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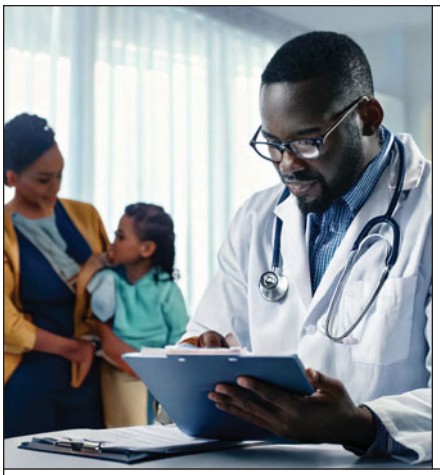

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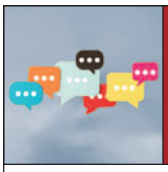

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— Joshua W. Russell, MD, MSc, ELS, FCUCM, FACEP
JUCM Editor in Chief

"The chart needs to tell a story…with a logical beginning, middle, and end."

— Michael Weinstock, MD
JUCM Senior Clinical Editor

"Pediatric respiratory presentations, including asthma, are the leading cause of pediatric urgent care visits. However, the management of asthma in the pediatric urgent care is not well-studied. Further studies on the nature of presentations and standardized management of asthma at the urgent care will provide significant and impactful insight."

— Richmond Darko MD, MPH, FAAP
Associate Medical Director of Quality, Urgent Care Centers Nicklaus Children's Hospital, and Author of "A Pilot Quality and Feasibility Project Focusing on Clinician Use of an Order Set for Acute Asthma Care in Pediatric Urgent Care Centers" (Page 37)

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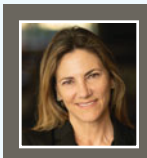
Rapid Molecular Diagnostics for Lower Respiratory Tract Infections in Urgent Care: Filling a Selective Gap

Barbara D. Alexander, MD, MHS; Kimberly E. Hanson, MD, MHS; Adriana E. Rosato, PhD; David B. Nash, MD; Maren S. Fragala, PhD; Steven E. Goldberg, MD, MBA

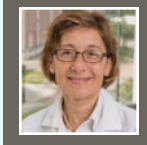
Diagnostic uncertainty and error contribute to inappropriate treatments, which, in turn, can increase morbidity and the costs associated with care.[1,2,3,4] Diagnostic errors can also contribute to unnecessary antibiotic prescribing, contributing to antimicrobial resistance (AMR).[1,5] Lower respiratory tract infections (LRTI) are among the most common urgent care (UC) and emergency department (ED) presentations, and are often associated with diagnostic errors that can invite additional morbidity and cost of care per episode.[6] This persistent clinical challenge calls for continued attention. Diagnostic insights can be a component of the solution.

Among LRTI, community-acquired pneumonia (CAP) remains a leading cause of infectious disease-related hospitalization and death in the United States.[7] Current guidelines recommend 'empiric' therapy based on the most likely pathogen when treating CAP.[8] There is persistent data on the continued opportunity for more selective antibiotic prescribing for LRTIs. That said, a clinician in the UC setting is challenged to balance the risk of a delayed diagnosis and intervention for CAP versus an incorrect intervention by prescribing an antibiotic for symptoms not of a bacterial etiology at the time of evaluation. Data suggests that further reductions in respiratory infection-related antibiotic prescribing should be possible without an increase in hospitalization for pneumonia.[9] Recently, in inpatient and ED settings, syndromic multiplex polymerase chain reaction (PCR)-based testing has shown efficacy in the detection of multiple pathogens simultaneously while facilitating early pathogen-directed treatment, reducing unnecessary use of antibiotics, and shortening the length of pneumonia-related hospitalization.[10-15] These recent findings have applications to the UC setting. Early identification of the infecting pathogen could improve CAP treatment and reduce unnecessary or inappropriate antibiotic use in the UC setting. Yet, access to such testing in outpatient settings has been limited.[16,17]



Barbara D. Alexander, MD, MHS, is a Professor of Medicine and Pathology, Division of Infectious Diseases, Duke University, Durham North Carolina.

Kimberly E. Hanson, MD, MHS, is a Professor of Medicine and Pathology, Divisions of Clinical Microbiology and Infectious Diseases, University of Utah and ARUP Laboratories, Salt Lake City, Utah.



Adriana E. Rosato, PhD, is a Professor of Medicine, Maine Health Institute for Research, Scarborough, Maine.

David B. Nash, MD, is the Founding Dean Emeritus and Professor of Health Policy, Jefferson College of Population Health, Philadelphia, Pennsylvania.

Maren S. Fragala, PhD, is the Director of Clinical Operations, HealthTrackRx, Denton, Texas.

Steven E. Goldberg, MD, MBA, is the Chief Medical Officer, HealthTrackRx, Denton, Texas.

Syndromic Multiplex PCR-based Test Panels

Multiplex PCR-based panels have high diagnostic accuracy for detecting both viral and bacterial respiratory pathogens with sensitivities and specificities >90% for most pathogens.[18-20] Further, these panels permit "syn-

drome-based" (eg, "area of infection") test ordering in patients with a high pre-test probability that their symptoms are caused by a pathogen and for whom empiric decision-making or available point-of-care testing have proved insufficient. It is postulated that clinical profiles of patients with potential LRTI infections in whom this testing could be beneficial include (1) those with worsening symptoms or recent antibiotic treatment; (2) comorbidities associated with increased risk of morbidity from a LRTI; (3) risk for polymicrobial pathogens; or (4) more severe clinical presentation inviting consideration of additional diagnostic insight (eg, chest x-ray or ED referral).[21,22]

Antimicrobial Selection

As community-acquired antibiotic-resistant infections continue to increase in incidence,[23] molecular diagnostics can offer earlier opportunities for data-driven antibiotic selection and an opportunity to monitor AMR rates faster through the detection of specific gene sequences.[24,25] More than 20 known resistance genes, including *mecA* in MRSA and extended-spectrum β-lactamase genes, can now be directly tested in patient specimens without requiring recovery of the organism.[26,27] The overall sensitivity and specificity of AMR gene targets (compared with culture and susceptibility) are high at 91% and 99%, respectively.[18]

Better Interpretation of Results to Make Treatment Decisions

When multiple organisms are detected in a specimen, a clear understanding of which to treat has been a longstanding microbiologic dilemma. Depending on host and environmental factors, many potentially pathogenic organisms can be found among the normal flora of the respiratory tract, asymptomatically colonizing the host for prolonged durations without causing disease.[28-30,31] As nucleic acids may be detected from nonviable, nonpathogenic, or colonizing organisms, the clinical relevance of the targets detected must be carefully considered.[32,33 34] This is why limiting testing to only patients with significant infectious signs and symptoms (ie, syndromic testing) is so critical. Ordering syndromic panels that are most appropriate to presenting clinical symptoms increases the likelihood that the organisms detected are pathogenic rather than incidental colonizers. Further, semi-quantification scales, which were developed to differentiate the significance of organisms recovered in culture, are now being applied to real-time PCR analysis wherein the semi-quantitative cycle threshold (Ct) value produced for the organism can be correlated with the equivalent value expected based on standard culture (eg, colony forming units [CFU]/ml). Applying Ct to culture based quantitative correlations has shown promising analytic concordance,[35,36] enabling clinicians to more effectively interpret results and make treatment decisions. Meaning, a "4+" pathogen organism finding as measured by "Ct" is likely clinically meaningful and a "1+" is not. Other methods for producing quantitative PCR results include calibration curves or internal calibrators. Molecular tests that couple organism detection with markers of pathogen viability[37] and/or host response[38] may further aid in determining the significance of organisms detected.

Urgent Care Center Workflow

As patient care expenditures face increasing scrutiny, clinicians and administrators are tasked with deciding when tests are worth their costs. Many patients can be evaluated and a care plan formulated without the use of diagnostics. (The expectation is that the clinician is leveraging evidence-based clinical practice guidelines.) Still others will be able to be fully evaluated using point of care (POC) testing. Multiplex PCR assays are positioned to follow. Well-constructed syndromic testing menus simplify test ordering, allowing parallel testing for the most common pathogens based on the patient's symptoms. Multiplex PCR assays provide scale and throughput benefits over single-target assays—a single specimen collected and tested by a single laboratory saves collection and processing time for providers in the clinic.

Operating Cost Considerations

In UC settings, where profitability is driven by patient volume,[39] the clinically judicious use of molecular diagnostics with clinically actionable results can have multiple favorable impacts. Incorporating syndromic, multiplex PCR testing with accurate and actionable results available next day, enables an opportunity for adding next-day patient follow-up in the clinical workflow to adjust treatment based on the diagnosis. Moreover, multiplex testing using a universal collection device simplifies clinical workflows. Clinicians report access to next morning results supports antibiotic stewardship.[40] Ultimately, in order to realize the full potential impact of complex molecular testing for respiratory infections, UC centers will require the lowest achievable cost per test and the ability for results to seamlessly cross into the electronic health record (EHR). Clinician practice and prescribing would also need to be adapted so that rapid results are incorporated into the patient's plan of care. The potential value realized from this change in the UC evaluation of

patients presenting with LRTI symptoms could be less overall testing, less provider time spent following up inappropriately ordered test results, decreased staff time spent in specimen collection, processing, packaging and shipping specimens for multiple tests, and potentially, improved patient satisfaction and outcomes. Certainly, clinical leadership of the UC center has a role in test stewardship to support the utilization of such testing at an evidenced-based point in the workup of patients presenting for a range of infectious disease complaints.[41]

If a clinician is working in a facility is seeing a patient whose care episode is paid for at a population level (eg, per member, per month) with the expectation that diagnostic testing is included in that schedule, additional testing needs to be especially judicious. Further, the clinician needs to be aware of the "payer" for the service, if there is a steered relationship to a preferred lab partner to generate the diagnostic insight, and if so, the coverage and reimbursement policy of the payer or managed services organization that applies to the specific utilized diagnostic insight.[42] All said, coverage and reimbursement policies are a "guide" and clinicians might be engaged in a request for additional clinical information in support of an overturn of a denial for reimbursement of a selected diagnostic test.

Adoption of PCR Testing: Future Research

Despite the value, use of multiplex molecular testing in the UC setting for CAP has faced adoption barriers, including provider training, patient expectations, and reimbursement.[43,44,45] Recent claims-based studies have shown reduced healthcare costs and utilization of multiplex PCR respiratory testing compared with evidenced-based empiric decision-making or the use of culture.[46,47] Despite technological advances, certain inherent limitations of molecular testing remain. For example, genotypic resistance testing that is an available component of molecular testing is directionally accurate but has limitations versus phenotype resistance testing obtained as part of "culture and sensitivity" testing. [18,48] Ideally, each specimen should undergo a quality check (eg, Gram stain assessment) prior to testing. But perhaps the most influential roadblock has been the lack of randomized control trials that have definitively and directly linked use of multiplex molecular respiratory tests with improved patient outcomes in the outpatient and UC setting. [17] Accordingly,[8] existing guidelines do not currently recommend routine microbiologic testing for CAP, citing the delay and overall poor yield of sputum culture for detecting organisms causing CAP and the lack of high-quality evidence demonstrating benefit.[8] Additional studies are required to confirm that real-world use of molecular PCR based multiplex testing in the UC setting indeed improves patient oriented outcomes, such as reducing the risk of hospitalization, return visit, and improving time to recovery. Overcoming these barriers with operational strategies and additional research into clinical utility is necessary for successful adoption.

Conclusion

For decades, rapid molecular testing has provided methodological benefits and proven beneficial for patient outcomes with certain viral infections.[49,50] Molecular-based tests are well-suited for improving diagnostic accuracy in UC settings; these tests are faster, more sensitive, and timelier (and therefore, clinically impactful) versus traditional culture methods. In clinical practice, these tests provide results which can guide effective pathogen-directed therapy. Data continues to emerge on the real-world experience and value of molecular pathogen detection.[12,51,52] Future randomized interventional studies examining the short- and long-term effects of such molecular testing will be important for clarifying the value of integrating rapid syndromic molecular diagnostics into routine outpatient clinical practice. Additionally, such evidence would support favorable reimbursement policies for such multiplex PCR array syndromic panels. Ultimately, incorporating these tests into patient care algorithms provides an opportunity for UC clinicians to reduce diagnostic error and, importantly, combat inappropriate empiric prescribing for the millions of patients seeking acute care for undifferentiated respiratory infections. ■

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Hello World

Lou Ellen Horwitz, MA

The Urgent Care Convention is the launchpad for many of the new products and services for the year from our vendor community, the Urgent Care Association (UCA), and our affiliates. This year is no exception, so I wanted to tell you about a few big things coming out in May.

The first is a new organization. Last year, the Board voted to elevate our quality department into its own organization to better recognize quality in the field of Urgent Care. This move aligns us with other large professional healthcare organization groups that have separate accrediting bodies. It is thrilling to have advanced this far as a field, so we are very excited to unveil the Commission on Ambulatory and Urgent Care Quality (CAUCQ).

CAUCQ—run by the same great team from UCA—will lead standards development and recognition for all the field's operational scope and quality. They will continue to collaborate with the Urgent Care College of Physicians as a partner in elevating Urgent Care quality both clinically and operationally.

This move also creates a new voice in the field to speak independently on issues related to quality operations in walk-in care settings. It makes us all a little louder. The inclusion of "ambulatory" in the name is also intentional, allowing for future expansion of quality standards into all the ways that Urgent Care and adjacent on-demand medicine are evolving. Having a fifth voice will help amplify all that the field is working towards together.

Landmark Effort

The second launch is UCA's landmark effort to help address your ongoing staffing shortages. For many years, we have left recruiting to our members because we were unable to find or create a platform that was any better than what everyone was already using. That changed last May, and we've been working on it ever since. This month, we are launching UC Compass—a new website where you can "Find Your People"—whether you are a clinician looking for a job or an organization that's hiring.

UC Compass is map-based, adopting technology that is new to recruiting but familiar in home buying and selling. That familiarity makes it easy for job seekers to search within a geographic area and follow an area where they are (or may be) interested in working. No more scrolling through boring, endless listings; you can look exactly where you want to be.

If you are an employer, prospective employees will always be able to find you because hiring organizations will have a permanent, visible presence even when you don't have a job opening. Clinicians can always see where your centers are, and they can easily contact you for potential openings. No more wasted money on listings that you fill overnight or filling one position then needing to hire another and having to start over. The annual subscription provides unlimited postings and changes for all your centers, which is much more aligned with the way Urgent Care recruitment actually works!

Lastly, we are excited to announce a new direction for the Urgent Care Foundation (UCF). As we have been clarifying the roles of all 5 of the organizations in our Urgent Care universe, we kept coming back to a gap: public relations. While we've done lots of work on scope and standards, we do not yet have a unified, national, recognizable Urgent Care "brand." We need this brand so patients know what we can do, payers appreciate what we can do, and the healthcare workforce understands what's great about working in Urgent Care. We believe the Urgent Care Foundation is best suited to create, share, and manage those brands.

As a foundation—rather than a trade association or professional society—UCF has an educational and informational mission, and we want to take that mission and see how far and how fast we can run with it. Starting this month at the Foundation Celebration, we are launching this new role and will have lots more to say about it in the months to come. We hope you are as excited as we are to see where this branding will take us. Thanks, especially, to the UCF Trustees for leading us up this new path. More to come! ■

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

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CONTINUING MEDICAL EDUCATION

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Urgent Care Evaluation and Management of Suspected Lisfranc Injuries (page 15)

1. What mechanism may cause Lisfranc injury?
a. Car accidents
b. Falls from heights
c. Hyper-plantarflexed foot
d. All of the above

2. What percentage of Lisfranc injuries are reportedly misdiagnosed?
a. 10%
b. 20%
c. 30%
d. 40%

3. What possible condition should be suspected for patients diagnosed with Lisfranc injury who have increasing foot pain at rest?
a. Contrition syndrome
b. Concussion syndrome
c. Compartment syndrome
d. Compromised syndrome

Postpartum Presentations: When Risk Arises After Delivery – Vaginal Bleeding and Discharge (page 21)

1. What is the leading cause of postpartum fever in women?
a. Endometritis
b. Bacterial vaginosis
c. Thyroid dysfunction
d. All of the above

2. Approximately how long after delivery should postpartum patients normally expect all forms of lochia to resolve?
a. 2-3 days
b. 2-6 weeks
c. 8-10 weeks
d. 10-12 weeks

3. In patients presenting with postpartum bleeding combined with hypotension and/or tachycardia, what is the best course of clinical action?
a. Referral to OB/GYN
b. Referral to cardiology
c. Order complete blood count
d. Transport to emergency department via ambulance

Insidious Unilateral Axillary Swelling in a Patient with Untreated HIV: A Case Report (page 31)

1. How many people in the United States are living with HIV?
a. 250,000
b. 1.2 million
c. 2.1 million
d. 2.2 million

2. Lymphadenopathy in patients who are HIV-positive may represent which of these?
a. Bacterial, viral, or fungal infections
b. Castleman disease
c. Autoimmune disorders
d. Any of the above

3. Determining the definitive diagnosis for the cause of suspected HIV-related lymphadenopathy requires which diagnostic test?
a. X-ray series
b. Biopsy with fine-needle aspiration
c. Magnetic resonance imaging
d. There is no test

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See CME Quiz Questions on page 13.

Urgent Care Evaluation and Management of Suspected Lisfranc Injuries

Urgent Message: Rapid identification of Lisfranc injuries in urgent care is critical, as delays in diagnosis can lead to chronic disability. Most patients with Lisfranc fractures or dislocations should be referred directly to the emergency department. Cross-sectional imaging (ie, computed tomography) and orthopedic consultation are time-sensitive, and urgent operative repair is often indicated.

Alexandra Eby, BS; Nicole Meschbach, MD

Citation: Eby A, Meschbach N. Urgent Care Evaluation and Management of Suspected Lisfranc Injuries. *J Urgent Care Med.* 2025; 19(8):15-20

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

Abstract

A Lisfranc injury is a tarsometatarsal fracture and/or dislocation that occurs between the medial cuneiform and base of the second metatarsal. Lisfranc injuries typically occur when there is rotational force and axial loading through a hyper-plantarflexed foot. Rapid identification of a Lisfranc injury is important, as delays in diagnosis can lead to chronic disability. Initial imaging involves plain radiographs (XR) of the foot, but these may be normal in some cases. The priorities for urgent care (UC) management in patients with suspected Lisfranc injuries center around properly identifying the patients at risk for such injuries and prompt referral to an appropriate emergency department (ED) where cross-sectional imaging and orthopedic consultation are available.

