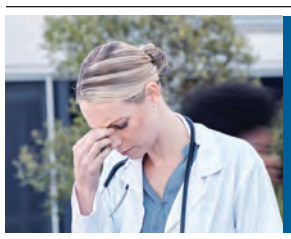


PEARLS FROM THE EM LIT

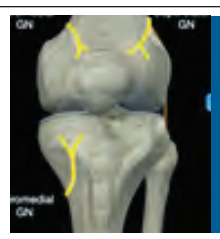
Show Me My Mistakes

SEE PAGE 16

SKEPTICS' GUIDE

The SPEED Protocol

SEE PAGE 17



SOUND ADVICE

Ultrasound-Guided Genicular Nerve Block

SEE PAGE 18

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ACEP Now

The Official Voice of Emergency Medicine

MAY 2024 Volume 43 Number 5 FACEBOOK/ACEPFAN INSTAGRAM/ACEPNATION X/ACEPNOW **ACEPNOW.COM**

PLUS

KIDS KORNER

Extracting External Auditory Canal Foreign Bodies

SEE PAGE 21

FORENSIC FACTS

Factitious Disorder

SEE PAGE 22

FIND IT ONLINE
For more clinical stories and practice trends, plus commentary and opinion pieces, go to:
www.acepnow.com

EM CASES

Managing Adult Asthma

Risk stratification of asthma and preventing bounce backs

by ANTON HELMAN, MD, CCFP(EM), FCFP

This past summer, it became quite apparent that larger and more intense forest fires were contributing to poor health in the United States.[1] One of the consequences of the increase in forest fires was more air pollution. The incidence of asthma is higher if the air in your neighborhood is more polluted.[2] The more nitrogen dioxide and carbon monoxide in the air, the more asthma. In fact, a recent study out of Calgary in Canada suggested that there were 13 percent more asthma exacerbations presenting to emergency departments (EDs) when there was visible wildfire smoke in the city.[3] Asthma presentations to EDs have increased recently.[4] Ten people die from asthma daily in the United States, deaths that are

CONTINUED *on page 14*

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Discharging Hypertensive ED Patients

Is it time to change our approach?

by BRETT R. TODD, MD, FACEP

Treating elevated blood pressure (BP) in patients being discharged from the emergency department (ED) is often a challenge for emergency physicians (EPs). Often, EPs refrain from prescribing anti-hypertensive therapy on discharge due to a perception that many of these patients may not require ED care, and the likelihood of adverse outcomes, such as stroke or myocardial infarction, is minimal. Furthermore, EPs can find this patient population challenging or frustrating to manage, as they have been made anxious or concerned about an imminent stroke or myocardial infarction and frequently frightened by an outside health care worker who has little understanding of the real risk of acute, severe outcomes. Yet with nearly half of patients treated and discharged from the ED registering an elevated BP reading during their visit, hypertension is a problem that EPs cannot ignore.[1]

Hypertension is a well-established long-term risk factor for adverse cardiovascular outcomes and premature mortality, which is why managing hypertension is routine

CONTINUED *on page 13*

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Why Is This Foley Bag Purple?

PAGE 4

ALEX KOO

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NEWS FROM THE COLLEGE

UPDATES AND ALERTS FROM ACEP

Longtime ACEP Reimbursement Director Announces Retirement

After serving ACEP for 29 years, Reimbursement Director David A. McKenzie, CAE, will be retiring at the end of June.

For many members, Mr. McKenzie has been a staple at ACEP's educational conferences with a deep knowledge of emergency medicine reimbursement and coding information. He also was quick to offer personal assistance to member inquiries for their specific payment-related questions.

Mr. McKenzie was the liaison to the ACEP Reimbursement, and Coding and Nomenclature Advisory Committees, as well as ACEP's staff contact for the AMA RVS Update Committee (RUC) and the CPT Editorial Panel, where he represented member interests.

In 2018, Mr. McKenzie was honored with the Specialty Society Staff Excellence Award. This is the highest award available for specialty society staff serving the CPT process, and the nomination comes from AMA CPT staff. He was recognized for his excellent assistance in developing code change applications, education on CPT codes, and support of members and staff. Mr. McKenzie won the award previously in 1998, and in 2015, he won the Excellence in Education Award.

Want to Present a Course at ACEP24 in Las Vegas? Apply Today

While the window to submit CME course proposals has passed, there is still time to be considered for a speaking opportunity at ACEP24 in Las Vegas (Sept. 29–Oct. 2). ACEP's Educational Meetings Subcommittee is accepting Off-Track Course proposals through June 30. What is the difference in a CME course and an Off-Track course? Off-Track Courses:

- Provide a voice for ACEP sections and committees to reach beyond their membership.
- Offer later deadlines for more "of-the-moment" content outside of strict CME planning requirements.
- Can discuss topics that may be restricted by ACCME guidelines.
- Allow attendees and their guests to attend educational, non-clinical courses.

Apply to Be *ACEP Now*'s Next Resident Fellow

ACEP Now is looking for its next resident to join our editorial team. The position is open to any emergency medicine resident physician in an ACGME-accredited program who will be PGY2–4 during the July 2024–July 2025 Resident/Fellow term. Applications are due June 15, 2024, for a year-long term that will begin July 15, 2024. Learn more and apply at acepnow.com/article/resident-fellow.

Call for *ACEP Now* Columnists, Writers

The *ACEP Now* Editorial Advisory Board would like to expand its group of columnists and writers. Are you:

- Boarded in Emergency Medicine with a Critical Care subspecialty and aware of current updates in EMCC?
- An emergency physician with medical malpractice or risk management expertise?

For either column, *ACEP Now* needs excellent writers who are reliable, are able to meet deadlines, have unique ideas that meet the pulse of the membership, and are not currently a recurring writer in another publication. If you are interested, please send an email telling us why you'd be a great fit, along with at least one writing sample, to acepnow@acep.org.

SEND YOUR THOUGHTS AND COMMENTS TO ACEPNOW@ACEP.ORG

THE BREAK ROOM

Survival Tactics for Emergency Department Boarding (March 2024)

We read with interest Dr. Welch's article on front-end processes amid excessive ED boarding. While the PIT model may improve certain metrics, our experience suggests it fragments care by creating handoffs and lack of ownership of the patient. This increases staffing needs without additional revenue, can cause increased length of stay, shifts left without being seen to left before treatment was complete, and exacerbates stress on staff which leads to worsening burnout and moral injury.

Although a front-end process is often necessary when ED boarding is high, we have implemented an alternative to PIT: a zoned care approach utilizing a robust vertical low/mid acuity process with a vertical care intake model for higher acuity patients—utilizing existing staffing without adopting the PIT model. In this model, high acuity patients awaiting care are temporarily placed in a dedicated intake area, where clinicians can evaluate them alongside nurses—facilitating more appropriate diagnostics and therapeutics. If patients can remain vertical, they return to the waiting room; if critical, they are prioritized to the back once a bed becomes available. Each clinician owns the patient, which leads to a more tailored approach to patient care and improves patient safety by reducing handoffs. This model has proven successful not only at Sentara Leigh Hospital, but across all of our clinical sites, both academic and community sites. While having sufficient nursing staff and treatment rooms is the ideal state, we have found that—in the reality of unprecedented patient volumes—our model is adaptable, scalable, and deployable in multiple environments.

—Doug Browder, MD, PhD, FACEP; and Bruce Lo, MD, MBA, RDMS, FACEP

ACEP Rejects Excited Delirium (April 2024)

[This article] is a good review of the conflicted history of that diagnosis. However, I was surprised at the statement by Dr. Jeff Goodloe that, "The 2021 [ACEP Task Force Report on Hyperactive Delirium with Severe Agitation in Emergency Settings] strives to highlight that 'excited delirium with severe agitation' is not a diagnosis in the living or the deceased."

The report devotes a six-page section to excited delirium, aimed at providing a "brief discussion of the conclusions reached and limitations of the evidence surrounding [excited delirium syndrome] (ExDS) as a distinct pathophysiologic process" (emphasis mine). More concerning, the report suggests that better documentation (presumably by emergency physicians) will allow us to "fully explore ExDS as a distinct entity." The section on excited delirium states that better documentation of clinical encounters "allows these deaths to be identified, tracked, and studied to better identify unique features of [excited delirium] and improve patient care. Without the 'excited delirium' component, these deaths are lost as routine acute drug intoxication deaths."

It is clear that the 2021 report does not refute excited delirium as a diagnosis "in the living or the deceased." Quite the opposite—it appears to be concerned with further legitimizing this almost universally discredited and harmful concept.

—Brooks Walsh, MD

FROM THE EDITOR

D.C. Brief

ACEP recently held its annual Leadership and Advocacy Conference in Washington, D.C. Among the many invited speakers included were Congressman Greg Murphy (R-NC) who, despite supporting many of ACEP's policy positions in the past, introduced a bill called the "EDUCATE Act." Among many other things, it would defund medical schools simply for operating offices of diversity, equity, and inclusion see: (section 124(a)(4)). After hearing concerns from members, ACEP changed the original format for the session—converting it from a standalone talk to a conversation with ACEP President Aisha Terry, MD, MPH, FACEP, limiting the congressman's allotted time, and allowing for questions from attendees. We will have more coverage of this and dispatches from DC in our LAC recap in next month's issue.

DR. DARK
(@RealCedricDark) is associate professor of emergency medicine at Baylor College of Medicine and the medical editor in chief of *ACEP Now*.

By the Numbers

Measles

AS OF APRIL 4, 2024

113

MEASLES CASES IN 18 JURISDICTIONS:

Arizona, California, Florida, Georgia, Illinois, Indiana, Louisiana, Maryland, Michigan, Minnesota, Missouri, New Jersey, New York City, New York State, Ohio, Pennsylvania, Virginia, and Washington.

INFECTS

90%

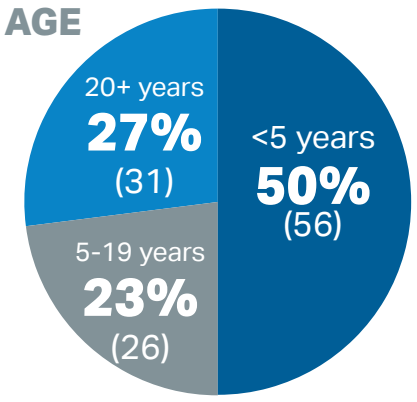
OF SUSCEPTIBLE PEOPLE

who are exposed, primarily in the unvaccinated and immunosuppressed.

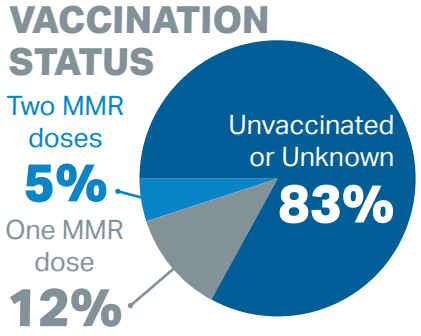
SYMPTOMS

HIGH FEVER
CONJUNCTIVITIS
COUGH
CORYZA *(runny nose)*

AGE



VACCINATION STATUS



U.S. HOSPITALIZATIONS IN 2024

58%

of cases hospitalized (65 of 113 cases) for isolation or for management of measles complications.

Source: Centers for Disease Control and Prevention. Measles. Available at: https://www.cdc.gov/measles/cases-outbreaks.html. Accessed on April 1, 2024.

ONLINE EXCLUSIVE

Scan the QR Code to access the full story.

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Diagnosing Lower Urinary Tract Infections

It doesn't always require a urinalysis, and here's why

by BATURAY AYDEMIR, MD; DAVID T. OVERTON MD, MBA, FACEP

Few shifts go by without ordering at least one urinalysis. While it is ubiquitously used, urine testing is often unneeded and frequently misleading. How often do you feel frustrated about a urine sample that takes too long to obtain? You may not need the sample in the first place. To understand why, we need to go back to the basics and think carefully about the indications for obtaining a urinalysis. Let's look at three young female patients with differing symptom severities. For simplicity, we will focus only on the patients with suspected lower urinary tract infection (UTI). Patients with flank pain (which would suggest pyelonephritis) as well as patients meeting two or more SIRS criteria (which would suggest sepsis) comprise a higher risk group. As a result, obtaining a urinalysis in these patients is almost always prudent.

Continue reading by following the QR code above.

