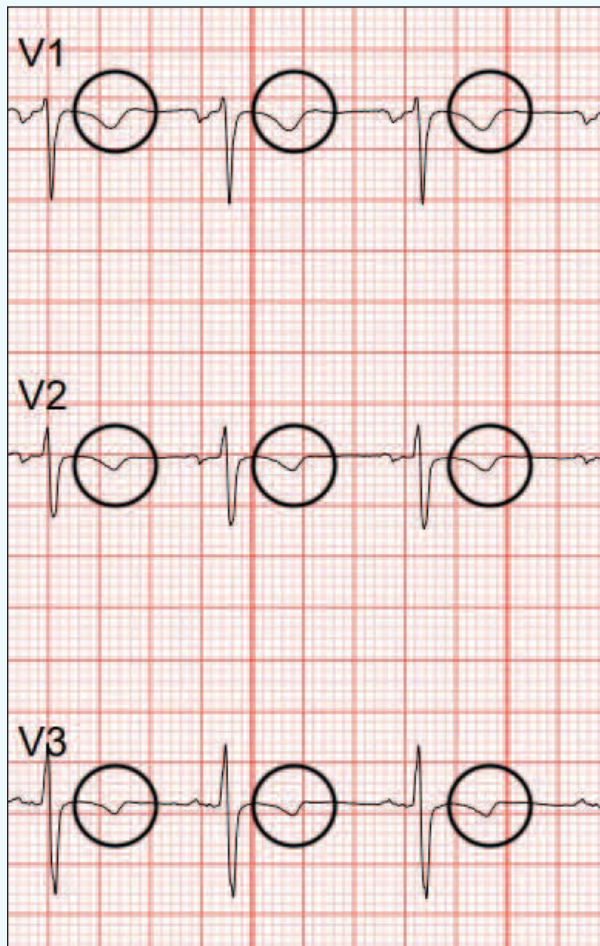
A 27-year-old female with history of asthma presents to urgent care on a Friday morning with dyspnea for 1 day. She denies palpitations, syncope, or chest pain. An ECG is obtained.

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

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

Case courtesy of ECG Stampede ([www.ecgstampede.com](http://www.ecgstampede.com)).

ECG STAMPEDE



**Figure 2:** Inverted T-waves are circled. They are asymmetric and  $< 3$  mm in depth.

### Differential Diagnosis

- Myocardial infarction
- Anterior ischemia
- Left bundle branch block
- Arrhythmogenic right ventricular cardiomyopathy (ARVC)
- Persistent juvenile T-wave pattern (PJTWP)

### Diagnosis

The diagnosis in this case is persistent juvenile T-wave pattern. The ECG shows a normal sinus rhythm with a rate of 90 beats per minute. There are inverted T-waves in leads V1-V3 with no Q waves or ST-elevations.

### Discussion

Inverted T-waves in V1-3 are a normal finding in children—the result of right ventricular dominance. While in utero, the neonate's right ventricle strengthens as it

pushes against the pulmonary circulation. After birth, this right ventricular prominence decreases and the juvenile ECG pattern of T-wave inversion in V1-3 gradually evolves into an adult pattern (inversion only in V1) by about age 10.<sup>1</sup>

In some patients, inversions in V1-3 carry on into adulthood. This persistent juvenile T wave pattern is most commonly found in African American women under the age of 30. The pattern does not portend structural changes; it is purely electrical and physiologically normal. While there are no specific diagnostic criteria, the hallmark ECG finding is asymmetric, shallow ( $< 3$  mm), inverted T-waves in leads V1-V3 (**Figure 2**).<sup>2</sup>

While ischemia or infarction can cause T-wave inversions, ischemic T wave inversions are generally symmetric and often accompanied by dynamic changes on subsequent ECGs. AVRC, a cause of sudden cardiac death in young people, may also have inverted T-waves in V1-V3, however the most specific finding is epsilon waves. Consider ARVC in patients with unexplained syncope or ventricular dysrhythmias. The QRS is narrow, excluding the possibility of bundle branch blocks.

Persistent T-wave pattern is a benign condition that requires no additional workup or treatment. While there are not strict diagnostic criteria for this pattern, it remains primarily a diagnosis of exclusion.

### What to Look For

- Persistent juvenile T-waves are asymmetric, shallow ( $< 3$  mm), inverted T-waves in leads V1-3
- PJTWP is primarily seen in young African American females under the age of 30
- PJTWP should only be diagnosed after considering more dangerous causes of inverted T-waves including ischemia, pulmonary embolism, and ARVC

### Initial Management, Considerations for Transfer

- The PJTWP is benign and does not require additional workup or transfer

### References

1. Dickinson DF. The normal ECG in childhood and adolescence. *Heart*. 2005 Dec;91(12):1626-30.
2. Marcus FI. Prevalence of T-Wave Inversion Beyond V1 in Young Normal Individuals and Usefulness for the Diagnosis of Arrhythmogenic Right Ventricular Cardiomyopathy/Dysplasia. *Am J Cardiol*. 2005;95:1070-1071.