Questions for the Clinician at the Bedside

1. Which injury patterns and historical features are associated with Lisfranc injuries?
2. Can the physical exam reliably differentiate between Lisfranc and other midfoot injuries?
3. What radiographic findings are suggestive of Lisfranc injuries?
4. Which patients with Lisfranc injuries require operative interventions?
5. Which patients with suspected Lisfranc injuries require immediate referral to the emergency department?

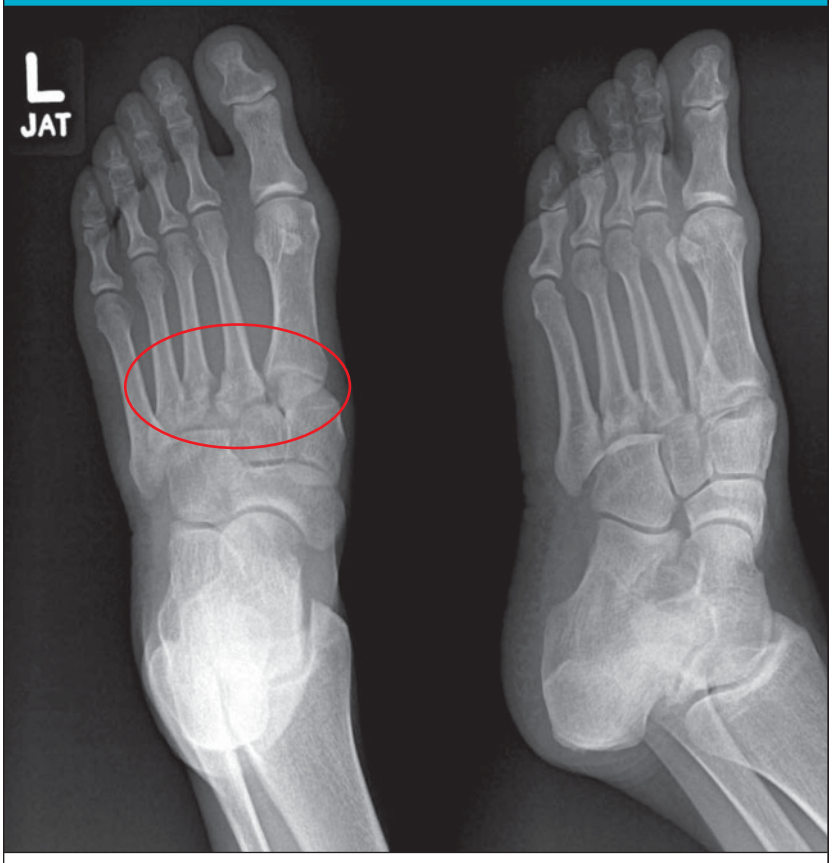
Clinical Scenario

A previously healthy 38-year-old man presented to UC an hour after he slipped from a ladder and fell 8 feet (~2.5 meters) onto his left foot. He complained of pain centered at the midfoot, which was worse with movement and attempts at weight-bearing. There was minimal associated numbness. A primary and secondary survey indicated the foot trauma was an isolated injury.

On examination, the patient had normal vital signs and appeared relatively comfortable at rest. He had a severely antalgic gait and difficulty bearing any weight on the left foot. There was no ecchymosis of the foot, but there was swelling over the mid-dorsal aspect of

Author Affiliations: Alexandra Eby, BS, Lincoln Memorial University Debusk College of Osteopathic Medicine. **Nicole Meschbach, MD,** Adena Regional Medical Center. Authors have no relevant financial relationships with any ineligible companies.

Image 1. X-Ray Image of Lisfranc Fracture of Left Foot - Anterior Posterior and Oblique



Credit: Experity Teleradiology

the foot. There was tenderness to palpation particularly over the proximal aspect of the 2nd metatarsal. The skin was intact, and he had a normal neurovascular exam with sensation and capillary refill similar to the unaffected side. XR was obtained in UC **(Image 1)**.

Discussion

Midfoot fractures overall encompass 0.4% of all adult fractures,[1] but Lisfranc injuries specifically describe a subset of midfoot injuries, representing 0.2% of all fractures.[2] Lisfranc fracture describes only a subset of such midfoot injuries, however, as it is possible to have an entirely ligamentous Lisfranc injury. For the purposes of this article, we will be discussing predominantly bony Lisfranc injuries (ie, fracture-dislocations).

The eponymous condition is named for French physician Jacques Lisfranc (1790-1847) who served in Napoleon's army as a field surgeon. He described an injury pattern most frequently encountered among calvary soldiers whose foot became entrapped in their stirrups after falling from horses in battle. He also developed a technique for partial foot amputation through the tarsal-metatarsal joint (TMT), which was simpler as a field surgical procedure than cutting directly through bone.[3]

A Lisfranc injury can occur by direct or indirect forces to the foot. Direct injuries generally involve high-energy mechanisms such as car accidents, crush injuries, or falls from height. Indirect mechanisms of injury occur with strong rotational forces, often with a hyper-plantarflexed foot with axial loading, resulting in injury to the TMT joint.[4] High energy mechanisms are not required for Lisfranc injuries to occur. In fact, a study done by Stødle et al. in 2019 showed that low-energy trauma and sports injuries were the most common cause of Lisfranc injury in the population studied.[5] Yu et al. examined 80 patients with a TMT joint fracture-dislocation and found 41% of cases resulted from motor vehicle collisions, 30% involved a fall from a height, and 16% occurred after a crush injury.[6]

Lisfranc injuries may be clinically subtle and as much as 20% of injuries are initially misdiagnosed.[7] Delays in diagnosis have consequence with many patients developing chronic foot pain,[8,9] and they are commonly missed on the initial XR.[5]

Understanding the Anatomy

The foot is divided into the hind foot (ie, talus and calcaneus), midfoot (the cuneiforms, cuboid, and navicular bone), and the forefoot (involving the proximal aspect of the metatarsals and extending distally through the phalanges). The junction of the midfoot and the forefoot is termed the "Lisfranc joint."

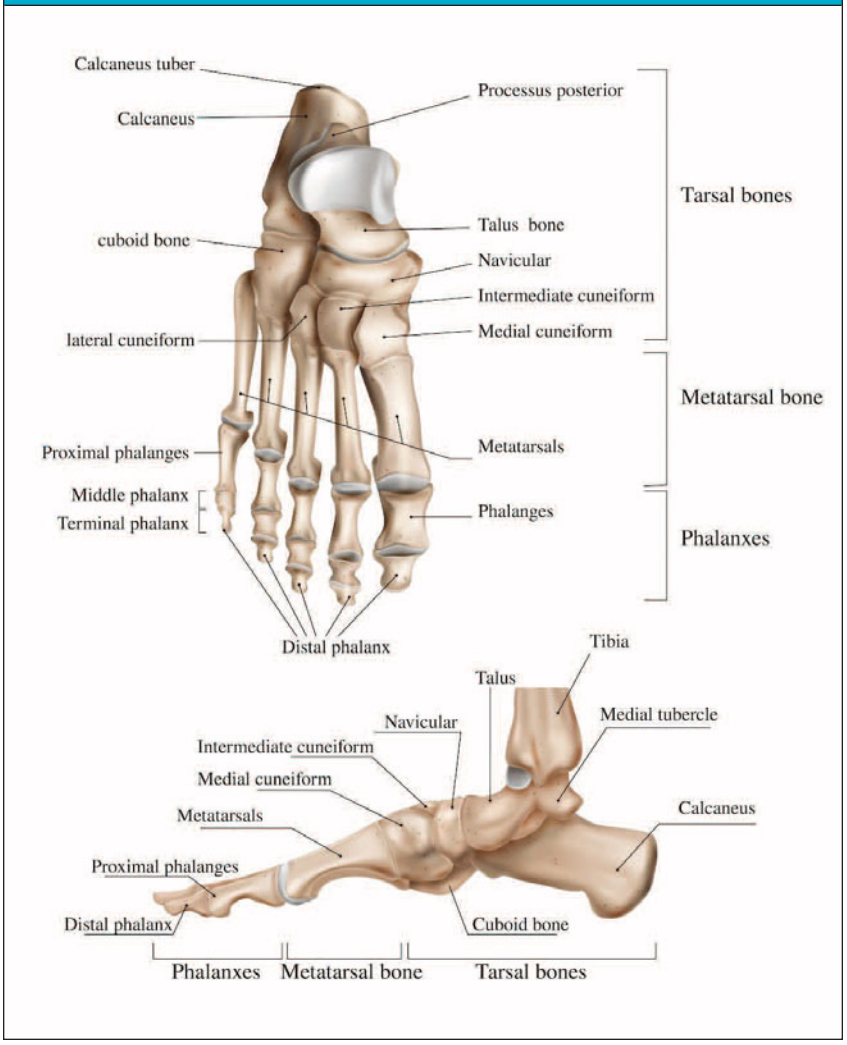
The Lisfranc joint complex is comprised of **(Figure 1)**:

- Medial, intermediate, and lateral cuneiform
- Cuboid bone
- The base of the 5 metatarsals

Typically, a Lisfranc injury indicates a fracture of 1 of these structural elements. The TMT joint is also held together by a ligamentous capsule structure known as Lisfranc's ligament, which travels between the base of the second metatarsal and the medial cuneiform. The

Lisfranc ligament serves to increase the strength of the joint. This allows for stability of the midfoot and is critical in maintaining the arch of the foot for push off during the gait cycle. The bases of the lateral 4 metatarsals are secured by strong ligaments, however, no transverse ligament exists between the first and second metatarsal bases, thereby creating an area of structural vulnerability.[8]

Figure 1. Bones of the Foot and Ankle



History

As with any musculoskeletal injury, begin with inquiry about the mechanism of injury. Lisfranc injury might be considered in cases with midfoot pain after a motor vehicle collision, direct impact, or a fall from height.[4] Lisfranc injuries may also occur from seemingly minor mechanisms, such as a twisting motion during sport; in older patients, lower mechanism injuries can result in Lisfranc injuries with relative frequency.[10] Pain from a Lisfranc injury is often severe with attempts at weight-bearing but may be minimal at rest. Many patients with Lisfranc injuries will be entirely unable to bear weight.

Physical Examination

Review the vital signs and the patient's general appearance. Expose and examine the entire lower leg, from the distal femur to the toes. Palpate for the site of greatest tenderness. If the point of maximal tenderness is at the dorsal midfoot near the TMT joint complex, this should raise suspicion for the possibility of Lisfranc injury. Evaluate for swelling, erythema, ecchymosis, and deformity. Occasionally, bruising may only be evident on the plantar aspect of the foot, so it is important to inspect beyond the dorsum of the foot. Ensure the skin is intact and there is no concern for open fracture. Include an assessment for range of motion of the knee and ankle.

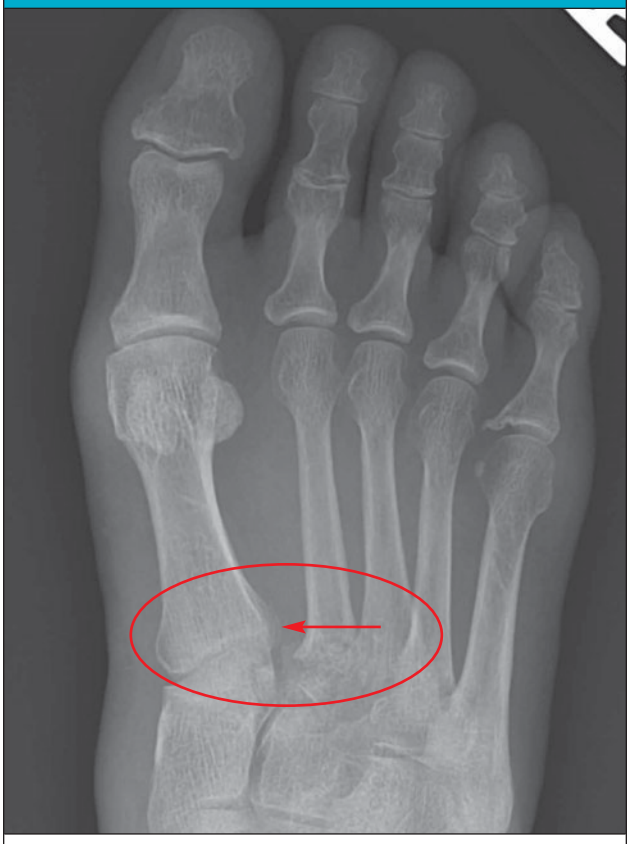
Assess and document neurovascular status. Patients with a Lisfranc injury may have a dorsalis pedis artery injury, as it is susceptible to disruption in severe dislocations and should be evaluated in the initial assessment.[8] With a crush injury, there may be evidence of swelling, ecchymosis and bruising. If the patient is able to tolerate it, the clinician can examine for pain on forced pronation and abduction; this is specific for TMT injury.[10]

Examine the patient's tolerance to bear weight. If the patient is weight-bearing, they may have significant pain in the "push-off" phase of the gait cycle as well as a limping gait and reduced walking speed. The patient will struggle to stand on their toes on the injured foot.[11]

Diagnostic Testing

Plain radiography is the initial imaging study of choice for midfoot injuries where Lisfranc injury is suspected **(Images 2-4)**. Views obtained should include anterior posterior (AP), lateral, and 45-degree internal oblique views.[12] Note that the XR appearance in patients with

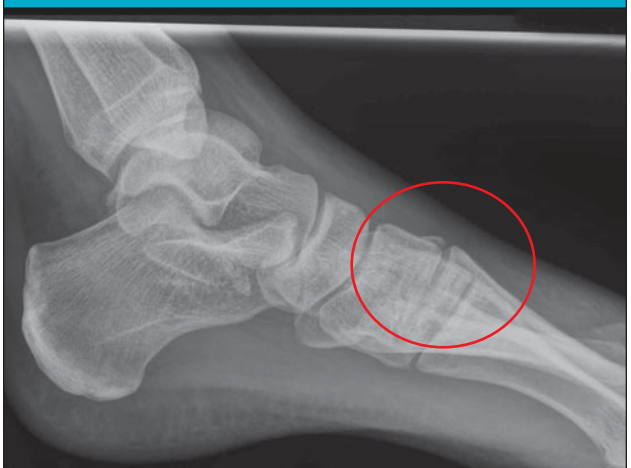
Image 2. X-Ray Image of Lisfranc Fracture of Right Foot



Arrow indicates an increased space between the first and second metatarsal, which is indicative of Lisfranc fracture

Credit: Experity Teleradiology

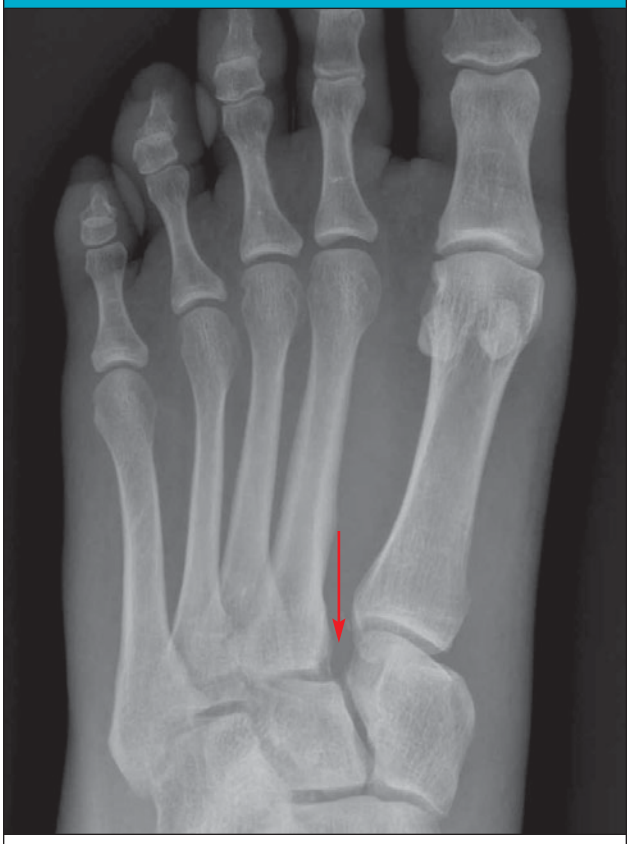
Image 3. X-Ray Image of Lisfranc Fracture - Lateral View



Circle indicates dislocation of the metatarsal base raised relative to the cuneiform

Credit: Experity Teleradiology

Image 4. X-Ray Image of Lisfranc Fracture Between First and Second Metatarsals



Arrow indicates where the medial border of the second metatarsal should align with the medial border of the underlying intermediate cuneiform

Credit: Experity Teleradiology

Lisfranc injuries may demonstrate findings ranging from fracture, dislocation, both, or may even appear normal.

Typical findings on XR when a TMT dislocation/fracture is present include:

- Loss of the normal anatomy with displacement of the proximal metatarsal bones relative to the distal aspect of the 3 cuneiform bones and the cuboid[13]
- Widening at the base of the 1st and 2nd metatarsals > 2.5mm[13]
- Widening between the cuneiform bones
- Presence of a "flake" fracture (previous called a "fleck sign"), which is a fracture at the base of the 2nd metatarsal or cuneiform[10,14]
- Impaction fractures of the cuboid, medial cuneiform, or navicular bone[15]

In cases of reasonable clinical suspicion, clinicians should have a low threshold to obtain a computed tomography (CT) scan of the foot. If this cannot be

achieved expediently from UC, immediate ED referral is recommended.

A CT of the foot without contrast is used not only to assess the extent of the injury but is also useful for preoperative planning.[14] Advanced imaging should be guided in conjunction with specialist consultation.

Indications for Referral to the ED

Patients with confirmed or suspected Lisfranc injury on foot XR will be sent to the ED for cross-sectional imaging and orthopedic or podiatry consultation.
Other indications for ED referral include:

- Evidence of neurovascular compromise
- Clinical suspicion for compartment syndrome as evidenced by the "5 Ps":[16]
  - Pain out of proportion to exam findings
  - Paresthesia
  - Pallor
  - Pulselessness
  - Paralysis

Management of Suspected Lisfranc Injury in Urgent Care

In patients where XR confirms a Lisfranc injury, the patient should be made strictly non-weight-bearing and splinted in a short leg splint. If immediate consultation from UC with podiatry or orthopedic clinicians is possible, they can guide appropriate follow-up and need for additional imaging. In cases where immediate consultation is not possible, then immediate ED referral where appropriate specialist coverage is available is recommended.

In cases with severe midfoot pain and/or swelling with a suggestive mechanism, but negative XR imaging, it is most prudent to splint the foot as if there were a Lisfranc injury. Ensure the patient is non-weight-bearing and referred immediately to an ED where CT imaging is available.