EMERGENCY IMAGE QUIZ *with* VISUAL DX

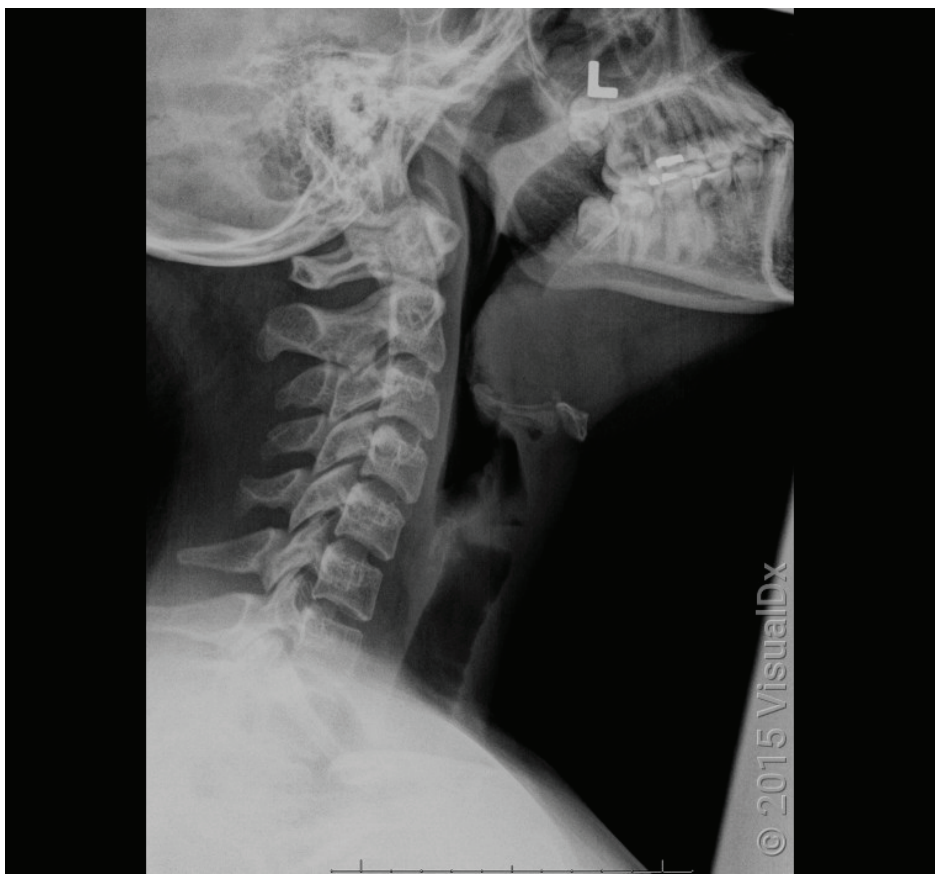

IMAGE USED WITH PERMISSION FROM VISUALDX

Question: A 22-year-old man presents with sore a throat. What is the diagnosis?

a. Epiglottitis
b. Peritonsillar abscess
c. Retropharyngeal abscess
d. Uvulitis

ANSWER *on page 23*

Why Is This Foley Bag Purple?

Understanding a unique case

by ALEX KOO, MD, FACEP

A 79-year-old male with a past medical history of paroxysmal atrial fibrillation and insulin-dependent diabetes presented to the emergency department with generalized weakness. He was found to be hypothermic at 34.2 Celcius rectally, tachycardic at 140 bpm and in atrial fibrillation. He had a stable blood pressure and respiratory status.

The patient had a urinary catheter placed two weeks prior due to acute urinary retention while on vacation in India. During the last two weeks, he became progressively weaker, with poor food intake.

CONTINUED *on page 20*

RESIDENCY SPOTLIGHT

UNIVERSITY OF LOUISVILLE

Location:
Louisville, Ky.

Instagram:
@uoflem

Year founded:
1971

Number of residents:
36 (12 per year)

Program length:
3 years

University of Louisville EM residents with "L's Up!"

What does your program offer that residents can't get anywhere else?

At our program, you will experience all the learning opportunities and experiences of a major academic medical center, but also get focused, direct attention from a smaller group of passionate core faculty. We believe that experiential learning and respecting residents with autonomy are the most effective ways to teach emergency medicine. With more than 50 years of alumni to network with, we can get you the job you want in the location you want.

What are some fun activities residents like to partake in or recently participated in?

Some resident-favorite activities include all the great event medicine and sports medicine opportunities at our program. We provide medical coverage for every major music festival in Louisville. Residents can work in the tents for half a day, and then see the headliners right by the stage! Additionally, we work all University of Louisville football home games, so they can see some great college football. This year, we are even providing coverage for the 2024 PGA Championship.

How should potential applicants learn more about your program?

Follow us on instagram @uoflem to see snapshots of what it's like to train at our program. We also hold virtual Q&A sessions each fall for prospective applicants, advertised on our Instagram. If you're at ACEP or SAEM, come see us at the Residency Fair!

ACEP4U: Uncovering Hidden Member Resource Gems


ACEP

Fellowship at ACEP's events are often just as valued as the education. Members always get the best prices for ACEP conferences and products.

Many of ACEP's benefits of membership are some of the most obvious and tangible—having a seat on the RUC—the influential body that sets your payment rates, our advocacy work at the state and federal levels, peer-reviewed research in *Annals of Emergency Medicine*, and of course, your monthly *ACEP Now* magazine.

But with so many resources included with your membership, there are bound to be some that may have flown under your radar. Here are a few resources that members have repeatedly told us they were surprised and delighted to find as part of their ACEP membership.

Personalized Cards That Say You Exceed the Need for 'Merit Badge' Short Courses

ACEP believes that certification by ABEM or AOBEM supersedes the need for so-called "merit badge" short courses, which generally are designed for a broad spectrum of clinicians, including non-emergency physicians, as well as non-physicians.

However, documented completion of these courses is sometimes required for medical staff privileges. For members who are required to have a card, ACEP offers a set of personalized cards online, which attest that the member is currently Board Certified by ABEM or AOBEM and has expertise in:

- Procedural Sedation;
- Cardiac Resuscitation; and
- Trauma; and

Find out more and print out your card annuals at acep.org/expertisecards.

Maintenance of Certification Center Gets Articles So You Don't Have To

Emergency physicians who want to stay certified must satisfy all four ABEM MOC components:

- Lifelong Learning and Self-Assessment
- Improvement in Medical Practice
- MyEMCert™ Examination with Key Advances
- Professionalism and Professional Standing

ACEP does not set this re-certification process, but we do want to see you succeed. So, ACEP developed the Maintenance of Certification (MOC) Center where you can find free resources to help you get everything you need to pass all the re-certification components.

One MOC Center feature that gets the most praise is the set of Lifelong Learning and Self-Assessment (LLSA) articles—ACEP has curated access to all the articles you need for each year's reading lists, both for EM and all the subspecialties, so you don't have to pay for access to all the different journals and publications. There are also summaries to help.

Find out more about the LLSA reading lists, as well as other re-certification support, at acep.org/moccenter.

Discount on *JACEP Open* Journal Submissions

ACEP members get a 20 percent discount on *JACEP Open* article publication charges when submitting a manuscript for publication. After you log in to submit, there is a series of payment discount questions, including whether you are an ACEP member. When you answer "yes," there is a verification behind the scenes and the discount is applied. *JACEP Open*, an official journal of ACEP, is an international, peer-reviewed open access journal as a companion to *Annals of Emergency Medicine*. Its focus is on publishing high quality original peer-reviewed research, across the spectrum of basic and clinical research, in an open access format to the world wide community.

Scan the QR code to find the author submission guidelines and see if *JACEP Open* would be a good fit for your manuscript—at a discount.

Learn the Business of EM from the Experts

The business of emergency medicine continues to become an even bigger area of focus for many emergency physicians. But with so many clinical and practice management skills to learn, it's easy to skim over the administrative, legal, and reimbursement aspects of medicine.

"Practice Essentials of Emergency Medicine" is designed to augment your knowledge of several critical business topics.

Developed for physicians—by physicians—through a collaboration between ACEP and the Emergency Medicine Residents' Association (EMRA), "Practice Essentials of Emergency Medicine" distills the knowledge of top field experts into tangible, focused modules that learners can work through at their own pace.

This evolving curriculum will grow as learners' needs—and the health care landscape—change over time. This month, new modules were added, and the robust online curriculum now offers 11 important topic areas.

See what's available at acep.org/PracticeEssentials.

Have Erroneous Expert Witness Testimony Reviewed

What can you do if you believe an expert witness provided erroneous or egregious testimony against you in a recent liability suit? There are steps you can take through ACEP to have testimony reviewed for accuracy, with erroneous testimony brought to the attention of the membership, or, if the expert witness is an ACEP member, you can consider filing an ethics complaint against the expert for providing such testimony.

ACEP's Standard of Care Review process can provide an anonymous review and report on potentially egregious expert witness testimony.

The review process is used to publicize examples of expert witness testimony or reports as to the standard of care that does not meet the ACEP criteria for accuracy. Several instances have been reported and reviewed with summaries found online, without mention of any identifying information.

ACEP believes that a physician providing testimony as an expert witness clearly has an ethical responsibility to be objective, truthful, and impartial when evaluating a case based on generally accepted standards of practice. It is unethical to overstate one's opinions or credentials, to misrepresent maloccurence as malpractice, to bear false testimony, or to use the name of the College as evidence of expertise.

Find out more about the process and the cases, as well as how ethical violation charges can be brought against fellow ACEP members for allegedly providing such egregious expert witness testimony at acep.org/MedicalLegal.

Custom Responses from Expert Staff

ACEP members have exclusive access to expert ACEP staff for personalized answers on topics including reimbursement questions, medical-legal subjects, wellness concerns, clinical matters, and other practice issues.

And one of the most requested areas of assistance for members is around compliance disputes with private payers. ACEP staff can help and identify trends that may lead to more global efforts.

Additionally, ACEP has a dedicated office in Washington, D.C., with several full-time staff members who work closely with federal legislators and regulators who impact your specialty.

Staff are available by calling or emailing the department needed, which can be found at acep.org/contactus.

Free Amazon Business Account Access

A partnership forged during the COVID pandemic, ACEP members can make business purchases as part of a Central Amazon Business account—this is a huge benefit for our members in independent groups, who can take advantage of the cost savings on a variety of medical and office supplies.

Unlike your personal account, this account allows ACEP members to make business purchases of products and take advantage of Amazon's wide product selection and competitive prices. Amazon also waived their standard referral fees for third-party sellers on products supplied for the COVID-19 response.

Scan the QR code to read the detailed instructions on how to set up this account and what to do if your personal account is tied to your ACEP email on record.

OPINIONS FROM EMERGENCY MEDICINE

A NEW SPIN

You Never Forget Your First

Malpractice lawsuit gives emergency physician lifelong lessons

by DAN MAYER, MD, FACEP

It was a beautiful spring day in 1981, back when I was working at a community hospital in Phoenix, Ariz. I had just gotten up from my day nap after a busy overnight shift. My doorbell rang and a nicely dressed young man asked if Daniel Mayer was there. As that is not my name—I'm Dan the tribe and not Daniel the prophet—I immediately said "No." Realizing that he was just a messenger, I quickly reversed my answer and admitted that yes, that was me. He handed me an envelope and walked off. So started my voyage down the rabbit hole of being sued for medical malpractice.

Having never had any education about the topic of malpractice, I was reasonably petrified that, first, I had just been sued and, second, I may have made some horrible mistake that injured a patient. I carefully read the complaint that had just been served to me. The information was so vague that I could only surmise that the alleged malpractice took place four years earlier when I was a family medicine resident on my rotation in rural Maine.

I called my residency program. They recommended me to a defense firm in Portland, Maine, essentially a continent away from Phoenix, Ariz. The defense lawyer assigned to my case was excellent and educated me in the rules of medical malpractice and coached me through every step during the three-year process.

The first thing I learned was that I shouldn't ignore the papers that I received. Those papers, called a summons and complaint, had to be answered within 30 days, otherwise I was tacitly admitting that I was guilty (i.e., negligent). Of course, the answer to this was clear, "I didn't do it!"

I obtained the medical records from my residency program shortly after my first contact with my lawyer. The plaintiff, who was a 15-year-old camper at the time of the incident, alleged that I had performed a chiropractic maneuver that led to severe neck pain and prevented them from realizing their life's ambition. On viewing the medical record, I was embarrassed by the brevity of my note—it was only about eight lines in total—and I had no recollection of the patient. There was nothing in the record about performing any maneuver on their neck short of palpation, which elicited pain. That's all my attorney had to work with.

A few months later, I was served with another set of legal documents, the Bill of Particulars. This list detailed what the plaintiff alleged I had done that constituted malpractice. It was a comprehensive list of everything I did, didn't do, or should have done. It felt like the worst day of my life. It was one thing to read about what a horrible error I had made, but it also said that I was a terrible physician and was reckless, too. According to the plaintiff, my behavior bordered on being downright evil.

