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TOXICOLOGY Q&A

Feel the Burn

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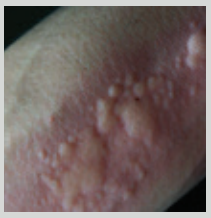

EM LITERATURE

New Option for Urticaria

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For more clinical stories and practice trends, plus commentary and opinion pieces, go to:

www.acepnow.com

PRACTICE CHANGERS

Outpatient Management of Pulmonary Embolism

MANY LOW-RISK PATIENTS CAN BE TREATED WITH DOACS RATHER THAN ADMITTED

by LAUREN WESTAFER, DO, MPH

Historically, patients diagnosed with pulmonary embolism (PE) initially have been managed as inpatients. This practice stemmed from two primary issues: a reported mortality of 18 percent following PE and the need to titrate anticoagulation to therapeutic levels. However, more recent studies report that PE-related mortality is actually only around 3 percent, albeit still a high figure.[1] Additionally, direct oral anticoagulants (DOACs) such as rivaroxaban and apixaban do not require injections or coagulation testing to monitor for therapeutic levels. As a result, many professional society guidelines, including those from ACEP and the American College of Chest Physicians, now recommend that select patients with low-risk PE can be

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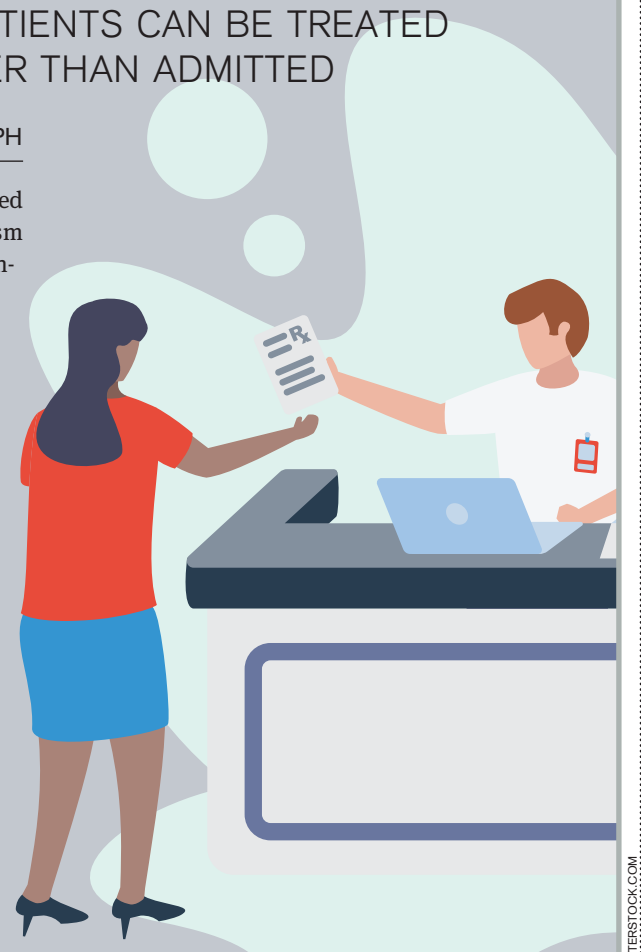

SHUTTERSTOCK.COM

Combating COVID in Latino Communities

Dr. Marina Del Rios Rivera combines outreach and research skills to help groups hit hard by the pandemic

by RENÉE BACHER

The first gathering of what would become Illinois Unidos, a consortium dedicated to addressing the impact of COVID-19 in the Latino community, is still vivid in the mind of Marina Del Rios Rivera, MD, MSc. "It was a Saturday in April [2020], and I remember how somber that meeting was when we recognized the magnitude of what was about to happen in our community," she said.

An associate professor at the University of Illinois College of Medicine and an emergency medicine specialist at the university's hospital, Dr. Del Rios Rivera was referring to not just the Chicago community that her hospital serves but also the disproportionately vulnerable Latino community in Illinois.

Born in Puerto Rico, the daughter of a father who worked a janitor and a mother whose education did not go beyond sixth grade, Dr. Del Rios Rivera acknowledges that as a physician, she has privilege—and she feels compelled to use it on behalf of those who do not. This has meant a decade of community service volunteer work in the Latino community for Dr. Del Rios Rivera—and in this instance, it felt especially important as Latino people in the United States are more likely to be infected with and die from COVID-19 than white people. Latino people also experience a disproportionate amount of COVID-related financial burdens, which may include work-hour reduc-

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NEWS FROM THE COLLEGE

UPDATES AND ALERTS FROM ACEP

New Candidate for ACEP President-Elect

Christopher S. Kang, MD, FACEP, current Chair of the ACEP Board of Directors, has decided to run for ACEP President-Elect as a floor candidate. Dr. Kang joins Aisha T. Terry, MD, MPH, FACEP, current Secretary-Treasurer of the Board, on the slate to become ACEP's next President. Elections will be held during ACEP21 in Boston in late October. Look for candidate profiles in upcoming issues of *ACEP Now*.

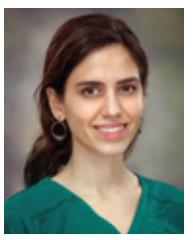
Workforce Infographic Outlines Next Steps

Visit acep.org/workforce to stay updated on ACEP's efforts to address the potential workforce oversupply. A new infographic diagrams ACEP's next steps, and many sections and chapters have been hosting virtual town hall discussions to gather input and questions. This page will continue to be updated often with the latest developments.

ACEP Joins AMA Scope of Practice Partnership

ACEP recently joined the AMA Scope of Practice Partnership (SOPP). The SOPP believes patients deserve care led by physicians, and it helps state and specialty societies in opposing scope-of-practice expansion legislation. Go to www.amascopeofpractice.org to find an interactive health workforce mapper, education and training modules on non-physicians, issue briefs, and media tools from the Physician-led Team Care and the Truth in Advertising campaigns. These resources are available to physician members of the more than 100 national, state, and specialty medical associations in the SOPP. Visit acep.org/aceplately where Executive Director Sue Sedory explains how ACEP plans to utilize this data moving forward.

Introducing Our First Resident Fellow



Cara Borelli, DO, has been selected as our first-ever *ACEP Now* resident fellow! Her one-year term begins in July 2021. Dr. Borelli will oversee the Resident Voice column while also contributing the resident perspective to the editorial board. Dr. Borelli is an emergency medicine resident at University of Texas Health San Antonio and a peer reviewer for the *Journal of the American Osteopathic Association* and the *British Medical Journal Case Reports*. Dr. Borelli recently interned with the *Journal of the American Medical Association* (*JAMA*) and is a contributor to *REBEL EM*.

Policy Statements Address Physician Compensation, Transparency

ACEP recently added or revised policy statements related to physician compensation, which can be viewed in full at acep.org/policystatement.

- The revised **Compensation Arrangements for Emergency Physicians** statement now includes a bullet addressing emergency physicians being provided detailed itemized reports of billing and collections in their name, reflecting the language in Amended Resolution 29(20) Billing and Collections Transparency in Emergency Medicine.
- The **Emergency Physician Compensation Transparency** statement, approved October 2020, details benchmarks that should be included to ensure physicians doing comparable work receive comparable compensation.

Emergency Physician Appointed to CDC Committee

Angela Lumba-Brown, MD, was appointed by the U.S. Secretary of Health to the Centers for Disease Control and Prevention (CDC) National Center for Injury Prevention and Control's Board of Scientific Counselors (BSC), a federal advisory committee. The BSC works to achieve stakeholder and public engagement in CDC's efforts and commitment to improve people's health. CDC's Injury Center BSC works with other institutions to study the causes and strategies related to the prevention of violence and injuries.

Registration Is Open for ACEP21 in Boston

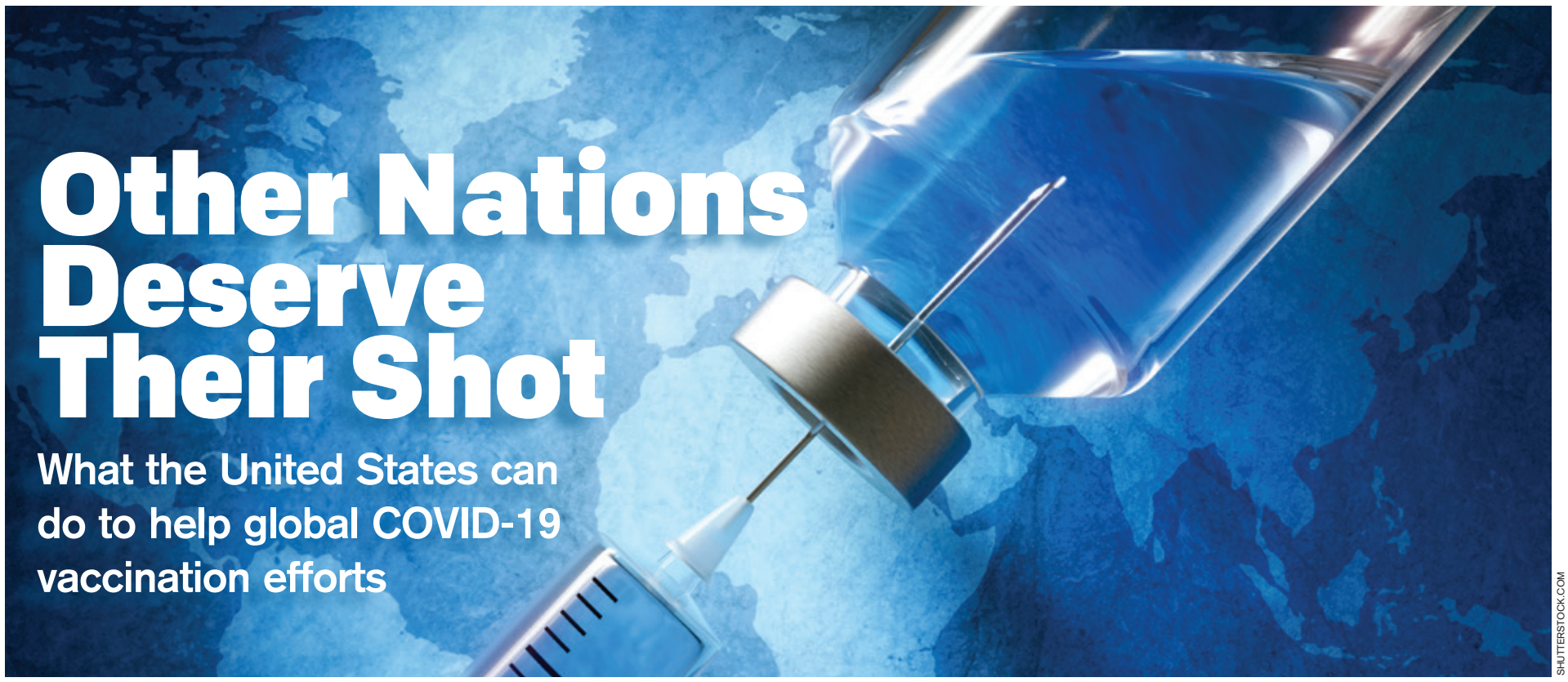
ACEP is so thrilled to return to an in-person event for the 2021 Scientific Assembly in Boston. We can't wait to see you! Visit acep.org/acep21 to register. Save $100 when you register for in-person before Sept. 24 with promo code OCTOBER21.

Peer Support Project Adds More Resources

Who can understand the unique stressors of being an emergency physician better than one of your peers? ACEP's Peer Support Project was launched in September 2020 to help emergency physicians improve their peer support skills while also providing institutional resources for hospitals and employers who want to form local peer support programs. Visit acep.org/peer-support-project for a collection of articles related to individual and institutional peer support in emergency medicine.

OPINIONS FROM EMERGENCY MEDICINE

A NEW SPIN



Other Nations Deserve Their Shot

What the United States can do to help global COVID-19 vaccination efforts

SHUTTERSTOCK.COM

by CRAIG SPENCER, MD, MPH

The pandemic is splitting in two. In the United States, case numbers have plummeted, thanks to a remarkable vaccine rollout. For the first time since the pandemic began, I didn't see a single COVID-19 patient during my last shift in the New York City emergency department where I work. As emergency physicians, many of us spent the last year at the epicenter of this pandemic. We never want to be there again.

More than ever, people now recognize emergency physicians for our hard-earned frontline expertise. Colleagues, friends, and relatives are likely to ask you what we can do now to help bring the COVID-19 pandemic to an end worldwide so that the smallest number of people are harmed and we don't end up facing a new wave of infections that are impervious to our vaccines.

The answer: We must keep advocating for public health, even though the gravest risk to our fellow Americans is, we believe, in the past.

While COVID-19 caseloads have declined in the United States, our colleagues in emergency departments around the world are being tested harder than ever before. In the last few weeks, there were more new COVID-19 cases worldwide than the entire first six months of the pandemic. Tragically, there will be more COVID-19 deaths in 2021 than in 2020.

Despite this, only 0.3 percent of all COVID-19 vaccines are going to low-income countries. The vast majority of doses are going to wealthy countries like the United States. Global vaccine inequity is profound. Approximately 75 percent of all vaccine doses administered have occurred in just 10 countries. Some countries have yet to receive a single dose to date.

Now that we've vaccinated a large percentage of the eligible population here, we need to think about how to help vaccinate the world. President Joe Biden has vowed the United States will provide an "arsenal of vaccines" for the world. There are significant humanitarian, public health, and economic reasons for the United States to lead the global effort, even as the pandemic ebbs here at home.

The United States has already made some laudable commitments. Recently, the White House announced it would send 20 million doses of the three Food and Drug Administration–authorized vaccines (Pfizer-BioNTech, Moderna, and Johnson & Johnson) abroad by the end of June. That comes in addition to 60 million doses of AstraZeneca vaccine (which is not currently authorized for use in the United States). Furthermore, the United States has been the largest financial contributor to COVAX, the global vaccine equity effort spearheaded by the World Health Organization.

But we can and must do more.

What We Can Do

The pledge to donate 20 million doses by the end of June seems like a nice gesture, but in reality, it's inadequate. Twenty million doses barely exceeds what the United States allocates to all of its states and territories in a single week, and it's only a small fraction of the 1.3 billion doses for which the United States has secured supply contracts, more than any other country in the world.

We don't need to wait until the end of June to do this. The United States is already sitting on a surplus stockpile, and the vaccine supply chain has been remarkably reliable in recent months. We should deploy these doses now, with a focus on getting our health care worker colleagues around the world vaccinated. Already, 115,000 of our colleagues have died from COVID-19. Any further delay will only add to that grim toll.

