RESIDENCY SPOTLIGHT

## Resurrection Medical Center

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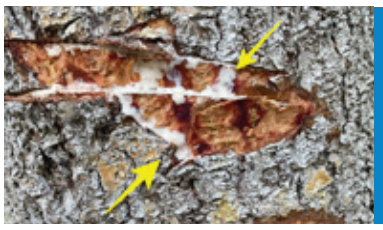

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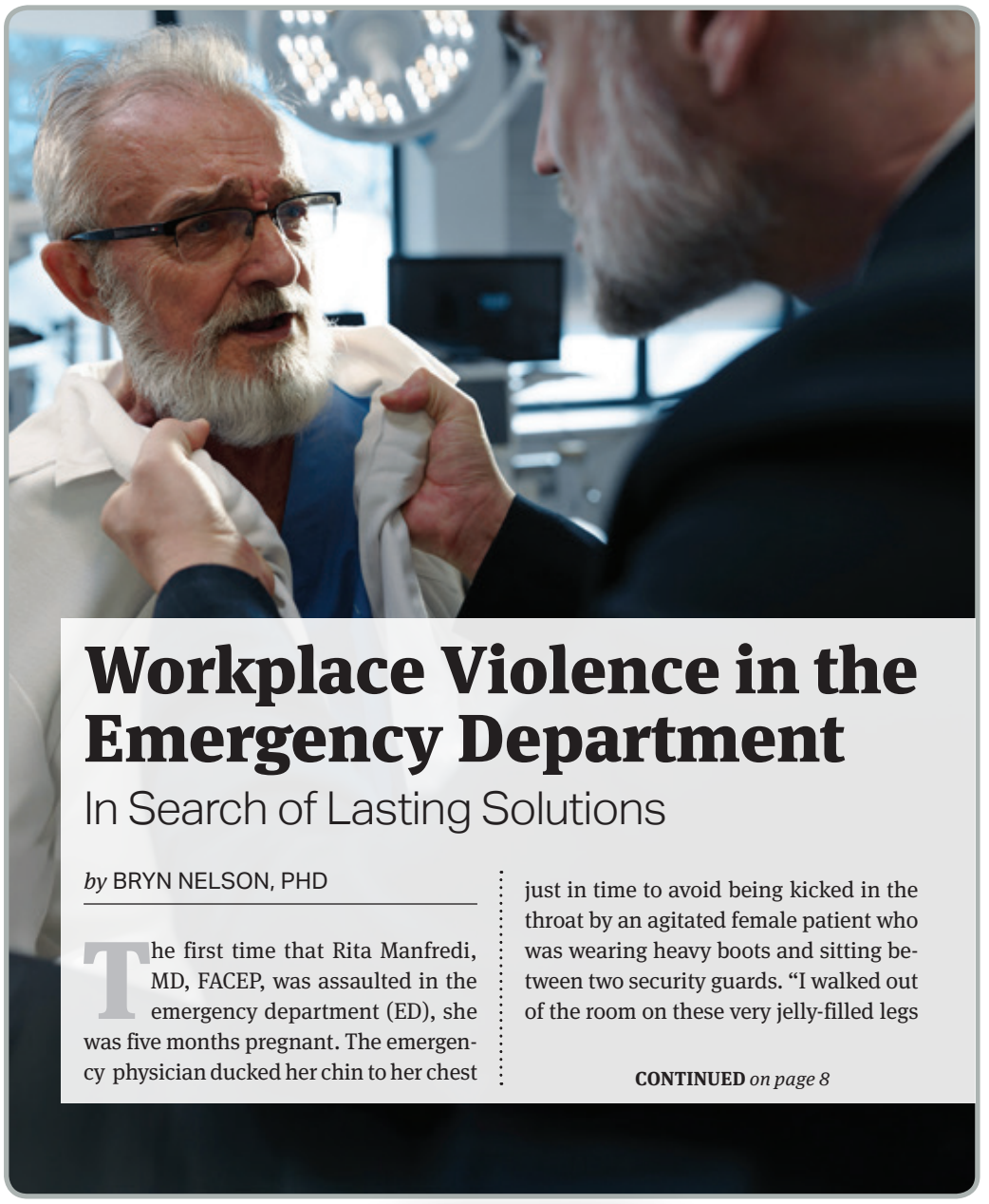

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# Workplace Violence in the Emergency Department

## In Search of Lasting Solutions

*by* BRYN NELSON, PHD

The first time that Rita Manfredi, MD, FACEP, was assaulted in the emergency department (ED), she was five months pregnant. The emergency physician ducked her chin to her chest just in time to avoid being kicked in the throat by an agitated female patient who was wearing heavy boots and sitting between two security guards. "I walked out of the room on these very jelly-filled legs

**CONTINUED** *on page 8*

# A Physician Goes to Washington

## Lessons from a Year in EM Advocacy

*by* LEAH ENSER

It was the abrupt closure of a labor and delivery unit in a small critical access hospital in western Colorado that inspired Joseph Leary, DO, MPH, to get involved in health care policy. Dr. Leary was working his first job as an emergency physician in the rural mining town of Craig, Colo., when his hospital made the decision.

Dr. Leary

"This one decision to close labor and delivery handicapped the whole region's emergency preparedness, because many ER docs quit, and it also left a number of pregnant women without a place to go," said Dr. Leary. "I started to wonder how I could be a voice in this larger discussion. I thought I could be part of the change."

*CONTINUED on page 6*

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## Do pediatric seizures have an association with the weather?

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# NEWS FROM THE COLLEGE

UPDATES AND ALERTS FROM ACEP

## ACEP Advocacy Win: DEA Issues Long-Awaited EMS "Standing Orders" Final Rule

In a long-awaited victory, the federal Drug Enforcement Administration (DEA) issued the Registering Emergency Medical Services Agencies under the Protecting Patient Access to Emergency Medications Act of the 2017 Final Rule to ensure continued access to pain and anti-seizure medications for patients experiencing medical emergencies.

This regulation implements the ACEP-supported "Protecting Patient Access to Emergency Medications Act of 2017," originally sponsored by one of ACEP's longtime legislative champions, Rep. Richard Hudson (R-NC). Signed into law on November 17, 2017, the measure addressed issues regarding how EMS agencies store, handle, and administer controlled substances. The final regulation explicitly permits physician medical directors to issue standing orders to EMS personnel so that they may administer controlled substances to their patients.

ACEP was largely supportive of the DEA's proposed rule issued in 2020 but did provide the agency with technical and clarifying comments, many of which were accepted in the final rule. Of note, the DEA agreed with our suggestions to more accurately reflect the way that EMS agencies operate throughout the country, and ease burdensome recordkeeping requirements to provide greater logistical flexibility — especially important for EMS in rural areas.

## ACEP and National Health Care Groups Issue Joint Statement on Pediatric Readiness in Emergency Departments

An estimated 2,000 children could be saved if emergency departments follow a set of new recommendations focused on caring for young people in emergencies, leading organizations in emergency medicine stated in a joint statement published in February in the *Annals of Emergency Medicine* (2026;87:E11-E24). In the statement, ACEP, the American Academy of Pediatrics, the Emergency Nurses Association, and the American College of Surgeons outline critical steps that emergency departments can take to be ready to care for sick or injured children.

"More than 80 percent of children who come to an emergency department go to a local community hospital, not a children's hospital," said Kate Remick, MD, FAAP, FACEP, FAEMS, lead author of the statement. "Every emergency department should be fully prepared for kids, no matter how often they see them. These recommendations save lives."

The statement informs the work of the National Pediatric Readiness Project (NPRP), an initiative of the Emergency Medical Services for Children Program — part of the Department of Health and Human Services' Health Resources and Services Administration — in collaboration with multidisciplinary organizations. The NPRP supports more than 5,000 emergency departments nationwide to improve their pediatric capabilities through self-assessments, benchmarking, checklists, quality dashboards, and other resources.

Updates to the previous recommendations include decision support tools; nationally vetted pediatric quality measures; an emphasis on a multidisciplinary review surrounding pediatric deaths and adverse events for local quality improvement; a deeper focus on pediatric mental health; reinforcement of the importance of immediately available, portable, weight-based pediatric resuscitation carts and use of medication dosage tools; and broader expectations for pediatric considerations in disaster preparedness.

The previous assessment published in 2023 noted improvements in five of six categories measured since 2013, including an increase in the number of emergency departments with pediatric equipment and supplies (90 to 97 percent) and the number of emergency departments with a pediatric mental health care policy (44 to 73 percent).