I probably overreacted, but the language felt incredibly inflammatory. My lawyer reassured me, saying "it's not personal, it's business." It was just the way lawyers do things. It certainly felt personal to me.

A few months later—malpractice cases grind you down slowly—I had a conference with my attorney, who had gotten a medical record from the camp saying that the patient got a massage from a bunkmate after their visit with me and then complained about severe neck pain. I thought this would end things. Someone else obviously caused the problem. I started to feel better about myself. But I was wrong.

Two years after being served, I finally gave a deposition. It was short. Honestly, I didn't have much to say as I had a brief medical record and no independent recollection of the encounter. My lawyer had prepared me to "only answer the questions asked" and not to answer any question about facts about which I was uncertain.

It was another year before anything else happened. A trial had been scheduled. This occurred in Portland, Maine, in the summer of 1984, seven years since the incident and three years since I was sued. Today, I can still vividly see the courtroom, the judge, the jury box with eight people who would judge whether I was guilty of malpractice, my attorney and his assistant, and the plaintiff and their attorney.

I was on the stand for a short time, as I didn't have much to say except that I didn't do what the plaintiff alleged. The camp nurse was unable to attend the trial and a video of her deposition testimony was presented. My expert was a local chiropractor, who I knew and had referred patients to when I was in family practice. He told the jury that the maneuver so precisely described by the plaintiff was a common chiropractic maneuver that was abandoned because too many chiropractors injured themselves doing it.

The plaintiff's expert was a neurologist, who had been one of my instructors in residency. I felt betrayed. He testified about the plaintiff's alleged injuries. When asked by my attorney in cross examination to give his diagnosis, he stated "cervical myalgia." Then came the part that I will never forget. My attorney said, "We are just simple folks up here in Maine. Can you please explain what that means?" He just answered, "a pain in the neck."

It took all my willpower not to look at the jury to see their reaction. My attorney had prepared me for this. He later told me that there were several subtle smirks among the jury members.

The jury went to deliberate; the next 90 minutes were among the longest of my life. When the jury came back and found me not liable, the case was over and I was relieved that I could start my new job in New York City unscathed.

Since then, I've learned a lot about medical malpractice, and have advised many students and colleagues about how to improve their experiences after being sued. I have taught about medical malpractice for more than 20 years to medical students and residents, and hopefully made the whole process less anxiety-provoking for them.

Since the first trial, I've been sued three more times. Here is my advice from these experiences.

1. Never ignore a legal document. That's what lawyers are for.
2. Listen to your lawyer. Do what they say! But don't be intimidated to the point where you are afraid to express your misgivings.
3. Talk to your lawyer about anything that makes you uncomfortable. Pay attention to your feelings.
4. Be the voice of good, evidence-based medicine (and science). You and your lawyer can figure out how to explain your defense to the jury.

DR. MAYER is a board certified emergency medicine physician in Niskayuna, New York.

"A New Spin" is the personal perspective of the author and does not represent an official position of *ACEP Now* or ACEP.

LEADERSHIP SPOTLIGHT
WITH **DR. AISHA TERRY**

EP FINDS CAREER CALLING IN COACHING, MOTIVATING

by AISHA TERRY, MD, FACEP

Physician leadership is a priority for ACEP President Aisha Terry, MD, MPH, FACEP. She's approaching the issue from all sides. As she builds a programmatic approach within ACEP to identify and cultivate leaders, she is strengthening the "pipeline" and creating opportunities for newer physicians to thrive.

The Leadership Spotlight highlights examples of emergency physicians using their foundation in emergency medicine to lead, teach, and inspire the next generation. Whether inside the hospital or beyond, the foundation laid by deep experience in the specialty is versatile, unique, and invaluable.

Dr. Terry: How has emergency medicine prepared you for coaching and leading?

Dr. Barth: As the new executive director of the Alpha Omega Alpha (AOA) medical honor society, I lean on my background in emergency medicine to teach and mentor the next generation of physician leaders. As emergency physicians, we can do a lot and we do it well.

I'm a coach at heart and I am grateful for the opportunity to help physicians achieve their goals through the AOA leadership fellowship—a one-year program where physicians learn to hone their skills to lead from within and expand their servant leadership. The program focuses on mid-career physicians and current chairs who want to help solve the biggest challenges facing emergency medicine and the health care system.

Our students are doing so much more than lab work. They are working in the community and making a difference.

Coaching can be a vital resource for students and a constructive outlet for teachers. My research shows that coaching helps faculty, too. It's not just students that benefit. Coaching helps teachers stay inspired and motivated.

Dr. Terry: How can coaching impact care delivery and professional development?

Dr. Barth: I'm incredibly fortunate to have a platform that could be an opportunity to change the make-up of medicine. We need doctors who share their patients' lived experience. The better we understand their challenges, the easier it will be to fix them.

One thing that years of faculty development and coaching impressed on me is that leaders exist at all career levels.

It's fun to help physicians achieve their goals and fascinating to watch people learn new leadership skills despite being established in their career.

Dr. Terry: Do you see emergency physicians becoming more strategic about their place in their hospitals and the broader health system?

Dr. Barth: There are so many challenges facing emergency physicians right now. Many of us are experiencing an old adage firsthand; if you're not at the table, you're on the menu.

Still, emergency medicine is a specialty on the rise with many opportunities to lead medicine forward.

Some emergency physicians are moving up in their systems, but there are not as many emergency physician leaders as there could be.

DR. TERRY is president of the American College of Emergency Physicians.

PHOTOS: BRADLEY BARTH

An ACEP member for three decades, Dr. Barth (RIGHT) is also active with the Association of American Medical Colleges, Society of Academic Emergency Medicine, and other domestic and international emergency medicine groups.

BRADLEY E. BARTH, MD, FACEP

- **CURRENT POSITION:** practicing emergency physician, University of Kansas School of Medicine; Executive Director of the Alpha Omega Alpha Honor Medical Society
- **MEDICAL SCHOOL:** University of Kansas School of Medicine
- **INTERNSHIP:** Internal Medicine, Naval Medical Center of San Diego
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EP, EMS Growth Parallel Tracks as EMS Week Celebrates 50 Years

Emergency Medical Services evolution has come so far, but still has room to grow

by STEPHANIE STANESIC

Jon Krohmer, MD, FACEP, who says he has "the EMS blood type," practically had a front row seat to the growth of EMS care starting as a volunteer EMT more than 50 years ago. "The evolution of EMS really mirrors the evolution of emergency physicians." Dr. Krohmer said.

Dr. Krohmer

"When EMS really blossomed, physician involvement waned a little bit because there was a very large demand as EMS programs were developing. But there weren't the physician resources to support that need," he said.

"But since the mid 80s, we have realized that EMS *is* the clinical practice of emergency medicine outside of the emergency department. So physicians need to be involved. That was the time that ACEP stepped up."

In 1974—50 years ago this month—President Gerald Ford saw the life-saving work of EMS teams and declared a national "EMS Week" to honor these men and women and the incredible difference they make on the field and in the trenches.

At that time, there was physician involvement in EMS, however they weren't necessarily emergency physicians simply because there weren't many of them at the time. Emergency medicine wasn't recognized as a clinical specialty of medicine until 1979. But over the last 20 to 30 years, ACEP and National Association of EMS Physicians (NAEMSP) together have been very intentional about increasing EMS educational activities for emergency physicians, as well as increasing their advocacy for EMS initiatives.

As a result, there has been a significant uptick in emergency physicians who have focused their clinical practice on EMS. There is now an EMS subspecialty within the American Board of Emergency Medicine that to date, has produced about 1,200 board certified EMS physicians throughout the country. There are also hundreds of other emergency physicians involved in EMS as part of their practice but aren't board certified as EMS subspecialists.

According to Dr. Krohmer, this is encouraging since "it's important that all emergency physicians have a good understanding of EMS, because they are either serving as a medical director for an EMS agency, or their clinical practice in the emergency department is significantly influenced by EMS."

Emergency physicians who are not EMS

CONTINUED *on page 10*

This year is the 50th anniversary of the first National EMS Week, designed to honor EMS professionals.

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ABOVE: Since 1974, EMS Week has been an annual tribute to the dedication of Emergency Medical Services professionals and is celebrated during the third week of May.

RIGHT: EMS Week helps inform the public about the importance of EMS and is often used to encourage individuals to learn basic life-saving skills like CPR and first aid.

specialized can turn to a number of resources for assistance. Both ACEP and the NAEMSP have educational courses and many states also have training programs that can help explain state rules and regulations, as well protocol development, and assist them in developing robust education and quality improvement programs.

From the national perspective, EMS care looks very different depending on where you live.

For example, rural EMS teams must depend more on EMS volunteers, they face staffing and sustainability requirements, they experience more financial stress, and they also depend more on their local physicians. However, more and more, there are a good number of subspecialty physicians who are moving to rural environments.

Dustin Holland, MD, MPH, FACEP, has worked in both rural and urban environments. He began as a volunteer EMT outside of Las Vegas, then moved to an ED in the city, handling calls on the Las Vegas Strip. He now serves a more suburban setting in Carson City, where he works as an emergency physician with rural EMS teams, something the agencies haven't had in the past.

Nevada is a great example of the importance of an emergency physician and EMS trained physicians, Dr. Holland explained. Other than Las Vegas and Reno, the rest of the state is rural and needs coverage. "The challenges, obviously they vary, depending on what type of agency it is ... (but) you can run into an issue where those are usually the agencies that require the most help and teaching and education and quality review because they have very long transport times," he said. "They are actually providing patient care for a lot longer, and if that patient is really sick, things can go south pretty rapidly. So you have to have well-trained EMS clinicians in these areas where they have to provide care for a longer amount of time."

EMS Week facilitates collaboration among EMS agencies, policy makers, organizations, and communities.

In urban settings, transport times can be 5 to 10 minutes to the closest hospital, but for the rural Nevada area, "it could be 45 minutes," Dr. Holland said. "It's very different. It's unfortunate that sometimes these are the agencies that need the most help, but they're not getting it because no one really works out there that's trained as an EMS physician."

How can rural areas begin to get the access they need to emergency physicians who are EMS trained? According to Dr. Holland, "I think we're on the right track. We're seeing more and more EMS fellowships established around the country. It's also the most popular subspecialty within emergency medicine."

He also suggested incentivizing positions for EMS-trained physicians to work rurally, similar to incentive programs for primary care physicians. "Small agencies have small budgets. They are barely scraping by and a lot of them rely on volunteers, so it's very hard for some of these agencies to pay a person to come out and spend quality time with them to do training and education," Dr. Holland said.

Fifty years ago, the attitude used to be, "all you need is diesel. Get the patient to the ER as quickly as you can and let the real medical people do their job," Dr. Holland said. Thankfully, those days are gone and the paradigm has shifted completely. The attitude now is, "we need to provide high quality care on-scene and we need to take our time doing it," Dr. Holland explained. "We don't need to rush to the hospital except in certain situations where the treatment can't be provided in the field."

MS. STANESIC is a freelance writer for ACEP.

GUIDANCE ON THE CLINICAL MANAGEMENT OF EMERGENCY DEPARTMENT PATIENTS

CLINICAL POLICY

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Acute Ischemic Stroke

Discussing critical issues in management of stroke patients

by BRUCE LO, MD, MBA, RDMS, FACEP

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The clinical policy on the management of adult patients presenting to the emergency department (ED) with acute ischemic stroke, was approved by the ACEP Board of Directors in April 2023.

Developed by the ACEP Clinical Policies Committee, the guidance was published in the August 2023 issue of the *Annals of Emergency Medicine*. You can find it on ACEP's website, www.acep.org/clincialpolicies, as well as in the ECRI Guidelines Trust, https://www.ecri.org/solutions/ecri-guidelines-trust.

Approximately 800,000 people in the United States are diagnosed with a stroke each year at an estimated cost of approximately 46 billion dollars. As a result, stroke remains one of the leading causes of death, as well as the leading cause of disability. Nearly 30 percent of all patients with an acute ischemic stroke have a large vessel occlusions (LVO), whereas 12 percent of acute stroke patients are thought to be candidates for endovascular thrombectomy (EVT). Because timely access to the expertise and resources needed to perform EVT is limited for much of the U.S. population, question one examines the use of out-of-hospital decision aids to assist in identifying suspected LVO patients who may be candidates for EVT.