You also may have heard of another move toward vaccine equity pertaining to intellectual property. In May, after mounting pressure, the Biden administration announced to the World Trade Organization that it would be enacting a temporary waiver on intellectual property protections—known as Trade-Related Aspects of Intellectual Property Rights (TRIPS) waivers—for coronavirus vaccines. This move fulfilled his campaign promise to not allow patent protections to stand in the way of expanding global vaccine supply and will make it easier for countries to expand their own domestic vaccine-manufacturing capabilities.

A waiver on vaccine intellectual property is important for increasing global vaccine supply, but even that is not sufficient in itself. Since October 2020, South Africa and India have argued that protections on proprietary formulas and technology are also inhibiting access to lifesaving therapeutics and vaccines. More than 100 countries have heeded their call and offered support.

To make an impact in the medium term, the United States must also help facilitate the transfer of technical know-how so that others can produce the vaccines themselves—instead of relying on handouts from wealthy countries. Unsurprisingly, pharmaceutical companies have vigorously resisted this, on worries that these tech transfers would impact financial returns from any future vaccines built on the same technology.

These are legitimate concerns. But seeing as the U.S. government bankrolled vaccine development in one case, and served as a guaranteed buyer in others, and many of our health care colleagues may otherwise not have access to a vaccine until 2022 or even 2023, now is hardly the time to prioritize the bottom line over public health priorities in a pandemic.

With an eye towards the future, the United States should help build manufacturing capacity in other countries where vaccine production capacity is limited or nonexistent. For example, in Africa there are 1.2 billion people but only 10 vaccine manufacturers. Only 1 percent of all vaccines administered on the continent are manufactured there.

The Africa Centres for Disease Control and Prevention (Africa CDC)—itself a product of a partnership of the African Union and the U.S. Centers for Disease Control and Prevention—recently announced plans to establish five new vaccine-manufacturing centers across the continent. At a recent summit hosted by the African Union and Africa CDC, leaders committed to increasing the percentage of vaccines manufactured in Africa from 1 percent to 60 percent by 2040. The United States must be a partner in helping Africa achieve that goal.

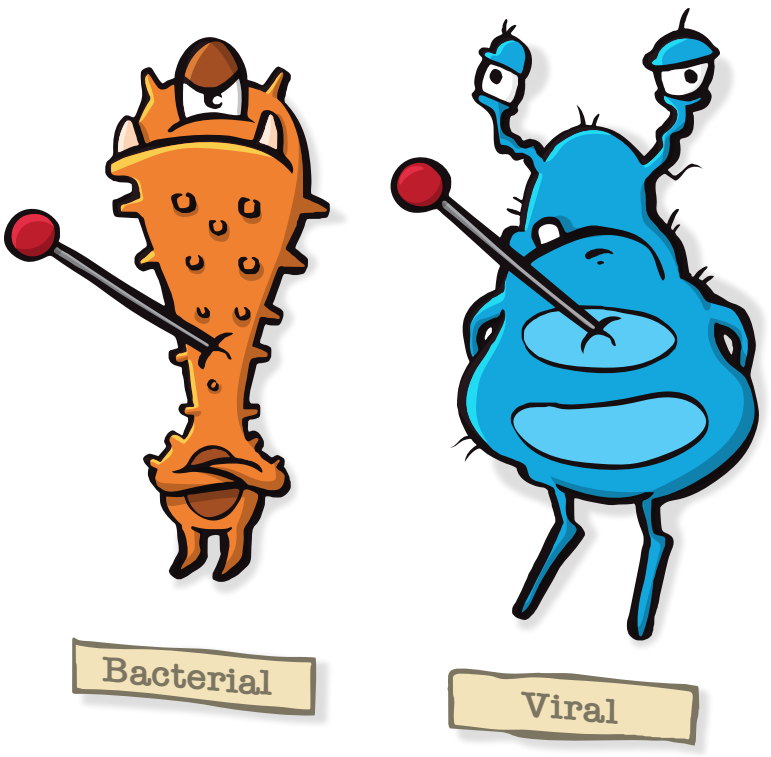
As we start seeing friends and family again here in the United States and our emergency departments fill with our regular pre-pandemic patients, it will be all too easy to forget that the COVID-19 pandemic is still raging around the world.

Here in the United States, we like to point out how we've donated more money and more vaccine doses than any other country. Even if that's true, the reality is that just doing more than others isn't enough.

By donating surplus doses, supporting the transfer of the technical know-how needed to produce vaccines, and helping expand manufacturing capacity around the world, the United States can help end this pandemic and better prepare the world—and ourselves—for a safer future.

DR. SPENCER is director of global health in emergency medicine at New York-Presbyterian/Columbia University Medical Center and assistant professor of emergency medicine and population and family health at the Columbia University Medical Center in New York City.

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



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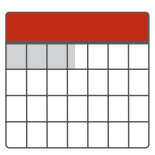

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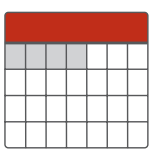
Time to diagnosis–pediatric patients[2]



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1. Cailleaux M, et al. 2020. Eur J Clin Micro Infect Dis. 39(2):293. 2. O'Brien MP, et al. (2018) Pediatr Infect Dis J. 37(9):868.

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ACEP4U: Committees and Sections Tackle Big Projects

NEW RESOURCES AND STATEMENTS DEVELOPED RELATED TO SEPSIS, ULTRASOUND, EMTALA, CAREER ADVANCEMENT, AND MORE

by JORDAN GRANTHAM

Did you know ACEP has 30 committees and 40 sections working year-round to advance emergency medicine? Led by emergency physician volunteers, these groups focus on specific niches or clinical topics within the field and regularly produce new policies, webinars, and resources to benefit ACEP members. Here are a few recent highlights:

New Clinical Policies: Opioids and Pneumonia

The Clinical Policies Committee, led by Chair Stephen J. Wolf, MD, FACEP, has published two new clinical policies this year that can be viewed at **acep.org/clinicalpolicies**.

- Critical Issues in the Management of Adult Patients Presenting to the Emergency Department with Community-Acquired Pneumonia (October 2020)
- Critical Issues Related to Opioids in Adult Patients Presenting to the Emergency Department (June 2020)

On deck: The committee is currently drafting revisions to the appendicitis, acute heart failure syndromes, and mild traumatic brain injury clinical policies.

Task Forces Address Sepsis, Excited Delirium

In April, the multispecialty task force convened by ACEP in 2019 published its new sepsis guidelines, "Early Care of Adults with Suspected Sepsis in the Emergency Department and Out-of-Hospital Environment: A Consensus-Based Task Force Report," in *Annals of Emergency Medicine*. The report covers principles of early sepsis recognition, initial care steps in the ED and out-of-hospital environments, titration of care, and related controversies. It has been endorsed by the American Academy of Emergency Medicine, the American College of Osteopathic Emergency Physicians, the American Osteopathic Board of Emergency Medicine, the Association of Academic Chairs of Emergency Medicine, the Council of Emergency Medicine Residency Directors, the Emergency Medicine Residents' Association, the Emergency Nurses Association, the National Association of EMS Physicians, the Infectious Diseases Society of America, the Society for Academic Emergency Medicine, the Society of Critical Care Medicine, and the Society of Hospital Medicine. ACEP's sepsis point-of-care tool, DART, was updated to reflect these new guidelines. Visit **acep.org/sepsis** for more information. The guidelines were authored by Donald M. Yealy, MD; Nicholas M. Mohr, MD, MS; Nathan I. Shapiro, MD; Arjun Venkatesh, MD, MBA; Alan E. Jones, MD; and Wesley H. Self, MD, MPH.

Up next: The Excited Delirium Task Force is working on revisions to the 2009 White Paper Report on Excited Delirium Syndrome.

Ultrasound Section Launches New and Improved Sonoguide

A subcommittee of ACEP's Emergency Ultrasound Section recently published work on the new Sonoguide: Ultrasound Guide for Emergency Physicians. Led by co-authors Dasia Esener, MD, MS, FACEP, and Gabriel Rose, DO, the Sonoguide was initially developed for those with little ultrasound experience, but it includes advanced concepts and skills as well. View the guide at **acep.org/sonoguide**.

EM Lifestyle Series Kicks Off with Career Content

ACEP's Young Physicians Section and Online Education Committee are collaborating on EM L.I.F.E.R.S., a new content series focused on EM lifestyle concerns including career advancement, finances, life balance, parenthood, and more. Hosted by YPS Chair John Corker, MD, FACEP, and Chair-Elect Puneet Gupta, MD, FACEP, in collaboration with Simone Lawson, MD, the first episode provided tips for job hunting during a pandemic. The second episode was a deep dive into EM employment contracts that focused on how to identify red flags and deal breakers. View the series at **acep.org/EM-life**.

EMPC Tackles Compensation, Staff Safety

The EM Practice Committee, led by Chair Daniel Freess, MD, FACEP, has been reviewing, revising, and drafting policy statements. The following were approved by the Board at its April 2021 meeting and are available at **acep.org/policystatements**.

- The revised **Compensation Arrangements for Emergency Physicians** statement now includes a bullet addressing emergency physicians being provided detailed itemized reports of billing and collections in their name, reflecting the language in Amended Resolution 29(20) Billing and Collections Transparency in Emergency Medicine, among other edits.
- The revised **Cultural Awareness and Emergency Care** statement now references the role of implicit bias.
- The revised **Transition of Care for ED Patients** statement includes new language emphasizing physician autonomy as defined by the prudent layperson standard.
- The revised **Emergency Department Planning and Resource Guidelines** statement now references the role of the emergency physician as the leader of the emergency department team. Language was added to address the level of patient literacy for understanding discharge instructions and family transport in private vehicles, to name a few.
- The revised **Emergency Physician Contractual Relationships** statement adds language to state emergency physicians are entitled to detailed itemized reports on a semiannual basis for what is billed and collected for their services. Language was added that emergency physicians shall not be asked to waive access to billing and collection reports. An existing section concerning the honoring of contractual agreements was expanded to include honoring contracts prior to the initiation of employment or in cases of deferred/delayed employment, such as that of a graduating resident.
- The revised **Emergency Physician Rights and Responsibilities** statement now includes addressing the provision of detailed itemized reports of billings and collections on a semiannual basis and more specific language related to due process before adverse action is taken related to employment or contract status, among other edits related to contract negotiations and restrictive covenant agreements.
- The revised **Non-Discrimination and Harassment** statement includes the role of implicit bias and the potential impact of cognitive load on bias.
- The new policy statement **Safer Working Conditions for Emergency Department Staff** addresses the importance of leadership promotion of safety, interior and exterior facility infrastructure, safety planning, reporting and training, written and posted behavioral standards, and the availability of equipment to prevent workplace injury.
- The revised **Patient-Centered Medical Home Model** statement emphasizes the importance of the patient-centered medical home providing timely care, integration of acute care services for patients to receive efficient evaluation, and recognition of the safety-net role of emergency medicine.

Diversity Section Addresses Vaccine Hesitancy

Vaccine hesitancy has been front of mind this spring, so the ACEP Diversity, Inclusion & Health Equity (DIHE) Section produced both a webinar and a toolkit to equip clinicians with historical context and strategies to counsel patients on this important decision. The webinar "This Is Our Shot: How EM Docs Can Empower Patients to End the Pandemic," moderated by Tracy MacIntosh, MD, MPH, FACEP, and including panelists Ugo Ezenkwele, MD, MPH; Pilar Ortega, MD; and Robert Rodriguez, MD, is now available to watch on demand at **ecme.acep.org**. View the toolkit, led by DIHE Chair Andrea Green, MD, FACEP, and Merle Carter, MD, FACEP, at **acep.org/covid-19-alert.**

New Smart Phrases, Disease Screening Statement

ACEP's Public Health and Injury Prevention Committee (PHIPC), led by Chair Antony Hsu, MD, FACEP, revised the smart phrase "Coronavirus Concern–Confirmed or Suspected" with the new title "Coronavirus Discharge–Confirmed or Suspected" and added a new smart phrase: "Monoclonal Antibodies for COVID-19 Infections." View all of ACEP's smart phrases at **acep.org/smart-phrases**.

In April, the Board approved the PHIPC's request to rescind the previous policy statement "HIV Testing and Screening in the ED" to be replaced with the new, more encompassing statement "Screening for Disease and Risk Factors in the ED." View the new policy statement at **acep.org/policystatements**.

Webinar Series Digs Deep into EMTALA

The Medical-Legal Committee, led by Chair Rade Vukmir, MD, JD, FACEP, developed a new series around an oft-requested topic: EMTALA. This series, available to watch on-demand at **acep.org/emtala-webinars**, breaks this complicated law into digestible sections without losing the details. Webinar hosts included Dr. Vukmir; Michael Bresler, MD, FACEP; Keri Gardner, MD, MPH, FACEP; Hugh Hill, MD, JD, FACEP; and Robert Bitterman, MD, JD, FACEP.

- Overview and Evolution
- Why EMTALA Is Actually GOOD for EM Physicians
- EMTALA and the Medical Screening Exam
- Minimizing Risk of EMTALA Violations During Transfers
- Managing Psychiatric Patients in the ED Under EMTALA
- The EMTALA Complaint Process

MS. GRANTHAM is ACEP communications manager.

EM Leaders to Reunite at LAC in July

ACEP's first in-person event since the start of the pandemic is an opportunity for current and future leaders to join forces

by JORDAN GRANTHAM

ACEP's Leadership & Advocacy Conference (LAC) holds two unique distinctions within the surreal world of "COVID time": The April 2020 event was ACEP's first to transition to a remote format, and the upcoming 2021 conference will be the first time ACEP members gather together beyond Zoom screens since March 2020. After a disconcerting year for our society that featured division and disagreement as a central theme, the time feels right for an event that was created to bring people together.

Averaging 400–500 attendees each year, LAC's goal is to create more and better leaders who are equipped to advocate for the emergency medicine specialty. It's small enough to create an intimate setting where attendees can really get to know one another, and the programming offers both introductory and deeper dives into health care policy. The pandemic saw emergency physicians stepping into leadership roles at every level, and now the voice and influence of emergency medicine have never been stronger.

A confluence of circumstances beyond the pandemic has made this year's LAC a unique challenge for its planning team. It's always a puzzle to schedule hundreds of Congressional meetings, but COVID precautions and security concerns lingering from the Jan. 6 attack at the U.S. Capitol have added some new wrinkles to the planning process. Washington, DC, began opening up its museums, libraries, and live entertainment venues in early May, a welcome update for those who like to attend LAC with their families in tow.