This year's nationwide NPRP Assessment period started on March 3 and runs through May 31. Emergency departments will be assessed on a 100-point scale and receive a score for benchmarking and a gap report identifying areas for improvement.

"The 2026 assessment is our chance to see where we stand — and where we can do better," said Marianne Gausche-Hill, MD, FACEP, FAAP, FAEMS, and a statement co-author. "The NPRP Assessment helps emergency care teams lead efforts to quantify the progress made and improvements needed to optimize emergency care for children. Further, participation in pediatric readiness efforts is among [the] criteria for ACEP's ED Accreditation (EDAc) program, which demonstrates a commitment to quality and safety."

## Emergency Physician Named Health Commissioner for New York City

Alister Martin, MD, MPP, an emergency physician at Mass General Hospital, was appointed commissioner of New York City's Department of Health and Mental Hygiene by Mayor Zohran Mamdani, the mayor's office announced earlier this year. The role lets Dr. Martin focus his lens on health care and public service in his hometown where he'll oversee the city's public health apparatus, manage disease outbreaks and support the mayor's pledge to give every New Yorker access to affordable, high-quality health care.


Dr. Martin

A native of Queens, Dr. Martin has brought health care and public policy together in the past, including as founder of Vot-ER, a nonpartisan voter registration initiative, and leader of A Healthier Democracy, a health care incubator organization designed to serve the needs of vulnerable patients.


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# ACEP4U: Calling on Congress to Curb Bad Insurer Behavior

*by* LEAH ENSER

In January 2026, large health insurance company leaders were summoned to Washington, D.C., for congressional hearings about their role in skyrocketing health costs.

Seizing the moment, ACEP shared a statement detailing a pattern of bad insurer behavior and the policy fixes needed to make them stop. ACEP cited denials of medically necessary care, misuse of prior authorization requirements, and continued attempts to weaken the prudent layperson standard.

"Insurers continue to exploit our health care system and the individuals and families they ostensibly cover, all for the sake of increasing record profits," ACEP wrote.

Insurers routinely fail to conduct business in good faith, and ACEP is working on legislation to stop tactics that drive up costs and threaten patient access to emergency care.

## Insurers Compound the Strain on Emergency Physicians

Emergency physicians work under federal EMTALA law requiring them to evaluate and stabilize any patient who seeks care, regardless of insurance status or ability to pay. As a result, emergency medicine involves more uncompensated care than any other medical specialty. According to an April 2025 RAND report, across all payers, 20 percent of emergency physician payments go entirely unpaid, a $5.9 billion annual shortfall that exacerbates resource constraints and hinders access to emergency care.

Insurers compound the existing strain on emergency physicians by doing all they can to delay, deny and avoid their payment obligations. "The persistent failure of insurance companies to conduct business in good faith will keep driving up costs and impeding access to care, unless they are stopped," said ACEP President L. Anthony Cirillo, MD, FACEP.

## ACEP Puts the Pressure On

The message to Congress builds on ACEP advocacy to confront insurer misconduct at federal and state levels.

Most recently, ACEP pushed back against Anthem's new policy that will penalize facilities when care is delivered by an out-of-network clinician. ACEP warned that Anthem's approach would undermine continuity of care, conflict with federal protections under the No Surprises Act, and further strain emergency departments.

ACEP can apply the right kinds of pressure to compel insurance companies to roll back abusive policies, including payment denials, downcoding, reimbursement delays, and other tactics, putting emergency physician practices at risk.

ACEP's latest appeal to Congress reflects the clear reality that existing laws are only as effective as their enforcement.

## Accountability is the Missing Ingredient

Insurers must be held accountable for their actions, and lawmakers and regulators have an opportunity to strengthen oversight, improve transparency around insurer practices, and impose real consequences when insurers fail to act in good faith.

"ACEP strongly supports robust enforcement of laws and regulations meant to halt patterns of insurer misconduct that have only become more egregious in recent years," said Dr. Cirillo.

## Putting Physicians and Patients First

Emergency physicians should be focused on saving lives, not fighting insurers for payments.

As Congress weighs next steps, ACEP reaffirmed its commitment to work with lawmakers to advance policies that enforce existing protections and ensure that emergency care remains accessible to every patient, in every community, at every hour.

ACEP is urging Congress to pass the No Surprises Act Enforcement Act (H.R. 4710/S. 2420), and members can use the new ACEP action alert to contact their legislators and ask them to cosponsor this important bipartisan legislation that will help hold insurers accountable for continued gaming of the No Surprises Act.

Emergency medicine is always there when patients need it. ACEP will continue calling on Congress to ensure that insurance companies meet that same standard.

# Creative CAREERS

Exploring unique career options for emergency physicians

## THERESA TRAN CARAPUCCI, MD, MBA, FACEP

*by* LEAH ENSER

When Houston opened a dozen warming centers during back-to-back freezes in January 2026, the city's new health director found herself offering advice from her clinical experience.

"I wrote staffers a note giving them tips and tricks as an ER doc," said Theresa Tran Carapucci, MD, MBA, FACEP, an emergency physician and past chair of the Emergency Medicine Foundation who became Houston Health Department Director in fall 2025. "How to manage overnights, what to expect with people arriving 24/7. It felt very familiar."

Translating direct frontline experience into system-level decisions has defined Dr. Tran Carapucci's career, from working as an emergency physician, to advocating on behalf of emergency medicine at the Texas state legislature, to leading public health for one of the nation's most diverse cities.

### Finding A Voice in Advocacy

After earning an MD from Baylor College of Medicine, an MBA from Rice University, and completing her emergency medicine residency at the Mayo Clinic, Dr. Tran Carapucci went on to serve as faculty at Baylor College of Medicine, where she taught residents, continued clinical practice, and even became program director of the MD-MBA program she had completed herself.

THERESA TRAN CARAPUCCI

In 2016, as a new attending, she found herself paying close attention to politics and health policy. Encouraged by her mentor, she became active with the Texas College of Emergency Physicians (TCEP). When a position opened to lead TCEP's government relations efforts, Dr. Tran Carapucci stepped in to help, despite not having a formal policy background.

"I asked our lobbyists to give me an eight-hour crash course," she said. "It was me asking questions and getting every answer that I needed to become an expert. I studied like it was a test, and I spent all my free time learning about the legislature."

Her early preparation paid off over the next several years as issues affecting emergency medicine emerged in the state's legislative sessions. By 2019, when surprise medical billing dominated health policy debates, Dr. Tran Carapucci had already become a valued physician resource to lawmakers, so she was able to help shape legislation that ultimately became the No Surprises Act.

### Advocate, Not Activist

Reflecting on the skills crucial to her success in the statehouse, Dr. Tran Carapucci cited her ability to communicate in plain language. "I became a trusted source as a voice of medicine for non-medical people," she said. She also emphasized her willingness to work across party lines. "It's ally building. It's understanding that you may be opposed to each other on an issue today, and later the exact same day, there's another issue that you need to ally on."

Lawmakers responded to Dr. Tran Carapucci's balanced approach to the issues. "I was never forceful about any single issue, and I understood how to read the room and political climate," she said. "I became trustworthy across many issues. To me that is being an advocate, not an activist."

### From the ED to Public Health Leadership

In 2025, when the longtime Houston Health Department Director retired, Houston's Mayor John Whitmire turned to someone he trusted from his previous role as a Texas State Senator: Dr. Tran Carapucci.

Although she now oversees a department of more than 1,400 employees spanning public health preparedness, disease prevention and control, environmental public health, and community health services, she stays true to her roots in emergency care. In her first six months on the job, she conducted deep dives into each division, accompanying staff into the field and participating directly in investigations. "I still consider myself frontline personnel," she said.

In addition to letting her frontline experience guide her policy decisions, her vision for the role centers on evidence-based, community-informed policies and broad collaboration across sectors. "I've been opening the doors of public health to say we will and want to work with everyone and anyone. Academic institutions, nonprofits, for-profits, there is no competition in my world."

And for emergency physicians considering similar paths beyond the bedside, Dr. Tran Carapucci offers reassurance. "As emergency physicians, our skill set is incredibly powerful, and it can translate everywhere. No industry is off limits."

PHOTOS: SHAMIE DAS

**LEFT:** Dr. Joseph Leary (l) and Dr. Shamie Das spent a year in Washington, D.C., focusing on legislative health policy issues, fellowship work, and advocacy.

**ABOVE:** Dr. Das; RWJ Foundation fellow Tonya Moore, PhD, RN; Dr. Leary; and RWJ Foundation fellow Sujith Ramachandran, PhD.