Surgery is occasionally performed emergently based on specialist level decision making. However, in cases of vascular compromise or compartment syndrome, emergent operative repair is generally required. In the absence of these emergent complications, most cases are operatively repaired within several weeks and may require up to 4 months of immobilization.[10]

Operative techniques are injury dependent and include closed reduction and internal fixation, open reduction and internal fixation, or arthrodesis (reserved for severely comminuted fractures).[15]

Red Flags and Legal Pitfalls

- Without a high index of suspicion, it is easy to miss a Lisfranc injury. Missed Lisfranc injury can result in significant medicolegal risk for clinicians.[17]
- Many Lisfranc injuries have initially normal XR.[18]
- Compartment syndrome of the foot is a known complication of Lisfranc injuries and should be suspected with severe pain at rest/without weight-bearing[16]
- Recommendations to avoid missing Lisfranc injuries include:[7]
  - Have a low threshold to obtain XRs in patients with midfoot pain and swelling after trauma
  - If a fracture is seen at the proximal metatarsal, suspect Lisfranc injury
  - If edema persists for 10 days after the injury, suspect Lisfranc injury

"In cases with severe midfoot pain and/or swelling with a suggestive mechanism, but negative XR imaging, it is most prudent to splint the foot as if there were a Lisfranc injury."

Clinical Scenario Conclusion

The patient's XR initially appeared non-diagnostic. A foot sprain/contusion was diagnosed and treated. The patient was sent home with a hard-soled shoe but continued to have significant pain. He made an appointment to follow up with an orthopedist the next day. The orthopedist interpreted the XR as diagnostic for Lisfranc fracture/dislocation and subsequently obtained CT imaging of the foot, which confirmed the diagnosis. The patient ultimately underwent operative repair and had a relatively good functional outcome with minimal chronic foot pain.

Takeaway Points

- Lisfranc injury is a high-risk injury and should be suspected in any patient with significant pain and/or swelling of the midfoot, especially after a crushing or twisting mechanism of injury.
- Lisfranc injuries may be bony (ie, fracture), ligamentous, or both.
- A normal XR does not exclude possible Lisfranc in-

jury. CT imaging is considered the definitive imaging modality in cases with negative XRs and ongoing clinical suspicion.

- Delays in diagnosis can result in chronic pain. In cases of reasonable suspicion, immediate podiatry or orthopedic specialist consultation or ED referral is recommended.
- Compartment syndrome of the foot can occur secondary to Lisfranc injuries and should be suspected in patients with increasing foot pain at rest. ■

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Postpartum Presentations: When Risk Arises After Delivery – Vaginal Bleeding and Discharge

Urgent Message: Postpartum vaginal bleeding and discharge have a broad range of etiologies ranging from benign and self-limited to life-threatening. As postpartum patients may present to urgent care centers with concerns for bleeding or discharge, it is important for clinicians to have an understanding of the unique differential diagnosis for causes of hemorrhage in this population.

Alexa Bailey, BS; Lauren Kostandaras, BS; Hannah Poorman, BS; Michael Weinstock, MD; Catherine Neal, DO

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Key Words: Vaginal Bleeding, Postpartum, Endometritis, Lochia, Retained Products of Conception

Editor's Note: *The patient case scenario is hypothetical.*

Abstract

Background: The postpartum period is a unique period of changing physiology. As such, the causes of vaginal bleeding and discharge during this period are distinct and require a unique approach in their evaluation.

Aim: The aim of this review is to enhance urgent care (UC) clinicians' familiarity with the differential diagnosis and management for both common and life-threatening causes of postpartum discharge and hemorrhage.

Conclusion: In addition to the common and normal causes of postpartum vaginal discharge and bleeding, it is important for UC clinicians to consider factors that can pose threat of morbidity and mortality when there are delays in diagnosis. Among these conditions, endometritis and retained products of conception are among the most critical to consider. UC clinicians should notify

Author affiliations: Alexa Bailey, BS, University of Pikeville. **Lauren Kostandaras, BS,** Lincoln Memorial University. **Hannah Poorman, BS,** Lincoln Memorial University. **Michael Weinstock, MD,** Adena Health System; Wexner Medical Center at The Ohio State University; *The Journal of Urgent Care Medicine*. **Catherine Neal, DO,** Adena Regional Medical Center. Authors have no relevant financial relationships with any ineligible companies.

the patient's obstetric specialist of the patient's presentation early in the assessment and involve them in work-up and disposition decision-making.

Background

The postpartum period is variably defined and ranges from 6 weeks to 6 months after delivery.[1,2] However, the majority of physiologic changes and risk are limited to the first 6 weeks after delivery.[2] During these first weeks of the postpartum period, a number of symptoms and physiologic changes are expected. Differentiating normal postpartum signs and symptoms from pathologic conditions can be challenging for both patients (particularly first-time mothers) and clinicians alike.[3]

Given that postpartum symptomology may be related to conditions ranging from benign to life threatening, it is important for UC clinicians to appropriately balance reassurance and vigilance.[4] When women present to UC settings with concerns for postpartum vaginal bleeding or discharge, assessment should begin with an appropriately focused history and exam. Serious etiologies should be considered and reassurance given only after these have been excluded with reasonable certainty.[5]

The following case scenario is hypothetical but is illustrative of the diagnostic reasoning required when women present to UC with concerns for bleeding or discharge after delivery.

Hypothetical Clinical Scenario

A 36-year-old G2P2 (ie, 2 pregnancies, 2 live births) woman presented to UC 6 days after giving birth to a healthy infant by cesarean delivery (C/S) without complication. Her chief complaint was 4 days of dark, redish-brown vaginal bleeding that mostly saturated about 3-4 pads daily. She also complained of fatigue and feeling warm at times but denied chills. She reported some abdominal pain but felt that it was improving.

On exam, her vitals were normal, and she appeared comfortable and in no distress. Her cardiopulmonary exam was unremarkable, and her heart rate was normal. Her abdominal exam revealed no tenderness, guarding, or distension. Her C/S incision was clean, intact, dry, and without surrounding erythema. The uterus was firm, nontender, and palpable just below the umbilicus. The remainder of her general exam revealed no concerning findings.

A pelvic exam with speculum was performed and a small amount of blood was noted at the introitus and throughout the vagina. There was a dime-sized clot at the cervical os. A swab was used to clear the clot to better visualize the cervix. After clearing the blood, a tiny amount of residual oozing from the cervical os was noted when suprapubic pressure was applied.

Normal Postpartum Vaginal Bleeding and Discharge

Physiologic changes begin immediately after delivery, and heart rate is expected to decrease while body temperature may become slightly elevated. Bloody vaginal discharge (ie, lochia) is normal for the first 4 days postpartum.[6] The lochia then becomes pale brown (ie, lochia serosa), and then yellowish (ie, lochia alba) by 12 days postpartum.[5] Lochia or bleeding that differs from this progression suggests the possibility of a pathophysiologic postpartum condition.

Postpartum Endometritis

Epidemiology and Pathophysiology

Endometritis is the leading cause of postpartum fever in women.[7] Its incidence ranges from 1-3% in patients without risk factors after a normal spontaneous vaginal delivery (NSVD) but can be as high as 6% in women with risk factors for endometritis.[8] Specifically, it is important to note that cesarean delivery is associated with a 5- to 20-fold increase in the risk of postpartum endometritis. When C/S is performed after the rupture of the amniotic membranes, the risk is over 20-fold higher than with NSVD.[9]

History

The key clinical feature suggestive of postpartum endometritis is the presence of fever following a recent delivery. Early-onset endometritis occurs within the first 48 hours of the postpartum period, while late-onset refers to endometritis occurring from 2 days to 6 weeks after delivery.[8] The patient may also complain of increasing lower abdominal pain and purulent or foul-smelling lochia.[10] Patients with endometritis may also have symptoms resembling a viral illness including fatigue, headache, and chills.[11]

Exam

A focused abdominal and genitourinary (GU) exam, including speculum exam, should be performed if suspecting endometritis. Clinical findings of postpartum endometritis include pronounced suprapubic and uterine tenderness and unexpectedly prolonged enlargement of the uterus. Vital sign abnormalities such as fever and tachycardia may occur but may also be initially absent.[8] If diagnosis is delayed, patients may develop sepsis with signs indicating end-organ dysfunction (eg, altered mental status).[12]

Speculum Exam

The GU exam should begin with inspection of the external genitalia. Any external abnormalities should be noted prior to speculum exam. In postpartum patients, the speculum exam provides critical data but may cause anxiety among UC clinicians who rarely perform speculum examinations in the postpartum setting. It is important to attempt to discuss these patients with the obstetric specialist who performed the delivery (eg, gynecologist or midwife). Prior to the speculum exam, while UC support staff is gathering the necessary supplies, is often the optimal opportunity for this. The obstetric specialist can then either provide guidance for speculum examination techniques and key findings to note or may perhaps prefer the exam is deferred and the patient is sent for immediate evaluation in clinic or the hospital labor and delivery unit.

If unable to consult with an obstetric specialist, it is appropriate to proceed with a gentle speculum exam. To minimize discomfort, ensure adequate lubricating gel is used and attend to the use of the most aseptic technique possible.[13] During insertion, gentle downward pressure is applied with the speculum itself, which helps reduce discomfort from the speculum sliding against the sensitive urethra anteriorly.[13] With proper insertion technique, the inferior blade of the speculum should be placed in the posterior fornix of the vagina. The speculum is then opened carefully until it cups the cervix. If the cervix is difficult to identify, the speculum should be withdrawn slightly, repositioned, and reopened. If the uterus is anteverted, the cervix is directed toward the posterior vaginal fornix, while a retroverted uterus will result in a more anterior position of the cervix.[13]

Once the cervix is identified, characteristics of the cervix and surrounding vaginal tissue should be noted, including cervical position, size, color, and the presence of any lesions, lacerations, and characteristics of any discharge coming from the cervical os. Purulent discharge in this setting is abnormal and suggestive of uterine infection.

Testing

Postpartum endometritis is primarily a clinical diagnosis. Endocervical swabs sent for wet mount can be helpful for confirming this, but the results may not be immediately available during the UC visit.[13] When the consultation with the patient's obstetrician is available, they can offer guidance if any specific testing would be clinically useful. Endocervical cultures, when negative, do not exclude an endometrial infection, and positive cultures may result from contamination from the vaginal vault during collection.[8]

Blood laboratory study findings (eg, leukocytosis) can be suggestive of endometritis, but the results are often not available rapidly enough to influence care during a UC visit and are not reliable for ruling-in or excluding postpartum endometritis.[8,14] A urinalysis and culture should be obtained to exclude the possibility of urinary tract infection (UTI), which can have similar symptomatic presentation.[12]

"Given the need for IV antibiotics for proper treatment, any patient with suspicion for postpartum endometritis should be immediately referred to the emergency department."

Pelvic ultrasound (US) is recommended as the first-line imaging modality as it can assess for retained products of conception (POC) or alternate diagnoses, such as septic pelvic thrombophlebitis.[15] However, most often, pelvic US findings in cases of postpartum endometritis are nonspecific, and there is significant overlap with normal postpartum findings (eg, gas in the endometrial cavity, uterine enlargement).[16] Similar to blood testing, imaging decisions should be undertaken in conjunction with the patient's obstetric specialist and should not delay referrals to appropriate levels of care, especially if the patient is ill-appearing.

Diagnostic Criteria

While scoring systems have been proposed,[17] there are no formal diagnostic criteria for postpartum endometritis. It is generally diagnosed in the presence of fever, tachycardia, uterine tenderness, and purulent appearing lochia.[18]

Initial Management

Intravenous (IV) antibiotics and close monitoring are recommended for suspected endometritis. Clindamycin plus gentamicin is the recommended first-line empiric antibiotic regimen.[8] IV antibiotics are recommended until the patient is clinically feeling improvement and remains afebrile for at least 24 hours.[8]

Indications for Referral to Emergency Department

Given the need for IV antibiotics for proper treatment, any patient with suspicion for postpartum endometritis should be immediately referred to the emergency department (ED). If the patient delivered in a hospital setting, referring the patient to site of her delivery is often preferrable for the purposes of continuity of care.[19] In cases where there is concern for sepsis based on the patient appearing ill or having significant tachycardia, mental status changes, and/or hypotension, use of ambulance transport to the ED is recommended.

"As in any case of vaginal bleeding, postpartum bleeding should be quantified to determine the likelihood of a pathologic condition."

Lochia and Mild Postpartum Bleeding

The various forms of lochia previously described are expected after every delivery. Lochia is composed of blood and the remnants of the amniotic membranes and placental tissues. Shedding of the layers of the placenta, which completely cover the endometrial cavity, typically progressively decreases, resolving by approximately 35 days postpartum.[20]

Lochia rubra, which may be described as "vaginal bleeding" or "spotting" typically resolves within 4 days of delivery. Lochia serosa, the next phase, is increasingly watery and pinkish and will resolve by 12 days after delivery. Finally, lochia alba, which is a yellowish-white discharge, resolves within 2-6 weeks postpartum.[6]

History

As in any case of vaginal bleeding, postpartum bleeding should be quantified to determine the likelihood of a pathologic condition. It is important to assess how often pads are changed, their degree of saturation, and whether the patient is noting clots (and if so, the size of clots). As discussed above in the consideration of endometritis, inquire about symptoms suggestive of infection (eg, increasing pain or fevers) and if there is an unpleasant odor to the discharge that the patient has noted.

Exam

The clinical assessment should start with reviewing vital signs. It is especially important to note tachycardia, hypotension, and/or fever, which could suggest significant blood loss and/or infection (eg, endometritis).

The physical exam should focus on the abdominal and GU assessment. If the delivery was performed by C/S, do not forgo inspection of the surgical incision. Palpate the abdomen to assess for uterine size and tenderness. The GU exam, again, should begin with external inspection, looking for other sources of bleeding such as labial lacerations or perineal tears.

A speculum exam in consultation with the patient's obstetric specialist using gentle and maximally aseptic technique is also generally recommended.[21,22] This can also offer information about alternate internal sources of bleeding from cervical or vaginal injuries vs normal, small amounts of bloody lochia coming from the cervical os.

Testing/Diagnostic Criteria

Differentiating normal lochia from pathologic discharge is generally a clinical assessment based on the patient's history, exam, and the character of the discharge. This relies on visual inspection and no testing is routinely recommended.

Initial Management

If bleeding/lochia seems to be conforming to the expected pattern of change described previously, simple reassurance is appropriate. Education should be provided on proper hygiene in the postpartum period. Only sanitary pads should be used for the first 6 weeks postpartum to allow for adequate time for the perineum and vagina to heal.[22] Tampons or other menstrual products inserted into the vagina (eg, menstrual cups) should not be used until the patient is cleared by their obstetrician. Pads also allow for the patient to track their bleeding and discharge so that they might seek care again if there are changes that do not conform to the normal progression of postpartum discharge.

Indications for Referral to Emergency Department

Heavy bleeding in the postpartum period is almost never physiologic. If there is active, heavy bleeding, ED referral may be indicated, especially if the patient appears pale or is tachycardic and/or hypotensive. However, for more stable patients, the patient's obstetric specialist may prefer to have the patient seen in clinic or in the hospital labor and delivery unit directly. Heavy bleeding or passage of clots usually requires an urgent pelvic US to exclude retained POC.[1]

Retained Products of Conception

Epidemiology and Pathophysiology

The mnemonic of the "4 Ts" is frequently used to remember the common causes of postpartum hemorrhage. Uterine atony ("tone") is the most common cause and accounts for 70% of cases. However, this will be evident within the first 24 hours after delivery, and therefore, unlikely to be an issue of concern in UC settings.[23] "Trauma" (eg, laceration) is the second leading cause, accounting for 20% of cases, but is also typically evident before hospital discharge.[23] Retained POC ("tissue" in the mnemonic) accounts for approximately 10% of cases of postpartum hemorrhage and more commonly presents in a delayed fashion.[23] The fourth is "thrombin" (coagulation deficiency).

Retained POC is defined as a condition where tissues resulting from a gestation persist after medical or surgical termination of pregnancy, spontaneous abortion (ie, miscarriage), or vaginal or cesarean delivery.[24] Retained placenta specifically refers to a situation when placental tissue remains adherent to the uterine wall after delivery of the placenta.[21] This can occur due to uterine atony, the placenta accreta spectrum of disorders, or premature cervical closure.[25] Retained membranes may also occur, particularly if manual removal of the placenta was performed.[26]

Retention of placental fragments is the most common situation involving retained POC, occurring in 3% of all vaginal deliveries; it is responsible for 6% of all cases of postpartum hemorrhage.[27] Placenta accreta is the result of a defect in the decidua basalis, which allows the placenta to invade the uterine wall to an abnormal depth.[24]

Risk factors for retained placental fragments include prolonged exposure to oxytocin, high parity, preterm delivery, placental abruption, prior uterine surgery, placenta accreta, and assistive reproduction technology use (eg, *in vitro* fertilization).[25,28] Retained POC is the second leading cause of postpartum hemorrhage and is associated with nearly a quarter of cases of endometritis.[25]

History

The most common complaints among women who have retained POC are abdominal pain and vaginal bleeding.[24] Fever may be present and is suggestive of concurrent endometritis.[24] Ascertaining if the patient has a history of prior uterine surgeries is useful as this is a significant risk factor for retained POC.[29] Quantifying bleeding character and quantity as previously discussed is a critical aspect of assessment for the degree of hemorrhage. The majority of cases of retained placenta are diagnosed during delivery, but when pieces of the placenta remain, abnormal vaginal bleeding may develop in the days to weeks after delivery, with a median time to onset of hemorrhage being 24 days.[25,30]

"The most common complaints among women who have retained POC are abdominal pain and vaginal bleeding ."

Exam

Review the patient's vital signs for hypotension, tachycardia, and tachypnea, which are indicators of significant blood loss. In addition to tenderness and surgical incision assessment, abdominal exam should focus on assessment of the uterine size and texture. The uterine fundus should become firm and return to the level of the umbilicus in the 24 hours after delivery.[31]

As previously discussed, it is recommended to attempt to consult with the patient's obstetric specialist before performing a pelvic exam. When performing a GU exam, begin with external inspection for sources of bleeding related to the trauma of delivery including from the labia, vaginal introitus, and rectum. A gentle, aseptic speculum exam should then be performed in order to visualize the vaginal mucosa and cervix to identify non-uterine sources of bleeding, such as lacerations. If the patient complains of passing clots or saturating pads, suction or absorptive swabs should be available to assist with visualization for sources of bleeding. Active bleeding coming from the cervical os or the presence of visible clots is concerning for the possibility of retained POC and warrants further assessment with US.

Testing/Diagnostic Criteria

Retained POC requires failure of complete passage of the placenta by 30 minutes or longer after delivery, after which time, the risk of hemorrhage begins to increase.[25] The clinician performing a delivery will routinely inspect the placenta carefully to ensure there is no evidence of tearing to suggest incomplete passage.[29] However, clinical assessment is unable to exclude retained POC in all cases.