ACEP

LAC18 attendees mingle between educational sessions.

The LAC agenda has shaped up nicely and includes events for all career phases. In addition to the annual Health Policy Primer hosted by the Emergency Medicine Residents' Association and ACEP's Young Physicians Section, the popular National Emergency Medicine Political Action Committee (NEMPAC) reception will return for 2021. ACEP's leaders will be on hand during LAC to host a town hall meeting focused on the future of the EM workforce, giving attendees a platform to discuss emergency medicine's challenges with the leaders who are actively developing the strategies and solutions. Also new for 2021, a "Women in Health Policy" networking event is scheduled for Sunday, July 25.

For the Congressional meetings, discussions will center upon three main topics:

- **The Lorna Breen Health Care Provider Protection Act:** Named after the ACEP member tragically lost to suicide during the height of the pandemic surge in New York, this important legislation would provide support and protections for frontline health care personnel who face mental health challenges as a result of their work.
- **The Medicare reimbursement cliff:** Congress averted a significant cut to Medicare evaluation and management codes last December, but it was only a temporary fix. Without action, we will see these cuts enacted in January 2022.
- **The Mainstreaming Addiction Treatment (MAT) Act:** This important legislation would fully repeal the X-waiver requirement that continues to exist for clinicians to be able to provide buprenorphine as a treatment for substance use disorders. With opioid overdoses climbing again during the pandemic, the need for this legislation to be passed is urgent.

Registration is still open! Visit www.acep.org/LAC to secure your spot.

MS. GRANTHAM is ACEP communications manager.

MIDYEAR Q&A WITH ACEP'S PRESIDENT

Dr. Mark Rosenberg talks about the challenges ahead and how COVID-19 has reshaped emergency medicine

When Mark S. Rosenberg, DO, MBA, FACEP, assumed the ACEP presidency at ACEP20 last October, the pandemic was still the biggest challenge for emergency medicine. Now, in the eighth month of his term, U.S. vaccination numbers are rising, COVID-19 cases are falling, and we're starting to consider the shape of the postpandemic world.

Dr. Rosenberg recently emailed with *ACEP Now* Medical Editor in Chief Jeremy Faust, MD, MS, MA, FACEP, about his goals for the rest of his term and some of the challenges emergency medicine has ahead.

JF: The ACEP EM Physician Workforce of the Future report has turned a lot of heads. What's the biggest area of concern you've heard about from members regarding its findings and recommendations?

MR: Our members are concerned about the impact of market consolidation, fragmentation, and health care economics on our specialty. They are frustrated that board-certified emergency physician hours and contracts have been eliminated in favor of more cost-advantageous physician assistant (PA) or nurse practitioner (NP) hours, at the detriment of patients and our workforce. They are aware of how the COVID-19 pandemic has exposed vulnerabilities that had been increasing in our health care system.

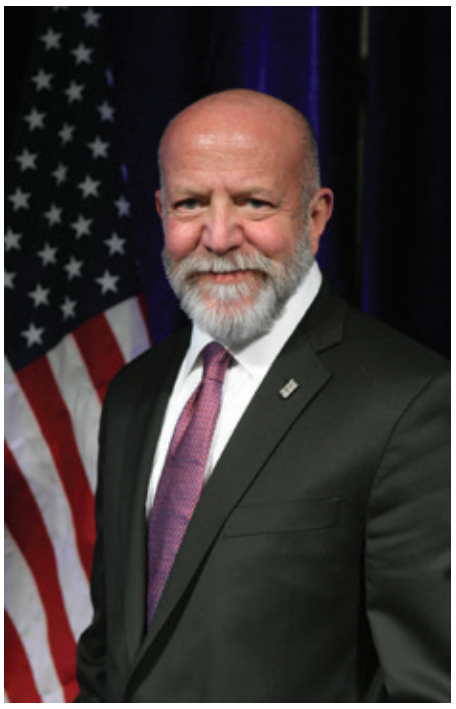
These concerns were clarified through the data in this report. External forces are reshaping our specialty, accelerating the pressures and the urgency of taking immediate steps to ensure and maintain a sustainable emergency medicine workforce.

JF: How do you respond to these concerns?

MR: First, we understand that, in the face of frustration and uncertainty, our members want solutions. That requires both listening and action. The framework offered by the ACEP Board is being used to engage all within the specialty of emergency medicine to work together to identify solutions to address this market-driven instability and improve the specialty for the future.

As for action, ACEP and our Task Force partners worked to uncover the data that analyzed and quantified the threats to our specialty's future. That same methodical rigor is being applied now to ensure we move forward with data, focus, and intent. I can promise you that ACEP is committed to leading the charge to influence and support a landscape that sustains a balanced, fulfilled, and thriving workforce that continues to provide high-quality emergency care.

JF: As I have gotten to know you, you're an incredibly upbeat, "make lemonade out of lemons" type of guy. What is one thing in this report that worries you in particular? What's the steepest climb we have ahead?



Dr. Mark Rosenberg

MR: Emergency physicians chose a specialty that requires us to be there for our patients during some of their most challenging circumstances. We meet their uncertainty and fear with our expertise, experience, decisiveness, and compassion. Now, we must tap into these same strengths to navigate our *own* period of uncertainty.

Too many of our members and residents—and their families—are already directly affected by threats to the careers and livelihoods that they have worked so hard to build.

I believe the biggest challenge facing ACEP is our responsibility as the leading EM association to help *all* those we represent—from our newest residents to our most experienced senior physician leaders, from those who practice in busy Level I trauma centers to those who work in community hospitals in rural areas. The breadth of perspectives in emergency medicine is one of our greatest strengths. We must ensure that we embrace this diversity as we align to protect the future of our profession while safeguarding the excellence of care our patients deserve.

We must not let the report's findings divide us. There is not one magic solution or a simple, quick fix. These are complex, nuanced issues that will require all of us working together for many years ... to not only address the potential oversupply but also to better position emergency medicine in the nation's changing health care system.

JF: The opioid epidemic continues. Recently, the Biden administration announced that the X-waiver requirement for prescribing buprenorphine for opioid use disorder will no longer be necessary. Does that mean no more training courses? What's the upshot?

MR: The new guidelines are a welcome step to increase patient access to buprenorphine. We are pleased that the eight-hour training course requirement will be eliminated. However, you currently still have to notify the Substance Abuse and Mental Health Services Administration of your intent to prescribe buprenorphine and wait for their approval. ACEP is also getting some clarification on a 30-patient limit included in the guidelines to see how or if it would apply to emergency physicians.

These guideline changes are positive progress toward reducing barriers and helping patients get access to this lifesaving treatment, and we are hopeful that Congress will take action to fully eliminate the X-waiver.

ACEP has been advocating for years to repeal this requirement, and we strongly support the Mainstreaming Addiction Treatment (MAT) Act, which would completely eliminate the outdated requirement.

Many emergency physicians have been seeing an uptick in opioid overdoses during the pandemic. ACEP members from across the country are eager to discuss the importance of ED access to this treatment with members of Congress, one of several important topics we will address with legislators during ACEP's Leadership & Advocacy Conference in July.

JF: The emergency department should be a safe place for everyone, but we know doctors and nurses and our colleagues are victims of violence at work. What is being done on workplace safety?

MR: Emergency physicians go to work every day driven by their commitment to caring for patients, and we shouldn't have to fear being attacked. Unfortunately, violent incidents that put health workers at risk are on the rise, even during the pandemic.

ACEP strongly supports the Workplace Violence Prevention for Health Care and Social Service Workers Act of 2021. This bipartisan bill will help strengthen workplace safety standards, enhance incident prevention, and allow you to focus more on patient care.

The No Silence on ED Violence campaign, organized by ACEP and the Emergency Nurses Association in 2019, continues to share stories of those who suffer physical and emotional injuries after workplace assaults. The campaign strives to build awareness while also providing resources and a peer network to support emergency health care professionals.

JF: The COVID-19 pandemic has taken a toll on emergency physicians but has also revealed problems that were already there. Can you tell us about the Lorna Breen mental health legislation? GovTrack.us gives the bill a 3 percent chance of ever passing. What is ACEP doing to raise those odds?

MR: Dr. Lorna Breen's legacy will extend long after this pandemic is over. The bill carrying her name will be a lifeline for emergency physicians who absorb extraordinary levels of grief, anxiety, and other stressors but feel their only option is to struggle in silence.

The bill authorizes funding for mental and behavioral health services for physicians, supports education campaigns to encourage healthier work conditions, and calls for research on causes and impact of physician burnout, among other provisions.

As you know, though, it can take time for a bill—even with the best bipartisan goals and outcomes—to gain enough traction to become a law. That's why it's so important for all emergency physicians to contact their members of Congress and urge them to support the Dr. Lorna Breen Health Care Provider Protection Act. It's a very easy step on the ACEP website we all need to take. [***Editor's note:*** Visit acep.org/actioncenter to send a message to your legislators.]

We know there is a legitimate fear of consequences that deters many emergency physicians from getting the care they need. In a statement ACEP developed, along with more than 40 other medical organizations, we recommend removing existing barriers to seeking treatment, including the fear of reprisal.

ACEP also supports The Joint Commission's stance that history of mental illness should not be used as an indication of a health professional's current or future ability to practice medicine. And, for our members, ACEP offers free mental health counseling sessions, peer-to-peer support, meditation guides, and other resources.

Changing the culture of medicine will not happen overnight, but the pandemic is shining a light on the urgent need to protect physician mental health, which has been pushed under the rug for far too long.

JF: I'm going to use my editor's privilege here to ask a question that interests me regarding tone policing and open dialogue. A couple years ago, ACEP Council voted to ban the use of the word "provider" in any official ACEP publication. The idea was to stop lumping emergency physicians and other clinicians into one basket because this one particular word is seen as somehow devaluing emergency physicians. I get that there's a bigger debate about scope of practice, and that's not what I'm asking about now. In your view, does the banning of certain buzzwords in our official publications—and I'm not talking about truly vulgar words—reflect well on us as a College, who we want to be, and how we want to foster debate and solve problems?

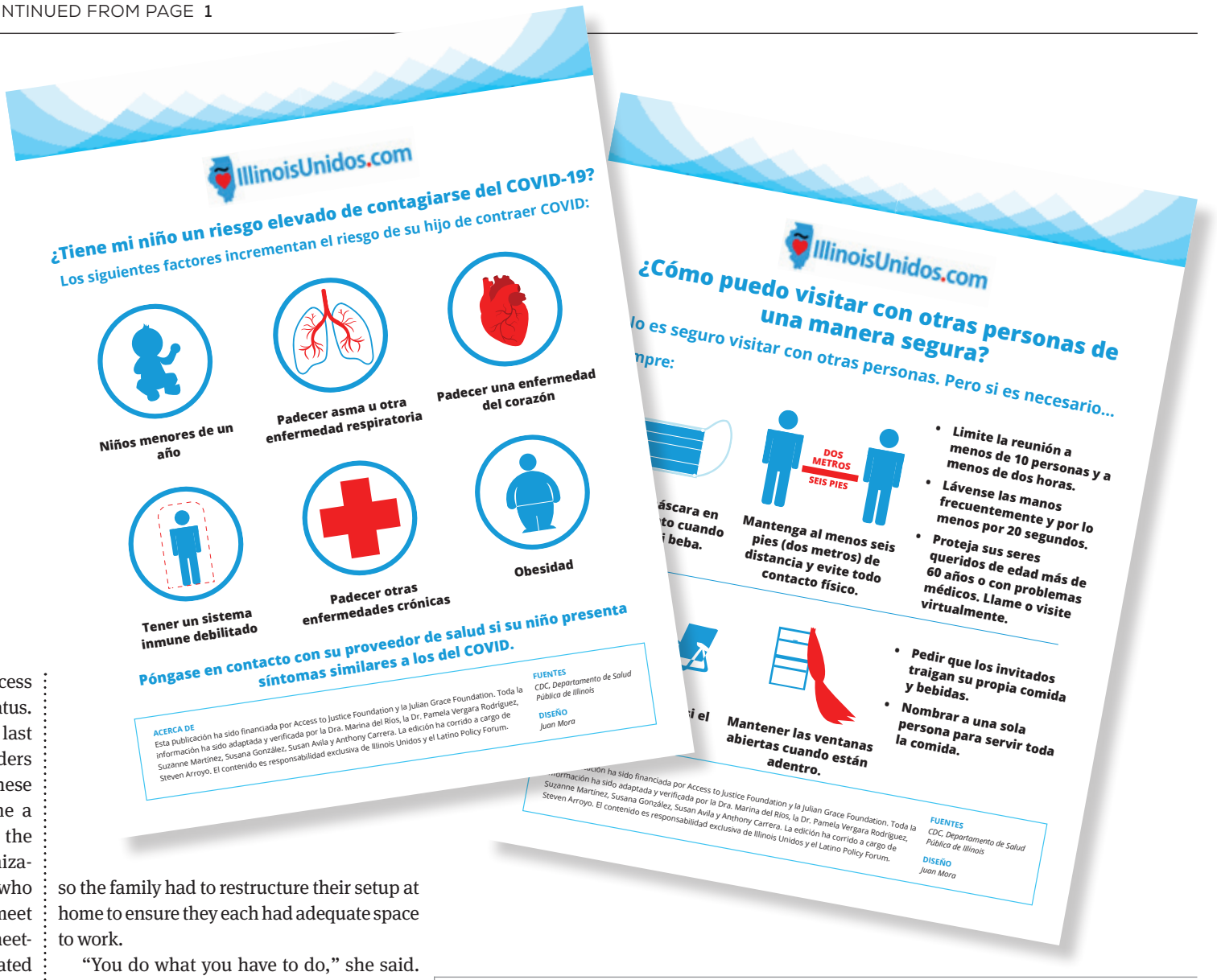
MR: I think my colleagues on the ACEP Council were focused specifically on ensuring that emergency physicians are identified in a way that acknowledges our role as the head of the team. I do not think it was intended as a restriction of speech but as a way to delineate the unique role we play.

The beauty of the ACEP Council is that each year we have the opportunity to rethink any and all positions, and I welcome a continued, evergreen discussion on ensuring the healthiest debate possible.

MY COVID CAUSE | CONTINUED FROM PAGE 1

ABOVE: Dr. Marina Del Rios Rivera

RIGHT: Illinois Unidos provides COVID-19 information sheets in Spanish and English on its website, IllinoisUnidos.com.
ILLINOIS UNIDOS



tion, unemployment, and inability to access government benefits due to citizenship status.