Diagnosing an acute stroke patient with an LVO who may be a candidate for EVT requires advanced imaging, such as computed tomography angiography (CTA). However, identifying which suspected stroke patients are likely to have an LVO can be challenging. This has implications for determining who should receive advanced imaging, such as a CTA, in the ED or potentially be diverted to an EVT-capable stroke center. Question two examines the addition of computed tomography perfusion (CTP) to CTA or MRA to identify patients more likely to benefit from thrombectomy.

Recently, there has been interest in the use of tenecteplase for acute ischemic stroke. Question three compares the published literature comparing the safety and effectiveness of tenecteplase versus alteplase.

Finally, patients who present with dizziness can present a diagnostic challenge to emergency physicians trying to differentiate a peripheral from a central cause. Although the rate of misdiagnosis of stroke in patients who are discharged home from the ED with a diagnosis of peripheral vertigo is less than 0.2 percent, up to 37 percent of posterior circulation strokes are missed on initial presentation. Because the mortality of a missed posterior circulation stroke can be significantly higher than those with cerebellar strokes in general, Question four examines the strategies that are needed to prevent misdiagnosis.

The critical questions were based on feedback from ACEP members. A systematic review of the evidence was conducted and the committee made recommendations (Level A, B, or C) based on the strength of evidence available.

This clinical policy underwent internal and external expert review and was available for review by ACEP members during an open comment period. Responses received were used to refine and enhance the final policy.

Critical Questions and Recommendations

Question 1: In adult patients with a suspected acute ischemic stroke, can a clinical decision instrument be used to identify patients who have an LVO on CTA or MRA?

Patient Management Recommendations

- **Level A recommendations:** None specified.
- **Level B recommendations:** None specified.
- **Level C recommendations:** In adult patients with suspected stroke, either the Los Angeles Motor Scale (LAMS) or Rapid Arterial Occlusion Evaluation Scale (RACE) may be used to identify patients with increased likelihood of an LVO.

Question 2: In adult patients with a suspected acute ischemic stroke, does the addition of perfusion imaging to a CTA or MRA identify patients more likely to benefit from thrombectomy?

Patient Management Recommendations

- **Level A recommendations:** None specified.
- **Level B recommendations:**None specified.
- **Level C recommendations**: Obtain CTP or MR-based diffusion/perfusion imaging in patients with acute ischemic stroke because of LVO, especially if the time the patient was last known normal was between 6 and 24 hours before arrival to the ED.

Question 3: In adult patients with a suspected acute ischemic stroke qualifying for intravenous thrombolysis, is tenecteplase safe and effective compared with alteplase?

Patient Management Recommendations

- **Level A recommendations:** None specified.
- **Level B recommendations:** Use either tenecteplase or alteplase in patients with acute ischemic stroke who qualify for thrombolysis.*
- **Level C recommendations:** None specified.

*For tenecteplase, use 0.25 mg/kg maximum dose 25 mg bolus; for alteplase, use 0.9 mg/kg maximum dose 90 mg with 10 percent given as a bolus and the remaining as an infusion over 60 minutes.

Question 4: In adult patients who present with acute vertigo with possible stroke, is there a history or physical examination findings (e.g., HINTS examination) that can risk stratify for acute ischemic stroke?

Patient Management Recommendations

- **Level A recommendations:** None specified.
- **Level B recommendations:** None specified.
- **Level C recommendations:** In addition to a standard comprehensive history and physical examination, physicians may use specific findings such as ABCD2 score, ocular motor examination, presence of additional neurologic deficits, and HINTS to risk stratify patients with a possible stroke.

Before employing a maneuver such as HINTS, physicians should have sufficient education to perform the technique (Consensus recommendation). ⊕

Translation of Classes of Evidence to Recommendation Levels

In accordance with the strength of evidence for each critical question, the subcommittee drafted the recommendations and supporting text synthesizing the evidence using the following guidelines:

- **Level A recommendations:** Generally accepted principles for patient care that reflect a high degree of scientific certainty (e.g., based on evidence from 1 or more Class of Evidence I or multiple Class of Evidence II studies that demonstrate consistent effects or estimates).
- **Level B recommendations:** Recommendations for patient care that may identify a particular strategy or range of strategies that reflect moderate scientific certainty (eg, based on evidence from 1 or more Class of Evidence II studies or multiple Class of Evidence III studies that demonstrate consistent effects or estimates).
- **Level C recommendations:** Recommendations for patient care that are based on evidence from Class of Evidence III studies or, in the absence of adequate published literature, based on expert consensus. In instances where consensus recommendations are made, "consensus" is placed in parentheses at the end of the recommendation. ⊕

DR. LO is chief of the department of emergency medicine in Sentara Hospitals Norfolk and medical director of Sentara Transfer Center as well as professor/assistant program director Eastern Virginia Medical School in Norfolk, VA.

Brazilian Butt Lift Procedure Can Result in ED Visits

COMPLICATIONS OF A SIGNATURE MIAMI PROCEDURE 'AIN'T THAT FUNNY'

by MARY BRIDGET LEE, MD, MPH; MATTHEW PYLE, MD, FACEP

A search for Brazilian Butt Lift (BBL) on any social media platform will yield thousands of before-and-after images, faja sales, operating room videos, recovery tips, and patients praising their plastic surgeon. With a little more digging however, you will also find women like Nelly Baptiste telling *The New York Times*, "When the pain came yesterday, I was like: I want my old body back" after undergoing a BBL in Miami. Or Helly Larson describing the first week after her Miami BBL as "absolute hell" to a *Vox* reporter.[1,2] You'll also find the story of Sheila Powell, a woman who suffered a pneumothorax during her 2018 Miami BBL and whose 16-year-old daughter worried that in "just a blink of the eye, I could have lost my mom."[3]

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Autologous Fat Transfer Procedure

Gluteal autologous fat transfer procedures (AFT), popularly known as "Brazilian Butt Lifts" are gaining prominence in the aesthetic surgery community. A surgical technique to augment a patient's backside, AFT involves abdominal liposuction followed by re-injection of the fat into the gluteal area. The procedure has soared in popularity as beauty standards have shifted and cosmetic surgery has become increasingly transparent on social media platforms, with reported cases in the United States increasing from 614 in 2002 to 61,387 by 2021, a nearly 10,000 percent increase.[2,4,5] The procedure costs thousands of dollars and requires significant post-operative care; in addition to typical post-surgical needs, patients often require aggressive lymphatic massage and have significant movement restrictions that include sleeping face down, avoiding sitting, and wearing constrictive corset-type garments called fajas.[1]

The Rise of the Miami BBL

An entire industry has emerged around gluteal AFTs in Miami. Stand-alone cosmetic surgery centers offering the procedure, often at significantly "discounted" prices, can be spotted on nearly every block. Dedicated "Recovery Centers" have also sprouted up to meet the demand from patients who have traveled from out of state to take advantage of the competitive pricing in this area.

Unfortunately, the low prices come at a cost. Opportunistic physicians and entrepreneurs capitalized on the demand for these procedures by opening dedicated cosmetic surgery centers where physicians performed multiple gluteal AFT procedures per day, while providing little to no post-operative care or monitoring. These questionable practices led to a rash of bad outcomes. When seven South Florida gluteal AFT patients died tragically in one year alone, the Florida Board of Medicine issued an emergency regulation restricting fat injection to the subcutaneous space rather than injecting into muscle. Unfortunately, at least 13 deaths were subsequently reported in Miami-Dade County from 2019–2022, the three years immediately following the implementation of the subcutaneous injection regulation.[6] The increasing mortality rate led to an additional emergency regulation in 2022 requiring the consenting physician to perform the critical steps of the case, limiting surgeons to three cases per day, and mandating continuous, recorded ultrasound guidance for gluteal AFT procedures.[7] The impact of this latest set of regulations on the complication rate has yet to be reported.

Complications of Gluteal AFT

The pale, prone patient with multiple surgical drains and a constrictive faja has become a common site in the Jackson Memorial Hospital Emergency Department. Jackson Health System (JHS), the public hospital network in Miami-Dade County, has undertaken an internal review of these cases in response to the number of gluteal AFT patients being seen in our emergency department. Our experience at one of the country's epicenters of gluteal AFT complications can prove instructive for emergency physicians nationwide who may encounter these patients after surgeries performed in their own cities or when patients return from medical tourism trips to Miami and other cosmetic surgery hubs.

Gluteal AFT complications are notoriously difficult to study as stand-alone cosmetic surgery centers have no reporting requirement. The data that are available come largely based on voluntary reporting, physician surveys, or autopsies. As a result, our current data on AFT complications likely underestimates the actual incidence. JHS' chart review project, which identified 163 patients presenting to the ED with gluteal AFT complications in a 30-month period between 2020 and 2023, provides one of the most comprehensive and informative datasets on the breadth of AFT complications as they are currently being performed.

The most concerning complication of AFT is the pulmonary fat embolism (PFE). Classically associated with long bone fractures, a PFE may also occur when fat is injected or absorbed into a blood vessel during the re-injection phase of an AFT procedure. It even has been suggested that moving the patient into a supine position post-operatively can put enough pressure on newly deposited adipose tissue to shift it into the bloodstream.[6] Theoretically, ultrasound guidance should decrease this risk, which formed the basis for the 2022 Florida Medical Board regulation. PFEs from gluteal AFT are rare (occurring in an estimated 1:1,030 procedures) but life threatening, with mortality rates as high as 50 percent.[8,9] This statistic represents the highest mortality rate of any aesthetic procedure.[9]

PFE is only definitively diagnosed on autopsy and a high clinical suspicion must be maintained in high-risk patients. The term PFE is often used broadly to encompass two distinct clinical entities: microscopic and macroscopic fat embolism. Macroscopic fat embolism is thought to cause mortality through mechanical obstruction of large vessels. This should be suspected in patients with intraoperative cardiac arrest or shock. Microscopic fat embolism, on the other hand, causes morbidity and mortality through a systemic inflammatory response within 24 hours of the procedure, also known as "fat embolization syndrome." While both conditions rely on supportive care as the mainstay of treatment, plastic surgery literature suggests better outcomes with microscopic fat embolism.[10]

It is difficult to say exactly how many of the 163 patients at JHS suffered a PFE without autopsy reports. However, only one case—a patient who decompensated during her procedure and suffered a stroke but ultimately survived to hospital discharge—was presumed to be attributable to PFE.

CONTINUED *on page 20*

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HYPERTENSION | CONTINUED FROM PAGE 1

in the primary care setting. However, the optimal outpatient management on ED discharge is unclear and varies widely among EPs, with between 6 percent and 43 percent of patients receiving a prescription on discharge.[1,2,3,4] This practice variation is partly a result of a lack of evidence of benefit, as well as little concrete guidance from authoritative bodies. ACEP last updated its Clinical Policy for Managing Patients with Asymptomatic Elevated Blood Pressure in 2013, stating that "routine ED medical intervention is not required," but that EPs may "initiate therapy for long-term control" in selected populations, such as those with poor follow-up.[5] This recommendation was classified as Level C, meaning that it was based on expert consensus and had a low level of data quality. Complicating this lack of evidence and guidance on treating elevated BP, EPs may have a sense that elevated BP is a low acuity problem, best managed long-term by the primary care physician. Ultimately, EPs are often ambivalent about whether to prescribe an anti-hypertensive to the discharged hypertensive patient.

We know from the literature that prescribing antihypertensives at discharge is a safe practice, with no increased short-term risk of adverse effects.[2,4] Perhaps the greatest fear of the EP, that of precipitating a stroke as a result of a rapid drop in BP after discharge, does not appear to be a risk.[2] However, what remains unclear is whether there is a short-term benefit to prescribing anti-hypertensives at the time of discharge. After all, EPs typically will prescribe a week or at most a month of medication, after which hopefully the patient will follow up with their primary care physician for long-term management. If, however, a short-term benefit of treating hypertension after ED discharge could be demonstrated, then a re-evaluation of EP practice with this patient population would be worth considering.

We investigated this very question, which was published in the April issue of *JACEP Open* ("Antihypertensive prescription is associated with improved 30-day outcomes for discharged hypertensive emergency department patients"). In a retrospective study of 93,512 hypertensive patients discharged from eight EDs, we asked whether prescription anti-hypertensive therapy was associated with a decreased risk of an adverse event (aortic dissection, acute heart failure, myocardial infarction, stroke, and hypertensive encephalopathy) within 30 days of discharge. Consistent with prior studies, we observed a low risk of events, with an adverse outcome occurring in just 0.7 percent of patients within 30 days mortality was 0.1 percent. This should reassure EPs that discharging hypertensive patients is safe.