Retained POC is generally diagnosed by US.[24] In cases of retained POC, US will demonstrate an echogenic mass within the uterus and/or a thickened endometrial stripe.[29] The most sensitive finding for retained POC is

a thickened endometrial echo complex, with "thickened" defined as >8 mm.[24]

Initial Management

When retained POCs are suspected after the third stage of labor (ie, placental delivery), manual attempts at removal of the placenta are typically performed by the obstetrician.[29] For cases where retained POC are still suspected, curettage is often immediately performed.[29] Patients presenting to UC with bleeding where there is concern for retained POC based on US findings will generally be treated with dilation and curettage via hysteroscopy.[25] Thus, the initial UC management consists of coordination of US and obstetric evaluation with the patient's treating specialist or ED referral if this cannot be coordinated expediently.

Indications for Referral to Emergency Department

Patients with signs of significant blood loss (eg, hypotension, tachycardia, syncope) should be sent to the ED via ambulance. In stable patients, ED referral can often be avoided through discussion with the patient's obstetric specialist. This should involve a plan for immediate or rapid US acquisition and obstetric clinic or labor and delivery unit evaluation.

Other Causes of Postpartum Vaginal Bleeding and Discharge

In addition to the causes of postpartum vaginal and discharge bleeding discussed previously in this review, women may also experience bleeding from structural causes or systemic causes. The American College of Obstetricians and Gynecologists has adopted the acronym PALM-COEIN from the International Federation of Gynecology and Obstetrics to categorize the wide variety of abnormal uterine bleeding (AUB).[32,33,34]

The "PALM" etiologies include structural causes of AUB:

- Polyps
- Adenomyosis
- Leiomyomas
- Malignancy (or hyperplasia)

The "COEIN" etiologies include physiologic or systemic causes:[35]

- Coagulopathy (the fourth "T" in the mnemonic—for "thrombin" related issues)
- Ovulatory dysfunction, typically related to endocrine disorders or at the extremes of reproductive age (eg, polycystic ovary syndrome, thyroid dysfunction)
- Endometrial abnormalities (eg, inflammatory or infectious endometritis, disorders of endometrial hemostasis, such as those that occur with endometrial atrophy)
- Iatrogenic causes (eg, hormonal contraceptives, hormone therapy, adverse effects from medications such as anticoagulants)
- Not otherwise classified (eg, bleeding from arteriovenous malformations, uterine sarcoidosis, or other rare conditions)

Additionally, other uterine and vaginal disorders leading to bleeding and/or discharge unrelated to the delivery (eg, sexually transmitted infections [STIs], bacterial vaginosis, polyps, fibroids, and cervical ectopion) may still occur, especially in patients further into the postpartum period.[35] In the late postpartum period (ie, after 4-6 weeks post-delivery), it is important to expand the history to determine if patients warrant testing for STIs or vaginitis or outpatient gynecologist referral, as they may have completed all scheduled follow-up with their obstetric specialist by this time.

Clinical Scenario Conclusion

The UC clinician consulted with the obstetrician (OB/GYN) on-call covering the group where she received her pregnancy care. Based on the UC clinician's description of relevant findings, the OB/GYN felt the patient was experiencing a normal amount of vaginal bleeding consistent with the lochia expected after C/S. The patient was therefore instructed simply to monitor her symptoms and follow-up as scheduled with her OB/GYN. She was counseled on the signs of significant postpartum hemorrhage and endometritis, which would warrant immediate reassessment.

Summary and Key Points for Urgent Care Clinicians

- Make attempts to consult with the patient's obstetric specialist early in the evaluation of any postpartum complaint. The OB/GYN will usually appreciate the call and can offer guidance for what should be addressed in UC and where and when the patient should be seen for follow-up.
- Postpartum lochia initially presents as red-brown discharge or spotting, termed lochia rubra. The lochia gradually lightens in color and lessens in quantity but may persist for up to 6 weeks postpartum.
- For normal postpartum lochia presentations, patients should be reassured and reminded to avoid tampons (ie, pelvic rest) until cleared by their OB/GYN.

- Vaginal bleeding or discharge in the postpartum period may be normal lochia, but endometritis should be suspected if it does not conform to the expected pattern of progression, is foul-smelling, or is accompanied by uterine tenderness and/or fever.
- Endometritis is a clinical diagnosis; recommended treatment consists of hospitalization and IV antibiotics.
- Significant, delayed postpartum hemorrhage (ie, soaking through pads frequently or passing clots) is suggestive of possible retained POC.
- Retained POC is diagnosed via US and treated with dilation and curettage.
- Ambulance transport should be used in postpartum patients with bleeding or discharge if they have signs of shock related to infection or hemorrhage (eg, hypotension, mental status changes, significant fever, and/or tachycardia). ■

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Case Report

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Insidious Unilateral Axillary Swelling in a Patient with Untreated HIV: A Case Report

Urgent Message: Lymphadenopathy in patients living with HIV is most commonly related to HIV infection, but it may also be related to many forms of systemic infection or malignancy. Definitive diagnosis is most often achieved by fine-needle aspiration.

Hana Kusumoto, MD, MPH; Lindsey E. Fish, MD

Citation: Kusumoto H, Fish LE. Insidious Unilateral Axillary Swelling in a Patient with Untreated HIV: A Case Report. *J Urgent Care Med.* 2025; 19(8):31-35

Key words: Diffuse Large B Cell Lymphoma, Human Immunodeficiency Virus, Lymphadenopathy

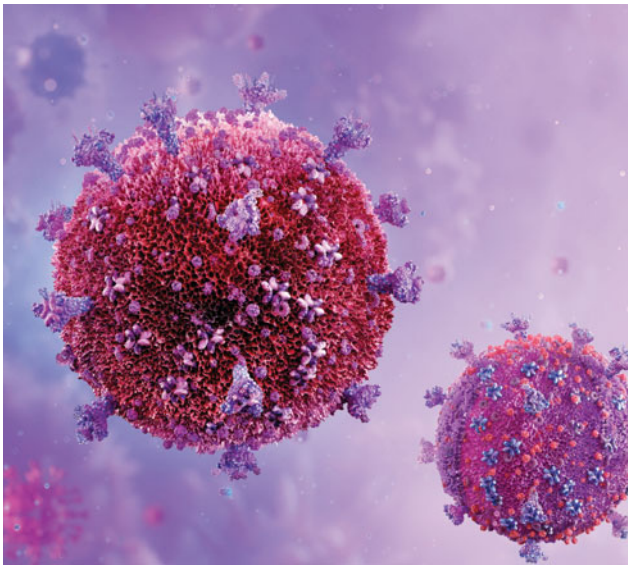
Abstract

Introduction: Lymphadenopathy (LAD) can result from a variety of conditions. While in some cases LAD may be reactive and self-resolving, it may also represent time-sensitive diagnoses including cancer and human immunodeficiency virus (HIV).

Clinical Presentation: A 41-year-old man presented to urgent care (UC) with complaints of new swelling in his right axilla for the previous 2 weeks and was concerned for an abscess. His past medical history included HIV, for which he was not taking antiretroviral treatment (ART). He denied pain in the axilla, fevers, night sweats, and weight loss.

Physical Exam: On exam, a 4x5cm, well-circumscribed mass in the right axilla was noted without associated erythema, fluctuance, or tenderness.

Testing: A point-of-care ultrasound (POCUS) exam showed no fluid collection at the site of axillary swelling.



Case Resolution: Computed tomography (CT) imaging performed 3 days later showed an ill-defined axillary mass as well as scattered, enlarged thoracic and abdominal lymph nodes with mild splenomegaly. His absolute CD4 count and HIV viral load returned at 76 cells/µL (reference range: 496-1,647 cells/µL) and >216,000 copies/mL (reference range: ≤ 0 copies/mL), respectively. When the axillary lesion was biopsied, pathology returned showing diffuse B-cell lymphoma. The patient was started on chemotherapy, and ART was resumed.

Author Affiliations: Hana Kusumoto, MD, MPH, University of Colorado School of Medicine. **Lindsey E. Fish, MD,** Denver Health and Hospital Authority and University of Colorado School of Medicine. Authors have no relevant financial relationships with any ineligible companies.

Conclusion: HIV-related diseases, particularly in patients not taking ART, include a wide array of secondary infectious and non-infectious conditions. New LAD in HIV-positive patients requires a broad differential diagnosis and biopsy to confirm the cause.

Introduction

Lymphadenopathy (LAD) can indicate a wide variety of pathology ranging from reactive and self-limited hyperplasia, which is most common in the acute setting, to serious, systemic illness.[1] For patients living with human immunodeficiency virus (HIV) specifically, LAD can be a manifestation of HIV infection itself or may be indicative of insidious conditions such as cancer or other infections. Differentiating the etiology of LAD is clinically challenging and generally requires an extensive diagnostic evaluation.[2] Given that an estimated 1.2 million people in the United States live with HIV, many of whom are not yet diagnosed,[3] clinicians in urgent care (UC) centers should use extra caution when approaching the assessment of possible LAD in patients living with HIV as it is more likely a sign of serious disease.

Clinical Presentation

A 41-year-old man presented to UC with complaints of swelling in his right armpit, which he had noticed 2 weeks prior. In the 2 days before his visit, he reported that the swelling had increased in size, and he had concerns for an abscess. He denied redness or pain at the site of swelling and denied fevers, chills, or other infectious symptoms. He denied any swelling elsewhere, including in the groin or neck. He denied smoking and drug use. His review of systems was negative for weight loss, night sweats, cough, dyspnea, and hemoptysis. His past medical history was most notably positive for HIV, which was diagnosed 8 years prior. Due to limited health literacy and a lack of health insurance, he had stopped antiretroviral therapy (ART) 6 years before the visit.

Physical Exam Findings

The patient's vital signs were normal, and he was afebrile: temperature was 36.4˚C; blood pressure was 139/82; heart rate was 95 beats per minute; respiratory rate was 16; blood oxygen saturation (SpO2) was 98%. He was overall well appearing and in no distress. In the right axilla, a 4x5cm well-circumscribed, firm mass without overlying erythema, fluctuance, or tenderness to palpation was noted. Palpation of the inguinal, cervical, and contralateral axillary regions revealed no other areas of swelling or masses. The remainder of his exam including skin, abdomen, and cardiopulmonary was also normal.

Figure 1. Point of Care Ultrasound

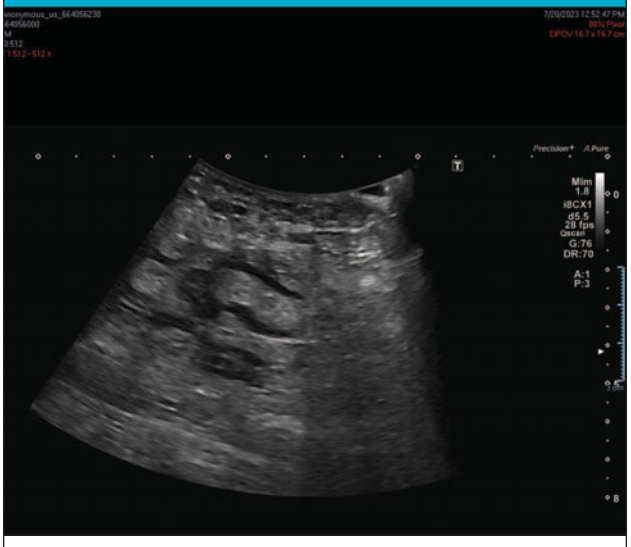


Image obtained examining the area axillary swelling, which demonstrates no apparent fluid collection.

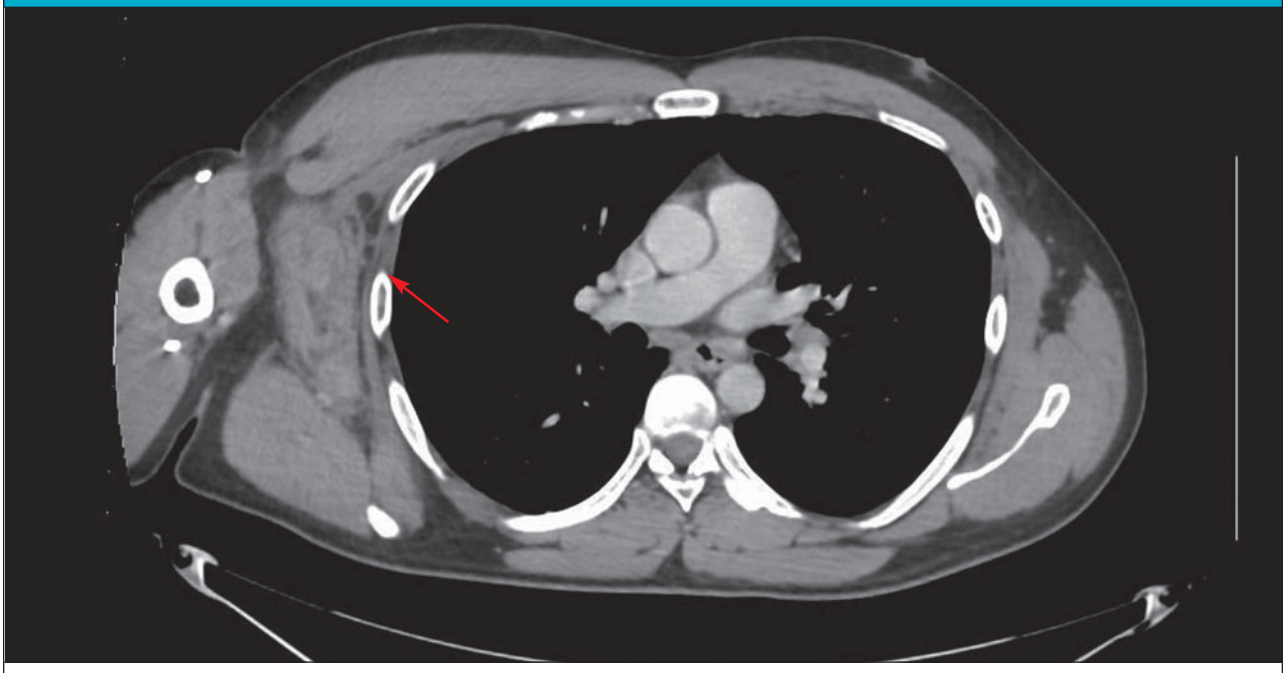
Medical Decision Making

A POCUS exam of the area of swelling in the right axilla demonstrated no discrete fluid collection (**Figure 1**), further decreasing the probability that an abscess was responsible for the swelling. A complete blood count (CBC) was obtained, which was normal except for mild leukopenia with a total white blood cell count of 3.6 k/μL (reference range: 4.5-10.0 k/μL). Given his lack of follow-up, a CD4 T-cell count and HIV viral load were also collected, although results were not immediately available. The differential of infectious and neoplastic conditions for a patient with untreated HIV was considered including bacterial, fungal, viral, and tuberculous infections as well as various forms of lymphoma. The patient was referred for a stat thoracoabdominal computed tomography (CT) imaging and follow-up with the infectious disease clinic.

Case Continuation and Management

The next day, his absolute CD4 count returned at 76 cells/μL (reference: 496-1,647 cells/μL) and his HIV viral load was >216,000 copies/mL (reference: ≤ 0 copies/mL), confirming untreated HIV infection. The patient was seen by an infectious disease specialist to manage resuming his ART. CT imaging of the chest, abdomen, and pelvis with intravenous contrast was performed 3 days later, which confirmed that there was no drainable axillary fluid collection. The CT, however, did demonstrate an ill-defined enhancing mass in the right axilla (8.4x3.8x7.8

Figure 2. CT of Chest, Abdomen, and Pelvis



CT demonstrates an ill-defined mass in right axillary region (arrow)

cm) **(Figure 2)** as well as scattered, pathologically enlarged thoracic and abdominal lymph nodes, and mild splenomegaly.

Final Diagnosis

Ultimately, a biopsy of the axillary mass was obtained, and the final pathology revealed diffuse large B-cell lymphoma (DLBCL). The patient underwent inpatient positron emission tomography imaging and induction chemotherapy. The patient had a good response to chemotherapy, and after 6 cycles, repeat imaging performed approximately 1 year after diagnosis revealed no evidence of disease—indicating complete remission.

Discussion

LAD can represent myriad conditions including benign and self-limited processes (ie, reactive LAD), malignancy, autoimmune disorders, and infectious etiologies.[1] For patients with HIV, however, LAD is more likely to represent other etiologies compared to the general population (**Table 1**) including specific malignancies[4] and mycobacterial infections.[5] For this reason, HIV testing should be considered as part of the initial diagnostic approach for unexplained LAD in patients.[1]

LAD, when present in patients living with HIV, is commonly a manifestation of HIV infection itself with 40-50% of lymph node biopsies in such patients demonstrating reactive lymphoid hyperplasia related to HIV.[6,7] This occurs due to the virus' lymphotropic properties and most often occurs in the setting of acute HIV infection.[8]

Secondary infectious causes of LAD in HIV positive patients are most often due to mycobacterial infections.[7] In endemic countries, *Mycobacterium tuberculosis* is the most common mycobacterial infection, whereas nontuberculous mycobacteria, (ie, mycobacterium avian complex) is more often seen in industrialized countries.[2] Fine needle biopsy showing caseating necrosis and ill-formed granulomas are the hallmark findings of *Mycobacterium tuberculosis*.[7] Other infectious etiologies that can produce pathologic LAD among HIV infected individuals include cryptococcus, histoplasma, aspergillis, cytomegalovirus, and syphilis.[2,6,9] Lastly, opportunistic infections can also precipitate LAD when ART-naïve patients initiate therapy—a phenomenon termed immune-system reconstitution syndrome.[10]

Neoplastic causes of LAD in patients living with HIV are primarily related to various forms of lymphoma and constitute the final diagnosis in 42% of cases of HIV-related LAD, although this rate is less in regions with higher burdens of opportunistic infections.[6] Non-Hodgkin lymphoma (NHL) is the most common HIV

Table 1. Etiologies For Unexplained Lymphadenopathy Among HIV-Positive Individuals

Reactive Changes
HIV lymphoid hyperplasia, immune system reconstitution syndrome (IRIS)
Malignancy/Neoplastic
Non-Hodgkin lymphoma (diffuse large B-cell lymphoma, Burkitt lymphomas, other lymphomas), **Hodgkin lymphoma, Castleman disease, diffuse infiltrative lymphocytosis syndrome** (DILS), **Kaposi sarcoma**, *Leukemias*
Infection-Associated
Bacterial: **Mycobacterium tuberculosis, nontuberculous mycobacteria** (ie, Mycobacterium avian complex), **syphilis**, *Brucellosis, Bartonella, chancroid, staphylococcal or streptococcal cutaneous infections, lymphogranuloma venereum, tularemia, typhoid fever* Viral: **Cytomegalovirus (CMV), HIV,** *adenovirus, hepatitis, herpes zoster, infectious mononucleosis (Epstein-Barr virus), rubella* Fungal: **Aspergillosis, cryptococcosis, histoplasmosis,** *Coccidioidomycosis*
Autoimmune
Dermatomyositis, rheumatoid arthritis, Sjögren syndrome, Still disease, systemic lupus erythematosus
Miscellaneous
Sarcoidosis
Iatrogenic
Medications (allopurinol, hydralazine, penicillin, phenytoin, primidone, bactrim, etc.), serum sickness

Adapted from the "MIAMI Mnemonic" by Gaddety et al[1], which includes malignant, infectious, autoimmune, miscellaneous, and iatrogenic etiologies of lymphadenopathy in the general population. Patients living with HIV who present with lymphadenopathy are at risk of theses general causes of lymphadenopathy (italicized) and at greater risk of etiologies specific to being HIV positive (bolded).

associated malignancy, with DLBCL constituting the most common subtype found on biopsy.[11] In the past 3 decades, however, the incidence of Burkitt and Hodgkin lymphomas among HIV-positive patients with LAD has increased, and survival of patients diagnosed with HIV-associated lymphoma has improved.[12,13]

Castleman disease represents a spectrum of pathologic LAD that shares histological features; it is variably classified as unicentric or multicentric depending on the number of lymph nodes affected.[14] Castleman disease, while rare, has higher prevalence among patients with HIV and human herpesvirus 8 infection.[15] Castleman disease itself does not meaningfully impact life expectancy, but afflicted patients are at an increased risk for lymphoma, autoimmune disorders, chronic lung disease, or even compression of nearby structures from enlarged lymph nodes, which may impact survival without appropriate surveillance.[16]

Given the vast array of etiologies of LAD in patients living with HIV, clinical suspicion for more serious causes of LAD, especially if multifocal, persistent, and progressive, is warranted. Laboratory testing, including absolute CD4 count, HIV viral load, and CBC, as well as imaging and biopsy, usually with fine-needle aspiration (FNA) [2,17,18] is typically required to confirm the cause of LAD. While coordinating this from UC may not be achievable, it is important that patients be informed of the high likelihood of a serious cause for the LAD and efforts are made to coordinate expedient continuation of the work-up.