## What's New in Telemedicine for 2025?

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

CPT	Technology	Patient Type	MDM	Time Minimum
98000	Audio-video	New	Straightforward	15 minutes
98001	Audio-video	New	Low	30 minutes
98002	Audio-video	New	Moderate	45 minutes
98003	Audio-video	New	High	60 minutes
98004	Audio-video	Established	Straightforward	10 minutes
98005	Audio-video	Established	Low	20 minutes
98006	Audio-video	Established	Moderate	30 minutes
98007	Audio-video	Established	High	40 minutes
98008	Audio-only	New	Straightforward plus more than 10 minutes of medical discussion	15 minutes
98009	Audio-only	New	Low plus more than 10 minutes of medical discussion	30 minutes
98010	Audio-only	New	Moderate plus more than 10 minutes of medical discussion	45 minutes
98011	Audio-only	New	High plus more than 10 minutes of medical discussion	60 minutes
98012	Audio-only	Established	Straightforward plus more than 10 minutes of medical discussion	10 minutes
98013	Audio-only	Established	Low plus more than 10 minutes of medical discussion	20 minutes
98014	Audio-only	Established	Moderate plus more than 10 minutes of medical discussion	30 minutes
98015	Audio-only	Established	High plus more than 10 minutes of medical discussion	40 minutes

The American Medical Association (AMA) added a Telemedicine Services category to the Evaluation and Management (E/M) section of the Current Procedural Terminology (CPT) code set. Codes are divided up by the technology used and the patient type (ie, new vs. established). These codes are for synchronous, real-time interactive encounters between the provider and the patient. Codes are leveled by medical decision making (MDM) or time, which is similar to the office visit codes.

Billing for telemedicine visits is already complex with multiple places of services (POS) and modifiers (ie, 93,

95, GT). What's more, each payer requires different combinations of these coding elements. Unfortunately, adding specific CPT codes to the mix will only further complicate the revenue cycle management process.

The challenge for urgent care operators in 2025 is to learn which payers want office visit codes (ie, 99202-99215) and which require the new telemedicine codes. For example, the Centers for Medicare & Medicaid Services (CMS) has determined that these new codes would not be covered based on the current language in the Social Security Act.

State laws also need to be considered. Many states have payment parity laws that require telemedicine services to be paid the same as in-office codes. While CMS is not covering these codes, they did price them. Based on that information, payment could be lower for telemedicine services in 2025. Practices will need to analyze payments



**Phyllis Dobberstein, CPC, CPMA, CPCO, CEMC, CCC,** is Revenue Integrity Manager at Experity.

Telemedicine Code	2025 Allowable	Office Visit Code	2025 Allowable
98000	\$49.81	99202	\$69.87
98001	\$82.16	99203	\$109.01
98002	\$131.00	99204	\$163.35
98003	\$173.70	99205	\$215.75
98004	\$38.49	99212	\$54.99
98005	\$67.28	99213	\$88.95
98006	\$99.30	99214	\$125.18
98007	\$131.65	99215	\$175.64

to make sure they align with your contract and state laws.

Current telephone call codes 99441-99443 are replaced by the audio-only codes: 98008-98015. A minimum of 10 minutes must be spent with the patient to bill a telephone call, and time must be documented in the medical record. Though CMS does not cover these codes, the payment information published has reimbursement for telephone only services ranging from \$47.23 to \$130.68.

**One Code Works**

It’s worth noting that one code in this new category is covered by CMS: CPT 98016 (*Brief communication technology-based service [eg, virtual check-in] by a physician or*

*other qualified health care professional who can report evaluation and management services, provided to an established patient, not originating from a related evaluation and management service provided within the previous 7 days nor leading to an evaluation and management service or procedure within the next 24 hours or soonest available appointment, 5-10 minutes of medical discussion).*

Also, CPT 98016 now replaces the virtual check in code G2012. The virtual check-in is for established patients only and must be initiated by the patient. It’s a single 5-10 minute medical discussion that is not related to an E/M service in the prior 7 days or leading to an E/M service in the next 24 hours. The non-facility payment is \$15.85.

While telemedicine continues to be complicated from a billing standpoint, it’s a positive sign to see services expanding.

During the pandemic, telemedicine use among physicians increased from 15.4% in 2019 to 86.5% in 2021, although use has declined in the years since.<sup>1</sup> Most urgent leaders will agree, however, that telemedicine is here to stay. ■

**Reference**

1. Myrick KL, Mahar M, DeFrances CJ. Telemedicine use among physicians by physician specialty: United States, 2021. NCHS Data Brief, no 493. Hyattsville, MD: National Center for Health Statistics. 2024. DOI: <https://dx.doi.org/10.15620/cdc:141934>.