## YEAR OF ADVOCACY

| CONTINUED FROM PAGE 1

Dr. Leary's desire to learn how physicians can make an impact beyond working their shifts eventually brought him to Washington, D.C., where he served as a health legislative fellow in the office of U.S. Senator Bill Cassidy, MD, of Louisiana.

Shamie Das, MD, MBA, MPH, FACEP, also developed an interest in policy early in his career. "It goes back to med school, when I went to present a research poster at an AMA [American Medical Association] meeting," said Dr. Das. "I vividly remember walking by a ballroom with hundreds of medical students from across the country discussing the Affordable Care Act, recognizing the huge transformational discussions about the future of health care. I thought, 'This is going to have a significant impact on my career, and I want to be in the room.'"

Dr. Das

Years later, after a decade in clinical practice, Dr. Das was drawn to the Robert Wood Johnson (RWJ) Foundation Health Policy Fellows program, through which he did a year of service for U.S. Senator Tim Scott of South Carolina.

It is rare for mid-career emergency physicians to devote a year to health policy, but Drs. Leary and Das were inspired to step away from the bedside and into the halls that govern it. Their time away reshaped how they understood the reach and impact of emergency medicine.

### Inside a Policy Year

For Dr. Das, there was no such thing as a "typical" day as a health policy fellow. "Like the ER, there's always some fire burning," he said. "During my time in D.C., there were a lot of big discussions on health care, especially around the reconciliation bill, HR 1, The One Big Beautiful Bill Act."

Dr. Das worked full time in Sen. Scott's office, partnering with legislative staffers who were managing a vast portfolio of education, workforce, and health care issues. Much of his fellowship work focused on the problem of how to address skyrocketing costs of health care without compromising patients' access to care.

> It's ultimately our responsibility as citizens to be engaged in the political process.

Dr. Das described how he brought the messy realities of clinical practice to bear to inform policy efforts. "The way we practice and the way we live is not some highly structured, rigorously monitored setting like in an academic paper. It is the real world, so I'm bridging the gap between what the papers show and what the reality of practice is," he said. "There are a lot of people working on health policy who have never treated a patient. This is where fellows are especially valuable."

There may be no such thing as a typical day on Capitol Hill, but during his own year in Dr. Cassidy's office, Dr. Leary developed a rhythm. Moonlighting in urgent care to keep his skills sharp, Dr. Leary came straight from weekend clinical shifts to full days of Hill briefings and meetings.

Dr. Leary managed a portfolio including projects to foster long-term care planning, to increase funding for critical access hospitals, and to improve access to durable medical equipment. Right after his fellowship ended, Dr. Leary saw success in one of his projects; legislation that he had helped champion — the Medicare Advance Planning for Care Act encouraging Medicare beneficiaries to create electronic advance directives — was introduced in Congress in December 2025. For years, ACEP has pushed for greater adoption of advance directives among Medicare beneficiaries and applauded the introduction of the legislation.

"I came into Senator Cassidy's office saying I would love to work on hospice, palliative care, and anything that pertains to advance directives. So, I'm very proud of my time working on that," Dr. Leary said.

### Impact on Self and Specialty

For Dr. Leary, the year away reenergized his practice. "It refreshed me. I'm going into the ER thinking, 'Wow, what an opportunity I've been given to take care of these people.' It provided an attitude adjustment."

It also provided peace. Before engaging in policy, Dr. Leary said he "felt like I was shouting into the abyss. No one was listening." He is now able to pass this peace along to the patients he serves. "Now I feel heard, and I think my patients are probably going to benefit from a happier, healthier version of myself."

Dr. Das continues to share the value of getting involved in the political process with those around him. "Even before, I would encourage patients to reach out to legislators and policymakers if they were unhappy with how things were, because it's ultimately our responsibility as citizens to be engaged in the political process. Engagement is especially true for emergency physicians, as we are the canaries in the coal mine of health care," he said.

### Emergency Physicians as Unique Advocates

Drs. Leary and Das emphasized that emergency physicians occupy a unique vantage point in health care, and policymakers are increasingly taking notice of the valuable expertise and experience they provide. "Because we see all comers, and engage with most specialties, we have a broad understanding of what our health system is doing well, and where our health system needs to improve," Dr. Das said.

"We are the last men and women standing in this system, so we intimately understand the affordable housing crisis, the mental health crisis. We're at ground zero, and there's no one in the country better equipped to speak up," added Dr. Leary.

They also both noted that getting involved in policy or advocacy work is easier than their colleagues might assume, and that there are many different forms that advocacy can take.

Dr. Das outlined some immediate actions for physicians. "Find out who your representatives are and get to know their staff. Sometimes it's a quick message, a vignette of how a certain policy impacts a patient you recently saw (protecting PHI of course)," he said. "You have to remember that, while data is important, it's the stories that move decision makers the most."

And Dr. Leary shared longer-term steps: "Apply to one of the accredited emergency medicine health policy fellowships and go to the Leadership & Advocacy Conference that ACEP puts on in Washington."

### HOW TO GET INVOLVED

- Register for the ACEP Leadership & Advocacy Conference (LAC) in Washington, D.C., from April 26-28, 2026. https://www.acep.org/lac
- Join the ACEP 911 Grassroots Network to receive weekly email updates on legislative, regulatory, and political actions impacting emergency medicine and to access tools and techniques to engage your lawmakers effectively.
- Invite a Legislator to Your ED. Nothing is more impactful than visiting an ED in person. You can bring a legislator to work, and we will guide you every step of the way. Reach out to ACEP Senior Director of Political Affairs and Advocacy, Jeanne Slade, to get started: jslade@acep.org.
- Support ACEP's political action committee, the National Emergency Medicine Political Action Committee (NEMPAC). Join thousands of your colleagues who are collectively helping to elect federal legislators who will work in the best interests of emergency physicians and your patients. https://www.acep.org/nempac.


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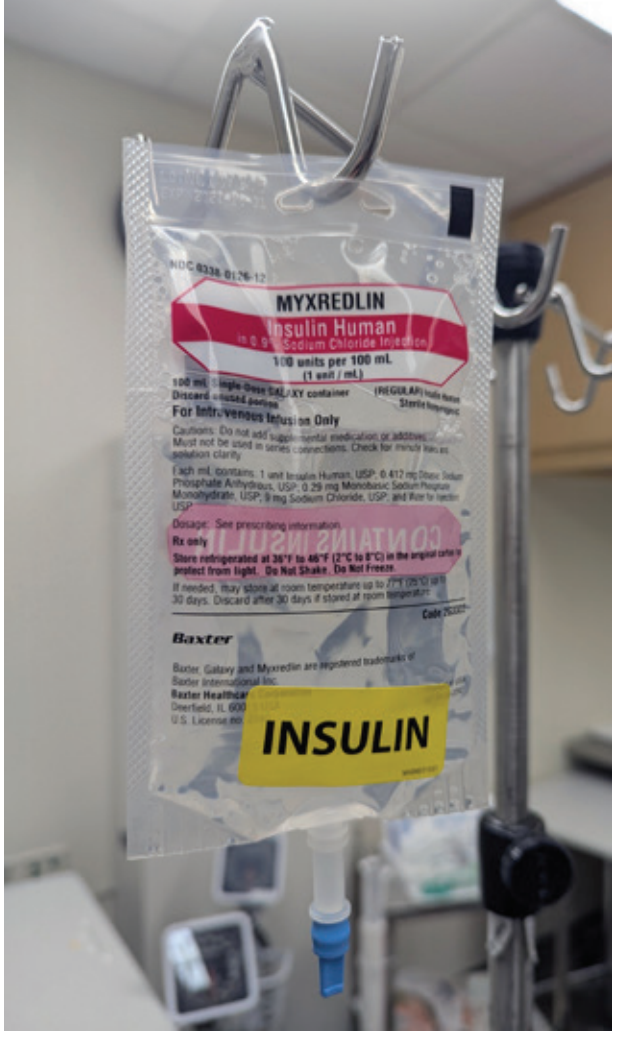
*by* PAUL JANSSON, MD, MS, FACEP




PAUL JANSSON, MD, MS, FACEP

## C-U later C-Collar?

*by* KEN MILNE, MD

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## Pediatric Disaster Readiness

*Hosted by* AMY FAITH HO, MD, MPH, FACEP

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and said, 'I think we need some help in there,'" Dr. Manfredi recalled. The hospital, however, never followed up on the incident.