Conclusion

In UC settings, patients may present with swelling that is consistent with LAD. It is crucial to inquire about a patient's HIV status in cases of LAD that are not clearly reactive and benign. Patients presenting with concerning LAD and a prior diagnosis of HIV, regardless of their use of ART, require a thorough history and exam. However, clinically confirming the cause of LAD is generally not feasible, and a FNA biopsy is usually required to ascertain which of the many possible etiologies for LAD is causal.

Ethics Statement

Verbal consent for publication of this case was obtained from the patient.

Takeaway Points

- LAD in patients living with HIV is most commonly related to HIV infection but may also be related to many forms of systemic infection or malignancy.
- Even in the absence of diffuse LAD or systemic symptoms, LAD in patients with HIV commonly represents serious diseases, including lymphoma and mycobacterial infection.
- Many patients with HIV are undiagnosed, and HIV testing should be pursued in patients with apparent pathologic LAD.

■ Determining the definitive diagnosis for the cause of suspected HIV-related LAD requires a biopsy, which is most often achieved by FNA. ■

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Original Research

Brief Report: A Pilot Quality and Feasibility Project Focusing on Clinician Use of an Order Set for Acute Asthma Care in Pediatric Urgent Care Centers

Urgent Message: There are limited data on implementation and use of clinical decision support tools for the evidence-based management of asthma in pediatric urgent care settings. In this pilot project, providing reports and feedback to clinicians on their use of order sets increased utilization of order sets but not adherence to best practice guidelines for asthma care.

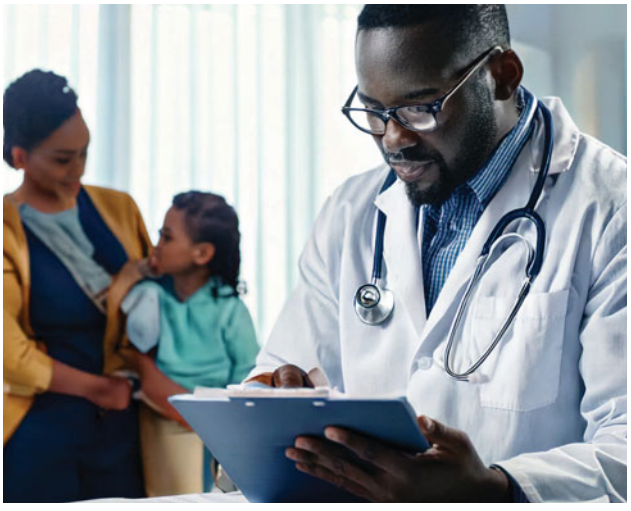
Richmond Darko, MD, MPH; Andrea Aguilera, MD; Gabriela Lins, DO; Maria Ramon-Coton, MD

Citation: Darko R, Aguilera A, Lins G, Ramon-Coton M. Brief Report: A Pilot Quality and Feasibility Project Focusing on Clinician Use of an Order Set for Acute Asthma Care in Pediatric Urgent Care Centers. *J Urgent Care Med*. 2025; 19(8):37-41

Abstract

Background: Pediatric respiratory diseases, including asthma, are the leading causes of urgent care (UC) center and emergency department (ED) visits and hospitalizations among children in the United States and globally. Asthma care in the pediatric UC setting has not been well-studied. It is known, however, that many children presenting to primary care clinics and EDs with acute asthma exacerbations receive unnecessary chest x-rays (CXR). Multiple professional societies and organizations have made formal recommendations against the use of CXR in this setting.

Objective: The aim of this project was to increase clinician use of an evidence-based order set in pediatric asthma presentations in pediatric UC centers through various interventions and to track average length of stay (LOS) and CXR use after order set implementation.



Methods: This quality improvement project involved a 1-month educational and pilot phase for nurses, advanced practice providers (APPs), and physicians prior to the "go live" date. During this phase, clinicians were informed about the new order set and asthma pathway and were allowed to provide feedback for improvements. The final order set and pathway were then integrated into the electronic medical record (EMR) system.

Author affiliations: Richmond Darko, MD, MPH, Nicklaus Children's Hospital, Miami, Florida. **Andrea Aguilera, MD,** Emergency Resource Group/Baptist and Wolfson Children's Hospital, Jacksonville, Florida. **Gabriela Lins, DO,** Nicklaus Children's Hospital, Miami, Florida. **Maria Ramon-Coton, MD,** Nicklaus Children's Hospital in Miami, Florida.

Subsequently, a survey was sent to 79 clinicians to evaluate for awareness of, utilization of, and preferences for educational modalities. Utilization rates and self-reported feedback were measured over a 12-month period.

Results: Clinicians' report of their personal use of the evidence-based order set was incongruent with data extracted from the EMR. We provided actual utilization data to the clinicians regarding their usage of the order set, focusing efforts towards clinicians with low adherence rates. During the 12-month project period, the use of the asthma order sets by clinicians increased. However, the increased order set usage did not correlate with changes in the LOS for children with acute asthma exacerbations or a change in the rate of CXR utilization.

Conclusion: In this pilot project, we found that clinicians' use of evidence-based order sets increased during the project period. The educational interventions may have contributed to this change, however, future prospective randomized controlled trials would be helpful in determining causality.

Introduction

Pediatric respiratory presentations, including asthma, are the leading cause of UC and ED visits, as well as hospitalizations in children; as such, respiratory presentations in children are a significant source of morbidity and mortality globally.[1-11] In the United States, asthma remains the most common chronic respiratory disease of childhood, affecting approximately 8% of children.[12,13]

The management of asthma in the pediatric UC setting is not well-studied, and most published data comes from emergency and inpatient settings. ED-based studies on this topic have shown that clinician adoption of evidence-based care for asthma in children remains suboptimal despite recent progress in our understanding of best practices for appropriate resource utilization.[2,5,14] Evidence-based clinical decision support tools, guidelines, and pathways define the universal standards for effective asthma management.[15] Prior quality programs that simplify these guidelines and integrate clinical decision support tools within the EMR have been shown to improve the quality of asthma care in outpatient settings.[15,16] The National Asthma Education and Prevention Program guideline for the management of acute asthma exacerbations advises against the use CXR for the routine assessment of children with acute asthma exacerbations.[17,18] Current guidelines recommend limiting the use of CXR in patients presenting with acute asthma exacerbations to <20%.[1] However, many pediatric patients presenting to outpatient settings with acute asthma exacerbations still undergo CXR despite these guidelines. CXR usage in patients presenting with acute asthma exacerbations is among the lowest value services (ie, wasteful use of health services with limited benefit as compared with harm) offered in pediatric ED settings.[19] The use of decision support tools, standardized order sets, feedback, and audit have shown promise for improving clinicians' adherence to asthma guidelines.[20]

Published data on respiratory illness from pediatric UC visits are very limited. The Pediatric Hospital Information System (PHIS) has created an administrative database containing inpatient, ED, and ambulatory observational data from 41 not-for-profit, tertiary care pediatric hospitals in the United States.[21] However, the PHIS database currently does not include data from UC centers. As such, there remains an absence of data on pediatric asthma care in UC centers, despite increasing trends of UC utilization in children. [22,23]

Methods

The specific clinical pathway and order set for pediatric asthma presentations used in the project were created collaboratively by the clinical effectiveness program (CEP) within a large pediatric academic hospital in Florida and implemented in the hospital's 10 affiliated UC centers. The CEP consists of a multi-disciplinary team comprised of APPs, physicians, and nurses from multiple departments including primary care, UC, emergency medicine, pulmonology, inpatient care, pharmacy, and medical informatics. The aim of the CEP is to standardize and improve patient care and outcomes. The evidence-based medicine committee of the hospital reviewed and approved the clinical pathway and order sets prior to their implementation. The project was exempt from institutional review board review as it did not meet criteria for human subjects research.

A 1-month educational pilot period, which involved emails informing clinicians about the availability of the order set and pathway, was implemented prior to the project initiation ("go live") date. During the pilot phase, feedback was solicited and aggregated from clinicians/users on how to improve the pathway and order sets. The final pathway and order set were then published on the "go live" date and accessible through the EMR in April 2020.

An initial survey was sent to 79 clinicians (physicians and APPs) to assess their awareness of evidence-based guidelines, self-reported resource utilization frequency, and preferred modalities for education, as well as to

Figure 1. Asthma Order Set Usage Among All Centers and Clinicians

Order Set (OS) Usage	June 2022 Baseline	December 2022 6 Months	June 2023 12 Months	
				p-value
OS Usage (n, %)	110 (38.06%)	294 (65.48%)	184 (84.02%)	0.001
Non-OS Usage (n, %)	179 (61.94%)	155 (34.52%)	35 (15.98%)	
Acute Asthma Encounters	**289 (100%)**	**449 (100%)**	**219 (100%)**	

A chi-square test was conducted to examine the difference in order set usage over time. The result indicated statistically significant differences over time, $\chi^2(2)=116.88$, p= 0.001.

Figure 2. Average Length of Stay (LOS) For All Patients Diagnosed With Acute Asthma Exacerbation

	Baseline (n=289)	12 Months (n=219)	p-value*
LOS, mean (SD)	1.90 (0.41)	1.72 (0.41)	0.001

*An independent samples t-test was conducted to examine LOS between start and end of the observation period. The results indicated that there was a statistically significant decline in LOS between start (M=1.90, SD=0.41) and end of observation (M=1.72, SD=0.41), t(506)=4.90, p=0.001.

Figure 3. CXR Usage for All Patients with Acute Asthma Exacerbations

	Baseline	6 Months	12 Months	p-value*
Count (yes, n %)	71 (24.65%)	94 (21.17%)	54 (25.47%)	0.371
Count (no, n %)	217 (75.35%)	350 (78.83%)	158 (74.53%)	

A chi-square test was conducted to examine the difference in proportions over time. The result indicated no statistically significant differences over time, $\chi^2(2)=1.98$, p= 0.371.

gather feedback about existing clinical pathways and order sets. Clinicians' utilization of the asthma order set was measured for all patients with a discharge diagnosis of "acute asthma exacerbation." Data was collected over a consecutive 12-month period beginning in June 2022. The CEP team set a target of 80% for asthma order set usage in the UCCs. We also measured clinician awareness and self-reported utilization of the asthma order set among clinicians at the end of the 12-month period with a second survey.

The outcome measures compared to baseline/pre-project values were:

1. Change in use of the asthma clinical pathway and order set after implementation
2. Change in the average LOS for patients presenting to the pediatric UC centers with acute asthma exacerbations after implementation of guideline-based clinical pathway
3. Change in the proportion of patients diagnosed with acute asthma exacerbations that underwent CXR

Description of Quality Interventions

Beginning in September 2022, the hospital data science team began reporting monthly metrics on the usage of the asthma order set in the UC, ED, and inpatient units. The data science team reports included all patients in these settings with a discharge diagnosis of "acute asthma exacerbation." The reports identified how often the treating clinician had used the asthma order set. All UC clinicians were sent a monthly report of their use of asthma order sets. Each month, clinicians who had low (<50%) pathway usage were provided individualized "report cards," direct (one-on-one) education and feedback for improvement, and then were given an opportunity to discuss any barriers contributing to their low rate of usage. Usage data and reminders about the importance of using the order sets and pathway were also presented at quarterly UC staff meetings.

Results

The initial survey was sent to all the organization's UC clinicians (47 physicians and 32 APPs). The response rate to the survey, which was sent at the beginning of the project period, was 48% (n=38/79). All (100%) respondents reported using the general pathway at least once. Additionally, 76.3% (n=29/38) of respondents reported having knowledge regarding the availability of

the evidence-based order sets, and self-reported pathway and order set usage was 100% (n=38/38).

The survey was repeated after the outlined quality interventions. The response rate for the follow-up survey was 40.5% (n=32/79). In the follow-up survey, 100% of respondents again reported personal use of the pathway at least once (n=32/32). Interestingly, only 90.6% of respondents reported knowledge of the pathway (n=29/32).

During the 12-month observation period, a total of 258,112 pediatric patient encounters occurred among the 10 UC centers. Of those encounters in children, 5,034 (2%) had a discharge diagnosis of acute asthma exacerbation.

As shown in **Figure 1**, asthma order set usage significantly increased during the project period from 38.06% at the beginning of the observation period to 84.02% (χ^2 p=0.001).

As shown in **Figure 2**, the average LOS for patients seen in UC for acute asthma exacerbations decreased a small but statistically significant amount during the project period, from 1.90 hours initially to 1.72 hours after 12-months (p=0.001).

The proportion of patients with acute asthma exacerbations who had CXRs was 24.65% initially, 21.17% after 6 months, and 25.47% after 12-months, which was not a significant change (p=0.371) (**Figure 3**).

Discussion

The PHIS database does not include data from UC centers, and institutions with a large pediatric UC footprint do not report to or have access to national UC data.[21] There were roughly 200,000 unique pediatric (0-21 year olds) encounters at our institution during our study period. During the 12-month study period, about 2% of these encounters were for acute asthma exacerbations, amounting to approximately 5,000 encounters across 10 UC centers. Thus, many patients and families are affected by how children with acute asthma exacerbations are managed in our centers.

While many studies have assessed the frequency of ED visits related to asthma exacerbations in children, only 1 study has assessed the proportion of UC visits that constitute care for asthma in children. This single study found 9% of visits in children from 2009-2015 presenting to UC were related to asthma, but this study was restricted to metropolitan Washington, D.C., and included only military healthcare facilities.[24] Ours is the first publication assessing the frequency of pediatric asthma exacerbations in civilian pediatric-specific UC centers.

To our knowledge, this pilot quality improvement project is the first of its kind to follow changes in clinician EMR engagement, test ordering, and LOS after implementation of evidence-based clinical guidelines in the EMR for the care of acute asthma exacerbations among children presenting to a UC setting. We monitored for changes in these variables while targeting educational interventions towards clinicians with the lowest use rates individually as well as across the whole group broadly.

There were several findings of interest in this pilot quality improvement project. First, clinicians over-reported their use of the asthma pathways. While clinicians often stated they were aware of the order sets and guidelines and were using them regularly, the data of their actual usage revealed much lower levels of clinician engagement with the tools. Additionally, as we continued the announcements and focused clinician educational interventions, we saw a relatively substantial increase in clinician use of the asthma order set (38% to 84%) during the 12-month project period. This may be related to the interventions, but causality cannot be ascertained with the project's design (ie, absence of a control group).

The use of decision support tools or order sets, feedback, and audit have been shown to help improve clinicians' adherence to asthma guidelines.[15,16] In this study, we predicted order set use would correlate with reducing CXR use in children with acute asthma exacerbations. While the EMR was engineered to provide a pop-up on-screen notice stating CXR is "*not routinely recommended as per Choose Wisely Campaign,*" we were not able to access monthly data on CXR ordering as we were with order set utilization. Therefore, we were not able to provide feedback to clinicians on their use of CXR. Given that feedback was provided to clinicians about order set utilization with increased order set utilization observed (and feedback was not provided regarding CXR utilization with no change observed in CXR ordering), it is possible that the feedback contributed to increasing levels of clinician engagement with the asthma order set. Unfortunately, given that this quality project had no control group, such inferences cannot be made from the data. For example, it is possible that rather than a specific aspect of the interventions contributing to clinician behavioral change, the awareness of being monitored in the order set usage drove this effect (ie, the Hawthorne effect). Future work exploring these practices with formal study, such as a prospective cluster randomized trial, would offer more insights as to the effect of the specific interventions.

We hypothesized clinicians who used the asthma order set would have shorter average LOS for their patients. We did observe that average LOS was reduced by an average of 10.8 minutes during the observation period, which was statistically significant. We restricted the LOS assessment to only patients who presented with acute asthma exacerbations, which accounted for approximately 2% of all patient visits during the project period. LOS is also affected by countless factors including, but not limited to, the time of day, day of the week, and the number of other patients being cared for concurrently. Since LOS is a common metric for tracking efficiency, further work on the topic of standardizing care for pediatric asthma in UC and its effect on overall UC efficiency should explore how implementing such care guidelines for asthma affect not only the LOS of patients with asthma but overall LOS for all patients in a prospective randomized controlled fashion.

Limitations

This was a small pilot project. Given the lack of control groups, inference regarding causality of any observed changes in clinician practices and LOS are necessarily speculative. The response rate was 48% on the initial survey and 40.5% on the follow-up survey; since the majority of clinicians did not respond, it is possible the non-responding group may have been systematically different than those who did respond in one or more ways.