# Recruit Urgent Care Professionals online at JUCM CareerCenter

## Tools for Employers

- Post Jobs Online
- Manage Resumes
- Track Job Performance
- Upgrade Opportunities

## Post an Urgent Care Job Today!

**Danielle McDade**

[danielle.mcdade@communitybrands.com](mailto:danielle.mcdade@communitybrands.com) • (860) 574-1221



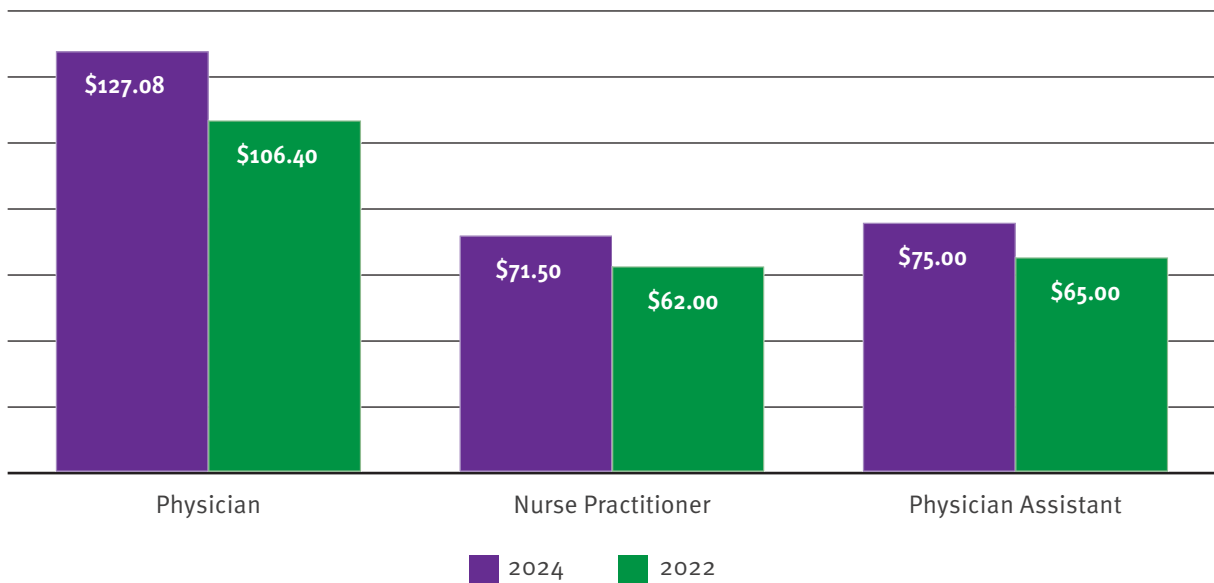


## DEVELOPING DATA

# Provider Compensation Increasing Since 2022

■ Alan A. Ayers, MBA, MAcc

### CHANGE IN HOURLY COMPENSATION 2024 VS 2022



By comparing 2022 and 2024 hourly compensation data from the Urgent Care Association (UCA) Clinician Compensation Benchmarking Report, data shows that there has been a 15% increase in nurse practitioner (NP) and physician assistant (PA) pay. Meanwhile, there was an average 19% increase in physician (MD and DO) pay.<sup>1</sup>

In 2024, the median reported hourly base compensation (excluding bonuses and incentives) showed an increase compared to 2022 rates across all clinician types. This rise likely reflects both actual salary increases and differences in survey methodology between the 2 years. In 2022, compensation for clinical roles was reported by the organiza-

tion, whereas in 2024, it was reported individually by respondents.

According to UCA, information for the benchmarking report was gathered through an anonymous survey that included 576 responses from member and non-member MDs, DOs, NPs, and PAs.

Updated UCA data also shows the number of urgent care rooftops has reached 14,928, and the average visit time for a patient at a UC clinic is about 60 minutes or less.<sup>2</sup> ■

#### References

1. Urgent Care Association. 2024 Clinician Compensation Benchmarking Report. October 2024. Accessed November 19, 2024, at: <https://urgentcareassociation.org/shop/roles/for-operations-management/2024-uca-clinician-compensation-benchmarking-report/>
2. Urgent Care Association website. Accessed November 19, 2024, at: <https://urgentcareassociation.org/about/urgent-care-data/>



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

# Starting an **urgent care** center starts here.

Join us for the only in-person, national conference focused exclusively on starting an urgent care.



## This 2-Day Startup Bootcamp includes:

- + Defining and Differentiating Urgent Care Services
- + Evolution of the Urgent Care Industry
- + Basic Economics of Urgent Care Centers
- + Urgent Care Business Plan Development
- + Urgent Care Pro Forma Financial Planning
- + Recruiting and Scheduling Providers and Staff
- + Urgent Care Considerations for X-Ray and Lab
- + Occupational Medicine and Other Ancillary Services
- + Grassroots, Online and Media Marketing Strategies
- + Top Mistakes and Obstacles for Urgent Care Operators
- + Planning for Urgent Care's Future



LEARN MORE

**Urgent Care Connect**  
March 4-5, 2025  
Omni Hotel, Louisville, KY

 [UrgentCareConsultants.com/events](https://UrgentCareConsultants.com/events)  
 [info@urgentcareconsultants.com](mailto:info@urgentcareconsultants.com)