Illinois Unidos was born on that day last spring when a group of community leaders from around the state met to address these challenges. Dr. Del Rios Rivera became a founding member and is now chair of the health and policy committee. The organization has grown to about 100 members who actively participate in task forces that meet biweekly between their bigger plenary meetings. Thousands serve the group as affiliated members of independent community service organizations. These include the primarily Latino-serving federally qualified health centers located in areas that might otherwise be health care deserts as well as advocacy organizations like the Latino Policy Forum and the Puerto Rican Agenda. They also include representatives from academic health equity centers and the Great Cities Institute, which is part of University of Illinois at Chicago. And then there are members from work groups like Arise Chicago, which builds partnerships between faith communities and workers to fight workplace injustice through education, and Raise the Floor Alliance, which advocates for low-wage workers to achieve justice in Chicago. "Each of us have, in turn, another set of constituents that we respond to and advocate for," she said.

Including Outreach in a Busy Schedule

In addition to her other roles, Dr. Del Rios Rivera is director of Social Emergency Medicine at the university. Most of her research is on resuscitation related to cardiac arrest, specifically focused on community preparedness and teaching bystander CPR and the proper use of automated external defibrillators. Her research also examines how geography plays a role in survival so that she and her colleagues can focus their efforts on communities with the highest risk of death. Her involvement with Illinois Unidos, she said, is like another full-time job.

On top of that, she and her husband, a law professor now teaching from home, have two sons, 11 and 14, both doing hybrid schooling. While she used to do a lot of work from her office to minimize distractions, at the time of this interview she was trying to avoid the office as much as possible for infection control, so the family had to restructure their setup at home to ensure they each had adequate space to work.

"You do what you have to do," she said. "This is inconvenient, but I think that I'm, again, very privileged in that I have this flexibility. I feel for the parents that physically have to go to work and are also juggling having to help their children with online learning and making sure that they're safe."

Dr. Del Rios Rivera still works overnight shifts in the emergency department—"Sleep? What's sleep?" she said—and continues her cardiac arrest research, now looking at national data sets and doing predictive modeling to understand how some communities manage cardiac arrest well versus communities that do not. She also mentors medical students through the Hispanic Center of Excellence and the Urban Health Program, some of whom assist with her COVID-19-related community service work specifically for the Latino community, like helping put together information sheets, delivering messaging, and engaging with communities.

Building Awareness Powered by Data

Dr. Del Rios Rivera became involved with Illinois Unidos after community members began organizing to look at the COVID-19 data in a different way. Since the Latino community knows her, they reached out when it became clear in April that Latino people were not being included in the narrative of disparities and cardiac arrest.

"There seemed to be an absence of discussion of the crisis that was already occurring in our communities," she said.

At that point, the City of Chicago and the State of Illinois were mostly providing overall rates of COVID-19 illness, with a recognition that the Black population in the state was being disproportionately affected. In La-

CONTINUED *on page 10*

MY COVID CAUSE | CONTINUED FROM PAGE 9

tino communities, however, there was also a high rate of illness and mortality, but it was not yet being discussed. The community's fear, she said, was that there was undercounting and underreporting related to the way the state and the city were looking at the data.

"We have some data-savvy people that are community members who started looking at COVID-19 rates by ZIP code, and there was a recognition that there were predominantly Latino ZIP codes that had high rates of infection and high rates of mortality," she said. She thought the first meeting of Illinois Unidos would be like a think tank to discuss what to do next. But it grew into weekly meetings to discuss ongoing issues like how to garner media attention, gather resources, and have conversations with Latino government officials in the state and City of Chicago.

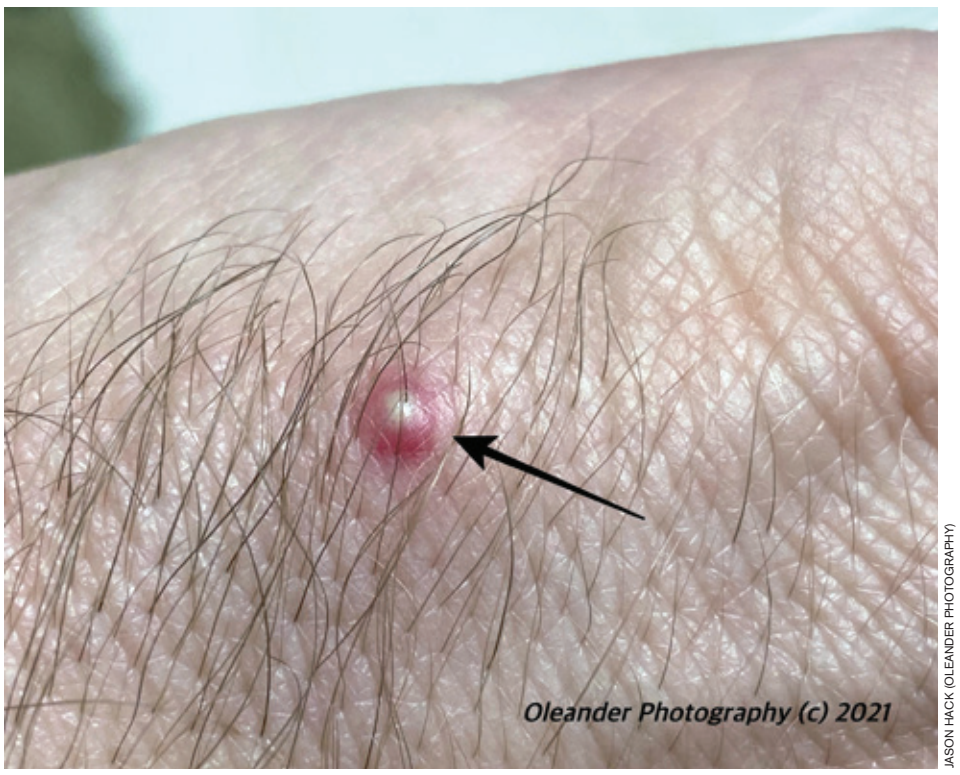
"From that, we've learned we all have different expertise, and different leadership roles have arisen throughout the time of the pandemic," she said.

The coalition has focused not only on getting bilingual and bicultural information on COVID-19 into the Latino community but also providing testing and personal protective equipment and advocating for resources to take care of COVID-19 survivors and their families, some of whom are of mixed status and include undocumented people who don't typically qualify for resources.

Beyond COVID-19, Dr. Del Rios Rivera said the Latino community confronts problems of structural racism similar to those faced by Black and Native American communities, including redlining, food/pharmacy/health and hospital deserts, and people being left out of worker protections due to discrimination. "The additional piece with the Latino community, though, is the language component," she said, "and the fact that many are not citizens, so they are treated worse because there's no protections in place for people that don't have the U.S. citizen badge."

The silver lining, she said, is that the pandemic shined a light on existing problems and issues with infrastructure that needed to be fixed anyway. She is hoping the same model can be used not just for another possible pandemic but also to point to hot spots in all communities to improve conditions like heart disease, asthma, and diabetes. "I know that sometimes the community reaches out to us for expertise, but I actually find that I've learned a lot in this process," Dr. Del Rios Rivera said. "I am certainly not an expert in community affairs, so a lot of this has been listening so you can be a voice to speak alongside other people rather than imposing your thoughts and beliefs on the community."

TOXICOLOGY Q&A



JASON HACK (OLEANDER PHOTOGRAPHY)

Feel the Burn

by JASON HACK, MD, FACEP, FACMT

Question: What garden visitor made this mark?

TURN TO PAGE 12 TO FIND OUT

Portuguese man-of-war jellyfish.

SHUTTERSTOCK / OLGA KASHUBIN

EMERGEN-SEA MEDICINE

An overview of marine envenomations

by CHRISTOPHER HAUGLID, DO; JOHN KIEL DO, MPH; AND ANDREW SCHMIDT, DO

Editor's Note: *This is Part 1 of a 3-part series on managing marine envenomations. This month we review some general tips and focus on jellyfish. Look for advice on coral, sea anemones, sea urchins, starfish, and sponges in July's issue and on fish and other chordates in August.*

Surf and turf, anyone? And when I say "surf," I am, of course, referring to our ocean-dwelling friends who "turf" water sport enthusiasts to the emergency department with their various bites and stings.

Before we "dive" (last nautical pun—we promise) into part one of our two-part series on marine envenomations, let's review general information and definitions.

General Management for All Marine Injuries

The vast majority of marine envenomations are completely benign in terms of long-term morbidity and mortality. Our goals in assessing these patients should be:

1. To evaluate and monitor for potential life threats;
2. To decrease risk for future infection; and
3. To reassure.

Pain is a big factor with marine envenomations. Surprisingly, some attempts to manage symptoms in benign cases can worsen the envenomation or lead to unnecessary prescribing of strong pain medications. Reassurance that this is a self-limiting event and that there is no evidence of a life-threatening condition is of utmost importance.

Initial approach: All wounds should be irrigated. What fluid is best? It's easy to remember: seawater or saline for saltwater species; freshwater for freshwater species. Once irrigated, wounds should be explored for retained foreign bodies. Nematocysts, barbs, spines, and other foreign bodies can be removed manually (with gloves) using forceps, adhesive tape, rubber cement, or facial peels. If the injury is deep or extensive or there is concern for a foreign body, obtain X-ray imaging. If X-rays are negative or if there is concern for radiolucent material, ultrasound can be helpful.

Treatment and management: For deep wounds, especially those involving joints or body cavities, early surgical consultation may be necessary. Infections from marine-associated injuries tend to be polymicrobial. Wounds should be swabbed (special media or cultures may be needed), and all patients should be screened for tetanus vaccination status. Be aware of the potential for necrotizing fasciitis (sometimes caused by *Vibrio* species), which is associated with serious saltwater injuries, especially in patients with pre-existing liver disease. Avoid suturing deep puncture wounds due to the high risk of infection. Pain should be managed with nonsteroidal anti-inflammatory drugs, acetaminophen, opioids, and/or topical analgesics (eg, lidocaine).

The following species-dependent topical measures may also be implemented:

- **Hot water immersion (HWI).** The injured area should be immersed in water that is 43–45°C (111–114°F) for 10–30 minutes, or until pain is controlled.
- **Vinegar.** 4–5 percent acetic acid solution should be applied to the injured area for at least 30 seconds. This treatment really only has evidence of benefit with the Australian box jellyfish. Studies with other species have actually shown it to encourage further nematocyte discharge.
- **Stingose**. A topical solution composed of 20 percent aluminum sulfate and 1.1 percent surfactant, Stingose is used for pain control, venom removal via osmosis, and venom neutralization via denaturation of proteins and polysaccharides through interactions with the aluminum ion.[1]

Note: There is little danger in using fresh water, however, this may increase the patient's pain due to increased nematocyst firing in certain species. It is always reasonable to attempt a small amount of vinegar initially and assess its effect.[1]

Antibiotic Treatment Recommendations[2]

No antibiotics are indicated for healthy patients who receive prompt would care provided that the wound is small or superficial, does not have associated foreign body, and there is no bone or joint involvement.

Prescribe prophylactic outpatient (oral) antibiotics for patients with late wound care, large laceration or injuries, or early or local inflammation

Patients should be admitted and given IV antibiotics if they have signs of systemic illness; deep wounds or significant trauma; retained foreign bodies; progressive inflammatory changes; penetration of bone, joint space, or body cavity; or comorbid medical conditions.

First generation cephalosporin *or* methicillin-resistant *Staphylococcus aureus* coverage (if concerned) is appropriate for all patients requiring antibiotics. Additionally, for seawater associated injuries (*Vibrio* coverage) use fluoroquinolone or third generation cephalosporin **or** for freshwater associated injuries (*Aeromonas* coverage) use fluoroquinolone or trimethoprim-sulfamethoxazole or carbapenem.

Antivenom

Although the literature discusses antivenom indications and dosing, the availability of such agents can be a barrier. For example, the only location that has readily available marine antivenom is Australia (specifically, antivenom for stonefish and box jellyfish made by the Commonwealth Serum Laboratories).

Both envenomation or antivenom administration can cause anaphylaxis, and this may initially be difficult to distinguish clinically. Signs include hypotension, bronchospasm, facial and airway swelling, pruritus, urticaria, nausea, vomiting, and diarrhea. Most reactions occur within 15–30 minutes and nearly all occur within six hours. A recipient of antivenom should be pretreated with 50–100 mg of IV diphenhydramine (1 mg/kg in children). The initial dose of antivenom should be administered no faster than one vial over five minutes. If antivenom is necessary and anaphylaxis develops, administer 0.1–0.2-mL aliquots of antivenom alternated with 0.03–0.1-mg IV doses of epinephrine. Alternatively, an epinephrine drip may be started and titrated to maintain a heart rate less than 150 beats/min.

PHYLUM: CNIDARIA

Class: Cubozoa (Cubozoa species produce the highest morbidity and mortality of all Cnidaria.[1])

Irukandji jellyfish (Carukia barnesi)

Location: Northern and western Australia; cases of Irukandji-like syndrome have been reported in the southeast United States and Hawaii[20,21]

Appearance: Small bell that measures less than 2–3 cm in diameter with four tentacles measuring up to 1 m in length.

Pathophysiology and Symptoms: Most commonly causes local inflammation and erythema. Symptoms can progress to a sympathomimetic toxidrome-like presentation called Irukandji syndrome, which usually develops within two hours of envenomation and can last up to two days.[1,22] This rare but serious complication manifests in diverse ways (including chest, abdominal, and back pain, myalgias/severe muscle spasm, headache, vomiting, and diaphoresis). In severe toxicity, exposure can lead to hypertensive crisis with nonspecific ECG abnormalities, elevated cardiac biomarkers, cardiogenic pulmonary edema, intracranial hemorrhage, and death.