Cases included were determined by the International Classification of Diseases code (ICD-10) of "acute asthma exacerbation" diagnosis assigned at discharge. It is likely that some children with asthma exacerbations were given alternate discharge diagnoses (eg, viral upper respiratory infection, bronchitis, etc.) and therefore would not have been included in the analysis.

Understanding the myriad influences on clinician behaviors is a complex topic. Given very limited scholarly work on these topics in UC settings, this pilot project, while limited in size and scope, does offer several insights as to worthwhile directions for future research. Our data confirm that asthma exacerbations are relatively common in pediatric UC centers. Appropriate care for pediatric asthma has among highest levels of supportive evidence, which makes this topic ideal for further research in UC centers to determine how to ensure clinicians are delivering high-quality, evidence-based care. ■

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Two AI Trends That Will Change Urgent Care

Urgent Message: While there are seemingly countless applications for artificial intelligence in healthcare, ambient scribes and front desk automation are key solutions that are readily available for adoption by urgent care providers.

Alan A. Ayers, MBA, MAcc

Citation: Ayers AA. Two AI Trends That Will Change Urgent Care. *J Urgent Care Med.* 2025; 19(8):43-45

Artificial intelligence (AI) is rapidly transforming healthcare, and urgent care operators have increasing opportunities to leverage AI in a way that works for patients and providers. While many AI-driven innovations are still in development, 2 solutions are emerging in 2025: ambient AI scribes; and AI front-office automation.

Promising technologies have accelerated throughput and raised efficiency in urgent care for decades. Electronic medical record (EMR) systems enhance clinical decision-making by identifying potential diagnoses and making documentation faster, for example. Algorithms can review documentation of a patient visit to determine medical decision-making levels and suggest billing codes. Dynamic queuing systems give patients accurate, up-to-the-minute, wait-time estimates, allowing them to wait from the comfort of home before arriving at the urgent care. As another example, image recognition software is also improving the accuracy of digital x-ray over-reads in urgent care.

Building on these prevailing technologies, AI scribes and front desk automation are additional advancements beginning to deliver value. AI scribes help reduce time-consuming documentation, allowing clinicians to focus on patient interactions and achieve higher productivity. Front desk AI streamlines a center's workflows from scheduling and check-ins to follow-ups and administrative communication.

In this article, we'll explore how these 2 AI solutions function and how they will influence urgent care's daily operations.

Ambient AI Scribes: Transforming Documentation

Documentation is one of the most time-consuming aspects of a clinician's day, taking time away from face-to-face patient interactions. Time spent in documentation is also a top complaint among clinicians, frequently causing burnout, even though it's necessary for optimizing patient health, business revenue cycle management, and compliance with legal standards.[1] Ambient AI scribes aim to change this dynamic by automating

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

clinical documentation in real time, thus increasing the provider's capacity for patient interactions.

These transcribing tools "listen" to audible patient-provider conversations and extract relevant clinical details. They then generate structured notes or populate the EMR through direct integration. Using an AI scribe can automate some of the provider's notation work, requiring only a review of the captured information to ensure accuracy rather than the provider keying in the notes manually.

Unlike traditional dictation software—which requires manual editing and is often used after the patient interaction—ambient AI scribes process natural conversation and write notes in real time at the bedside.

Impact on Urgent Care

Studies show that ambulatory-care providers spend 37% of their time in the exam room on EMR work.[2] Offloading some of this burden to an AI scribe can potentially free the provider to see more patients per shift without feeling overwhelmed by paperwork.

AI scribes also have the potential to improve the patient experience. Automating documentation allows the provider to maintain eye contact and engage more meaningfully with patients.

Beyond improving efficiency, AI scribes can also help reduce documentation errors and omissions by capturing details of conversations. By recording clinically relevant information, such tools can improve coding accuracy and reduce claim denials from insurance providers. Additionally, AI scribes help maintain compliance with documentation standards and facilitate accurate record keeping for audits and billing.

Challenges and Considerations

Despite the potential benefits, AI scribes are not without challenges. Operators should consider the following factors when implementing these tools:

- **Patient acceptance:** While studies show anecdotally positive patient sentiment toward AI scribes, clear communication and education are necessary.[3] Centers using this technology should inform patients upfront and obtain consent to ensure transparency and trust.
- **Regulatory compliance:** Compliance with HIPAA and data security standards is mandatory for AI scribes and human providers alike. Operators must ensure their chosen AI solution meets these privacy requirements.[4]
- **Provider oversight:** While AI scribes can help to reduce a provider's workload, no automation is perfect. Providers must still review and verify the generated notes to correct any inaccuracies before finalizing their documentation in the EMR.

AI Front Desk Automation: Streamlining Patient Interactions

The front desk is a bottleneck for many urgent care centers. Staff members must juggle phone calls, check-ins, insurance verification, payment collection, scheduling, and more. Often, the same staff have other duties, such as turning over rooms or restocking supplies. AI-driven front desk automation aims to alleviate some of this burden by handling routine administrative tasks, allowing staff to prioritize patients.

AI tools can answer phone calls, respond to text messages, schedule appointments, send reminders, verify insurance details, and even collect payment. Some urgent care centers are already experimenting with AI-driven virtual concierges that interact with patients via text or voice, mimicking a live receptionist.

While the goal is not to eliminate human staff, AI can significantly reduce the volume of repetitive tasks, ensuring front desk personnel are available to handle more complex or sensitive patient interactions.

Impact on Urgent Care

AI front desk automation has the potential to transform both operational efficiency and patient experience. For instance, a patient checking in at the center might not need to wait while the receptionist fields a phone call from another patient asking about clinic hours or insurance coverage. Instead, the AI handles the phone call inquiries autonomously, while in-person staff turns their attention to the patient checking in instead.

AI automation also enhances convenience for patients beyond the center's walls. Many patients seek information outside of traditional business hours, and AI can handle these inquiries 24/7.

Current technology already allows these systems to answer general questions with impressive accuracy, and the capability of AI front desk tools will only improve with time. Automated systems can also send text reminders, process digital check-ins, and provide estimated wait times, helping patients better plan their visits.

Challenges and Considerations

While AI front desk automation offers clear benefits, operators should consider these challenges before implementing this technology:

- **Balancing AI with human interaction:** AI should

enhance, not replace, personalized, face-to-face service. Urgent care centers must ensure that patients who prefer human interaction can still easily access it.

- **Patient frustrations with AI:** Many patients dislike automated phone systems, even if they are fast and accurate, and will become frustrated when they can't reach a live person. Operators must be mindful of how this may negatively affect patient perception of their urgent care brand.[5]
- **Implementation costs and training:** While AI can help reduce long-term administrative costs, upfront investments in software and training can change the value proposition.

The Future of AI in Urgent Care

AI is actively shaping how urgent care operators will approach administrative workflows and the patient experience now and in the near future. Both ambient AI scribes and AI-driven front desk automation are advancing to improve efficiency, enable long-term cost savings, and enhance the patient experience.

However, as the technology behind these tools is still developing, urgent care owners and operators must carefully consider how to best integrate them into their centers' unique workflows while maintaining high standards of care and improving patient satisfaction. Having the right adoption strategy is paramount. Operators must ensure that providers and support staff are properly trained, address patient concerns about the use of AI in their care, and maintain compliance with all privacy and security regulations.

Although AI has the power to dramatically enhance organizational efficiency, it can't supplant human oversight and manual review. No AI tool is 100% accurate, and operators must continue to prioritize the personal touch patients expect.

AI adoption in urgent care is likely to accelerate in the months ahead as even more tools and technologies emerge. However, urgent care's core mission remains the same: delivering timely, high-quality, patient-centered care. Leveraging AI tools strategically will allow urgent care operators to optimize their operations while keeping the focus on this essential mission. ■

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

51-Year-Old With Hemoptysis

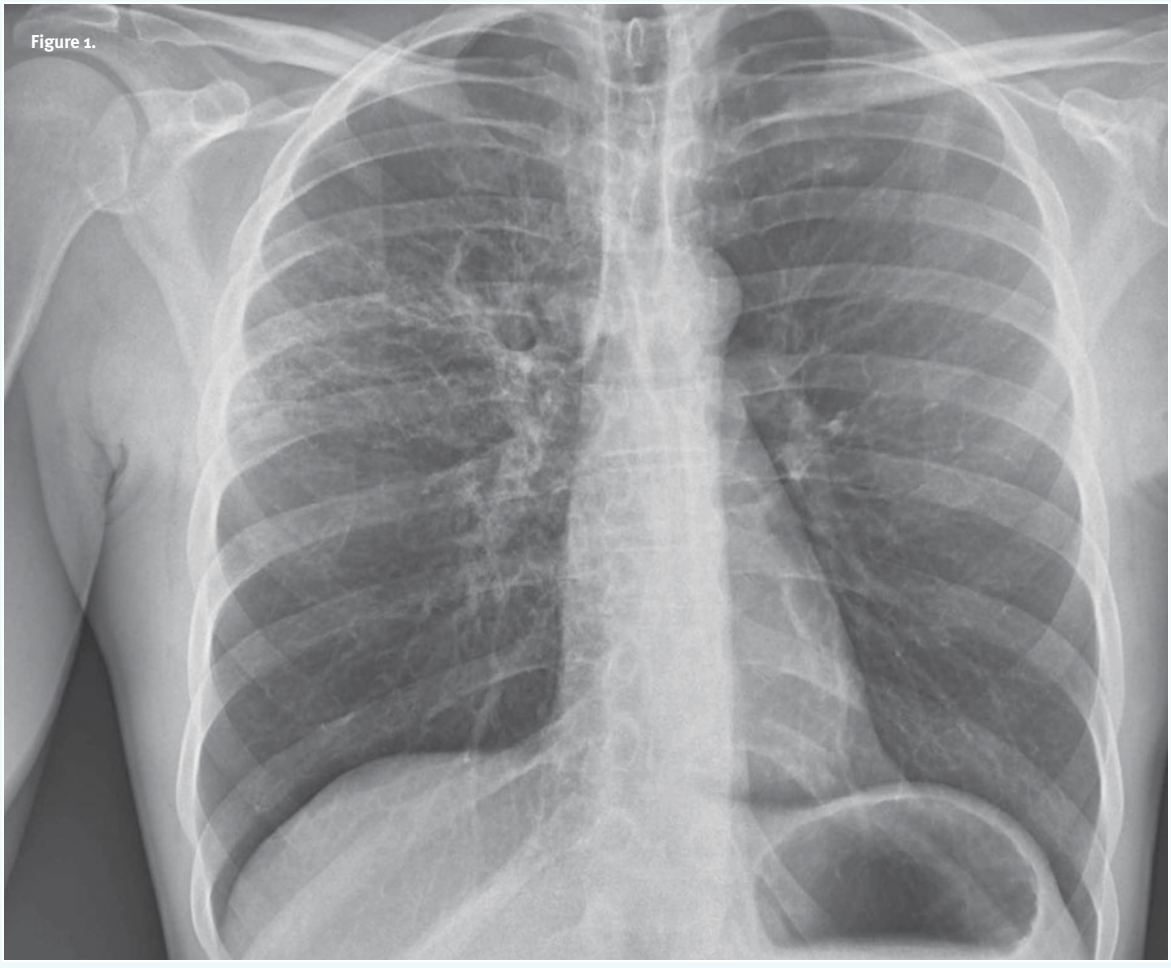


Figure 1.

A 51-year-old man presents to urgent care complaining of night sweats and a productive cough with visible blood for the past 2 weeks. He says he's been feeling rather tired lately. A chest x-ray is ordered.

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

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

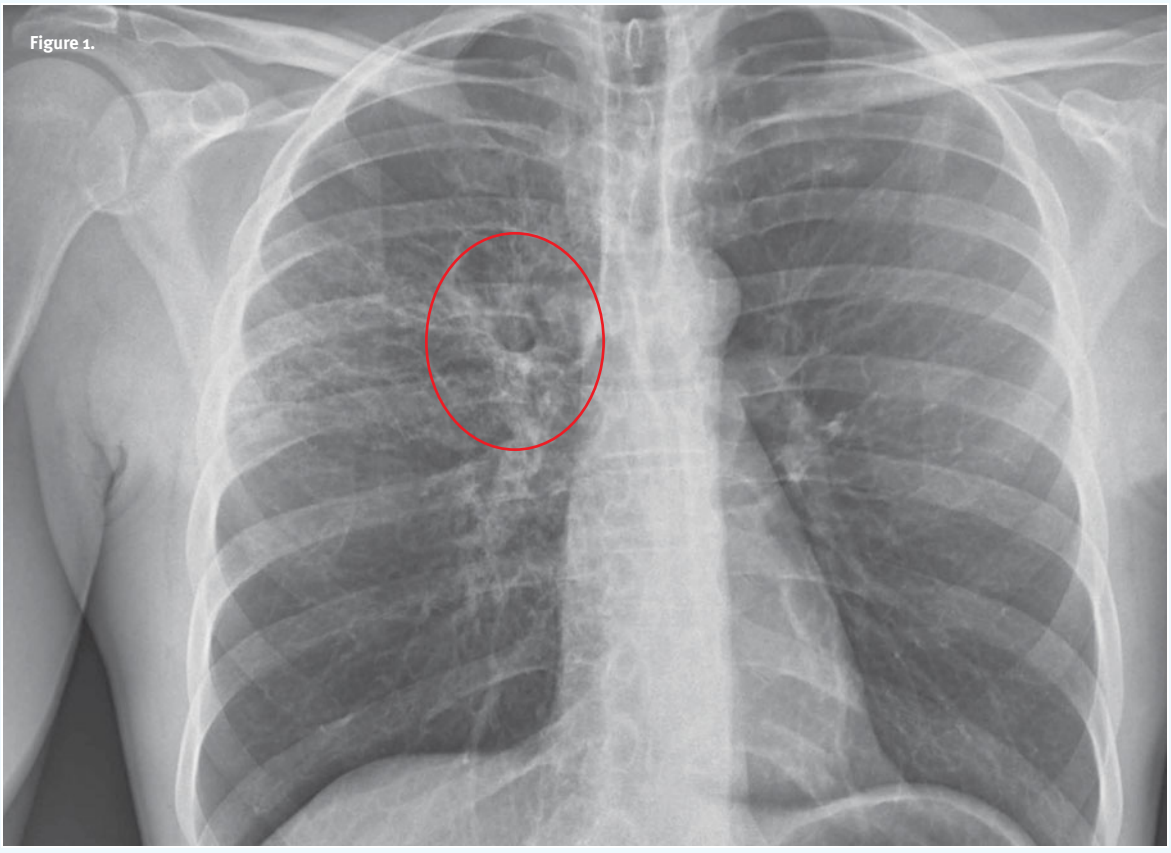


Figure 1.

Differential Diagnosis
- Community acquired pneumonia
- Aspergillus pulmonary infection
- Post-primary tuberculosis

Diagnosis

The correct diagnosis in this case is post-primary tuberculosis (TB). This radiograph demonstrates the typical appearance with patchy consolidation and poorly defined linear and nodular opacities. Cavitation is also present. Pleural effusions are also possible but not present in this radiograph.

Post-primary TB is a pattern of disease that arises in a patient who has previously been exposed to TB. This occurs when the disease reactivates in dormant primary lesions, usually several decades after infection when the patient experiences a weakened immune system.

What to Look For
- X-ray findings include interstitial infiltrates, nodular/linear opacities, and/or cavitary lesions commonly in the upper lobes
- Patients with post-primary TB are often asymptomatic or have only minor symptoms, such as a chronic dry cough
- Symptomatic patients experience constitutional symptoms such as fever, malaise, weight loss, or blood-stained productive cough
- Occasionally, patients may present with massive hemoptysis due to an erosion of a bronchial artery

Pearls for Urgent Care Management
- Place the patient in a surgical mask to avoid the spread of TB
- Airborne precautions should be implemented including N95 mask use by healthcare professionals
- If the patient is stable, contact the local public health department to coordinate confirmative testing and a treatment plan
- If the patient is severely ill, transfer to the emergency department for further evaluation and treatment

55-Year-Old With Hand Rash

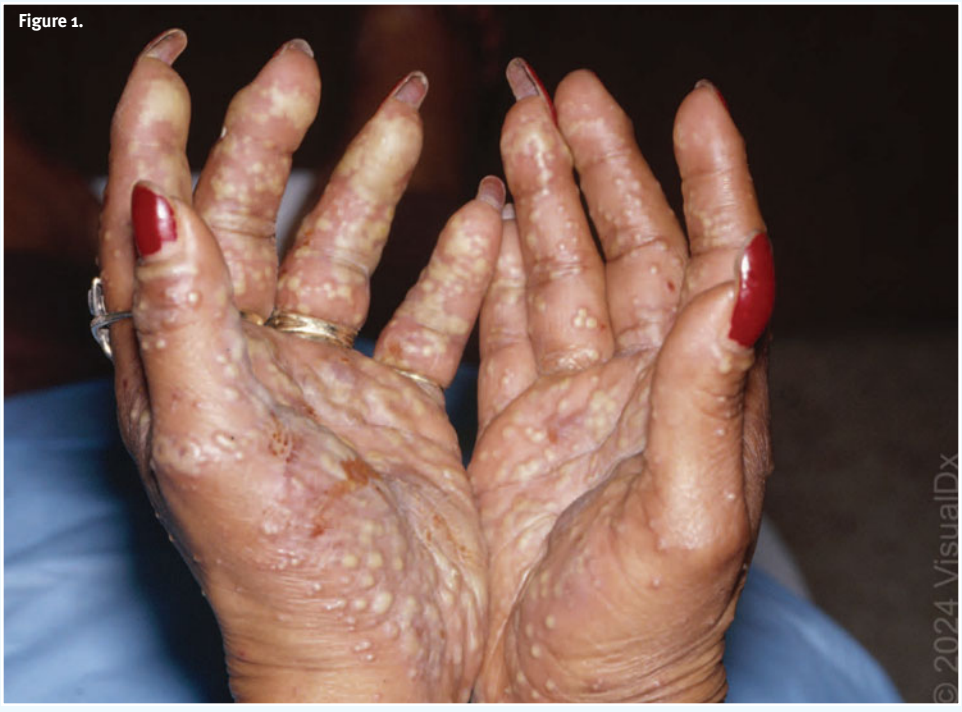


Figure 1.