Despite the overall low rate of adverse outcomes, we found that ED prescription of anti-hypertensive therapy can further lower the risk of an adverse outcome. Prescribing anti-hypertensive therapy was associated with lower odds of severe adverse outcomes within 30 days (0.2 percent) compared to the group not receiving a prescription (0.7 percent), equating to a number needed to treat of 183 to prevent one adverse outcome. Most of this observed benefit was due to a decrease in heart failure events.

Additionally, we observed a lower rate of ED revisits in the treatment group (15.5 percent) compared to the group that was not treated (10 percent), with a number needed to treat of 18 to prevent one 30-day revisit to the ED. Our results indicate that while the current practice of deferring care to primary care physicians is safe, there may be an opportunity to improve outcomes for discharged hypertensive patient.

Based on our observations, a lower threshold to prescribe anti-hypertensive therapy has the potential to both prevent 30-day severe adverse outcomes in this population and to decrease ED returns. Due to its retrospective study design, these findings require confirmation with prospective trials, and further study is also needed to investigate which specific anti-hypertensives are optimal. Given the enormous number of ED patients found to have elevated BP, a more aggressive approach to the treatment of incidentally noted ED hypertension could have significant positive effects on a population-wide scale if these findings are confirmed.

DR. TODD is the associate residency program director at William Beaumont University Hospital.

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nearly all preventable.[5,6] This article outlines how appropriate risk stratification and management of asthma in the ED can reduce preventable deaths and minimize bounce backs.

While you may be aware of the aphorism, "All that wheezes is not asthma," it can also be stated that "asthma does not always wheeze." The diagnosis of asthma is usually obvious, with the patient having recurrent exacerbations and visits to the ED. However, the diagnosis is not so obvious, and sometimes what appears to be a recurrent exacerbation is a more sinister diagnosis, like a pulmonary embolism. It is therefore important to entertain wide age-appropriate differential diagnoses, including heart failure and pneumonia in adults and foreign body and bronchiolitis in pediatric patients. Anaphylaxis may overlap with asthma, and when both are present, aggressive treatment is necessary to prevent death. Stridor may be mistaken for wheeze. While stridor is predominantly an inspiratory sound and wheeze an expiratory one, stridor may cause an expiratory sound that can be mistaken for wheeze. The absence of wheeze and a silent chest to auscultation may indicate life-threatening asthma.

Once the diagnosis of asthma exacerbation has been established in the ED, risk stratification is necessary, as this helps guide management and disposition. Risk stratification in the ED can be gleaned simply from the history and physical exam. The most predictive factor for admission is previous hospitalizations for asthma. The next two most predictive variables for admission are room-air O2 saturation less than 95 percent and peak expiratory flow (PEF) severity category (severe/very severe versus mild/moderate).[7] Risk factors for asthma-related death that should be gathered from the history include a history of requiring intubation and mechanical ventilation, having a hospitalization or ED visit for asthma in the previous year, not currently using or poorly adherent with therapy, overusing beta agonists, a history of psychiatric disease or psychosocial problems, concomitant food allergy, and currently using or having recently stopped oral corticosteroids.[8]

It is unclear whether ED PEF monitoring improves outcomes. While some guidelines include improving PEF measurements and greater than 60-80 percent of personal best (or predicted) in their algorithm for safe discharge from the ED, ACEP reviewed the literature on the topic and concluded that ED PEF monitoring for adults with asthma exacerbation does not improve outcomes, predict need for hospitalization, or decrease mortality.[9,10] One study suggested that PEF done at discharge was not predictive of relapse in patients discharged from the ED with asthma exacerbations.[11] On the other hand, PEF measurements can be a useful screening tool for hypercapnia, making routine assessment of blood gases unnecessary in most patients. The decision to perform PEF monitoring should be individualized and considered a single data point within the clinical context to aid in disposition decision making. Blood gases are not routinely required. They should be considered in patients with a PEF less than 50 percent predicted or for those patients who do not respond to initial treatments and who are deteriorating.[12]

After history-based risk stratification comes an assessment of severity of illness to further help guide management. Mild or moderate asthma exacerbation is characterized by the patient being able to talk in phrases, preferring sitting to lying, not appearing agitated, and having an elevated respiratory rate, no accessory muscle use, heart rate of 100-120 bpm, oxygen saturation of 90-95 percent, and PEF of greater than 50 percent predicted or best. Severe asthma exacerbation is characterized by the patient being able to talk in words only (not phrases), appearing agitated, and having a respiratory rate greater than 30/min, accessory muscle use, heart rate greater than 120 bpm, oxygen saturation less than 90 percent and PEF less than or equal to 50 percent predicted or best. Life-threatening asthma is characterized by drowsiness, confusion, or silent chest to auscultation.[13]

For mild to moderate asthma exacerbations, current treatment recommendations include short-acting beta agonists (SABA) at 4-10 puffs via MDI with spacer repeated every 20 minutes for one hour, prednisolone 40-50 mg orally, and oxygen supplementation to a target saturation of 93-95 percent. Reassessment should be considered in one hour or less with continued SABA treatment as needed. Corticosteroids should be given within one hour of presentation to patients with moderate to severe exacerbations.

For severe exacerbations treatment, recommendations include adding ipratropium bromide 4-8 puffs via MDI with spacer, repeated every 20 minutes for one hour, continued SABA treatments, and magnesium sulphate 2 g IV if there is little or no improvement with initial therapies.[14,15] Non-invasive positive pressure ventilation, continuous SABA, repeated magnesium sulfate, epinephrine, helium–oxygen mixtures, and endotracheal intubation with ketamine should be considered in patients who deteriorate despite these treatments or who present with life-threatening asthma.[16]

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Perhaps the most important aspect of ED management of non-life-threatening asthma exacerbations is providing evidence-based discharge instructions and appropriate prescription medications. A common pitfall in the management of asthma exacerbations is neglecting to prescribe an inhaled corticosteroid in addition to a beta agonist on discharge from the ED. Inhaled corticosteroids are seldom prescribed on discharge from the ED, in one study at a rate as low as 6 percent.[17] Inhaled steroids used as a controller therapy improve lung function and symptom control, while also reducing airway inflammation, the risk of exacerbation, the need for repeat ED visits, and the total exposure to systemic steroids.[18] Even patients who are provided a prescription for a short course of oral corticosteroids additionally require one for inhaled corticosteroids, which should be used for at least three to six weeks after ED discharge. In a randomized controlled trial, the addition of high-dose inhaled corticosteroids to a course of oral corticosteroids at discharge was associated with a lower risk of relapse of the asthma exacerbation at 21 days than the use of oral corticosteroids alone.[19] Inhaler technique should ideally be taught before discharge home. Poor inhaler technique is associated with poor asthma control and increased ED visits, so teaching patients proper MDI plus spacer technique before discharge from the ED may prevent bounce backs.[20] Asthma care plans have been shown to decrease bounce backs, as well. Patient education should include the role of each medication and the avoidance of allergens, irritants, and workplace exposures.[21] Robust evidence supports the role of written asthma action plans that detail how to prevent and manage future exacerbations, and every ED should provide online and/or paper access to such plans.[22,23] Written action plans should include when to increase therapy, how to increase it, how long to increase it, and when to seek medical care.

The simple principles outlined here of risk stratification, treatment, and discharge instructions will keep our patients with asthma healthy and prevent frequent ED visits, morbidity, and mortality.

A special thanks to Dr. Leeor Sommer and Dr. Sameer Mal for their expert contributions to the EM Cases podcast that inspired this article.

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PEARLS FROM THE MEDICAL LITERATURE

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Show Me My Mistakes

Where do we go wrong and how can we change?

by RYAN RADECKI, MD, MS, FACEP

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It has been well over a year since the controversial publication of the Agency for Healthcare Research and Quality (AHRQ) report on diagnostic errors in the emergency department (ED).[1] The striking conclusions of this report included estimates that 0.1 to 0.4 percent of ED visits resulted in preventable death as result of diagnostic error. While these percentages appear small, when multiplied by the 130 million ED visits annually, these authors arrive at an estimate of 250,000 preventable deaths. Adding in errors and preventable deaths in those occurring following admission to the hospital, these same authors now propose up to 371,000 deaths annually in the United States as a direct consequence of diagnostic error.[2] This accounts for nearly 15 percent of all deaths annually in the United States alone.

Putting aside, for a moment, the methods leading to concerns regarding the magnitude of these estimates, the fact remains diagnostic errors occur with under-appreciated frequency. The better questions remain: Where in the process of care do the harmful errors occur? If these can be characterized, what preventive interventions might be considered?

Taking a different approach than the authors of the AHRQ report, Auerbach et al used a "look back" approach to perform both qualitative and quantitative evaluations of the types and frequencies of errors occurring in hospital settings.[3] In their study, patients were identified retrospectively as having suffered deterioration following admission resulting in transfer to the intensive care unit, death, or both. From their initial search, the authors found 2,428 patients meeting criteria, for each of whom they performed manual chart review. Of these, the authors identified 550 (23.0 percent) patients had experienced a diagnostic error. As a "look back method," these are not estimates for the overall prevalence of error but do provide substantial sample size for their analyses of subtypes of diagnostic error.

By far, the most common subtypes of diagnostic error were those associated with patient assessment and obtaining appropriate testing. The bulk of patient assessment errors fell into the category of failure or delay to consider the diagnosis. The included example describes a critically ill patient admitted with hepatitis and hematochezia whose acidosis failed to improve with initial inpatient management. After developing encephalopathy and hypoxemic respiratory failure, the patient was transferred to the ICU. Further diagnostic testing in the ICU identified salicylate toxicity. In this case, the harm resulted directly from the initial failure to consider the correct diagnosis. It ought further to be noted, as with many cases of diagnostic error, several other types of error were identified as contributing to the primary error causing harm.

The second major category involves failure or delays in obtaining the appropriate testing. An included example of a failure to order proper testing describes a case of a chronically anticoagulated patient admitted for a psoas hematoma following bone marrow biopsy. After a period of inpatient observation, anticoagulation was restarted. Subsequently, the patient developed increasing extremity pain and tachycardia. A CT angiogram was not ordered until the following morning, nor performed for several additional hours. Active extravasation of blood into the hematoma was identified, and the patient was referred to interventional radiology. The diagnostic error was therefore classified as relating to the delays associated with testing and its effect on subsequent definitive management.

The remaining scope of diagnostic errors includes a veritable cornucopia of illustrative morsels. An example of inadequate physical examination interpretation is provided by failing to elicit reflexes in a patient with weakness, leading to a delayed diagnosis of Guillain-Barré. An example of an error in history-taking is illustrated by a patient with fecal impaction and kidney injury whose excessive ingestion of magnesium citrate was missed, delaying identification of serum magnesium level of 10.2 mg/dL. A patient was admitted with abdominal pain following hysteroscopy, and the free air seen on CT was thought to be related to the procedure, rather than the ultimate diagnosis of small bowel perforation. Other examples included patients transferred between services whose failure to include complete handover information led to other delays in care.

Each of these examples and their classifications into Diagnostic Error Evaluation and Research frameworks helps safety researchers develop strategies to improve processes systematically contributing to diagnostic errors. Understanding of the domains of diagnostic errors allows for further exploration of the foundational causes of subtypes of error, with the ultimate hope of identifying acceptable interventions to mitigate such deficiencies.

Circling back to the estimates of diagnostic errors causing severe harm to hundreds of thousands in the United States annually, it remains reasonable to recognize these estimates are built on precarious scaffolding and extrapolation from the authors' own prior work. The issues and flaws in their methods have been competently dissected elsewhere.[4,5] Rather than rehash the accuracy of these estimates, however, an alternative thought experiment involves taking these numbers at face value. This includes such estimates as the rate of diagnostic error for diseases such as "aortic aneurysm and dissection" between 21.0 and 51.7 percent. These rates of error are, at the least, consistent with the colloquial "standard of care" for dissection which has been to "miss the diagnosis" initially. Similarly elevated rates of error, and related harms, are associated with other serious vascular, infectious disease, and cancer-related diagnoses, as well.

Therefore, it may be reasonable to consider the profuse rate of diagnostic error comprising the current state of clinical practice directly informs the legal definition of the "standard of care." It is regularly noted the "standard of care" is not "perfect" care, but a much lower standard.[6] Three cases, Hall v. Hilburn, McCourt v. Abernathy, and Johnston v. St. Francis Medical Center are cited as forming the general basis for the modern definition of "standard of care." Relevant portions include:

> "Our law says that a physician is not an insurer of health, and a physician is not required to guarantee results. He undertakes only to meet the standard of skill possessed generally by others practicing in his field under similar circumstances." (Abernathy)
>
> "When a physician undertakes to treat a patient, he takes on an obligation enforceable at law to use minimally sound medical judgment and render minimally competent care in the course of the services he provides." (Hilbun)

Taken together, these opinions reinforce a standard associated with the skill of a "minimally competent" clinician. Relying upon these published estimates of the rate of diagnostic error, it would follow that error-prone practice is an unfortunate reality in modern medicine. A typical, reasonable, clinician providing "minimally competent care" will routinely make mistakes, and it is solely by virtue of good fortune and context by which the errors do not result in serious harms.