Management: Manage pain with vinegar and HWI. IV magnesium sulfate (0.2 mmol/kg, max 10 mmol in adults) given as a bolus over 5–15 mins can be used for pain refractory to opioids, however, data are limited and efficacy has not been established. If there is concern for Irukandji syndrome, immediately obtain an ECG, followed by serial cardiac biomarkers, echocardiography, chemistry panel, and/or CT of the head without contrast. Hypertension should be treated with short-acting, titratable medications (eg, phentolamine, esmolol, nitroprusside, nicardipine) due to potential for hypotension in the later stages of toxicity.[1]

Class: Hydrozoa

Portuguese Man-of-War (Physalia physalis and Physalia utriculus)

Location: Atlantic, Indian, and Pacific Oceans

Epidemiology: Approximately 10,000 stings from *Physalia* spp. are recorded each year in Australia.[23]

Appearance: *Physalia* species are considered siphonophores, meaning they are composed of multiple smaller organisms acting together as a single colony. *P. physalis* has a sail-shaped, bluish-purple pneumatophore (the origin of their alternative name "Bluebottle") that floats on the surface and can be inflated and deflated for flotation and submersion purposes. The pneumatophore ranges from a few inches to one foot in diameter and houses up to 40 tentacles that can reach a length of greater than 30 m.[1] *P. utriculus* has a similar appearance but has only one tentacle that measures about 15 m in length.[1]

Pathophysiology and Symptoms: Contact with the tentacles causes local, sharp pain and an erythematous, maculopapular rash in a linear distribution that resolves after 24–72 hours. In cases of significant toxicity, Irukandji syndrome can occur (see above), as well as hemolysis, and even cardiovascular dysrhythmia or collapse.

Management: A small randomized controlled trial found Stingose to be superior to saltwater irrigation in decreasing pain after *Physalia* envenomation.[24] HWI may also be used. Irukandji syndrome should be managed the same way it is for *C. barnesi* envenomation (see above).

Caveats: Avoid vinegar and methylated spirits because they increase firing of nematocysts. No antivenom is available.

Visit ACEPNow.com for tips on sea wasp injuries and the references for this article.

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Toxicology Q&A Answer

QUESTION ON PAGE 10

I like to think of myself as a fairly even-keeled person. I have a short list of hated things: root canals, traffic, wood rot, and the like. In the natural world, the list is even shorter, but it's topped by a large margin by fire ants, who were, in my opinion, designed to inflict misery and pain. I've yet to meet someone who takes a strong counterpoint to this position, so if I've missed the boat, please let me know.

Names

Names include fire ants, *Solenopsis invicta*, red ants, and red imported fire ants (RIFAs). There are also black imported fire ants (BIFAs). The difference between the two (red and black fire ants) is largely academic, as they have similar biologies and behaviors. There are also hybrids of these two species.

Anatomy

Distinct attributes of the fire ant include a narrow wasp-like waist, or pedicel, that is composed of two segments (see white arrow). Workers vary in lengths between 1/8 and 1/4 inches. They have large biting mandibles with four teeth, and their antennae have 10 segments, ending in a two-segmented club. A sting is present at the tip of the rear segment (gaster). The body color is usually red to brown.

History and Distribution

Fire ants first entered the United States somewhere around 1918 in Alabama—brought north from South America in dumped ballast from ships. They immediately began to spread though the costal Southeast and now infest most of that region of the United States.

Northern migration of fire ants was thought to be limited by the colder climate because winter temperatures freeze the soil deeply enough to affect overwintering colonies. However, recent research shows RIFA colonization in colder higher elevations.

JASON HACK (OLEANDER PHOTOGRAPHY)

FIRE ANTS

Ant Life

Mounds: Fire ant mounds look like heaped-up fluffy dirt. The mounds do not have central entrance holes on the surface, which distinguishes them from other ant hills. The mounds have interconnecting galleries and underground tunnels that can extend to the surface five to 25 feet away from the mound.

Colony life: Fire ants are social insects that nest in the soil in large colonies that contain 200,000 to 400,000 workers, although some super colonies have millions of individuals.

Fire ants spread by saltatory swarming. Reproductive male and female ants leave the mound *en masse*, fly into the air, and mate while airborne. The fire ant queens fall back to the ground, shed their wings, and start new colonies where they land.

Most of the ants in the colony are infertile female workers gathering food and caring for the colony—and all can sting. They are omnivores and feed on almost anything—invertebrates and vertebrates as well as plants and honeydew. There is usually one queen per colony, but some colonies have several that all lay eggs.

Attitude: These ants are *highly* aggressive. They scavenge food for the colony and vigorously attack intruders to defend their mound. They do so by swarming in large numbers to attack any animal disturbing their nest. They instinctively climb vertical surfaces, including limbs. Although they are small, their sting and strength in numbers allow them to overwhelm and kill much larger prey.

Fire ants use their strong jaws to dig in and pinch human skin. This bite anchors the insect to the skin and acts as a pivot, allowing it to inject venom multiple times using its sharp stinger. A single ant stings an average of three times before removal.

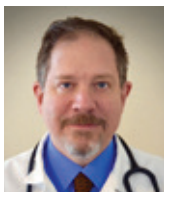
The Sting

For an unlucky person who wanders onto a colony (or is photographing the nest), bites will happen! The immediate sensation of a fire ant sting is one of intense burning at the area of a raised red welt, which subsides after 30 to 60 minutes. Within 24 hours, the affected area will develop pimple-like areas filled with white pus, a characteristic only of fire ant attacks. These lesions rupture over two to three days and are accompanied with reoccurrence of itching, pain, and swelling. The wounds often scar.

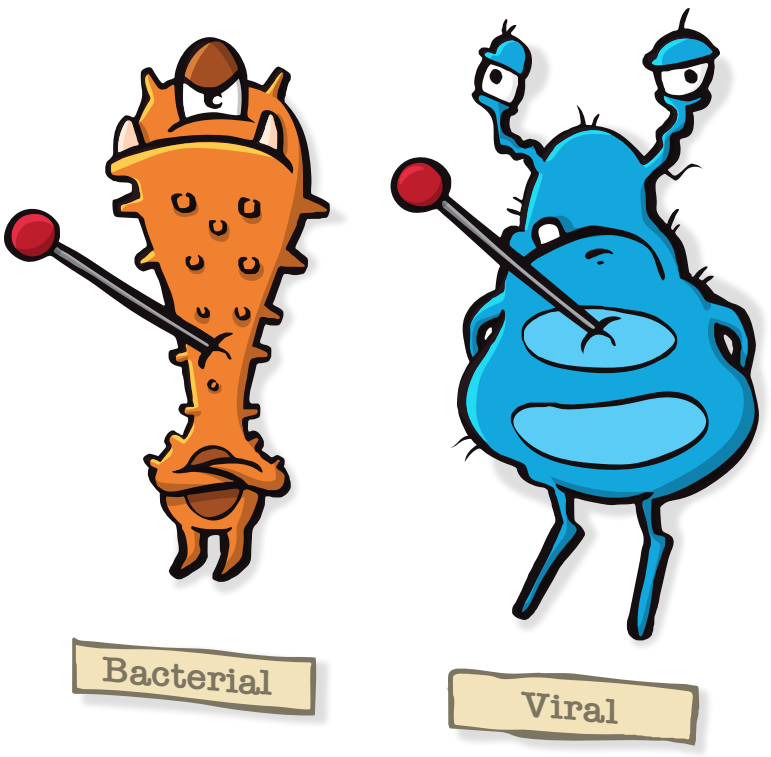
Although most stings are merely painful and annoying, up to 16 percent of people can have anaphylactic reactions and require immediate treatment for life-threatening allergic symptoms.

Care of the Fire Ant Sting

- The area should be washed with soap and cool water.
- Isolated local symptoms are managed with ice, anti-inflammatory medications, topical steroids, and antihistamines.
- Advise patients not to scratch or break the blisters, although from personal experience, this guidance is difficult to follow.
- Maintain vigilance for superinfection and the development of local infection.



DR. HACK is chief of the division of medical toxicology and vice chair for research at East Carolina University in Greenville, North Carolina.



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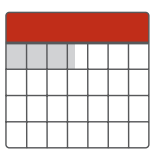
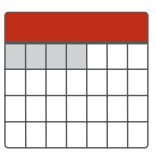
Time to diagnosis–adult patients[1]



3.3-day reduction

Time to diagnosis–pediatric patients[2]



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1. Cailleaux M, et al. 2020. Eur J Clin Micro Infect Dis. 39(2):293. 2. O'Brien MP, et al. (2018) Pediatr Infect Dis J. 37(9):868.

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managed as outpatients.[2,3]

Low-risk patients are typically classified as those with no hemodynamic instability, no significant cardiopulmonary comorbidities, and no evidence of significant myocardial strain or acute damage. Based on this, it is estimated that 30 to 50 percent of patients with acute PE diagnoses may be eligible for outpatient management.[2,4] Are you discharging 30 to 50 percent of your acute PEs? Doing so has advantages. Outpatient management is associated with lower costs—the median hospital cost among patients discharged from U.S. emergency departments with acute PEs between 2016 and 2018 was $986 compared to $6,130 for those admitted to the hospital.[5] Other benefits of outpatient management include reduced risk of hospital-acquired conditions and reduced hospital capacity strain.

Outpatient Management of Patients with Low-Risk PE Is Safe

Randomized trials and several observational studies demonstrate that patients with low-risk PE can be managed safely as outpatients.[4,6–8] A systematic review of the outpatient management of PE found that both all-cause and PE-related mortality at 30 days was less than 1 percent among high-quality studies.[8]

Who Is Eligible for Outpatient Management?

Multiple protocols for the outpatient management of PE exist and typically integrate risk-stratification scores as well as clinical and social factors. Commonly used risk-stratification scores for outpatient management include the PE Severity Index (PESI), the Simplified PESI (sPESI), and the Hestia criteria (see Tables 1–3). The PESI and sPESI include vital signs and comorbidities that predict mortality following the diagnosis of PE. Those who have a PESI falling within Class I or II or an sPESI of 0 are potential candidates for outpatient management. In addition to clinical criteria, the Hestia criteria also incorporate medical or social reasons for admission. Validation studies found each of these scores can safely identify low-risk patients but may classify nonoverlapping proportions of patients. Importantly, in addition to having a low-risk PE, patients must lack other conditions requiring hospitalization, lack contraindications to anticoagulation, and be able to obtain medications promptly and attend a follow-up appointment.

Many protocols also incorporate cardiac biomarkers such as troponin and brain natriuretic peptide (BNP) levels, although the cutoff value for BNP is not consistent (<600 pg/mL has been suggested).[9] The value of using CT or ultrasound evidence of right ventricular (RV) heart strain in the disposition decision is less clear. Some studies suggest that CT may overestimate RV strain, particularly if using an RV/LV ratio of 0.9 rather than 1.0.[9–12]

Treatment

DOACs have made it easier for patients to take anticoagulants and achieve reliable anticoagulation both as inpatients and outpatients. Rivaroxaban and apixaban are commonly used DOACs for PE and demonstrate similar safety and efficacy in real-world settings. Despite the ease of administration, however, insurance companies may require preauthorization or have a preferred DOAC, which can be a headache to sort out in the emergency department. Many clinicians and emergency departments take advantage of the coupons for free or significantly discounted medications from the pharmaceutical company to initiate treatment, then inform the patient that their primary care physician may switch the anticoagulant in the future (for example, www.eliquis.com/eliquis/hcp/resources and www.janssencarepath.com/hcp/xarelto/savings-program-overview).

In the age of DOACs, the benefits of hospitalization for a substantial fraction of patients with low-risk PE are minimal or nonexistent. Interestingly, despite professional society guidance and a decade of safety data, outpatient management of PE in the United States varies widely, with signals that the practice is largely institution- rather than patient-dependent.[5,14] Institutions and clinicians should work to implement protocols to identify and treat appropriate patients with low-risk PE in the outpatient setting.

Table 1: Pulmonary Embolism Severity Index

Parameter	Points
Age >80 years	Age in years
Male sex	10
Cancer	30
Heart failure	10
Chronic lung disease	10
Pulse ≥110/min	20
Systolic blood pressure <100 mm Hg	30
Respiratory rate ≥30/min	20
Temperature <36°C	20
Altered mental status	60
Oxygen saturation <90%	20

SCORING
≤65: Class I, very low risk
66–85: Class II, low risk
86–105: Class III, intermediate risk
106–125: Class IV, high risk
>125: Class V, very high risk

Table 2: Simplified Pulmonary Embolism Severity Index

Parameter	Points
Age >80 years	1
Cancer	1
Chronic cardiopulmonary disease	1
Pulse ≥110/min	1
Systolic blood pressure <100 mm Hg	1
Oxygen saturation <90%	1

SCORING
0: Low risk
≥1: High risk

Table 3: Hestia Criteria

Hestia Criteria	Points
Hemodynamically unstable	1
Thrombolysis or embolectomy needed	1
Active bleeding or high risk of bleeding	1
>24 hours on supplemental oxygen needed to maintain oxygen saturation >90%	1
Pulmonary embolism diagnosed during anticoagulant treatment	1
Severe pain needing intravenous pain medication >24 hours	1
Medical or social reason for admission >24 hours (infection, malignancy, no support system)	1
Creatinine clearance of <30 mL/min	1
Severe liver impairment	1
Pregnant	1
History of heparin-induced thrombocytopenia	1

SCORING
0: Low risk
≥1: High risk

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RESIDENCY SPOTLIGHT

NORMAN REGIONAL HOSPITAL EMERGENCY MEDICINE RESIDENCY

Twitter:
@Norman_GME

Location:
Norman, Oklahoma

Year founded:
2015

Number of residents:
24

Program length:
Four years

Secret weapons (medical)

Norman Residency is in a community-based hospital where we have the benefit of being the only residency program. This gives our residents the ability to do all the procedures and obtain tremendous experience. We also have extraordinary EMS opportunities. Our program director, Patrick Cody, DO, is also director of our hospital-based EMS. Our residents train in SWAT and learn to drive emergency response vehicles, and we host a statewide yearly EMS symposium. Additionally, our residents regularly exercise mass gathering training, serving as the game-day physicians in the stadium clinic at the University of Oklahoma football games.

Starting in their second years, residents have the opportunity to moonlight in smaller emergency departments in underserved areas of our state.

A few other important traits of our program include our new ultrasound fellowship, our friendly ECG competition, and an emphasis on wellness with a yearly retreat to rejuvenate, reflect, and bond.

Secret weapons (nonmedical)

Norman is a happening college town and hosts NCAA college sports. Our state is known for beautiful parks with biking, boating, and hiking. We have more man-made lakes than any other state. Nearby, Oklahoma City is known for downtown Riversport Adventures including whitewater rafting, the Bricktown entertainment district, outstanding theater, NBA basketball (OKC Thunder), and many large casinos.

—Angela Carrick, DO, FACOEP, FACEP, associate program director

Trivia

Oklahoma averages 54 tornadoes a year. The famous 1996 film *Twister* was filmed across our state, including scenes in an auto body shop here in Norman.