About four years ago, an even more distressing incident in a Washington, D.C.-area ED left her and colleagues badly shaken. A very large, mentally disturbed male patient who had been in a car accident rolled off the stretcher onto the floor. Dr. Manfredi helped several nurses try to get the patient back onto the stretcher. "The next thing I know I get *smashed* into the wall, and then the other nurses around me also got pushed back," she said. The staff called for security officers, who stood in the doorway and failed to intervene.

Dr. Manfredi

About 10 minutes after the medical team calmed the patient and moved him to a resuscitation bed, he again pushed two nurses and then punched a physician assistant in the face after ripping his stethoscope in half. Summoned security officers again remained on the sidelines, and the ED team managed to regain control only by sedating the patient. This time, the team got lawyers and department heads involved; even so, the case was never resolved.

Much of the violence in EDs tends to be blamed on untreated mental illnesses or substance use disorders, Dr. Manfredi said. "But what is truly unspeakable and unforgivable is the system not providing some kind of safety for the [emergency care teams and staff]. That's where the hang-up is, and that's truly a bigger problem in emergency medicine now," she said. "The system is failing us."

## An All-Too-Common Occurrence

Health care workers suffer more injuries from workplace violence than any other profession, reflected by a 2024 poll of ACEP members in which 91 percent of ED physicians reported that they or a colleague were the victim of violence within the previous year. Episodes of violence in which security officers fail to intervene is part of a troubling pattern, according to a majority of ACEP members (68 percent) who described their employers' response in a recent poll as inadequate.

The problem is also acute for ED nurses, who typically spend more time with each patient. In a 2024 survey of 999 nurses conducted by the Emergency Nurses Association (ENA), 20 percent reported experiencing physical violence within the previous *two weeks*, while more than half were subjected to verbal abuse, including insults and threats of violence. "I've had colleagues and team members that have been assaulted so bad that they could no longer practice as a nurse or required hospitalization," said Jonathan Nover, MBA, RN, who worked as an ED nurse for two decades before assuming a leadership position at a New York City health system.

Nover

Bass

"It becomes this world where you have to be aware of your surroundings constantly," said Dustin Bass, DNP, MHA, RN, president of the ENA and vice president of System Emergency Services at ECU Health in Greenville, North Carolina. That means always anticipating the potential for agitation or violence. One demand in the monthlong nursing strike in New York City, in fact, was better protection against workplace violence. "I think it's becoming harder and harder for a hospital or health system that didn't want to address this to be able to continue to not address it," said Jeffrey Rabrich, MD, president of New York ACEP and an emergency physician in the Hudson Valley. "It's at the forefront of everyone's mind now."

Dr. Rabrich

In its April 2025 research report, "Strategies for Sustaining Emergency Care in the United States," the Santa Monica, California-based RAND Corporation — with support from the Emergency Medicine Policy Institute — found that the rise in violence from patients and family members is "pervasive" and a major contributor to ED staff attrition.[1] "Increases in demand and insufficient capacity can lead to ED crowding, boarding, longer wait times, and sometimes violence toward ED staff. These factors can also compromise the quality of care and can lead to burnout, *moral injury*—negative psychological, social, and spiritual effects—and attrition among emergency care health workers," the report states.

North Carolina State Rep. Timothy Reeder, MD, (R-Ayden), an associate professor of emergency medicine at East Carolina University in Greenville and ACEP member, said violence can contribute to both poorer patient care and job satisfaction. "It diverts our attention from the patients that we're taking care of, not just the one who might be angry, but everybody else," he said. "One of the big predictors of burnout is loss of control and if you're unsafe in the environment, I believe that certainly contributes."

Rep. Reeder

To help mitigate the problem, the 2025 RAND report found strong support for two strategies: enforcing anti-violence policies in hospitals and enacting state or federal laws that increase the legal consequences for violence directed at health care workers. Those and other potential strategies, emergency physicians and nurses said, have been undermined by a lack of resources to institute deterrents such as metal detectors and security guards, as well as poor enforcement of existing policies and inconsistent guidance from regulatory agencies.

### Better Reporting, Harsher Penalties

As chair of the New York ENA Government Affairs Committee, Nover played a key role for ENA, in a joint effort with NY ACEP, to pass a state law called the Workplace Violence Prevention for Health Care and Social Services Workers Act.

The act, signed into law in December 2025, and scheduled to take effect in September 2026, mandates programs to include annual workplace safety assessments that adhere to regulatory requirements established by CMS and security presence in EDs. The Act also requires hospitals to create workplace safety committees, develop violence safety plans, and share data. For EDs in catchments of more than one million people, the law requires an off-duty police officer or trained security guard to be onsite at all times, while smaller hospitals must at least have security officers in the hospital who are available to respond to ED incidents.

"This is a tremendous gain," Nover said. The law is the latest in a series of victories that ACEP and ACEP chapters have spearheaded to confront the crisis of workplace violence in EDs.

New York ACEP, Dr. Rabrich said, would eventually like to see mandated weapon screening and restricted access at all facilities, as well as a permanent security presence in EDs, regardless of size. Although the association recognizes the costs involved, he said, the goal is to have uniform safety standards — perhaps facilitated through state or federal grants.

In North Carolina, the Hospital Violence Prevention Act, which went into effect on October 1, 2024, requires all hospital EDs to have at least one armed law enforcement officer onsite or to apply for an exemption. Some of the pushback suggested that violence was a bigger issue in larger facilities, said Rep. Reeder, the law's sponsor. "What I argued was that those big institutions, the trauma centers, they actually have more staff and are more equipped to do this," he said. "What I'm worried about is the 10-bed critical access hospital where there is no security."

Jennifer Casaletto, MD, an emergency physician in Charlotte, North Carolina, and an ACEP board member, said violence in the ED became a greater concern after she moved from a large academic trauma center with a responsive hospital security force to a smaller freestanding ED in 2010. "As we went through that decade, the threats and violence became more prevalent," she recalled. After several "pretty egregious episodes," the facility failed to respond while the police informed the on-duty nurses that pressing charges for assault would require them to leave the hospital and come to the precinct mid-shift.


Dr. Casaletto

The new state law, informed by ACEP members such as Dr. Casaletto and backed by the state's chapter, also requires hospitals to collect and report data on violent incidents and makes assaults that cause physical injury to hospital and medical practice personnel a Class I felony.

The reporting requirement could overcome the reluctance of many hospitals to voluntarily detail violence that may reflect poorly on their institutions. "Nobody wants to put their own dirty laundry out there," Dr. Manfredi said. As Dr. Casaletto and other doctors pointed out, however, the problem is nearly ubiquitous. "I think one of the big things that we all need to realize — hospitals included — is that this is not unique to one hospital, to one type of hospital, to a state, to a region and not even truly specific to a type of patient," Dr. Casaletto said.

Dr. Rabrich said reporting could take the form of anonymized data to avoid singling out any one institution. To make informed decisions about violence prevention and enforcement, however, he maintained that data from every institution are necessary to clarify the patterns and magnitude of the problem. Advocates are also pushing for federal requirements that would make violent incidents reportable safety events. "We do that with medication errors, and we do it with falls; we do it with hospital quality issues," Dr. Bass said. Similarly tracking violence could help point out where interventions are most needed.

Increasing penalties for assaulting health care workers, as North Carolina and other states like New York have done, could provide another important deterrent. At the federal level, ACEP and ENA have advocated for the Save Healthcare Workers Act, introduced in the U.S. House and Senate in May 2025. Mirroring protections for airport and airline workers, the law would make assaulting hospital personnel a federal crime and institute harsher penalties for assaults during a public emergency or under certain other scenarios. Some critics have worried that harsher penalties could effectively criminalize mental illness, but Rep. Reeder noted that ED workers have expertise that could be tapped by law enforcement to help distinguish between a patient who becomes violent due to an underlying condition such as dementia and someone who is "truly volitional" in their actions. ACEP also maintains a state legislative dashboard to keep up on regulatory issues, including those designed to protect health care staff safety.

### KEY STRATEGIES

From the RAND research report, "Strategies for Sustaining Emergency Care in the United States":

- Enforce hospital anti-violence policies.
- Institute state or federal laws that protect health care workers by increasing the legal consequences for violence against health care workers.

### Sharing Best Practices

At New York ENA conferences, attendees have shared best practices and reported using everything from facial recognition software and AI-based weapons detection software, to panic buttons that can be worn or positioned at nursing desks. Nover conceded that many of the tools are expensive (while Dr. Manfredi warned that metal detectors aren't infallible). Through their Workplace Violence Prevention Alliance, however, the New York ENA and ACEP chapters and collaborating associations have created a toolkit that health care workers can access to review best practices, such as effective anti-violence signage and de-escalation tactics. More EDs are also conducting simulations. "We practice caring for cardiac arrest; we do mock codes. A lot of institutions now are doing mock codes for an aggressive patient or a violent patient," Nover said.