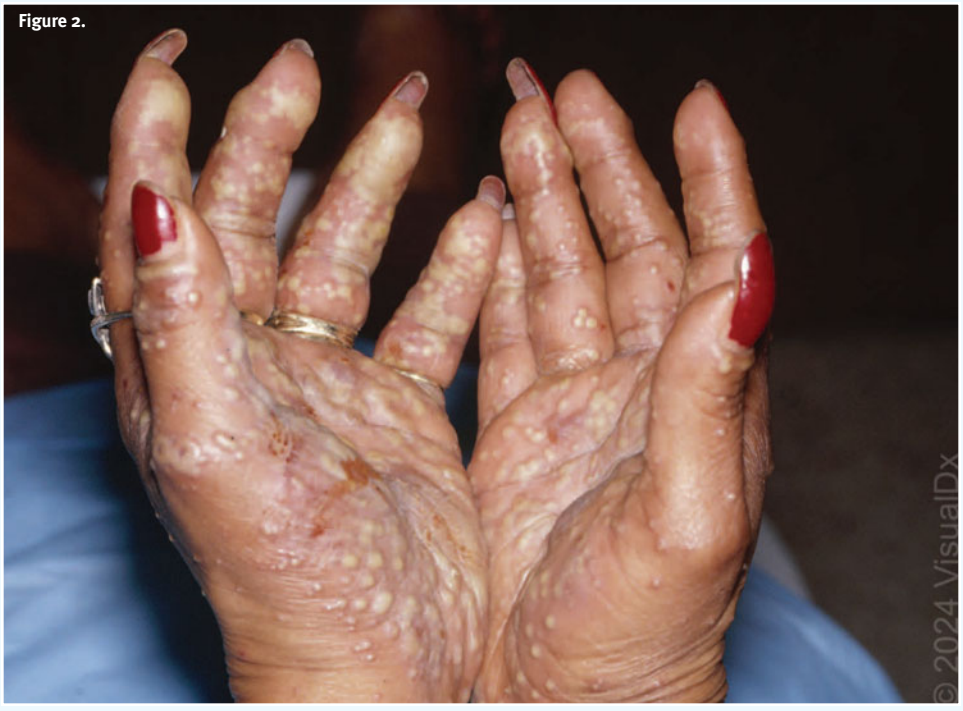
A 55-year-old woman presents to urgent care with complaints of arthralgia and a pustular rash on her hands. She has a past medical history of Crohn disease and has taken infliximab as treatment for the past year. The patient has no recent history of travel or infections and no history of any skin conditions. On dermatological examination, multiple pustules, some becoming confluent to form "lakes of pus," were seen on the palms and fingers. Bacterial and fungal cultures were negative.

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).

THE RESOLUTION

Figure 2.



Differential Diagnosis

- Dyshidrotic dermatitis
- Erythema multiforme
- Palmoplantar pustulosis
- Vasculitis

Diagnosis

The correct diagnosis in this case is palmoplantar pustulosis, a chronic eruption of the palms and soles, composed of sterile vesicles and pustules, often accompanied by painful fissuring. It is mostly seen in middle-aged women. Palmoplantar pustulosis may occur alongside or follow a systemic infection, including group A streptococcal infection. It may also be triggered by tumor necrosis factor-alpha inhibitor medication or metal allergy.

What to Look For

- Systemic symptoms are usually absent
- Besides the pustules/vesicles/fissures, there may be pain, pruritus, or a burning sensation
- Importantly, symptoms are limited to the palms and soles

Pearls for Urgent Care Management

- Palmoplantar pustulosis may resolve spontaneously; however, periods of exacerbation and remission may occur
- First-line treatment includes the use of a medium potency topical corticosteroid for 4 weeks
- Follow-up with dermatology should be recommended

17-Year-Old With Syncope

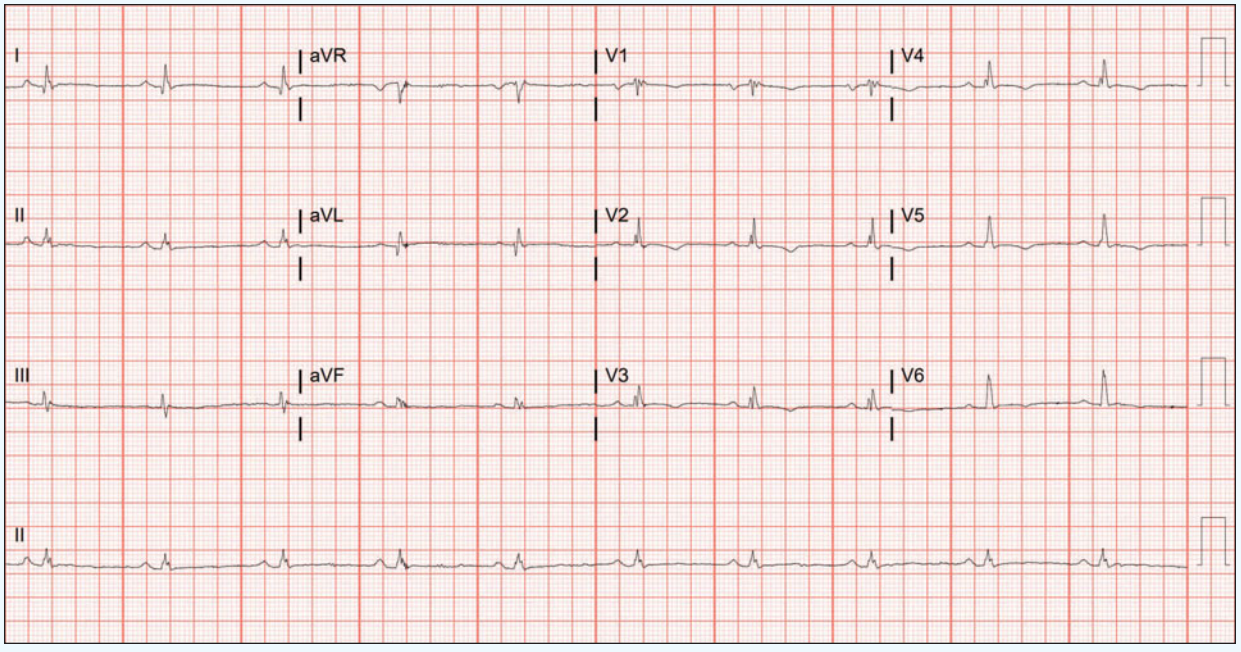


Figure 1: Initial ECG

A 17-year-old male presents to urgent care with syncope. He has a family history of sudden cardiac death. He is well appearing and with normal vital signs. An ECG is obtained.

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

Case presented by Benjamin Cooper, MD, MEd, FACEP, McGovern Medical School at the University of Texas Health Science Center at Houston

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

ECG STAMPEDE

Differential Diagnosis

- Arrhythmogenic right ventricular cardiomyopathy (ARVC)
- Brugada syndrome
- Wellens syndrome
- Third degree heart block
- Wolf-Parkinson-White (WPW) syndrome

Diagnosis

The diagnosis in this case is arrhythmogenic right ventricular cardiomyopathy. There is a normal sinus rhythm with a ventricular rate of 60 beats per minute, and there is an incomplete right bundle branch block pattern (iRBBB) in the right precordial leads (ie, V1 through V3) with associated T-wave inversions (typical for iRBBB). There is terminal notching of the QRS complex seen in V1, which is consistent with Epsilon waves, confirming the diagnosis of ARVC.

Discussion

ARVC is an inherited and progressive condition characterized by structural abnormalities in the right ventricle that predispose it to ventricular arrhythmias and sudden cardiac death. The condition is more common in males, most prevalent in the Italian population, and usually discovered during adolescence.[1,2] About 30% of patients will have Epsilon waves, which are terminal notches near the end of the QRS complex and are the most specific finding of ARVC.[3] While Epsilon waves are a hallmark finding, they are a late finding of fatty and fibrous infiltration of ventricular myocardium and represent fragmented conduction through islands of surviving myocardium in the right ventricular outflow tract (**Figure 2**).

T wave inversions are the most sensitive finding, present in up to 85% of patients, and are generally found in the right precordial leads, as with our case.[4] Other electrocardiographic findings include incomplete and complete right bundle branch block. Diagnosis is confirmed via magnetic resonance imaging, and treatment includes antiarrhythmics and implantable defibrillators.[1] Patients with suspected ARVC should be referred to a center with electrophysiologic capabilities. The urgent care clinician should consider defibrillator pad placement prior to, and during, transfer.

Brugada syndrome is a sodium channel disorder and cause of sudden cardiac death; it is characterized electrocardiographically by a right bundle branch block appearance in V1 and/or V2 with coved-type ST-segment elevations.[5] Wellens syndrome represents an ECG pattern seen in patients with critical stenosis of the proximal left anterior descending artery; it is characterized by biphasic T waves or deeply inverted, symmetric T waves in the anterior precordial leads.[6] WPW is a ventricular pre-excitation syndrome that predisposes to arrhythmias.[7] Electrocardiographic findings of WPW include a short PR segment, delta waves, and a slightly widened QRS—none of which are seen in this ECG. Additional electrocardiographic considerations for patients presenting with syncope include ischemia, heart blocks, hypertrophic cardiomyopathy, and prolonged QT.

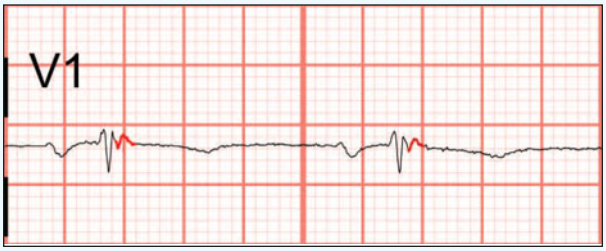


Figure 2: Epsilon waves in V1 highlighted in red.

What To Look For

- ARVC is a cause of sudden cardiac death, predominantly in young men
- It is characterized electrocardiographically by T wave inversions in the right precordial leads, and 30% may have Epsilon waves, terminal notches near the end of the QRS complex

Pearls For Initial Management, Considerations For Transfer

- Patients with suspected ARVC should be referred to an electrophysiologic center
- Place defibrillator pads while waiting for and during transfer

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Which Topical Agent is the Best Choice for Epistaxis?

Take Home Point: This study found that oxymetazoline was most effective in achieving hemostasis in cases of epistaxis when compared to tranexamic acid (TXA) and an epinephrine-lidocaine combination (ELC) solution.

Citation: Celik T, Altun M, Kudu E, et. al. Comparison of the efficacy of oxymetazoline, tranexamic acid, and epinephrine-lidocaine combination in the treatment of epistaxis. *Am J Emerg Med*. 2025 Feb 23:91:104-109. doi: 10.1016/j.ajem.2025.02.036

Relevance: Controlling epistaxis quickly in urgent care (UC) centers is important for minimizing patient anxiety. Uncontrolled hemorrhage can quickly become time consuming and messy. In a resource-limited UC center, it is of particular value for understanding which topical solution offers the greatest chance for rapid hemostasis.

Study Summary: This was a prospective, single-center, observational, cohort trial conducted in an emergency department (ED) of a tertiary care hospital in Turkey. The authors included adult patients who failed to achieve hemostasis during non-traumatic epistaxis after direct pressure on the nasal alae for 15 minutes. Patients received either nasal spray containing 0.05% oxymetazoline hydrochloride, 500 mg of TXA diluted in 5 mL of sterile saline, or 1 ml of 1% epinephrine (1:1000) and 1 ml of 2% lidocaine. All preparations were applied to a gauze swab and inserted directly into the nares to have a tampon effect. Hemostasis was assessed every 5 minutes and time to cessation of bleeding was noted. ENT consultation was requested for patients that had not achieved hemostasis after 30 minutes.

The authors initially included 373 patients, but 89 (23.8%) achieved hemostasis with direct pressure alone were not included in the final analysis. Among them, 40 patients were noted to have posterior bleeds and 333 anterior bleeds. Of the 284 patients analyzed, 91 patients (32%) received ELC, 96 patients (33.8%) received TXA, and 97 patients (34.2%) received oxymetazoline. Hemostasis was achieved in 69/97 patients (71%) receiving oxymetazoline, 53/96 patients (55%) receiving TXA, and 45/91 patients (49%) receiving ELC. Subgroup analysis revealed a significant difference between the oxymetazoline and the ELC group ($p = 0.002$, Cohen's $h = 0.45$, 95% CI [0.20, 0.70]). There was a significant difference between oxymetazoline and TXA groups ($p = 0.022$, Cohen's $h = 0.34$, 95% CI [0.10, 0.58]), but not between TXA and ELC groups ($p = 0.431$, Cohen's $h = 0.12$, 95% CI [−0.08, 0.32]).

Editor's Comments: The study lacked randomization and blinding. The choice of hemostatic agent used was based on physician preference. Therefore, there may be characteristics of patients in each group that were significantly different. The study was also a single site study based in a tertiary care hospital in Turkey, which limits generalizability to other setting such as UC. However, direct pressure alone was successful in nearly one-quarter of the epistaxis cases. This seems relatively high and is not reported in other studies. This may suggest a less severe cohort than typically seen in U.S. EDs, but perhaps more similar to UC centers. The rates of posterior epistaxis in this study were ~10% which is comparable to rates in previous published literature. Oxymetazoline was significantly more effective in this study than both TXA and ELC. These results contradict a 2020 study in the *Journal of Emergency Medicine* where TXA was successful in 78% of cases versus 35% efficacy seen with oxymetazoline. This contradiction suggests that prospective randomized controlled trials comparing hemostatic agents would be of great value in settling this debate. In light of this state of contradictory evidence, the most salient finding from this study is that application of direct pressure remains sound advice as an initial maneuver. Beyond this, until higher quality evidence (ideally among an UC population exists), it's reasonable to use which ever hemostatic agent (or combination of agents) is most immediately available. ■

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.

Could Probiotics be the Long Sought after Cure for the Common Cold?

Take Home Point: This study found that children with viral upper respiratory tract infections (URI) who were given probiotics had a significantly shorter duration of fever compared to controls.

Citation: Bettocchi S, Comotti A, Elli M, et. al. Probiotics and Fever Duration in Children with Upper Respiratory Tract Infections: A Randomized Clinical Trial. *JAMA Netw Open*. 2025 Mar 3;8(3):e250669. doi: 10.1001/jamanetworkopen.2025.0669.

Relevance: URIs are ubiquitous in children with most children suffering from multiple viral URIs per year. No treatments to date have proven to meaningfully affect the duration of URI symptoms in children. Antibiotics, specifically, have been shown repeatedly to be ineffective for shortening the duration of URI symptoms.

"It seems reasonable to suggest probiotics as a solution to help children with URIs feel better faster when parents are grasping for any reasonable treatment option."

Study Summary: This was a triple-blinded, placebo-controlled randomized clinical trial conducted in a pediatric ED in Milan, Italy. Children aged 28 days to 4 years with a fever >38.5°C and a diagnosis of URI were enrolled and randomly assigned to receive either a single oral dose of 1.5g of a probiotic mixture (*Bifidobacterium breve* M-16V, *Bifidobacterium lactis* HN019, and *Lactobacillus rhamnosus* HN001) by mouth for 14 days or similarly dosed placebo. Caregivers were instructed to measure a rectal temperature on the enrolled children 3 times daily. Patients had follow-up by phone 7 days after the ED visit to collect data on temperature measurements and compliance and then again 7 days later (14 days after the initial visit) in the cases where there was persistent fever. Fever resolution was defined as at least 24 consecutive hours without antipyretic use and no rectal temperature >38.5°C. Children were excluded if they had chronic immunodeficiency, required hospitalization, had current diarrheal symptoms, or had recently taken probiotics.

Enrolled into the study were 128 children with a mean age of 2.5 years with 63 (49%) assigned to the intervention group and 65 (51%) to the placebo group. The authors found that 55% of patients fully adhered to the protocol, 13% were partially adherent, and 32% dropped out. Participants in the probiotics group had a significantly shorter duration of fever compared with those in the placebo arm (3 days vs 5 days; P <.001). These findings were similar in both the intention-to-treat (ITT) and per protocol analyses. There were few adverse events (constipation, diarrhea, and abdominal pain) and these did not differ between groups.

Editor's Comments: Probiotics have been explored for acute diarrheal illnesses in children with unimpressive results. However, prior studies have suggested that immune system modulation through probiotics may hold promise for acute infectious illness outside the gastrointestinal tract. Probiotics are generally considered very safe in patients with functional immune systems and are available without a prescription in most countries. Given the relative safety and low rate of adverse reactions, probiotics would be an attractive treatment option, especially in children and in cases where there are very few safe symptomatic and/or disease modifying treatments.

This study did suffer from a significant attrition rate with 45% of participants having at least some deviation from the protocol. However, in both the ITT and per protocol analyses, there remained a statistically (and clinically) significant reduction in duration of fever. This finding is particularly compelling given the study's relatively small sample size.

Additionally, we can glean other useful data that can inform our counseling for parents of young children with febrile illnesses. For example, the average duration of fever was 4 days across all participants. This is particularly important to note in guiding parental expectations and timing of reassessments. For example, if a child with 1 day or less of fever is discharged from UC, recommending a 24-48 hour recheck, apart from its impracticality, is also poor guidance since many children will remain febrile, yet appropriate management will not change.

The study did have some shortcomings. Notably, the authors did not differentiate the cause of the participants illness: viral vs bacteria, however, presumably these were treated as viral illnesses and without antibiotics. Additionally, there are not data on how many children required additional visits or hospitalizations. Despite these shortcomings, it seems reasonable to suggest probiotics as a solution to help children with URIs feel better faster when parents are grasping for any reasonable treatment option, as they often are. There are little risks to probiotics in otherwise healthy children and this study presents a compelling argument that they may shorten the duration of illness by as much as 40%—an impressive treatment effect—in a situation where we have not historically had much to offer. ■

High Blood Pressure and Headache: Cause or Effect?

Take Home Point: Patients with headache and elevated blood pressure readings experienced normalization of blood pressure when the headache was effectively treated.

Citation: Kareff H, Sharpe S, Gupta C, et. al.. Treatment of headache reduces blood pressure among most patients with migraine and elevated blood pressure. *Am J Emerg Med*. 2025 Feb 19:91:55-58. doi: 10.1016/j.ajem.2025. 02.017
Relevance: Patients with elevated blood pressure (BP) often present with concurrent headache. Among patients and clinicians alike, concerns often arise that high blood pressure readings are causative for headache and/or require treatment with anti-hypertensive agents. Given increasing evidence that acutely lowering asymptomatically elevated blood pressure increases the risk of adverse outcomes (eg, acute kidney injury, stroke, etc.), it's worthwhile to determine if blood pressure measurements will improve simply by virtue of treating an active source of pain (ie, headache).

Study Summary: This was a retrospective study using data from 4 separate prospective ED-based migraine studies conducted in New York City. Patients in the initial studies received medication, alone or in combination, which included prochlorperazine, metoclopramide, diphenhydramine, and dexamethasone among others. In the initial studies' protocols, systolic (SBP) and diastolic (DBP) blood pressure were measured both prior to initiation of treatment and rechecked 1 hour post treatment. Pain scores were assessed on a 0-10 scale and were also measured pre- and post-treatment of headache. The authors included patients with and without a pre-existing diagnosis of hypertension.