Patient safety and diagnostic errors research is critical to the design of a health system in which errors are minimized. With the advent of further decision-support and artificial intelligence-augmented medical care, potent tools exist to address the systemic barriers and cognitive biases that result in error. However, striving for ideal care is not incompatible with recognizing the challenges associated with diagnosis in our present complex medical ecosystem. These differing approaches to the problem of diagnostic error ought to both help us move forward, while also aiding a conversation regarding legally protecting physicians from the expectation of perfection.

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DOGMA FEELS RIGHT UNTIL YOU STEP IN IT

SKEPTICS' GUIDE TO EMERGENCY MEDICINE

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The SPEED Protocol

An unltrasound protocol designed to detect acute aortic dissection

by KEN MILNE, MD

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A 59-year-old man presents to your community emergency department (ED) with chest pain that is radiating to his back. His vital signs are normal and the ECG does not demonstrate a myocardial infarction. Your clinical gestalt has you suspecting an acute aortic dissection (AoD). While waiting for laboratory investigations, including troponin and d-dimer, you wonder if a quick point-of-care ultrasound (POCUS) examination looking for three sonographic findings could help determine the likelihood of this being an AoD.

Background

Aortic syndrome (AAS) has been called the lethal triad and includes AoD, intramural hematoma (IMH), and penetrating aortic ulcer.[1] It is a deadly but rare condition that can present in atypical ways leading to delays in diagnosis associated with increased mortality.

AoD is broadly classified into two major types according to the Stanford classification system: Type A and Type B. This system is based on the location of the tear and helps guide treatment strategies. Type A dissections Involves the ascending aorta and may extend into the descending aorta. It is more common and more dangerous than Type B, as it can lead to serious complications like rupture into the pericardial space leading to cardiac tamponade, aortic valve insufficiency, or myocardial infarction. Type B dissections occur in the descending aorta only, after it has passed the arteries that supply blood to the arms and head. They are less common than Type A and usually less immediately life-threatening, but still serious and potentially fatal if not treated properly.

Speed is important in making the diagnosis of an AoD due to the associated increase in mortality with delays.[2,3] There are clinical decision tools available, but the American College of Emergency Physicians does not recommend the routine use of these tools in suspected cases of AoD.[4]

Clinical Question

In patients with a suspected AoD, what is the diagnostic accuracy of three sonographic findings?

Reference

Gibbons RC, Smith D, Feig R, et al. The sonographic protocol for the emergent evaluation of aortic dissections (SPEED protocol): A multicenter, prospective, observational study. *Acad Emerg Med*. 2024;31(2):112-118.

- **Population:** A convenience sample of adult patients with clinically suspected Stanford type A or B AoDs before performing a POCUS or CTA from January 2010 to December 2019
  - » **Excluding:** Patients unable to consent, those with a pre-existing or traumatic AoD, and individuals who did not receive a POCUS evaluation before advanced imaging (CTA, MRA, or TEE).
- **Intervention:** POCUS performed by PGY1 to three emergency medicine residents to identify three sonographic findings consistent with acute aortic dissection. This included (1) the presence of either a pericardial effusion or (2) an intimal flap, or (3) an aortic outflow track diameter greater than 35 mm measured from the inner wall to the inner wall within 20 mm of the aortic annulus during end-diastole.
- **Comparison:** CTA of chest-abdomen-pelvis, MRI/MRA, or cardiology-performed TEE
- **Outcome:**
  - » **Primary Outcome:** Diagnostic accuracy of identifying a Stanford Type A and B AoDs
  - » **Secondary Outcomes:** Test characteristics of each of the three individual sonographic findings for diagnosing Stanford type A and B AoDs
- **Type of Study:** Multicenter, prospective, observational, cohort study of a convenience sample of adult patients.

Authors' Conclusions

"The SPEED protocol has an overall sensitivity of 93.2 percent for AoD."

Results

There were 1,314 patients included in the study. The median age was 59 years with 49 percent being female. A total of 44 cases (3.3 percent) were diagnosed with AoD with 21 (1.5 percent) Stanford type A and 23 (1.8 percent) Stanford type B dissections. Additionally, 41 cases (93.2 percent) had at least one finding present on POCUS examination.

Key Results

While the sensitivity of POCUS for aortic dissection was high, the 95 percent confidence interval around the point estimate was very wide.

- **Primary Outcome:** Diagnostic accuracy of identifying Stanford type A and Stanford type B AoDs
- **Secondary Outcomes:** Test characteristics of each of the three individual sonographic findings for diagnosing Stanford type A and Stanford type B AoDs.

EBM Commentary

1. **Convenience Sample:** These were not consecutive patients but rather a convenience sample of patients with suspected AoD. This could have introduced selection bias into the study.
2. **Ultrasonographers:** POCUS was performed by PGY1–PGY3 emergency medicine residents. They received a four-hour introductory course taught by emergency ultrasound faculty. In addition, each resident completed a three-week emergency ultrasound rotation during their internship. They did not receive any additional formal training before participating in the study except for the standard bedside teaching throughout their residency. This may impact the external validity of the results to attending physicians in a non-academic, community, or rural settings.
3. **Prevalence:** The prevalence of 3.5 percent was high compared to previously published data.[5,6] This too suggests some selection bias. However, 3.5 percent is still a relatively small number and this results in a wide 95 percent confidence interval around the point estimate for the diagnostic accuracy metrics.

Bottom Line

Aortic dissections are rare diagnoses, deadly diagnoses and hard to diagnose even with POCUS.

Case Resolution

You perform the SPEED Protocol and do not see any of the three POCUS findings suggestive of AoD. This gives you some reassurance as it lowers the likelihood of this rare and deadly condition. However, the diagnostic accuracy of SPEED is not good enough to fully exclude the diagnosis and you order a CTA to definitively rule out an AoD in this man.

Remember to be skeptical of anything you learn, even if you heard it on the Skeptics' Guide to Emergency Medicine.

Thank you to Dr. Neil Dasgupta who is an emergency medicine physician and ED intensivist from Long Island, NY for his assistance with this critical appraisal.

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ONE MORE REASON NOT TO ORDER AN X-RAY

SOUND ADVICE

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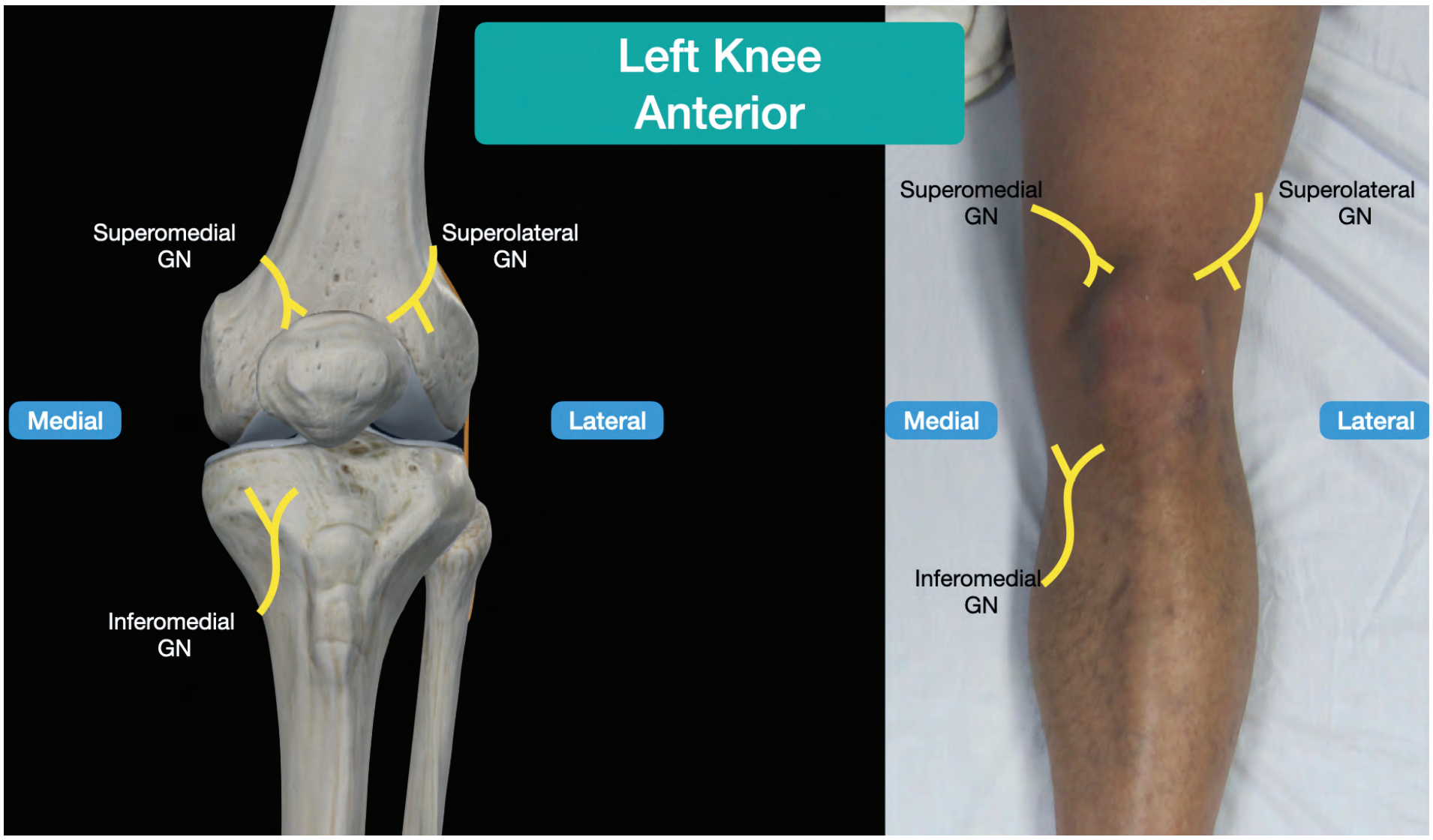


ARUN NAGDEV

FIGURE 1. Bony and surface anatomy of the knee with the superomedial, superolateral, and inferomedial nerves shown. Note that the inferolateral genicular nerve is omitted as this is not blocked to avoid foot drop from the nearby superficial peroneal nerve.

Ultrasound-Guided Genicular Nerve Block

A motor sparing nerve block for patients with acute on chronic knee pain

by JOSEPH STEGEMAN, MD; CARLOS MIKELL, MD; DAVID MARTIN, MD; AND ARUN NAGDEV, MD

Chronic knee pain is common and debilitating. Patients often seek care in the emergency department (ED) setting when flares of pain affect their ability to ambulate, climb stairs, or even stand up from sitting.[1] In many cases, these patients have been dealing with pain for years and have already exhausted the standard analgesic cocktail of acetaminophen, NSAIDs, and/or topical agents. Patients and clinicians are both aware of the obvious downstream risks of adding opioids to this multimodal regimen. Intra-articular steroid injections can be an excellent option but come with their own risks given they violate the joint space and are not commonly performed in the ED setting. The genicular nerve block offers a simplified, safe alternative for treating severe knee pain. In conjunction with multimodal oral and topical pain regimens, this motor sparing block can provide both acute pain control and lasting relief for weeks to months following the injection for patients with severe knee pain.[2,3]

Sonoanatomy

The innervation of the knee is complex, but much of its sensory innervation is supplied by the genicular nerves, which are easy targets for ultrasound-guided nerve blocks. The genicular nerves are a group of four sensory-only branches (off of the sciatic nerve) that wrap around the femoral condyles superiorly and the proximal tibia and fibula inferiorly. The genicular nerves are named based on their corresponding quadrant of the knee joint (superolateral, superomedial, inferomedial, and inferolateral) and run immediately adjacent to the bone, following the course of the genicular arteries. Their proximity to the bone allows us to use the bone as a backstop for the needle, making this a particularly easy block to perform. The genicular nerve block targets the superolateral, superomedial and inferomedial genicular nerves. We recommend not blocking the inferolateral nerve because of its close proximity to the superficial peroneal nerve and possibility of inadvertently causing a foot drop.