ACEP continues to embrace initiatives to address the problem, most recently, teaming with a coalition of health care organizations to call on CMS to issue guidance that facilitates posting signage in EDs discouraging violence, and developing a checklist to guide emergency physicians in conversations about violence prevention with colleagues and hospital leaders.

Despite the remaining challenges, several doctors said they've seen signs of progress and feel more supported by their workplaces. A few years ago, after a patient took a swing at Dr. Casaletto but missed, her hospital followed up on the ED incident report by offering her counseling and support the next morning, as well as asking whether she wanted to file a police report, needed help in doing so, and needed time off work to recover. Although she didn't need any help that time, Dr. Casaletto was so surprised that she called back to express her gratitude.

The No Silence on ED Violence campaign, launched in 2019 by ENA and ACEP, is helping to raise awareness and encourage more open discussion about the phenomenon and its potential solutions. For victims of violence, ACEP also has created a peer-to-peer support network, which allows ED physicians to talk with a peer in the aftermath of an incident — support that Dr. Manfredi said she wishes she had received years ago. She said she now believes that ED violence requires a multifactorial, top-to-bottom strategy, including an emphasis on treating people with compassion and kindness. "I think we should try everything," she said. "I've been working with folks in wellness and wellbeing for many years, and we're not going to give up on it. We're just going to keep trying different things."

**DR. NELSON** is a medical, science, and environmental writer and the author of *Flush: The Remarkable Science of an Unlikely Treasure*. He lives in Seattle.

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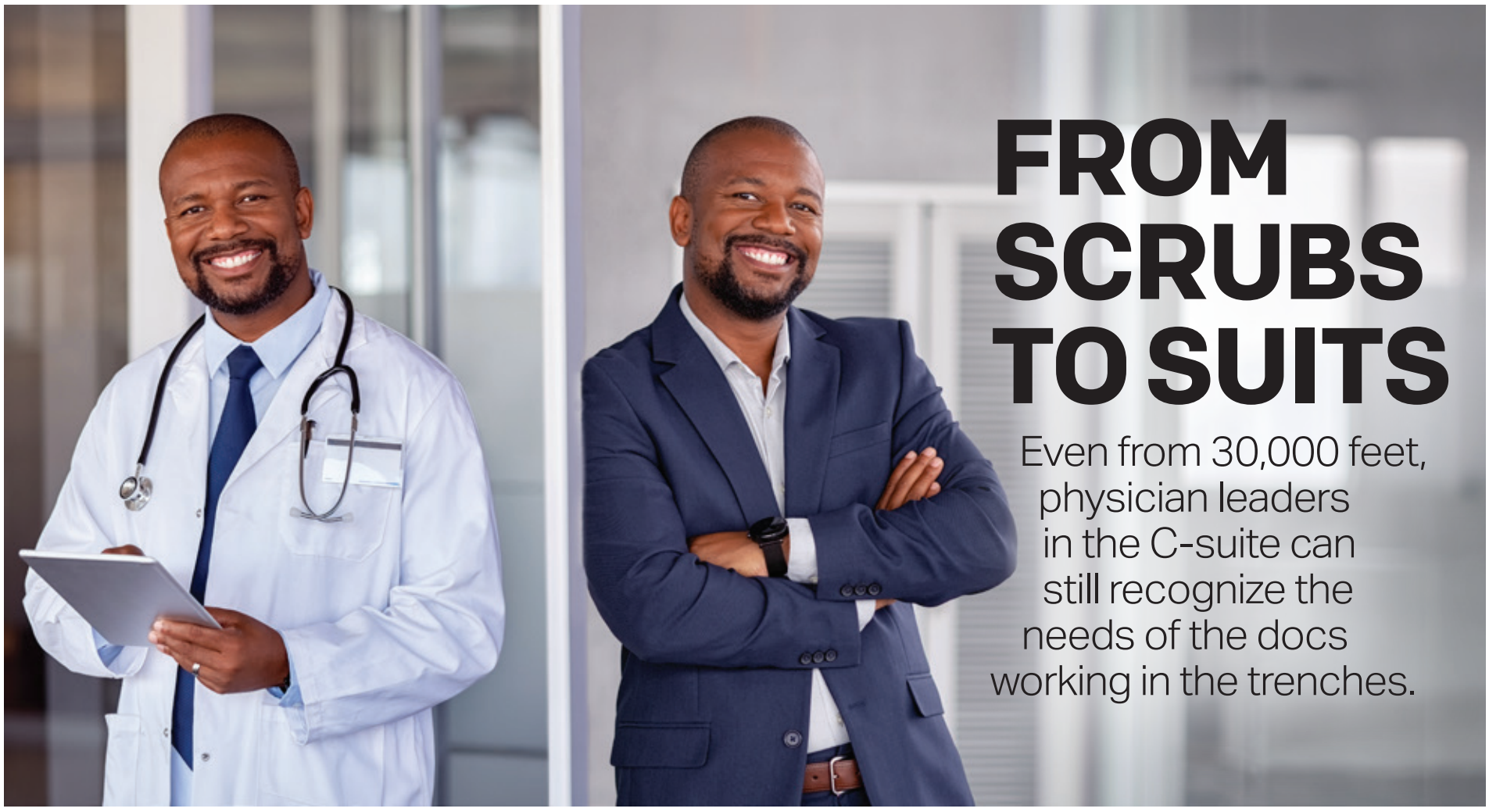

# FROM SCRUBS TO SUITS

Even from 30,000 feet, physician leaders in the C-suite can still recognize the needs of the docs working in the trenches.

PHOTO ILLUSTRATION BY CHRISTINA WHISSEN AND RIDO - STOCK.ADOBE.COM

*by* LEAH LAWRENCE

In 1935, it was estimated that the majority of U.S. hospitals were led by physicians. In contrast, fewer than one in five U.S. hospitals is led by a physician today.[1,2] However, there appears to be a growing recognition of the value of physician-based leadership in hospitals and health systems, and more than a few of these newly appointed physician leaders have a background in emergency medicine.

"Emergency medicine, as a specialty, has arrived," said Brendan G. Carr, MD, MA, MS, an emergency physician and chief executive officer. "The way emergency physicians are wired is with a 'can-do' mentality where failure is not an option. We know how to operate efficiently with a broad perspective of things that can impact health outcomes."

Dr. Carr

That broad perspective, once applied to clinical diagnosis in the ED, must broaden even more in leadership positions, Dr. Carr explained. "Our health care system is in distress and that manifests in the emergency department [ED]," said Dr. Carr, who still works clinical shifts in the ED. "The best way to advocate for the ED is to improve health care in America."

## Common Goals

With emergency physicians operating on the frontlines of health care, there may be a perceived disconnect between the aims of the hospital or health system, its leaders, and emergency physicians, acknowledged John D'Angelo, MD, FACEP, an emergency physician and president and chief executive officer of Northwell Health.

Dr. D'Angelo

"Sometimes within hospitals there is talk as if there are 'haves' and 'have nots,' but the reality, on my side, is that all providers are dealing with the same challenges," Dr. D'Angelo said. "That is, mainly, that the reimbursement for services we provide collectively on the clinician side has not kept up with the expense of providing those services, that the demand for those services is going up, and that the workforce and the pipeline to meet that demand is more and more strained."

Hospital and health system leaders are tasked with trying to figure out how to do more with less.

How can leadership best do that when the goals of different health care teams are not aligned? Dr. D'Angelo said that he tries to apply two rules, a concept he first heard years ago at an ACEP conference. First, do what is best for the patient. Second, do what's best for the people who take care of the patient.

What exactly that looks like when managing hundreds or thousands of employees will vary based on who you ask, Dr. D'Angelo and Dr. Carr both admitted.

"Programs focused on social determinants, education, and clinical care are all essential components of optimizing health outcomes," Dr. Carr said. "Leadership often means balancing advocacy for the ED and for community-based programs with the need to build the next decade of revenue driving the health system."

Emergency physicians can and should say that they want more done in the ED, but we are one ecosystem. We succeed or we fail together, Dr. Carr said.

## Keeping That Connection

Just as parents should not pick a favorite child, physicians' leaders in the C-suite should not pick a favorite specialty or service line. However, having emergency physicians in leadership does mean that the people making these 30,000-foot decisions understand what it means to spend time with their feet on the floor of the ED.