DR. RADECKI is an emergency physician and informatician with Christchurch Hospital in Christchurch, New Zealand. He is the *Annals of Emergency Medicine* podcast co-host and Journal Club editor and can be found on Twitter @emlitofnote.

New Option for Urticaria

Does new IV medication offer benefits over current treatments?

by RYAN PATRICK RADECKI, MD, MS

Medical news consumers may have noted the arrival of intravenous cetirizine (Quzyttir). This second-generation "nonsedating" antihistamine was approved by the U.S. Food and Drug Administration (FDA) in October 2019. Since then, its defining trial has been published in the *Annals of Emergency Medicine*, and promotional material now shows up in some trade magazines.[1]

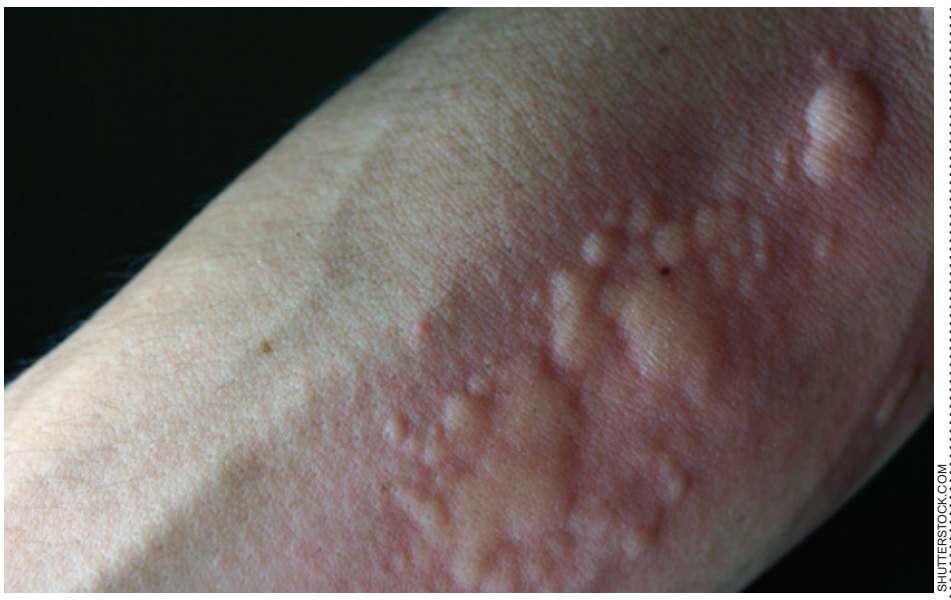
Intravenous cetirizine is precisely what you envision it to be: a 10-mg dose of cetirizine hydrochloride in sodium chloride for injection. Likewise, it operates as expected: selective inhibition of peripheral of H_1 receptors. It is currently approved for treatment of acute urticaria, an indication currently treated by off-label use of the remaining family of first- and second-generation antihistamines. However, while it and its second-generation cousins are available in oral formulation, availability for intravenous injection is restricted to diphenhydramine, while hydroxyzine is available for intramuscular use. An intravenous formulation of a selective H_1 inhibitor therefore has potential advantages.

The Research

These potential advantages were examined in the aforementioned randomized, double-blind, active-comparator trial conducted in 19 emergency departments and urgent care centers in the United States and Canada.[1] This trial enrolled patients with acute urticaria and an elevated "patient-rated pruritis severity score," comparing 10 mg of intravenous cetirizine with 50 mg of intravenous diphenhydramine. The primary endpoint of the trial was the patient-rated pruritis severity score at two hours following admission. If you are not already familiar with this scoring system, it is likely because it was created specifically by the trial sponsor for the purpose of this trial. This ordinal scale ranges from 0 to 3, in which 0 is "no pruritis," 1 is "mild," 2 is "moderate," and 3 is "severe." The trial was designed to test for the noninferiority of IV cetirizine compared to diphenhydramine.

The Results

Among 262 patients randomized into roughly similar cohorts, there were ultimately no differences in this patient-reported outcome measure. Each group complained of an average of "moderate" pruritis at baseline, and each displayed similar general declines in symptoms within an hour. Considering the almost identical clinical performance of each drug, the prespecified margin for statistical noninferiority was easily met.



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The more interesting clinical information comes from the many secondary outcomes. Diphenhydramine, as a first-generation antihistamine, displays greater sedating and anticholinergic properties. These adverse effects can be particularly undesirable in an elderly population or in people who have to stay alert during the day or at work, for example. To this effect, the authors measured a "patient-rated sedation score" for each group, an ordinal clinical scale defined only in this trial. To little surprise, the sedation perceived by patients receiving diphenhydramine exceeded that of those given intravenous cetirizine. The mean level of sedation rose from baseline to "mild" in those receiving diphenhydramine, while those receiving cetirizine generally remained close to their baseline upon enrollment.

Other key secondary endpoints included physician assessment of urticaria, effectively treated patients, time spent at treatment centers, and short-term recidivism. The results were full of minor curiosities. Even though the patient-rated pruritis scores improved similarly for each intervention, nearly twice as many patients in the diphenhydramine group received a rescue agent of some kind. These agents were most frequently a steroid, whether prednisone, methylprednisolone, or dexamethasone. Then, oddly, despite this excess of patients receiving steroids in the diphenhydramine, short-term recidivism favored cetirizine. The reasons for follow-up visits were not reported, so it is difficult to determine whether these were related to treatment failure or other adverse effects. It is also possible, particularly in a small trial like this, that there are simply unmeasured differences between the groups.

Lastly, the authors focus on time spent at treatment centers, which is distinct from length of stay. This outcome captures the time from treatment administration to discharge rather than from emergency department or urgent care center arrival. Roughly speaking, there was an advantage to intravenous cetirizine of about 20 to 30 minutes over diphenhydramine, which has reasonable face validity. However, this difference was not statistically significant under their prespecified analysis plan, and it was found only in an ad hoc analysis designed after efficacy data were already known.

Should We Add It to Our Toolbox?

Having summarized the high-level observations from this trial, it is reasonable to conclude, as the FDA reviewers did, that IV cetirizine is safe and effective.[2] The more challenging question addresses its appropriateness. The justification for its use in acute urticaria is stated by the authors as "the parenteral route of administration is often preferred," citing a generalist American Family Physician review article that, interestingly enough, does not actually include such a statement.[3] There is no evidence IV agents provide superior treatment of urticaria than oral ones for this frequent condition. In fact, the most recent practice update from the immunology community does not specify any specific route of administration for the most effective treatment of urticaria.[4]

To this larger point, the original oral cetirizine pharmacology labeling information from Pfizer in 2002 described rapid onset of inhibition of histamine release reaching 95 percent effectiveness within one hour.[5] Furthermore, the mean area under the concentration-time curve for the IV formulation is identical to that of the oral formulation. The obvious difference between the preparations is the IV form reaches a *peak concentration* of >300 percent the oral formulation and within minutes rather than an hour. The FDA reviewers, rather than commenting on a potential clinical benefit, focused instead on the safety profile of such a high serum level.

The bottom-line question: Does this product have a purpose? For its approved indication of acute urticaria, the most likely answer is almost never. Absent evidence to demonstrate the advantages of IV therapy over oral, the question asked by this trial is virtually moot, other than perhaps in patients unable to tolerate oral intake. For most patients, any rescue medications, such as H_2 blockers or steroids, can just as easily be given by mouth. But what about the "time in treatment center"? As noted above, measuring this outcome obscures the practicalities of a busy emergency department, particularly the resources required for IV access in the first place. A patient presenting with acute urticaria can be treated with an oral second-generation antihistamine at triage and easily reach therapeutic serum levels in less time than an intravenous version could be administered. In other words, if the study measured time from triage, most of the outcomes would likely have been indistinguishable. The authors seem to have forgotten that avoiding an IV is itself a positive outcome.

But what about anaphylaxis? In these cases, IV access is usually obtained early anyway. But the consensus from the allergy and immunology community is quite clear (though markedly different from standards of care in most EDs) that neither antihistamines nor steroids have any important role in treatment of anaphylaxis and certainly need not be given intravenously. A patient with an uncomfortable urticarial component to anaphylaxis not resolving with epinephrine is just as well-served by oral antihistamines. And those patients are not being discharged in an hour.

The final tiebreaker, of course, is always cost. The wholesale acquisition cost of Quzyttir is reportedly $300 for a 10-mg vial, which, combined with additional nursing resource charges for intravenous access and medication administration, rapidly increases the total cost for an acute encounter.[6] Conversely, if prudent avoidance of therapies lacking clear added value is important, then continued routine use of generic oral second-generation antihistamines will serve just as well.

The opinions expressed herein are solely those of Dr. Radecki and do not necessarily reflect those of his employer or academic affiliates.

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How to Invest Without a Crystal Ball

No one knows the future, so investing should focus on managing risk

by JAMES M. DAHLE, MD, FACEP

Q. There are so many opinions out there among gurus and "talking heads" about what the stock market, interest rates, inflation, housing prices, and cryptocurrency are going to do in the future. I'm not sure who to listen to. Any advice?

A. The CXO Advisory Group once looked at thousands of stock market predictions by dozens of financial gurus over a 15-year period. It found that the gurus (ie, public commentators) were only correct around 47 percent of the time; on average, an investor would have been better off simply flipping a coin. Gurus get paid for having an opinion, not for being correct. In fact, marketed properly, one good (or perhaps lucky) prediction can cement a commentator's reputation for decades. However, the truth is that "nobody knows nuthin'." When investors realize there is no reliable resource out there that will give them the future returns of various investments or the direction of interest rates, it can be an immensely freeing experience. All of a sudden, those investors realize trying to game the system is a waste of time and energy. Instead, they can concentrate on the factors they can control, such as how much they earn, how much they save, and their overall mix of investments.

Some people think they really can make good predictions. I propose an exercise. Get a notebook. Every time you have a prediction about the future performance of a particular investment, write it down. Be specific. Don't just write, "I think Tesla will do well." Write, "I think Tesla will outperform other large-growth companies by at least 3 percent over the next six months." Do the same thing with interest rate projections, housing prices, inflation, and anything else that you think you can predict with any degree of accuracy. Circle back and see how many of your predictions turned out to be correct. Within a year or two, you will likely convince yourself that your crystal ball is just as cloudy as anyone's. As investors, we are not always rational. Retrospectively, we believe it was much easier to predict the future than it was. Only honest evaluation of an exercise like this can reveal that bias.

So, What Should You Do?

There are many types of investments, or asset classes. These include various types of stocks, bonds, real estate, commodities, currencies, precious metals, and others. An investor need not invest in everything—and in fact, there are no "called strikes" in investing. If you do not like a particular investment, you can take a pass. There will be another "pitch" coming soon. However, every asset class is likely to have its day in the sun. These periods of time are usually preceded and followed by periods of underperformance. These investing cycles are natural and should not be a cause of worry to a long-term investor, especially since the cycles are far shorter than a typical investing career.

The natural inclination of an investor, unfortunately, is to "performance chase." Investors, as a whole, pile into investments after they have done well and seem to bail out of investments just before they start doing well again. This results in buying high and selling low repeatedly. Done too often, this can prevent an investor from reaching even reasonably modest financial goals. One of the best ways to avoid performance chasing is to use a static asset allocation and rebalance periodically.

A static asset allocation means that you divide your portfolio among the various asset classes you wish to invest in and assign a percentage to each investment. Perhaps you have decided to invest 30 percent in U.S. stocks, 20 percent in international stocks, 25 percent in bonds, and 25 percent in real estate. Going forward, no matter how each of these asset classes perform, at the end of the year you rebalance the portfolio back to the original percentages. If bonds have had a particularly good year and stocks did poorly, perhaps your portfolio now consists of 25 percent U.S. stocks, 15 percent international stocks, 32 percent bonds, and 28 percent real estate. So you sell a little bit of real estate and a lot of bonds to get back to your original 30-20-25-25 asset allocation. The next year, perhaps international stocks do particularly well, so you sell some of that asset class at the end of the year and buy more U.S. stocks, bonds, and real estate.

In the early years, investors often do not actually need to sell the overperforming asset class. They can simply direct new contributions at the underperforming asset classes to keep the portfolio in balance.

Maintaining a static asset allocation and rebalancing periodically ensures that investors are constantly selling high and buying low—or at least not consistently doing the opposite. More important, investors are maintaining the level of desired risk in the portfolio. The best part of this approach is that it does not require investors to know anything about what is going to happen in the future to be successful. Investors are freed from trying to divine future performance. They are much less likely to mistakenly assume that past performance indicates future performance, an idea so bad that mutual funds are required by law to tell you that such guarantees can never be made.

Successful investors know that investing is a single-player game—them against their goals. They avoid making mistakes due to the fear of missing out (FOMO) and stick to their written financial plan. They know that reaching their goals depends far more on saving enough money and risk control than about "hitting home runs" with their investments. Just as lots of singles and doubles win baseball games, slow and steady saving into a periodically rebalanced static asset allocation leads to a life free of financial worry.

DR. THOMAS is an attending physician in the emergency department at Kaiser Permanente (Greater Southern Alameda area).