How to Perform the Block

Supplies

- High frequency linear transducer
- Chlorhexidine
- Block needle
- Probe cover
- Sterile gel
- 3 mL lidocaine 1 percent for skin with 25g needle
- 10 mL bupivacaine 0.5 percent mixed with 10 mg dexamethasone

Step 1

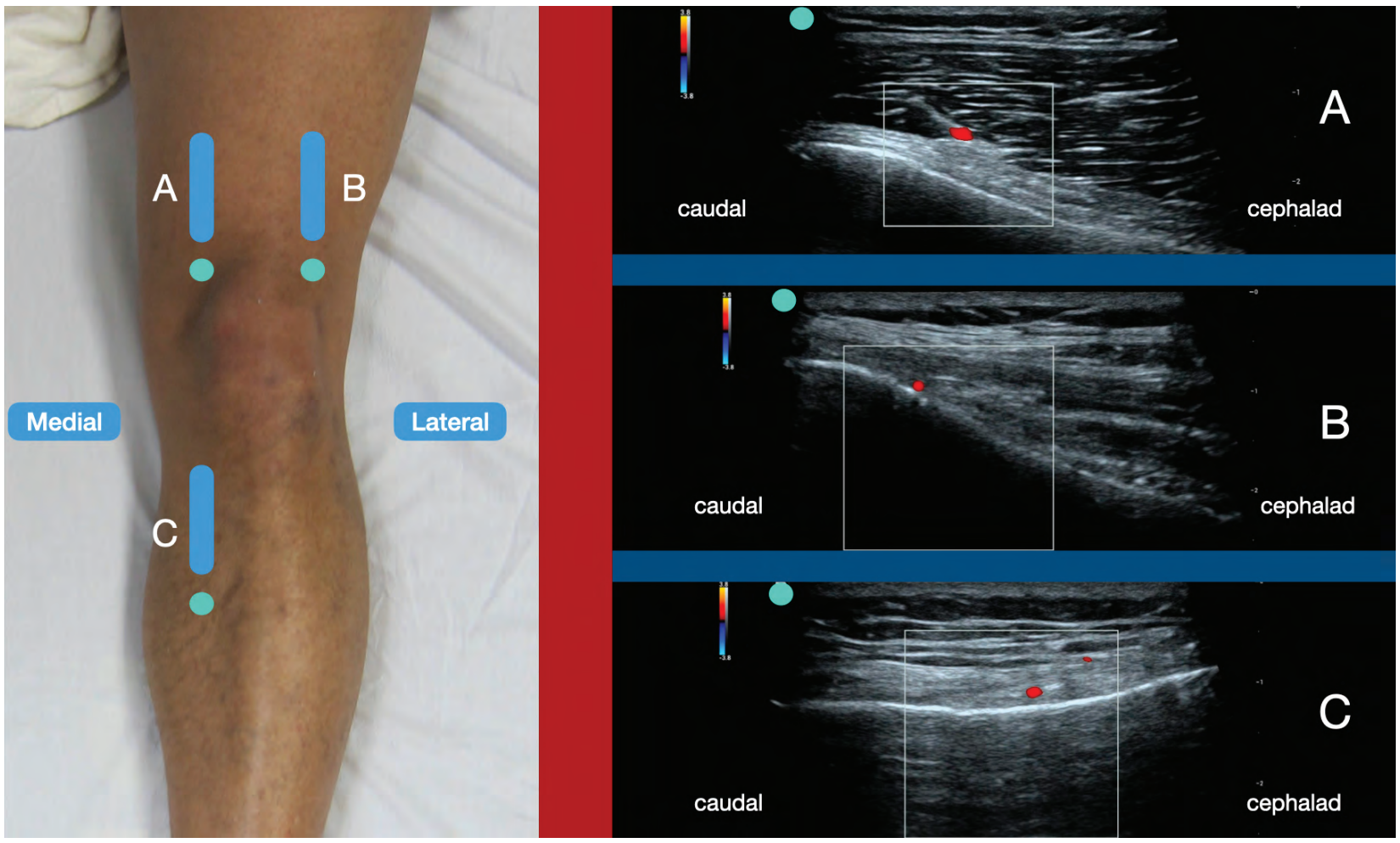
Prepare a 5 mL syringe with 3-5 mL of lidocaine 1 percent for skin wheals at each site of needle entry. Prepare another syringe with 10 mL of bupivacaine 0.5 percent and 10 mg dexamethasone. Place the patient supine with the knee exposed. Disinfect the anterior aspect of the knee with chlorhexidine and place a transparent adhesive cover on the probe.

Step 2

Place the ultrasound system contralateral to the affected knee so that you have a clear line of sight of the ultrasound screen when performing the block. The three locations for anesthetic deposition are the superomedial, superolateral, and inferomedial genicular nerves. The goal of this block is to gently place the needle tip against the bone at each location and spread local anesthetic along the surface of the periosteum toward the nerve.

Step 3

For the superomedial and superolateral genicular nerves, the probe is placed longitudinally just proximal to the knee joint to identify where the femoral shaft curves outward toward the condyles. The medial and lateral sides should appear nearly identical. Identification of the genicular arteries with color Doppler can be attempted but can be difficult because of their small size. Anesthetize the skin with 1 mL of 1 percent lidocaine, then advance the block needle down to the bone. Aspirate prior to injecting to prevent inadvertent intravascular



PHOTOS: ARUN NAGDEV

FIGURE 2. Probe placement (probe marker in green) and corresponding ultrasound images for the superomedial (A), superolateral (B), and inferomedial (C) genicular nerves with color Doppler showing the corresponding genicular arteries.

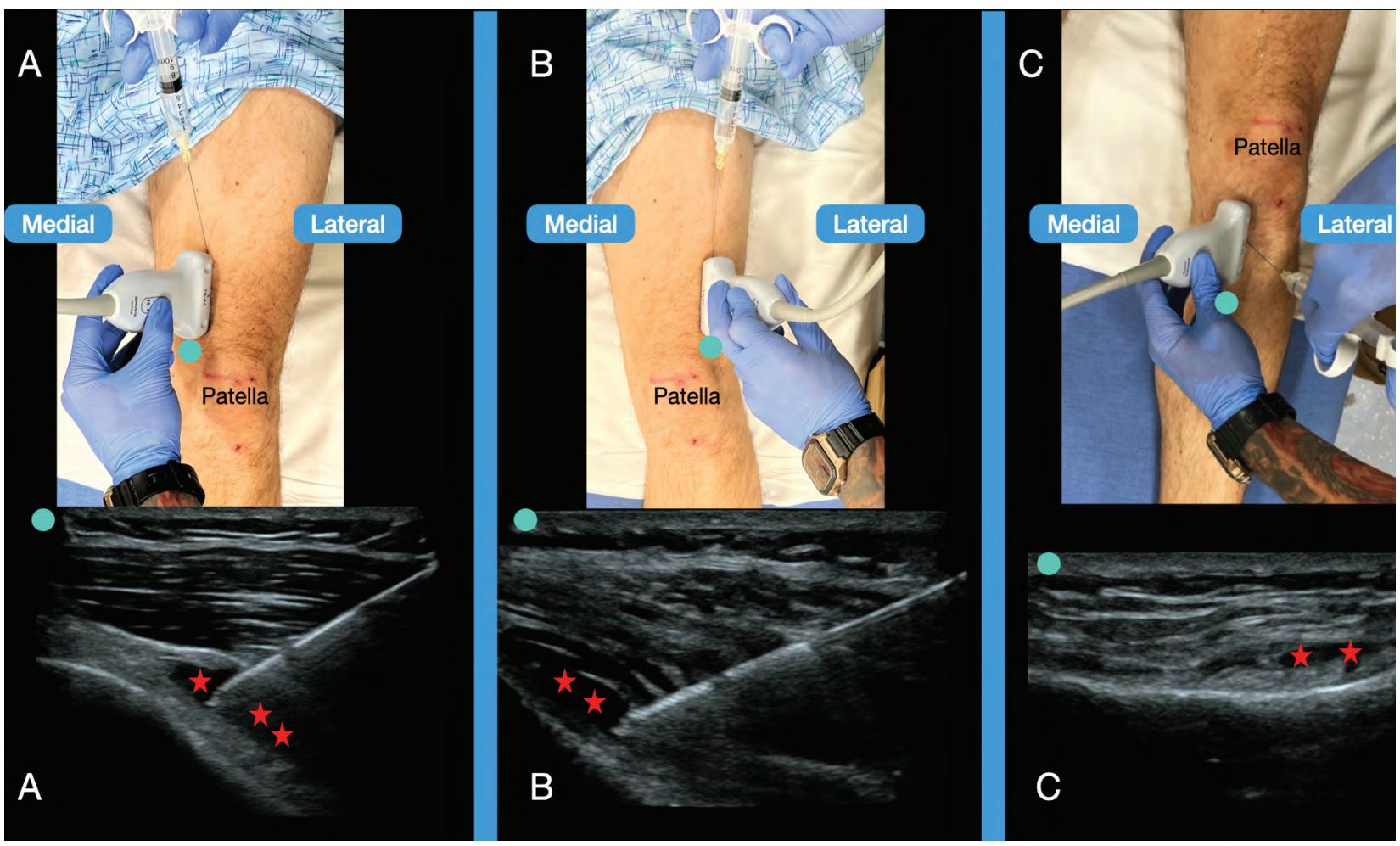


FIGURE 3. Probe and needle placement with corresponding ultrasound images demonstrating needle positioning and post-injection local anesthetic spread between the muscle and bone (red star) at the superomedial (A), superolateral (B), and inferomedial (C) sites.

injection and inject 3-4 mL of long-acting anesthetic mixed with corticosteroid at each site. Ensure that anechoic fluid spreads along the femur. We prefer an in-plane, superior to inferior approach, but an out-of-plane technique can be performed, as well.[4]

The inferomedial genicular nerve is about 3 cm medial to the tibial tuberosity (similar to the site used for intra-osseous access), where the surface of the tibia forms a shallow bowl. The probe is placed longitudinally and color Doppler can be used to identify the genicular artery. Anesthetize the skin and insert the block needle, using an out-of-plane approach, down to bone, taking care to avoid the artery. An out-of-plane technique is used for this portion of the block because of the shallow depth of the target. After negative aspiration, inject 3-4 mL of long-acting anesthetic mixed with corticosteroid along the bone.

This adapted technique from our anesthesia colleagues does not provide complete surgical anesthesia, but rather significant sensory analgesia. In our experience, patients have been able to ambulate comfortably with no motor deficits in approximately 30 minutes. Also, the very low volumes needed for this block allows for the possibility of performing bilateral blocks with safe anesthetic volumes.

Conclusion

The ultrasound-guided genicular nerve block is a safe, simple technique for treating acute on chronic knee pain. The block provides both the immediate relief that the patient desires and sustained functional improvement that will help prevent bouncebacks, while avoiding the risks associated with opioid prescriptions or injections that violate the joint space. This block is commonly offered in outpatient pain clinics but can be easily adapted to the ED setting.[5,6]

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PUBS | CONTINUED FROM PAGE 4

Purple urine bag syndrome (PUBS) is a purple discoloration of urine within the catheter bag and can occur over the span of hours to days. It is found in patients with indwelling urinary catheters, poor gastrointestinal motility, and alkaline urine.[1] The pathophysiology occurs with digestion of tryptophan by gut bacteria to indole to indoxyl sulphate by the liver and excretion via urine. Commonly *Escherichia coli, Klebsiella pneumoniae, Pseudomonas aeruginosa, or Proteus mirabilis* in the urine will convert the indoxyl sulphate to indigo (blue) and indirubin (red color) resulting in the purple hue. Treatment involves urinary catheter exchange, antibiotics for urinary tract infection (as warranted), and treating for associated conditions, such as constipation.[2]

The patient received fluid resuscitation, external rewarming and piperacillin-tazobactam with improvement in the patient's vital signs. His initial urinalysis was nitrite and leukocyte esterase positive with a pH of 8.5. The urine culture grew ESBL *E.coli* and *Proteus*. He was admitted and additionally diagnosed with diabetic gastroparesis, continued piperacillin-tazobactam for treatment of uninary tract infection, and discharged home on hospital day number five.

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ALEX KOO

Patient urinary catheter bag.

BRAZILIAN | CONTINUED FROM PAGE 12

Instead, the overwhelming majority of post-AFT patients at JHS presented secondary to bleeding, pain, and syncope. Emergency physicians are very familiar with the workup and treatment of these conditions , however EPs must not underestimate the severity of these concerns in a purportedly "minimally invasive" procedure. For example, in our system, 37 percent of patients presenting after gluteal AFT procedures required transfusion, an average of 1.7 units per patient. Nearly half of all post-AFT patients presenting to our emergency departments required admission and six percent required ICU admission. Other complications seen in our cohort included sepsis, hemorrhagic shock, electrolyte derangements, bowel perforation, hematomas, abscess formation, and cardiac arrest.