"The ED still has a large place in my heart and serves as the front door of the health system," said Paul E. Casey, MD, MBA, FACEP, system chief medical officer for Rush University System for Health in Chicago. "This morning, I was in the ED rounding, seeing old friends, and asking how I can help."

Dr. Casey

Dr. Casey spends a lot of his time leading digital health initiatives that could improve efficiency and patient outcomes throughout Rush. He can use his intimate knowledge of and experience in the ED to see how digital initiatives like artificial intelligence can impact areas, such as triage, or other aspects of ED workflow.

For example, last year, Rush began piloting the use of generative AI-powered ambient listening in outpatient clinics.

"One new area we are looking to launch ambient listening is within the ED," Dr. Casey said. "This technology can bring the clinical team back to the patient, make the care more efficient, and unhook clinicians from their keyboards so they can spend more time worrying about patients and less time worrying about documentation."

The technology still requires some documentation on the back end, but will hopefully decrease the amount of time physicians are pulled from patient care and forced to spend time getting notes done after their shifts.

"We wanted to test this technology outside of the more controlled area of the clinic," Dr. Casey said. "And I knew that emergency physicians and the ED clinical team are always willing to innovate."

## Working Together

Instead of viewing a divide between emergency physicians and leadership, Dr. D'Angelo encouraged more emergency physicians to take a seat at the table and offer solutions.

"Emergency physicians have a very innate skill set and have proven that they can help drive changes and results," Dr. D'Angelo said. "Use that skill set, be at the table, and apply it to the global challenges that a hospital is feeling and ultimately that impact will trickle down to the ED as well."

Taking a seat at the table may not be the right option for everyone. Alternatively, emergency physicians can articulate concerns to leadership and work to find out the "whys," Dr. Casey said.

"One of the things I am proud of is, even this morning when I was rounding in the ED, I had nurses and others on the clinical team coming up to me and asking questions," Dr. Casey said. "'Why are we doing things this way?' or 'Why are we moving in that direction?'" To me, that is a win.

"The way to keep connected to an organization is to have those conversations, to ask critical questions, and make sure you are getting answers," Dr. Casey said. "It may not always be the answer that everyone wants to hear, but at least it will help to understand the 'why' and provide context."

Despite what some may think, there is no lack of empathy for colleagues working in the ED, Dr. D'Angelo said. Things like the patient boarding crisis or other challenges faced by emergency physicians are still front of mind for the people running a hospital, who continue to work to direct resources in an appropriate way to do what is best for patients and the organization.

**MS. LAWRENCE** is a freelance health writer and editor based in Delaware.

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# RESIDENCY SPOTLIGHT

## RESURRECTION MEDICAL CENTER

**Instagram:** @resurrection_em

**Location:** Chicago, IL

**Year founded:** 1996

**Number of residents:** 39

**Program length:** 3 years

ROBERT RIFENBURG

Resurrection Medical Center Chicago residents.

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

Resurrection Medical Center is situated on the northwest side of Chicago, about 6.5 miles east of O'Hare International Airport, one of the busiest airports in the world. We are the catchment hospital for O'Hare, so anyone who is ill from the airport comes to our emergency department. As such, we see many conditions among patient populations that are rare or unheard of in the Midwest, including malaria, African sleeping sickness, drug mules, and SARS, among others. We are also uniquely located in the Chicagoland area, where a large percentage of our patient population is elderly Eastern European immigrants.

Our medical residents diagnose and treat some of the sickest patients in Chicago, admitting roughly 30 percent of their patients to the hospital and 15 percent to the intensive care unit.

Further, our residents are unopposed and perform all their own procedures, including central lines, orthopedic reductions, intubations, chest tubes, and paracenteses. We admit our patients to primary care physicians or hospitalists, not resident-run services, so our residents are adept and comfortable talking to attending admitting physicians and consultants. Lastly, our sister hospital, St. Francis Medical Center, located in Evanston, is a Level I trauma center that also serves a large underserved and pediatric population. Our residents spend a quarter of their residency at St. Francis, in addition to numerous other academic and community hospitals in the Chicagoland area.

Another unique opportunity that is offered to our residents is to provide medical control for numerous events across the Chicagoland region, including Lollapalooza, the Chicago Marathon, as well as events held at the nearby Allstate Arena.

### What is the work-life balance like? What are some fun activities that residents enjoy when they're not working?

Our residents are very good at practicing the adage "work hard, play hard." We have a tight-knit social group that regularly schedules events together, such as playing in a co-ed soccer league, sitting in the bleachers and basking in the summer sun at a Chicago Cubs game, or planning a social outing to enjoy some famous Chicago-style deep dish pizza. Residents also enjoy running, biking, or rollerblading down the Lakefront Trail, which runs right along the beaches of beautiful Lake Michigan.

We have wellness protected time during our didactic conference time where our resident-run wellness committee plans lectures, yoga classes, meditation sessions, or simply enjoys a breakfast burrito! We also have journal clubs that are run and hosted by faculty at their homes. These clubs allow both our faculty members and residents time to relax, eat, and drink in a casual environment while discussing the latest research in emergency medicine. Lastly, our residents all have the opportunity to attend regional and national conferences.

### How should potential applicants learn more about your program?

Check us out at: https://www.resurrectionem.com or on Instagram at @resurrection_em.

# HAVE AN IDEA?

Submit your story pitch to *ACEP Now*

If you have a story idea or drafted article, e-mail the word document file to Editor **Donna Petrozzello (dpetrozzel@wiley.com,** and Medical Editor in Chief **Cedric Dark, MD, MPH, FACEP (cdark@acep.org).** We'll review your submission and update you on next steps.

To submit a story pitch, please send a 250 word summary along with bullet points of the following:

- Why our readers would value the story.
- How the story would influence the provision of emergency medicine.
- What you hope the reader would learn from your article.
- Potential outside experts or sources for the story.

The usual length of standard articles (departments, columns, one- to two-page articles) is about 800 words. A reference list is also required to support researched material and the practice of evidence-based medicine. References do not count against the word count.

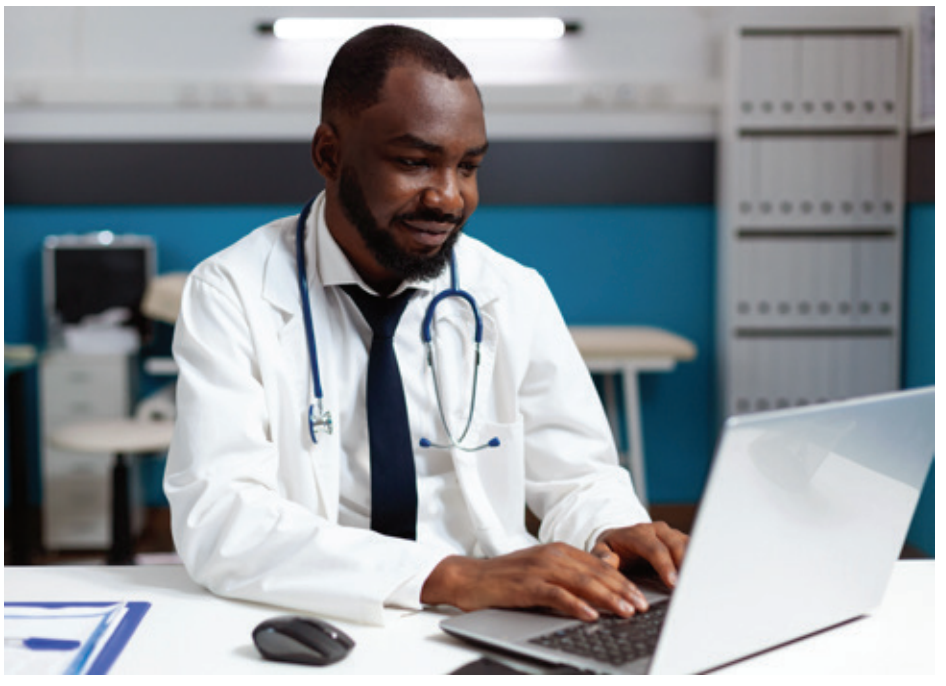
*Preference will be given to new voices.*

### Submit a Case Report

To be considered for publication, send your case presentation to Medical Editor in Chief **Cedric Dark, MD, MPH, FACEP**, with the following:

- 150-word introduction of the patient's presentation
- 650 word description of the diagnosis and management of the case including up to three bulleted teaching points
- 15 reference maximum

*Rare, but not unusual, cases with clinical importance to emergency medicine will be considered. Those with clinical images preferred.*



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# SOUND ADVICE, EQUITY EQUATION COLUMNS SEEKING WRITERS

*ACEP Now* invites physicians interested in writing for our Sound Advice or Equity Equation columns to contact Medical Editor in Chief Cedric Dark, MD, MPH, FACEP, (cdark@acep.org) and Editor Donna Petrozzello (dpetrozzel@wiley.com). Send us an email with a brief writing sample, letter of interest, and ideas for upcoming columns.