The authors reviewed data from 729 patients, 13.3% of whom presented with at least moderately elevated BP (SBP ≥ 150 mmHg or DBP ≥ 95 mmHg). Post-treatment with various migraine therapies, 73.2% (95% CI, 64.2–82.2%) experienced an improvement in DBP and 78.4% (95% CI, 70.0–86.7) improved SBP. Also, 11.3% (95% CI 4.9–17.8) experienced a complete normalization of BP within 1 hour of receipt of the study migraine medication. There was a significant association between reduction in pain scores and reduction in BP in patients without a diagnosis of hypertension, but no associated reduction in BP with lower pain scores in patients with prior a prior diagnosis of hypertension.

Editor's Comments: The data for this study did not account for patients who may have had undiagnosed hypertension at the time of enrollment. Additionally, there was no methods used to account for any vasoactive effects of the medications on blood pressure. Additionally, this was a retrospective, non-randomized study, which could introduce various forms of bias.

Despite these caveats, these data presents a compelling narrative corroborating elevated BP as an effect of headache (as it is for other sources of pain) rather than the cause of it. This is further supported by the finding that patients with existing hypertension did not experience corresponding decline in their blood pressures with the alleviation of pain. In total, while not the highest level of evidence, this is a clever study which supports disregarding BP elevations in patients with acute pain and reassessing after their pain is controlled. ■

Do Practice Sites Involved in Research Perform Better?

Take Home Point: In this study, general practices engaged in research activities had higher practice performance across multiple quality metrics.

Citation: Gibson J, Kontopantelis E, Sutton M, et. al. Relationship between research activity and the performance of English general practices: cross-sectional and longitudinal analyses. *Br J Gen Pract*. 2024 Dec 26;75(750):e50-e56. doi: 10.3399/BJGP.2024.0111
Relevance: The decision to engage in research is an important one as it has many implications for the logistics of clinical practice. Prior studies have shown improved clinical metrics among inpatient practice sites which were actively engaged in research. This study aimed to evaluate if this correlation also exists among outpatient practice sites.

Study Summary: This was a cross-sectional, longitudinal study using data from the National Institute for Health and Care Research Clinical Research Network (NIHR CRN) and the Royal College of General Practitioners in the United Kingdom to investigate relationships between general practice (GP) clinic research activity and organizational performance. Measures of performance tracked were clinical quality of care (data obtained from the Quality and Outcomes Framework, prescribing quality (proportion of antibiotics issued that were narrow-spectrum), patient experience measures (data from GP patient surveys), hospital utilization (non-elective admissions and rate of ED visits), and General Practitioner satisfaction and work-place retention.

Data from 6,203 GP practices were included. The authors found that participation in research activity was significantly associated with improved clinical quality, higher patient experience scores and negatively associated with frequency of ED visits among the GP clinic's patient population. The magnitude of these associations, however, was small.

Editor's Comments: Clinics' willingness to participate in research is a necessary ingredient for further medical

knowledge. Research is both financially and energetically costly and time-consuming. This study's findings, however, are useful in demonstrating a value beyond producing research manuscripts that involvement in research offers, namely in improvements in relevant clinical performance metrics including reducing ED visits and augmenting patient experience scores. Studies such as this one highlight the value of research networks. UC specific research networks, such as that of the Royal New Zealand College of Urgent Care, will be instrumental in determining if similar trends in clinical performance exist among UC centers engaged in research. UC administrators are often concerned about using UC as a study site because of perceptions that it will negatively affect performance metrics. This study's results, namely that patient experience scores were significantly higher in clinics engaged in research, is important ammunition for refuting this worry. ■

Perceptions of Video Visits among Non-Native English-Speakers

Take Home Point: Patients with non-English language preference (NELP) perceived multiple barriers to the use of video technology when compared to receiving care in person. Barriers cited included the concerns over the quality of communication and medical evaluation, as well as comfort with use of the technology.

Citation: Kong M, Rios-Fetchko F, Olmos-Rodriguez M, et. al. Challenges to Video Visits for Patients With Non-English Language Preference: A Qualitative Study. *JAMA Netw Open*. 2025 Feb 3;8(2):e2457477. doi: 10.1001/jamanetworkopen.2024.57477.

Relevance: Telehealth has risen dramatically in clinical application over recent years. While supporters tout the convenience and ease of access, barriers to the use of video technology among those with NELP could further exacerbate existing healthcare inequities.

Study Summary: This was a qualitative study using semi-structured interviews with patients who preferred Spanish or Cantonese rather than English in the ambulatory clinic network of a large, urban, academic health system serving a diverse population in California. Patients with NELP represented 12.2% of the overall patient population served by the health system. Health records were screened to identify suitable patients for participation, and the interviews were conducted with research staff who spoke the participants' preferred language.

Twenty-seven patients were interviewed (16 Spanish and 11 Cantonese speaking). Twenty participants (74%) reported having a phone, computer, or tablet with internet or cellular data access. The authors found that communication barriers with pre-existing communication, challenges from language discordancy, and concerns about inferior medical evaluations using video, reduced the motivation of patients with NELP to engage with video visits. Limited digital literacy, especially for older adults, was also described as a barrier. Participants described anxiety around video visits due to not knowing what to expect and fear over inabilities to troubleshoot technical issues. The lack of adequate clinical examination was cited by multiple participants as a concern for inferior care.

Editor's Comments: This study included only patients whose preferred language was Spanish or Cantonese. As many perceptions are culturally driven, it is likely that these perceptions would not be wholly reiterated by participants who had different primary languages. This study focused on primary care patients. As primary care is non-episodic and often scheduled far in advance, the necessity of rapid, easy access to a clinical evaluation is less. Similar studies examining patients' perceptions around virtual UC would be useful to determine if these concerns would be offset by the convenience offered through on-demand video based care accessible from their home. ■

Does Clinician Throughput Affect Others' Performance?

Take Home Point: The optimal pairing of physicians working side-by-side for maximal efficiency was a "fast" and a "slow" physician pairing in this study. When 2 "fast" ED physicians were paired, their average efficiency decreased.

Citation: Sangal R, Teresi R, Dashevsky M, et. al. Who is coming in? Evaluation of physician performance within multi-physician emergency departments. *Am J Emerg Med*. 2025 Apr:90:9-15. doi: 10.1016/j.ajem.2025.01.003

Relevance: Clinicians see patients at different paces. This ED-based study aimed to answer the question of optimal clinician pairing for overall throughput when more than 1 clinician is actively seeing patients.

Study Summary: This was a retrospective, cross-sectional, ED-based study which included combined data from a

community and academic ED in a large healthcare system in the northeastern U.S. Operational efficiency data were extracted from the electronic medical record (EMR). The primary outcome measured was patient length of stay (LOS). Secondary outcomes assessed were 72-hour ED revisits, imaging utilization, and admission rates.

Included were 212,902 unique ED visits among 105,666 unique patients. Of those, 134,795 (63.3%) of the visits included occurred at the academic ED. Patients were treated by 80 different ED physicians, of whom 32 worked exclusively in the academic ED, 15 worked exclusively in the community ED, and 33 worked at both. Faster physicians had a higher 72-hour ED revisit rate and lower admission rates at the initial index visit. The "fast" physicians had a 17.8% higher efficiency than the group average. When fast physicians were paired with other fast physicians their average LOS actually increased by ~3%. However, when fast physicians were paired with "slow" physicians, the authors found that the fast physicians efficiency increased, and they ordered fewer imaging studies. When slow physicians were paired with other slow physicians, the average waiting room times increased by nearly 7%.

Editor's Comments: This study examines physician efficiency and LOS, which are both complicated, multifactorial metrics with many influencing factors. The large number of visits provided sufficient power to draw some conclusions about pairing for the purposes of efficiency. This was an ED based study, so it's unclear, but worthy of study to determine if these trends would hold true in UC as well. It is similarly uncertain how these results might apply to pairings of physicians and advanced practice clinicians (APCs). Additionally, many UC centers have only 1 clinician working at any given time, especially in the U.S., and therefore, such considerations are not relevant. Furthermore, developing a clinician schedule is a complicated process that involves accommodating vacation requests and often coverage across multiple sites. With current staffing shortages, even in multiclinician practice locations, it is a relative luxury to consider things as nuanced as how the efficiency of clinicians working together might impact efficiency. However, the possibility of clinicians' efficiencies being influenced by that of a colleague working with them is likely a novel concept for many. This study does suggest that we do not work in silos when we are caring for patients side-by-side. While this study does not give a magic formula for staffing UC centers, it does offer one additional dimension of staffing to consider for those who are focused on continuing to whittle down the door-to-door metric. ■

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Effective Strategies Minimize Claim Denials in Urgent Care

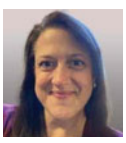
Kathy Delaussus

Urgent care centers serve a crucial function in providing prompt and accessible healthcare, but they encounter unique challenges in managing their revenue cycle, particularly in reducing claim denials. Unlike primary care or specialized medical practices, urgent care clinics often treat patients on a one-time basis, making both patient intake and billing more complex. Additionally, frequent turnover among front desk staff contributes to recurring errors in patient registration, insurance verification, and claims processing, all of which raise the likelihood of denials.

Denied claims can delay reimbursements, increase administrative burdens, and negatively impact overall financial performance. Many of these denials stem from avoidable mistakes such as inaccurate insurance details, coding errors, or failure to secure necessary prior authorizations. Addressing these issues effectively requires a multi-faceted approach that includes staff training, process improvements, and leveraging technology solutions. This article will explore the primary reasons for claim denials in urgent care settings and offer practical solutions to enhance financial outcomes.

Identifying the Causes of Denials in Urgent Care Settings

Claim denials typically occur when insurers refuse to reimburse for services because of missing or incorrect data, policy limitations, or failure to meet specific payer guidelines. Urgent care centers are particularly vulnerable to high denial rates due to their transient patient base and the difficulties associated with consistently training front desk personnel. Because many patients visit an urgent care center only once, correcting registration mistakes or obtaining missing documentation after the visit is difficult.



Kathy Delaussus is Enterprise Client Success Manager for Experity.

Furthermore, high staff turnover can result in inconsistent training, which leads to frequent errors in claim submissions. The complexity of varying insurance policies further exacerbates these challenges.

To mitigate these risks, clinics should establish standardized intake procedures, including comprehensive checklists for verifying insurance coverage and securing necessary approvals before providing treatment. Assigning experienced staff to review high-risk claims before submission can also help minimize errors and boost reimbursement rates.

Common Causes of Claim Denials

Several factors contribute to the high frequency of claim denials in urgent care centers. Among the most common are data-entry mistakes in patient registration and eligibility verification. These errors can result from entering outdated insurance policy numbers, selecting the wrong coverage type, or failing to verify managed care plan participation. Real-time insurance verification tools can help prevent these issues by ensuring patient eligibility is confirmed at the time of registration.

Incorrect or incomplete coding is another major factor in claim denials. If the diagnosis code does not align with the procedure performed, or if the level of service billed lacks sufficient supporting documentation, the claim may be rejected. Using coding assistance software can help staff identify and correct discrepancies before submission. Additionally, coordination of benefits and out-of-network complications pose challenges for urgent care centers. Patients with multiple insurance providers may need careful coordination to determine the appropriate payer, while out-of-network visits can result in denied or reduced reimbursement rates. Educating patients about their coverage options and offering clear self-pay pricing structures can help avoid confusion and reduce unexpected denials.

Addressing Front Desk Challenges

As the first point of contact for patients, front desk staff play a critical role in ensuring accurate registration and

insurance verification. However, frequent turnover among these employees makes it difficult to maintain consistent processes and training standards. Many urgent care centers struggle to onboard new staff efficiently while ensuring they have the knowledge necessary to prevent errors that lead to denials.

One effective solution is to develop structured training materials, such as orientation guides and quick-reference manuals, outlining key responsibilities and payer-specific requirements. Shadowing programs—where new employees work alongside experienced team members—can reinforce best practices. Additionally, regular training refreshers and monthly workshops focused on common mistakes and evolving billing procedures can help staff stay updated.

Standardizing check-in procedures is another way to minimize errors. Digital intake forms that require patients to enter their insurance details before arrival can help reduce registration mistakes. Implementing a dual-verification system—where a second staff member reviews insurance information before claim submission—can further enhance accuracy.

Improving Cross-Department Communication

Another often overlooked factor in reducing claim denials is strengthening communication between front desk staff, clinical providers, and billing teams. Silos between these departments can result in missing or incomplete documentation, failure to meet payer-specific requirements, and misunderstandings about the services provided. For instance, if providers are unaware of the documentation needed to support medical necessity for a particular service, or if billing teams are not notified of a patient's secondary insurance, claims may be denied unnecessarily. Establishing clear communication channels such as shared EHR notes, internal messaging tools, or daily huddles can help ensure that all teams are aligned in capturing accurate and complete information from the outset. Encouraging a culture of collaboration and accountability across departments helps reduce missteps and supports a more efficient, denial-resistant revenue cycle.

Leveraging Technology to Reduce Denials

Integrating technology into revenue cycle processes is one of the most effective ways to reduce errors and streamline operations. Real-time eligibility verification tools enable clinics to confirm a patient's active insurance coverage instantly, reducing the risk of denials due to inactive policies or coverage restrictions. These tools can also flag services that require prior authorization before they are performed.

Automated claim scrubbing and coding software can further reduce denials by identifying potential errors before claims are submitted. These tools detect inconsistencies between procedure and diagnosis codes, highlight missing documentation, and account for payer-specific requirements that could lead to rejection. Clinics that incorporate these solutions into their billing workflows can significantly decrease administrative burdens and improve first-pass acceptance rates.

Proactive Strategies for Preventing Denials

To minimize claim denials at the source, urgent care centers should implement proactive measures focusing on front-end accuracy, documentation completeness, and payer communication. One effective approach is requiring patients to upload a copy of their insurance card before their visit, allowing staff to verify coverage in advance. During check-in, front desk staff should confirm patient information, such as address and policy numbers, as minor discrepancies can lead to claim rejections.

Comprehensive and accurate documentation is also essential in preventing denials. Providers should document a patient's symptoms as well as recommended treatments and their medical necessity. Using electronic health record (EHR) templates can help standardize charting and ensure consistency in documentation. Additionally, maintaining an updated database of common insurance plans and their urgent care coverage guidelines allows staff to quickly reference payer policies and avoid preventable errors.

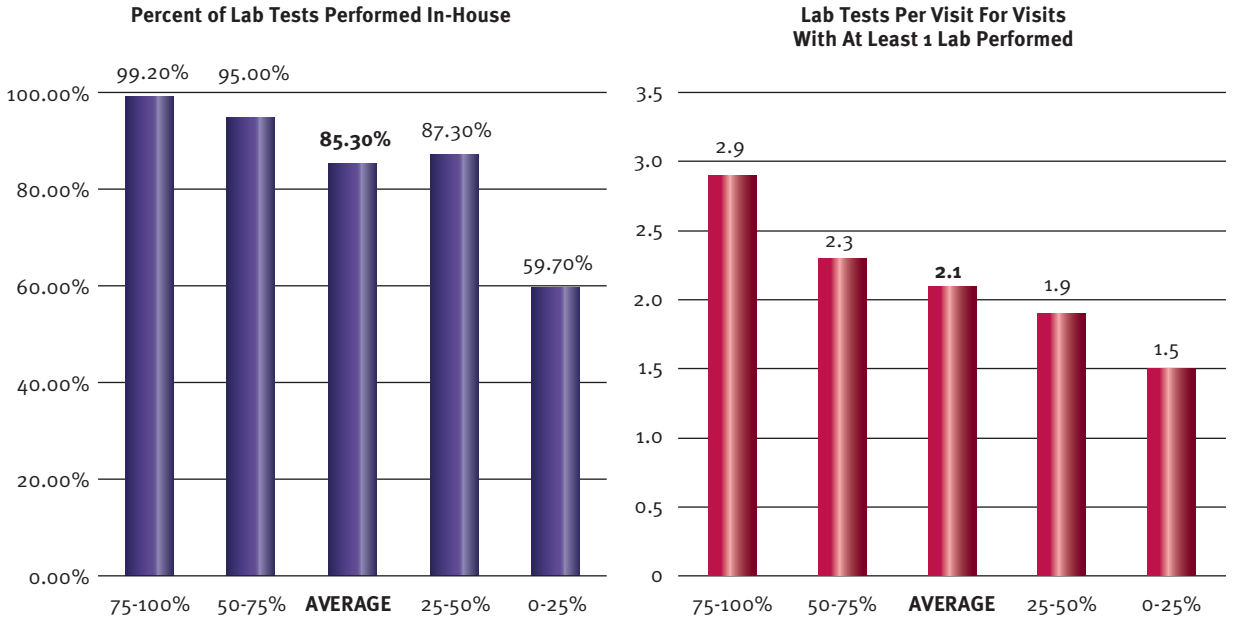
Establishing a Sustainable Revenue Cycle

Reducing claim denials in urgent care centers requires a strategic approach that addresses front desk training, adopts technology-driven solutions, and establishes standardized revenue cycle processes. By enhancing training programs, utilizing real-time eligibility verification tools, and ensuring meticulous documentation, clinics can improve their financial performance and operational efficiency.

Looking forward, advancements in automation and artificial intelligence will continue to enhance denial prevention efforts. Administrators should remain informed about evolving payer requirements and invest in continuous staff education to maintain long-term success. By taking proactive measures, urgent care centers can optimize their revenue cycle, minimize denials, and ensure financial stability in an increasingly complex healthcare environment. ■

Diagnostic Lab Test Utilization in Urgent Care

Alan A. Ayers, MBA, MAcc



By quartile among visits including labs
Source: Experity EMR data January 1 to December 31, 2024

Urgent care has long been defined by its model of "test and treat" for minor, non-chronic health conditions. Patients presenting with symptoms typically receive a rapid, on-site lab test, and based on the results, the provider makes a diagnosis and orders a prescription. It's a given that lab testing is a defining service and core capability of urgent care centers.

Based on 34 million patient charts in Experity EMR from January 1 through December 31, 2024, approximately 43% of visits involved a lab on average. Of those visits with a lab, more than 85% on average were labs performed in-house, and the average visit with labs involved roughly 2 tests.

The charts illustrate variances among 3,015 centers in the percentage of lab tests that are performed in-house and the average number of lab tests performed per visit. Sorting each datapoint from high to low, the charts illustrate each field by quartile as well as the average for all centers.

It's important to note that lab utilization is affected by multiple factors including the services offered—for example, orthopedic injuries or skin conditions may not require a lab—as well as patient expectations, prevalence of communicable disease, and provider behavior. ■

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

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