Communities like South Florida are scrambling to regulate gluteal AFT procedures, but in the meantime, the care of patients like Ms. Baptiste, Ms. Larson, and Ms. Powell will continue to fall to emergency physicians. Pain and bleeding need to be taken seriously in these patients, and for those who present in critical condition, fat embolism must be considered. Familiarity with post-op restrictions for gluteal AFT patients will also improve their care in the emergency department. Until these procedures are regulated in a way that makes them safe for patients, emergency physicians must be ready and equipped to care for them.

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Q&A ABOUT OUR LITTLEST PATIENTS

KIDS KORNER

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Extracting External Auditory Canal Foreign Bodies

Understanding the timing of it all

by LANDON JONES, MD; RICHARD M. CANTOR, MD, FAAP, FACEP

The best questions often stem from the inquisitive learner. As educators, we love—and are always humbled—by those moments when we get to say "I don't know." For some of these questions, you may already know the answers. For others, you may never have thought to ask the question. For all, questions, comments, concerns, and critiques are encouraged. Welcome to the Kids Korner.

JEAN-PAUL CHASSENET-STOCK.ADOBE.COM

In Children, How Successful Are Emergency Physicians at Extracting External Auditory Canal Foreign Bodies?

Kids stick everything everywhere. In general, the type and the location of the foreign body (FB) dictates the need for a speedy extraction. Airway FBs mostly likely need to be dealt with immediately. Button batteries tend to be the most concerning FBs in any orifice above the level of the stomach (i.e., ears, nose, mouth). But what about those instances of a non-button battery foreign body in the external auditory canal (EAC)? How quickly do they need to be removed?

Does it warrant a transfer or a late-night consult to pull a bead out of a kid's ear? Are we—as emergency physicians—always the best person to go after it?

So how successful are we at extracting the EAC FB? A recent 5-year retrospective study of 1,197 pediatric patients at a single institution studied 759 kids (63.4 percent) primarily presenting to the ED and 438 (36.6 percent) children presenting initially to an outpatient otolaryngology clinic.[1] In the ED cases, the EAC FB was present less than 24 hours in most cases (74 percent), while it was present less than 24 hours in only 11 percent of the outpatient clinic. Overall, FBs had been present for longer when patients presented to outpatient clinics. In ED cases, the EAC FB was successfully removed in 67.9 percent of ED pediatric patients compared to 92.9 percent of the otolaryngology clinic patients. In patients who had a failed ED FB extraction (n=186) the otolaryngology clinic was still able to successfully extract 146/186 (78.5 percent) of these originally unsuccessful EAC FBs. The most common types of FBs that resulted in failed ED attempts were beads, rocks, and popcorn seeds—items with a hard texture and which are notoriously difficult to grasp.

Complications also were more commonly reported in the ED setting (35.7 percent) compared to the outpatient otolaryngology clinic (5 percent). Complications included patient agitation, bleeding, irritation, EAC laceration, swelling, TM perforation, and pushing the FB closer to TM. While some of these complications are clinically significant, others may not be.

A separate retrospective study included 275 pediatric patients and found that emergency physicians were successful at removing most of these EAC FBs (86 percent), but the success rate was still less than in the ENT clinic (94 percent).[2] Complication rates from the ED setting (6 percent) were still higher than the ENT clinic (2.3 percent), but overall were much lower than the prior study. These complications included minor issues such as bleeding or excoriations of the external canal wall. Only 2.3 percent of ED retrievals required procedural sedation. Broadly, rates of successful extraction range from 53–86 percent by emergency physician and the use of procedural sedation varies from about 2 percent to up to 20 percent.[3–7]

Conversely, though, there is an occasional study that suggests that we are not great at successfully extracting EAC FBs. A retrospective study of 366 children found the ED/urgent treatment center success rate to be low at 17.5 percent with a complication rate of 22 percent compared to an ENT clinic with a reported successful extraction rate of 94.5 percent.[7] Interestingly, the authors did not report a complication rate for the ENT clinic and that study makes no mention of the number of patients that warranted procedural sedation.

Which EAC foreign bodies are we the most unsuccessful at retrieving?

Ultimately, it's the ones that are hard to grasp. A one-year retrospective study of 36 children with EAC FBs identified a higher success rate in graspable objects (64 percent; n=9) compared to non-graspable objects (45 percent; n=9). The complication rate was also much lower in these graspable (14 percent) versus non-graspable (70 percent) cases. Non-graspable objects were described as "smooth-surfaced objects," but the specific breakdown was not given aside from saying "beads were the most common." While the number of cases is small, non-graspable FBs appear to decrease the success rate of a successful EAC FB extraction.

Do EAC FBs need to be emergently removed?

Due to the COVID-19 pandemic we gained some data on the timing of EAC FB retrieval. During this time, outpatient ENT appointments were difficult to obtain. A retrospective study of 34 patients including both children and adults aged 2–78 years, evaluated the duration of EAC FB and its relationship to successful removal as well as complications.[6] The FBs duration ranged from 1–78 days with a mean of 19 days for those who did not require general anesthesia removal and 34 days for those who required removal under general anesthesia. The study did not find that a prolonged duration of EAC FB led to an increase in complications. However, this study is limited in addressing our question as it included both adults and children and had a low number of total patients.

While we may not plan to leave an EAC FB in place for over 2 months, like this study did, a shorter duration less than 1 week may not be unreasonable. The literature suggests we can remove the EAC FB a majority of the time although certain FB characteristics—like whether it is able to be grasped and its location in respect to the TM —should factor into our decision-making.

Summary

EAC foreign body retrieval in the ED setting is successful a majority of the time with success rates most commonly in the range of 53–86 percent. Hard, smooth-surfaced objects, such as beads, rocks, and seeds tend to have the lowest success rates. Removal of non-button battery EAC FBs is not typically emergent and can likely be done with a reasonable outpatient clinic referral if you cannot easily extract it yourself.

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BE A MEDICAL DETECTIVE– BONE UP ON YOUR FORENSIC SKILLS

FORENSIC FACTS

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Factitious Disorder Imposed on Another

Emergency physicians can play an important role in this diagnosis

by HEATHER V. ROZZI, MD, FACEP; RALPH J. RIVIELLO, MD, MS, FACEP

A 9-month-old male presents to emergency department (ED) with his mother for seizure. The child was diagnosed with seizure disorder at 2 months of age and has had multiple visits to the emergency department (ED) for seizures. The child was delivered at term vaginally, with normal prenatal period and labor. Immunizations are up to date. The child drinks baby formula and has been advancing his diet using baby food. Review of the chart shows that the child has had several negative CT scans and MRIs, and no structural or congenital central nervous system (CNS) abnormalities. The child was started on Levetiracetam and levels always have been normal despite breakthrough seizures. Metabolic conditions were ruled out but the child did have visits with both hyponatremia and hypernatremia present. These resolved during hospitalization. Today, the child is afebrile and vital signs are normal. Examination is unremarkable. Laboratory analysis reveals a sodium of 160 mg/dl. Urine electrolytes were obtained. Pediatric neurology and pediatric intensive care unit PICU were consulted and recommended obtaining anti-epileptic drug levels and starting D5 containing IV fluid. While waiting for bed placement, the RN observes the mother preparing a bottle for the child and comes to you with a concern about what she witnessed. What do you do?

KEY POINTS

- Factitious Disorder Imposed on Another (FDIA) is a mental health disorder classified by DMS-5 and is formerly known as Munchausen by Proxy.
- FDIA is a form of abuse (physical and medical) and may put the victim's life in jeopardy.
- Mothers are the primary perpetrators when the victim is a child and often suffered childhood abuse or suffers from psychiatric ilness.
- Emergency physicians need to maintain a high index of suspicion when treating pediatric patients.
- Treatment requires a multidisciplinary team approach but is often unsuccessful.

Discussion

Factitious Disorder Imposed on Another (FDIA), is a psychological disorder in which a caregiver and especially a parent induces the symptoms of a disease or injury in their child, falsifies the child's medical history, or tampers with the child's diagnostic specimens to create a situation that typically requires medical attention.[1] This is a recognized form of child abuse. The condition was described by Dr. Robert Meadow in 1977, as Munchausen Syndrome by Proxy. It was named after Baron von Munchausen, who was known for having a knack for embellished, elaborate stories.[2] Currently the condition has been renamed as Factitious Disorder Imposed on Another (FDIA). The current DSM-5 criteria for the diagnosis of FDIA is, "falsely presenting or causing physician or mental health symptoms in someone else with the intent of deception; authoritatively and falsely presenting another (adult, child, or pet) to others as physically or mentally impaired; the deceptive behavior occurs even when there's no obvious gain or benefit; and no other mental health condition can explain these behaviors."[2]

Several risk factors have been identified in both the parent and child.[3,4] Perpetrator risk factors include: female sex, mother of child, health care worker, history of obstetric complications, history of childhood maltreatment, and psychiatric illness (factitious disorder imposed on self, borderline personality disorder, histrionic personality disorder, and depression). Their motive is often to seek sympathy or attention. Victim risk factors include: young children especially younger that 6 years old, sibling of victims of FDIA, elderly, and the disabled. By far, the majority of victims are children. FDIA is estimated to occur in one percent of the population and carries up to a 12 percent victim mortality rate.[5]

The diagnosis of FDIA is difficult to make and can often take several months. Investigation involves a collaborative effort between child abuse specialists, child-protective services, psychiatry, and law enforcement. During the investigation, the child is often removed from the care of the offender. The offender may end up incarcerated, however the actual treatment is psychiatric, though no medication, behavioral therapy, psychotherapy, or multidisciplinary approach has proven effective. Only about 10 percent of offenders receive ongoing therapy.[5] Most cases result in the separation of the child from the offender.[5]

Emergency physicians can play an important role in the diagnosis by paying attention to potential red flags when evaluating children who repeatedly present for the same problem. These include:[5,7]

- Extensive but inconsistent medical history in the patient (victim), often with symptoms that do not correlate
- Frequent cycles of reporting improvement and worsening of symptoms
- Tendency to evade questions and change clinicians when a health professional explores other causes than a medical diagnosis
- Eagerness to have the victim undergo medical examinations, tests, and procedures
- Intense emotional reactions when a health professional doesn't provide or confirm the diagnosis
- Development of new symptoms when testing does not lead to a diagnosis
- Long history of medical visits and hospital stays
- Resolution (often complete) of symptoms while hospitalized, but returns while discharged

Case outcome: The registered nurse said she witnessed the mother adding a white substance to the formula. That bottle was confiscated, and the nurse gave the child a different bottle. Child protective services and law enforcement were consulted. The patient's mother was only permitted to have supervised visits with the child in the hospital while the investigation was underway. The formula was analyzed and was found to have an excessively high sodium concentration. The child's sodium level quickly returned to normal and remained that way while in the hospital.

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EMERGENCY IMAGE QUIZ | CONTINUED FROM PAGE 4

Answer

The correct answer is a) Epiglottitis

Epiglottitis is a potentially life-threatening inflammation of the epiglottis and supraglottic space caused by infection (e.g., Haemophilus influenzae type b [Hib]) or injury (e.g., foreign body, caustic substance, thermal damage). As the epiglottis swells, it can cause airway obstruction and create a medical emergency. Presenting symptoms include high fever, sore throat, difficulty swallowing, dyspnea, hoarseness, stridor, tachycardia, drooling, and hot potato voice or dysphonia.

Protection of the airway is a priority, and treatment may require placement of an artificial airway, intravenous steroids, antimicrobial therapy to control infection, and surveillance in an intensive care unit. Tracheostomy may be required in severe cases if airway management is not achievable with medical intervention or oral/nasal intubation.

The leading cause of epiglottitis in children is bacterial infection. Hib remains a leading causal organism but has a markedly decreased incidence. Group A *Streptococcus*, *Staphylococcus aureus*, and *H influenza* types A and F, and non-typeable *H influenza*, in addition to viral and fungal infections, have all been associated with epiglottitis.

Since widespread immunization against Hib, the average age of epiglottitis in children has increased. Nonimmunized populations and immunocompromised individuals are at increased risk for epiglottitis.

Epiglottitis in adults is also primarily attributed to infection but from different organisms. *Streptococcus pneumoniae* is the leading infectious agent, with other viral, bacterial, and fungal sources described as causal agents.

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