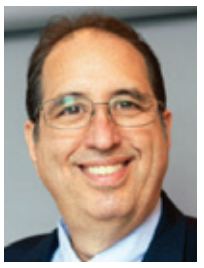
# Community Paramedicine

## Paramedics safely divert 'frequent fliers' and other complex medical patients from the ED

*by* LARRY BERESFORD

LOUIS-PAUL PHOTO STOCK, ADOBE.COM

EMS and emergency physician David Miramontes, MD, FACEP, FAEMS, NREMT, medical director of the San Antonio Fire Department (SAFD) and associate clinical professor of emergency health services at the University of Texas Health Science Center at San Antonio, has helped spearhead a variety of community paramedicine programs for SAFD.



Dr. Miramontes

Community paramedicine deploys paramedics with expanded training, experience, and skills in a variety of non-traditional, community-based roles and settings beyond the customary transport to the emergency department (ED). It is often proposed as a way to reduce medically unnecessary 911 calls and visits to overcrowded EDs. Community paramedics provide proactive, non-emergency care; patient education; and health promotion, helping to connect frequent 911 callers with more appropriate social and health resources.

Dr. Miramontes said EMS has been in his blood since working as an EMT while he was still in high school. "I've done lots of community EMS, community paramedicine, which is now also called mobile integrated health care." He used the term mobile integrated health care (MIH) for a related but somewhat broader concept that incorporates the community paramedic as an essential component, often in collaboration with telemedicine support and other community resources.

### High-Volume Users

In 2014, SAFD launched a pilot MIH program focused on high-volume users of 911 calls. The paramedics scheduled appointments, visited patients, performed assessments and baseline vital signs, did medication reconciliation and home safety inspections, and coordinated and navigated community resources. This led to a 54 percent reduction in 911 call volume for targeted patients.

SAFD has since added nine other service lines that use community paramedics. These include contracts with local hospice companies for paramedics to visit hospice patients who call 911; outreach programs offering medication-assisted therapy, including buprenorphine and navigation into addiction care after overdose; Integrated Mobile Partners Action Care in partnership with the San Antonio Police Department's Mental Health Unit, with an emphasis on helping homeless people move to transitional or other housing; and an acute care station in Haven for Hope, a homeless shelter, with paramedics staffing the night shift to provide non-emergent health care.

These programs all have different funding streams and have shown great value for the investment, Dr. Miramontes said.

In 2022, SAFD's community paramedicine programs collectively made 12,270 patient contacts. SAFD also has a contract with Molina Healthcare, a government-sponsored health plan that supports community paramedic services for its plan members. "These programs will do whatever it takes to stabilize patients and keep them out of the hospital," Dr. Miramontes said, including buying them food or picking up and administering their injectable antipsychotic medication at the pharmacy while addressing a variety of other social determinants of health.

"These are things that ER doctors don't always think about, unless you're one like me, who thinks about them all the time," he added. "These are factors that can play such a huge role in the patient's care and, more importantly, in keeping them out of the ER or hospital."

### Mobile Integrated Care

Until recently, Kevin Munjal, MD, was system director of EMS for the Department of Emergency Medicine at Icahn School of Medicine at Mount Sinai in New York City, where he founded its successful community paramedic programs. More recently he co-founded and serves as chief medical officer for Care2U, a mobile acute-care-at-home company providing services analogous to hospital at home for eight counties in the New York City metro area.[1] It makes considerable use of community paramedics visiting patients in their homes. Dr. Munjal's model of MIH uses patient-centered, mobile out-of hospital resources in a coordinated manner with physicians, hospitals, and other providers to provide higher quality patient-centered care and help prevent ED visits and hospitalizations.

Dr. Munjal

Dr. Munjal said his diverse experiences with emergency medicine and community paramedicine have guided the evolution of his thinking about, for example, how the financial

## TOXICOLOGY Q&A

DR. CHRISTOPHER LOGUE AND MR. FRANK NAWROCKI.

**IMAGE 1: Manchineel tree bark is brownish-gray and furrowed with white sap.**

# The Tree of Death

**QUESTION:** Which tree has a bark as bad as its bite?

*by* JASON B. HACK, MD

**ANSWER** *on page 18*

incentives of EMS dictate practice. In EMS, there's a perverse incentive, which is that the ambulance service often isn't reimbursed if it doesn't take the patient to the hospital. Efforts to reform EMS incentives include bills now in Congress. Many community paramedicine programs must patch together grants, local government support, contracts with Medicaid programs and private insurers, and other types of cost-sharing that reflect their ability to save the health care system a lot of money by preventing unnecessary ED visits.

Hundreds of MIH programs now operate across the United States, Dr. Miramontes said. ACEP promotes and supports the concept of community paramedics within a framework called MIH/CP (community paramedicine) and has published vision statements and related documents describing it as a patient-centered, community-based extension of emergency medical services designed to improve access to care, coordinate services, and supplement traditional emergency response.[2]

Dr. Miramontes said he wanted physicians to think of community paramedics as an essential part of emergency medicine — as the ED's partners, and extensions into the community. "Here we have this incredibly sophisticated, well-stocked emergency department on wheels that goes out into the community. But in many settings, no matter what the situation, the treatment is the same: Let's drive them to the hospital," he said. That doesn't always have to be the case.

## Tackling Chronic Heart Disease

In 2018, Brock Daniels, MD, MPH, an emergency physician at Weill Cornell Medicine and New York-Presbyterian Hospital in New York City, and Rahul Sharma, MD, MBA, chief of emergency medicine at Weill Cornell Medicine and New York-Presbyterian Hospital, established a pilot Community Tele-Paramedicine program, in collaboration with Weill Cornell's Advanced Heart Failure Clinic, targeting patients with heart failure who were frequent ED and hospital utilizers.

Dr. Daniels

Dr. Sharma

For Dr. Daniels, the genesis of tele-paramedicine for cardiac patients was seeing those patients in the ED. "They are short of breath, volume overloaded, their legs are swelling, they've missed a couple days of their diuretics. And I'm sitting there thinking if I had only seen this patient five days ago, they wouldn't be here now."

Once these heart failure patients are in the ED, they usually end up being admitted, waiting hours to days for an inpatient bed, and are frequently readmitted multiple times. "Community Tele-Paramedicine offers a better care model for these medically complex, socially vulnerable patients by providing triage and treatment at home where most of them would rather be," he said.

Patients typically are enrolled following an acute care episode, with care managers conducting proactive outreach to support post-discharge transitions of care. A team of community paramedics is dispatched as needed to perform home visits, where they facilitate telehealth encounters with emergency physicians.

"It has been shown to reduce ED visits and 30-day readmissions," Dr. Sharma said.[3] And the data also confirm that patients really love it.[4] "When you look at emergency departments today, they are overcrowded, they're packed. Patients are waiting for beds. There are other exacerbating factors such as lack of access and poor care coordination after discharge," he said. "We have to work within the system and create other opportunities for patients and providers. I think there is no better specialty than emergency medicine to take on this role."

## How Can Emergency Physicians Help?

If you listen to community paramedics, in many cases they will help you facilitate rapid discharge and safe disposition of the patient, Dr. Miramontes said. "If you hear a community paramedic come in to see a patient in your ER, embrace them, see how they can help you, and how you can help them. You can feel more comfortable discharging patients because you will have somebody else watching them."

EMS paramedics don't just bring people to the hospital. They are the entry point into care, he said. "And our goal is to better utilize our resources to get the right patient to the right place for the right care at the right time. EMS is now part of the health care system, just like case management, respiratory therapy, a pharmacist in the ER. We're part of the health care team."

These programs offer one more thing for emergency physicians, Dr. Daniels said. Emergency physicians at New York-Presbyterian said they also enjoy participating in the program's telemedicine role, doing virtual shifts from a hospital office or at home. Telemedicine is a somewhat different skill set and mindset than practicing within the ED.

Added Dr. Sharma, "Since burnout is a mounting challenge in our specialty, this actually has been beneficial for many physicians to find other ways to provide care in other environments for different patient populations. Diversifying our portfolio is really a key to longevity."