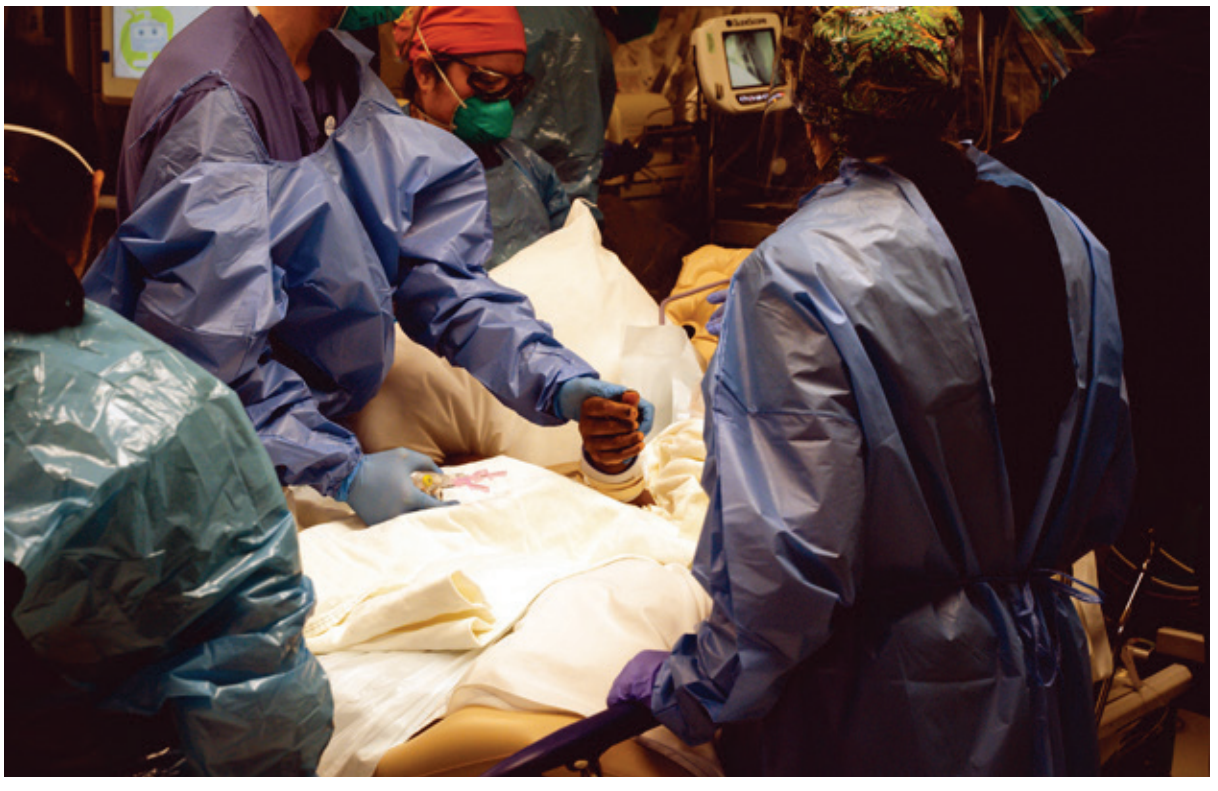
A Year of Coping with COVID

ALL PHOTOS: BENJAMIN THOMAS

ABOVE: Dr. Erik Anderson

RIGHT: Dr. Erik Anderson talks with an ED patient.

BELOW: Dr. Erik Anderson holds a patient's hand during a procedure.



Q&A with Erik Anderson, MD

by BENJAMIN THOMAS, MD

Erik Anderson, MD, is an emergency and addiction medicine physician at Highland Hospital, the county hospital in Oakland, California, where he works in the addiction medicine clinic weekly. Additionally, he works at San Leandro Hospital, a community hospital in Alameda County.

BT: We are now a year into the pandemic. Tell me about the moment when the pandemic became real for you.

EA: I remember seeing the news reports about the coronavirus in China and how it was spreading to nearby countries. I thought it would be like SARS-CoV-1 and we would see what happens. I thought there's no way that this would become a pandemic. I don't think it was even on my radar that this would change our lives as we know it. It felt real to me when I started seeing the news in Italy of emergency docs giving reports of how overwhelming it was, the devastation, and how unbelievably out-of-a-movie things were there. I thought to myself, "Well, this is happening now. People need to get ready." It felt like, from that point on, it was full steam ahead.

BT: Do you remember the first patient you saw with COVID-19?

EA: There were two patients that I remember when we first started testing people. It was midnight on an overnight shift when a woman came in with mild upper respiratory symptoms. She said, "There was a COVID-19 outbreak at my school." Now, this was well before there were actually COVID outbreaks or clusters in our area. I thought to myself, "Oh my gosh. How did I not know about this? This is crazy." I remember donning all the gear for the first time and looking at an instruction sheet on how to enter her room. In the end, we couldn't even order a COVID test for her because at the time, we needed the Public Health Department's approval. They weren't convinced that there was a true outbreak there. So I had to go back in there and tell this poor, scared woman, "Sorry, the Public Health Department is not letting me order this test." I remember that patient so clearly—just as clearly as the next patient I saw with coronavirus, who was a low-acuity, young, healthy patient with flu-like symptoms that ultimately went home and did fine. I remember, at the time, there was this whole thing with contact tracing when you see a COVID patient, and the hospital would track you down to tell you about a patient that you saw weeks ago who tested positive for COVID.

BT: Besides testing, were there any other obstacles you faced early in the pandemic when caring for COVID-19 patients?

EA: There was always so much discussion about who had enough testing and PPE for the weeks ahead. Working at a safety-net hospital always begged the question, Do we have enough of the resources that other places had? Early on, it was clear that big academic medical centers had more access to testing, and we had to figure out how to partner with these centers to help with our testing. So much of it felt unfair. We were caring for a very vulnerable patient population, and it didn't feel like we had the same level of support as some of the places that had more resources. Things have not been equitable throughout the entire pandemic, and it has disproportionately impacted different health systems, communities, and patient populations. Whether it be testing or access to monoclonal antibodies, one of the biggest takeaways for me is how inequitably COVID hit various communities and health systems along the way.

BT: What's been the impact of COVID-19 on the community and patient population at your hospital system?

EA: If we were to step back from the very beginning, at my health care system and across Northern California, we were seeing a lot of essential workers, particularly in the Latin(x) community, who were disproportionately impacted by COVID-19. Figuring out how to tailor interventions and education for that community was something that was going on early and still persists today. There is a significant indigenous Mayan community in Alameda County that has been tremendously affected by COVID, and there was essentially no COVID health information in the spring and summer of 2020 in any Mayan languages. There are these pockets of disparity among our patient populations that we do our best to navigate through.

I do addiction medicine as well, and there has been a lot written about increasing overdose deaths during the pandemic. We were really worried early on when our patients stopped showing up to the emergency department and clinic. The fear was that people were using more drugs and using them alone in a period of isolation. You never want that. A lot of my work has been focused on addressing this and keeping people safe.

BT: How has COVID affected the way you approach patients?

EA: My spouse and I worked on the Navajo Nation before we moved back to California. One thing that was really important there was, when you walked into a room, you'd shake the hand of the patient. You'd also shake everybody's hand who was in the room with the patient, often family members. It was an important thing that you greeted everybody by shaking their hand. Coming back to California, that was something that I continued to do. Now, there is this unseen barrier of germs and viruses and the physical barriers of masks and gloves that change a lot about the patient encounter. Pre-vaccine, there was this fear that anyone could have COVID-19, so I always need to have my guard up. Maybe that means you are standing farther away from the patient when normally you would be close to their bedside. I think that changes the dynamic of what patient and providers see and feel in a negative way.

Dr. Erik Anderson walks down a hospital hallway.

BT: How has the pandemic affected your personal life?

EA: It's been hard, like it has been for everybody else. My wife is a primary care physician in addiction medicine as well. That transition between pre-COVID and COVID seemed like it happened very fast. We were working the whole time, and that stress of keeping your family safe and finding ways to do that with childcare was difficult. Trying not to be sick was just something that we never thought about. Getting sick with a virus was just not that big a deal before. Just recently, we agreed that we should write a will. Having to go through that was so emotionally difficult with small kids at home. But things are getting better. As much of the night and day from pre-COVID to COVID, it's getting pretty darn close in terms of the post-COVID vaccine era. While still stressful to be at work and wear an N95 all the time, the emotional burden of going to work is so much less after the vaccine. I can't believe we did that for a whole year. Coming home, taking your clothes off outside, and taking a shower immediately, hoping you didn't bring something home, was a totally bizarre and difficult thing for our profession.

BT: Where do you see us a year from now?

EA: A year from now, I think COVID will still be out there globally. I think we will be getting ready for our booster shots. There will be more ability to see people and socialize, but we will still be living with COVID in a manageable way.

BT: How do you see emergency medicine changing when COVID is over?

EA: It's hard to imagine not wearing masks at work, at least for patient encounters. It's almost hard to remember intubating somebody without a mask on, let alone without an N95. I can't imagine intubating someone without eye protection and an N95 for a very long time. We weren't doing that regularly before COVID.

I'm interested in the public health interface of emergency medicine, and I think now we are going to be more aware of our role in population health. Before COVID, I was working a lot on HIV and hep-C screening in the emergency department, and that I think will become more easily understandable as a role of emergency medicine. On top of resuscitating patients, we have a part in public health and improving disparities in our communities. That's what our specialty is.

BT: Any final thoughts?

EA: Even though our world has gotten smaller with COVID in terms of social distancing, it has been nice to feel closer with smaller groups of people. Our relationships with some people have grown this past year, given this shared experience. I hope that continues.

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Bounceback Dilemma

Don't be shy when evaluating a patient who has returned to the ED

by ERIC FUNK, MD

Bounceback visits provide an opportunity for emergency physicians to review a case again with a clear mind and fresh eyes. A renewed search for red flags in a patient's presentation can help avoid a bad medical and legal outcome.

The Case

A 47-year-old woman underwent a Roux-en-Y gastric bypass. There were no immediate complications, and she had an uneventful course initially. Fifteen days later, she started to experience mild abdominal pain that worsened over the following two days.

She went to see a nurse practitioner (NP) at a local primary care office. The NP treated her with ceftriaxone and promethazine. The patient was instructed to immediately go to a nearby emergency department for evaluation. The emergency department was not affiliated with the hospital where she had the gastric bypass.

In the emergency department, she was evaluated by a physician. Her vitals showed a heart rate of 114 bpm, blood pressure of 141/74, 100 percent on ambient air, 28/min respirations, and temperature of 100.3° F. The note described left-sided abdominal pain with erythema and purulent fluid leaking from the incision site. There was extensive bruising on the left side of the abdomen. A postoperative drain was still in place.

Labs and CT of the abdomen and pelvis with IV contrast were ordered. She was treated with morphine, ondansetron, and a 1-L normal saline bolus.

Lab results were notable for a leukocytosis of 15.9 k/uL with neutrophilic predominance (70.9 percent). She was slightly hypokalemic at 3.2 mmol/L.

The CT scan results are shown in Figure 1.

1. Patient is status-post gastric bypass.
2. Unusual subcapsular liver fluid collection which is seen on the underside of the liver near the gallbladder fossa and near the dome of the diaphragm. The differential diagnosis would include the possibility of an injury to the liver and subcapsular blood versus the possibility of bile leak.
3. Inflammatory change at the incision site in the left abdominal wall without definitive drainable fluid collection, could represent hematoma versus cellulitis.
4. Distended loops of small bowel cannot exclude post-operative ileus versus developing partial small bowel obstruction.

Figure 1: Patient's CT scan results.

I. Hemorrhagic peritonitis
   A. History of recent (10/28[redacted]) gastric bypass with subsequent complaints of pain and wound drainage
      1. Seen in ER on 11/06/[redacted]
      2. Wound abscess cleaned and packed, antibiotics given
   B. Greater than 5 liters of purulent hemorrhagic fluid in abdomen
      1. Purulent material lining peritoneal surfaces
      2. Hemorrhagic pockets in mesentery, around pancreas and liver
      3. Foci of subcapsular hemorrhagic necrosis, liver, with history of intra-operative liver biopsy
   C. Staples apparently intact
   D. Medical record reviewed
II. Morbid obesity
   A. Body mass index (BMI) 42
   B. Cardiomegaly with clinical history of hypertension
   C. Steatohepatitis
III. Post-mortem blood positive for oxycodone 86.4 ng/g (clotted specimen)

Figure 2: Patient's autopsy results.

The patient's heart rate improved to 89 bpm. Her blood pressure remained stable, and her pain improved from 9/10 to 4/10.

The emergency physician then contacted the hospital where the gastric bypass had been performed. He was able to reach the surgeon who performed the operation. They reviewed the entirety of her results. The surgeon recommended that the emergency physician perform a bedside drainage of the infection at the incision site. The surgeon also said he would see her in the clinic in the next few days for reassessment. She was given prescriptions for sulfamethoxazole/trimethoprim and oxycodone.

The patient was discharged from the emergency department around 6 p.m.

About two hours later, the patient called 911 and returned to the emergency department for worsening abdominal pain. Her vitals at ED triage showed a heart rate of 132 bpm, blood pressure 131/72, 100 percent on ambient air, and a respiration rate of 37/min.

A new emergency physician saw the patient. He reviewed the previous notes and documented "CT scan earlier was fine." It was noted that she had not yet filled the antibiotic prescription from the earlier visit.

The patient was treated with IV hydromorphone, oral sulfamethoxazole/trimethoprim, and oral oxycodone.

No further labs or imaging were ordered. The surgeon was not contacted again.

The patient's heart rate climbed to 142 bpm.

The emergency physician then discharged her with instructions to fill her prescriptions and remain NPO for 24 hours and that after that she "may have small pieces of toast!"

The patient returned home with her husband.

Four hours later he checked on her, and she was found deceased in bed.

An autopsy was done with results shown in Figure 2.

The patient's family filed a lawsuit against both emergency physicians, both hospitals, and the surgeon.

At deposition, the attorneys asked the second emergency physician if he felt he released an unstable patient in light of her last documented heart rate of 142 bpm. He responded, "She was not unstable in my opinion. She was alert, talkative, pleasant. Her pain had been relieved. She had a blood pressure of 130/80. She had a good sat. I wouldn't call her unstable."

In addition to a medical malpractice claim, the lawsuit specified an EMTALA violation as well.

The EMTALA claims were dismissed by the judge because the second emergency physician never identified an emergency medical condition. (Note: Failing to detect an emergency condition is an acceptable defense against an EMTALA violation, though clearly not against a malpractice claim.)

The medical malpractice claims were settled out of court. The exact details are unknown, but a seven-figure settlement would be typical.

Discussion

This case provides an example of the dangers of discharging patients with tachycardia. Discharging a patient with tachycardia is not universally contraindicated in cases where the tachycardia is relatively mild and the patient has a credible low-risk explanation. However, this patient met neither criteria. A heart rate of 142 bpm (with an upward trend) in the setting of recent gastric bypass was a recipe for disaster.

The defendant's claim that the patient was not unstable with a heart rate of 142 bpm was misguided.

On the second visit, there was documentation that the patient had not filled her prescriptions. While it is frustrating when patients return to the emergency department without following the instructions they were given at the time of the previous discharge, it doesn't mean their bounceback visit can be dismissed. In fact, a return visit may be the last chance we have to prevent a catastrophic outcome.

The second emergency physician clearly did not want to do any workup or bother the surgeon again. Instead of making one more phone call to transfer the patient, he ended up dragging his partner and the surgeon into a multiyear litigation process. Don't follow in the footsteps of this physician and miss your final opportunity to reverse course and save a life.

SEE THE RECORDS

Visit www.medmalreviewer.com to review the full medical records or send Dr. Funk an email with your thoughts on the case at admin@medmalreviewer.com.

ONE MORE REASON NOT TO ORDER AN X-RAY

SOUND ADVICE

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Master These Microskills

Tips for performing ultrasound-guided nerve blocks in the ED

by CODY SCHULTZ, MD; ELAINE YANG, MD; JAMAL JEFFERSON, MD; DANIEL MANTUANI, MD, MPH; AND ARUN NAGDEV, MD

Ultrasound-guided nerve blocks are becoming an integral aspect of multimodal pain management in emergency departments. Ultrasound guidance allows clinicians to visualize both the target structures (nerve and surrounding fascial planes) and the advancing block needle. In our experience teaching ultrasound-guided nerve blocks over the past 15 years, clear needle tip visualization is often the most difficult "microskill" to master. A misplaced needle can result in inadvertent vascular puncture or direct nerve injury. Here, we outline some practical techniques that allow learners to better visualize the needle tip during nerve blocks and improve success rates. These skills can elevate ultrasound-guided nerve blocks to become an essential element of your multimodal pain management of the acutely injured patient.

Proper Equipment Setup

Ideal clinician and patient positioning improves success when performing any emergency department procedure. This holds true for ultrasound-guided nerve blocks. Unfortunately, patient positioning can be difficult in the acutely injured patient, adding another challenge. We recommend adhering to basic ergonomic principles to ensure that the view of the needle and ultrasound screen remain in the same line of sight when performing a block.[1]

The ultrasound screen positioning will vary depending on the block performed, but the general principle of keeping the ultrasound screen in line of sight is one of the keys to success. For example, when performing an ultrasound-guided femoral nerve block, we recommend placing the ultrasound screen contralateral to the site of injury (see Figure 1A). Conversely, for a patient with a palmar laceration (requiring a forearm nerve block), the clinician can place the ultrasound system on the same side as the injury to maintain clear line of sight (see Figure 1B). The clinician should determine the ideal position of both the patient and the ultrasound screen while setting up for the block. The extra few minutes spent up front determining the ideal ergonomic positioning will increase block success and often end up saving time overall.

Optimal Hand and Transducer Positioning

Optimal hand stability during ultrasound-guided nerve blocks can be accomplished with a few simple techniques. The operator should hold the ultrasound transducer with their nondominant hand and rest the medial aspect of their palm to stabilize the probe (termed "anchoring") (see Figure 2A). The operator can also use their fourth or fifth finger to further stabilize the probe against the patient.

After skin puncture, alternating subtle transducer movements with gentle needle manipulation will allow the needle tip to come into view. If the needle is not already in view, close attention to tissue deformation with needle movement will give clues as to its location. If needle sight is lost, take a moment to look away from the display screen to visually inspect the transducer position on the skin and its relationship to the needle's path. The transducer can then be fanned or rotated to visualize the needle clearly (see Figure 2B).[1]

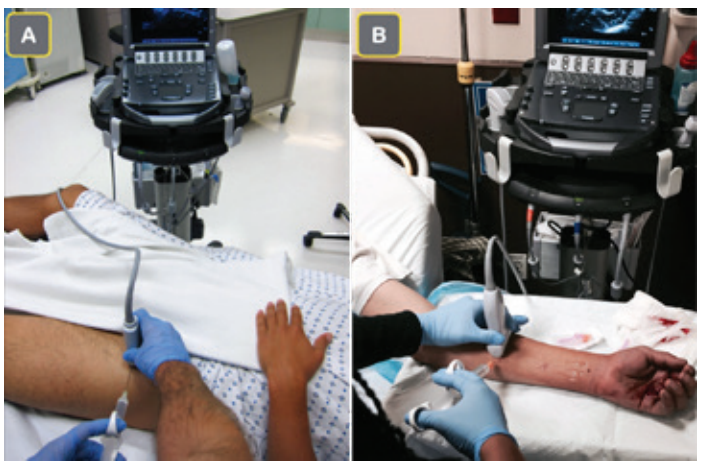
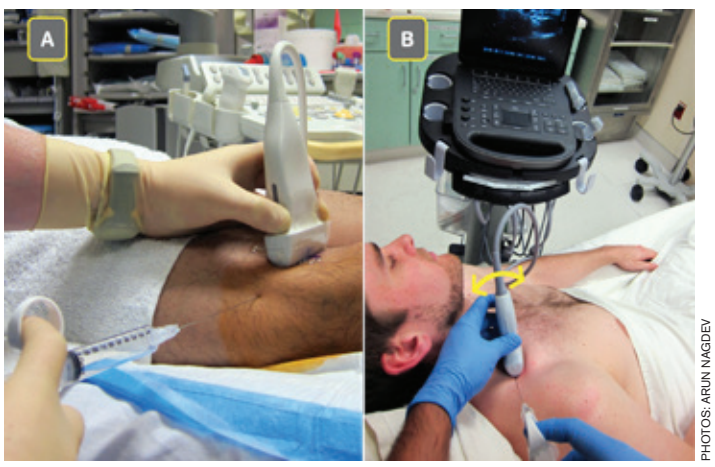


Figure 1A: The ultrasound screen is placed contralateral to the injured extremity when performing a femoral nerve block. This allows the clinician to view the ultrasound screen and the site of needle entry in the same line of sight.

Figure 1B: For a forearm nerve block for a palmar laceration, the ultrasound screen is placed on the ipsilateral side of the injury to allow for a clear line of sight.



PHOTOS: ARUN NAGDEV

Figure 2A: For a distal sciatic nerve block in the popliteal fossa, the clinician has stabilized their nondominant hand during the block.

Figure 2B: Once the needle has entered the soft tissue, gentle probe manipulation (fanning or rotating) can allow for proper needle visualization.

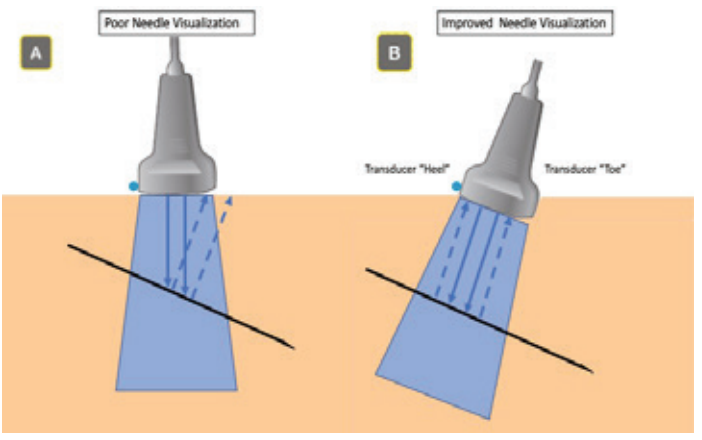


Figure 3A: Low angle of insonation: some ultrasound waves are reflected away from the transducer.

Figure 3B: High angle of insonation: a majority of ultrasound waves are reflected toward the transducer.

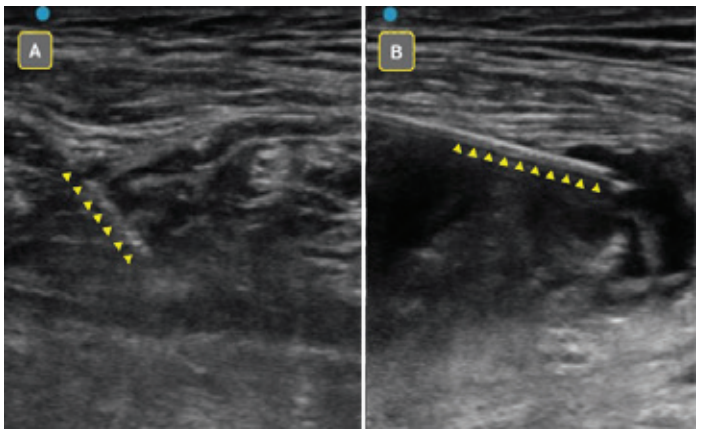


Figure 4A: Poorly visualized needle due to low angle of insonation.

Figure 4B: Improved needle visualization after "toeing in" transducer.

Figure 5A: Standard transducer positioning.

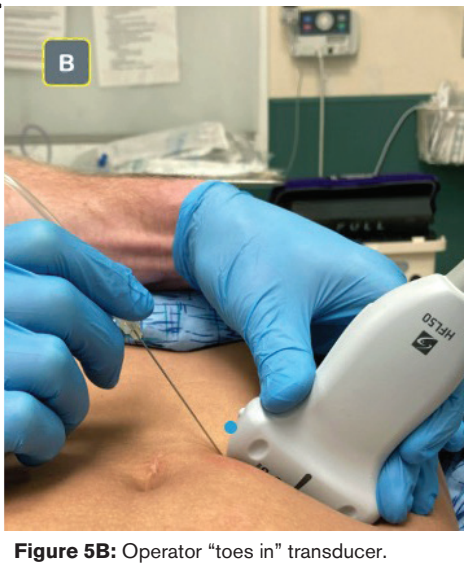


Figure 5B: Operator "toes in" transducer.

Optimizing Needle Visualization by "Toeing In" the Transducer

Needle visualization during in-plane ultrasound-guided nerve blocks with a steep needle trajectory is particularly challenging. Adjusting the "angle of insonation" can produce a crisp, clear image of the needle as it travels toward its intended target.

The angle of insonation refers to the angle at which an ultrasound beam intersects the nerve block needle. The smooth, metallic surface of the needle effectively functions as a mirror for ultrasound waves, thus small changes to the angle of the needle greatly influence its visualization (see Figure 3).[2] If the ultrasound beam is perpendicular to the needle (ie, angle of insonation of 90 degrees), the majority of ultrasound waves are reflected back toward the transducer, creating a bright, clear image of the needle (see Figures 3B and 4B).[3] Unfortunately, deeper targets necessitate a steeper needle trajectory and therefore create a lower angle of insonation. The result is that the majority of ultrasound waves are reflected away from the transducer and the needle is poorly visualized (see Figures 3A and 4A).

To effectively raise the angle of insonation (and thereby optimize needle visualization), an operator may rock or "toe in" the ultrasound transducer (see Figure 5).[3] This is best achieved by pressing one end (the "toe") of

CONTINUED *on page 22*

the transducer deeper into the superficial soft tissue so that the trajectory of the transducer more closely mimics the trajectory of the needle (see Figure 5B). A generous allocation of ultrasound gel can help ensure the other end of the transducer (the "heel") maintains contact with the skin surface. For very deep targets, switching from a linear to a curvilinear transducer will facilitate more exaggerated toeing/rocking and improved deep structure resolution. Also, many commercial nerve block needles have etched patterns which serve to make the needle tip more echogenic. Use of such needles can further enhance needle visualization, particularly for nerve blocks necessitating a steep angle of approach.[2,3]

Optimizing Needle Visualization by Hydrolocation and Hydrodissection

Hydrolocation and hydrodissection are additional techniques that help localize the needle tip during an in-plane ultrasound-guided nerve block.

Hydrolocation refers to a gentle yet rapid deposition of a small amount of normal saline to produce a small anechoic window, allowing better needle tip visualization. Hydrodissection uses this same fluid to dissect structures, classically fascial planes, when performing nerve blocks, providing confirmation of the proper location and fluid anesthetic placement.

During hydrolocation, as the clinician approaches the ideal location for anesthetic deposition, small aliquots of normal saline (<0.5–1 mLs) are gently pushed (with the help of an assistant) to visualize the needle tip. If the sonographer is off-axis (ie, the transducer is not in-plane with the needle shaft and tip), the sonographer will not see anechoic fluid coming from the needle tip. The sonographer can adjust the needle or transducer, and the assistant can inject another small aliquot to confirm needle tip localization.

During hydrodissection, we recommend using the overlying fascial plane as an optimal landmark for needle tip placement and anesthetic deposition. Using aliquots of normal saline (2–5 mL), the goal is to clearly visualize the opening (expansion) of targeted fascial planes with anechoic fluid (see Figure 6). Only then should an assistant gently infuse the anesthetic. If the clinician does not produce a clear anechoic pocket separating the targeted fascial planes, they are not in the desired space. Once the fascial plane is clearly opened with anechoic normal saline, we recommend slowly and gently depositing anesthetic for optimal block success.[2]

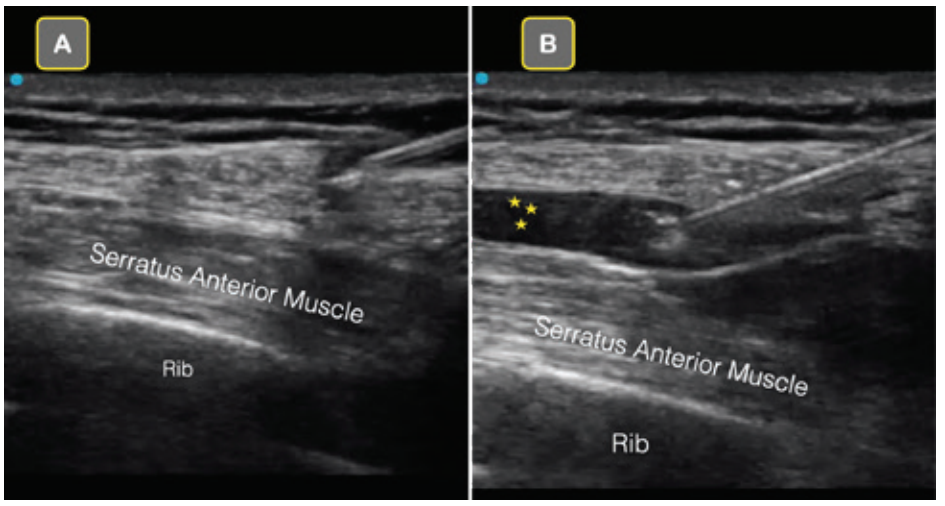


Figure 6A: The clearly visualized needle tip is seen above the serratus anterior muscle.

Figure 6B: Note that normal saline is used to hydrodissect the fascial plane that lies just above the serratus anterior muscle. Once this anechoic space is clearly defined, anesthetic can be safely deposited.

Conclusion

Ultrasound-guided nerve blocks are becoming an important clinical skill for emergency physicians. They provide directed anesthetic deposition, reduce reliance on opioids, and can even replace procedural sedation in some cases.

In our experience teaching ultrasound-guided nerve blocks, locating the needle tip during in-plane blocks is often the most challenging aspect of a procedure. Optimizing ultrasound screen positioning, properly stabilizing the ultrasound transducer with the non-dominant hand, "toeing in" the transducer for steep blocks, and using normal saline to both hydrolocate the needle tip as well as hydrodissect fascial planes improve success.

We hope these easily incorporated block "microskills" will improve your confidence when performing your next ultrasound-guided nerve block.

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