**MR. BERESFORD** is an Oakland, California-based freelance medical journalist.

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# EXTENSOR TENDON REPAIR BY EMERGENCY PHYSICIANS

*by* ERIN DOOLEY, MD, AND
J. MICHAEL SMITH, MD

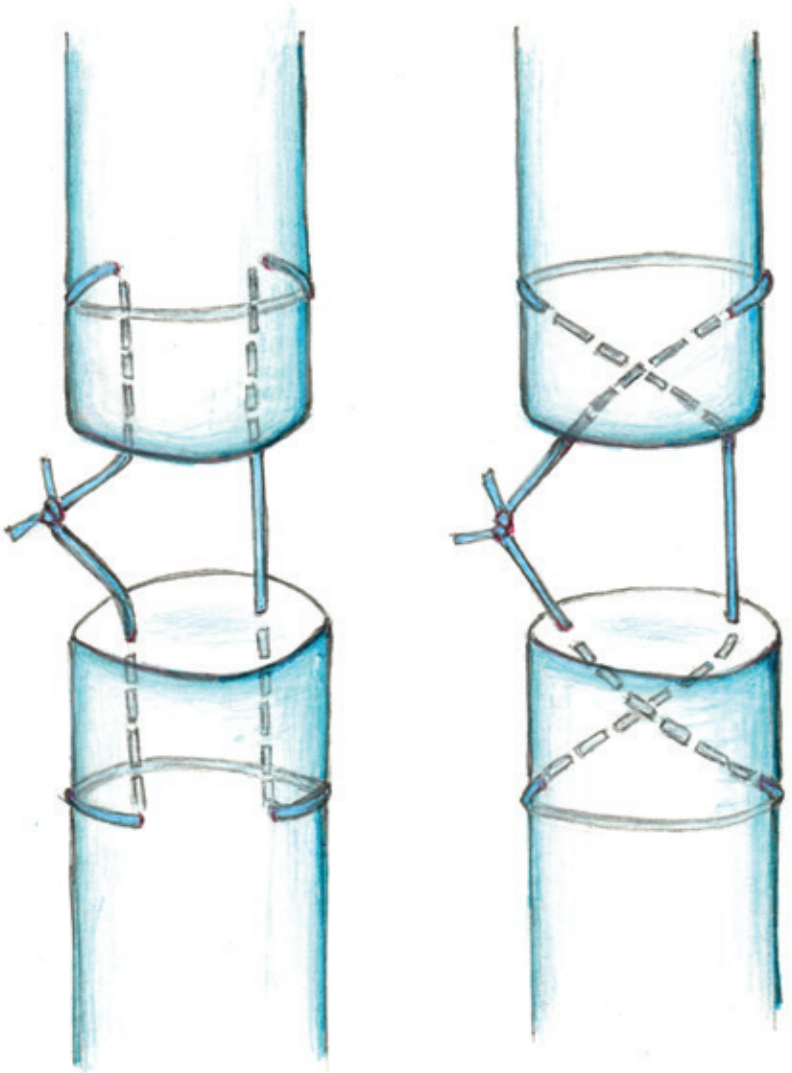
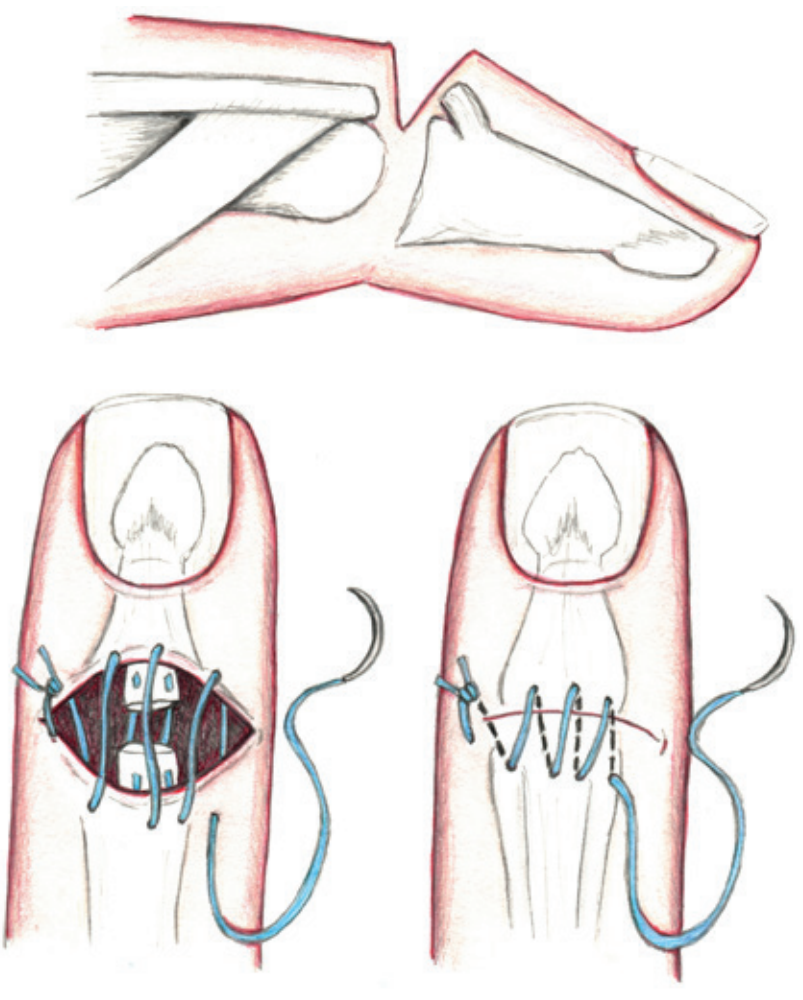


**FIGURE 1A (LEFT):** Modified Kessler stitch
**FIGURE 1B (RIGHT):** Modified Bunnell stitch



ILLUSTRATIONS: KRISTINA K. ROBINSON, MD

**FIGURE 2:** Roll suture.

Lacerations to the hand are common injuries that present to emergency departments, both in academic Level 1 trauma centers as well as community and rural settings. Lacerations across the dorsal surface of the hand and fingers often injure the extensor tendons of the fingers, leading to difficulty or inability to extend the joints of the finger.

The repair of these tendons is essential to preserving function of the hand and can be performed by a hand surgeon, but it is a relatively simple procedure, and in a resource-limited setting, can be performed by an emergency physician.

## Anatomy of Extensor Tendons

For a brief review of the anatomy and physiology of the extensor tendons, the tendons from muscles of the forearm meet the tendons of the hand in a sheet at the base of each finger (near the knuckle). The extensor digitorus communis (EDC) muscle of the forearm supplies tendons that work to extend the index, middle, ring, and small fingers. The index finger has two tendons (EDC and extensor indices proprius). The extensor digiti minimi muscle (EDM), in addition to the EDC, works in conjunction to extend the fifth digit. The extensor pollicis brevis and longus muscles supply the tendons for the thumb. The sheet of tendinous material gives off a central band that extends the middle joint of the finger, and two separate lateral bands that converge together past the joint and function to extend the distal interphalangeal (DIP) joint. Unlike flexor tendons, extensors usually do not retract significantly because of connections called juncturae tendinae.

## Diagnosis and Repair

To diagnose an extensor tendon injury, the patient will have pain with, or an inability to extend, one of the joints of the finger or finger drooping. Traumatic etiology of extensor tendon injury involves penetrating or blunt trauma to or with extension to the dorsal surface of the wrist, hand, or finger.

Once diagnosed, repair can be attempted. To prepare for the procedure, use a blood pressure cuff around the forearm and inflate it to 50 mmHg above systolic pressure to control bleeding. You can achieve anesthesia with digital ring block, local anesthetic, or systemic analgesia or moderate sedation, as needed. Liberally irrigate site of injury with 500 mL to 1 L of normal saline and apply sterile drapes around site of procedure.

The repair is performed by extending the site of injury to visualize both ends of the severed tendon and using sutures to join the cut ends together. For injuries to the extensor tendon when it travels through the hand or proximal finger, the Modified Kessler stitch or Modified Bunnell stitch can be used (see Figure 1).

**Figure 1A - Modified Kessler stitch:** Insert the needle perpendicular to the proximal severed surface of tendon along the radial side (closest towards thumb), then exit tendon laterally and wrap the string around the tendon. Insert needle into ulnar side of tendon at approximately the same distance from the lacerated edge where the needle pierced the radial side, then exit the tendon perpendicularly through the severed end of tendon at a 90-degree angle. Now, join the proximal tendon with the distal tendon by entering the distal tendon severed surface on ulnar side, exit out the tendon laterally, wrap around the tendon, and reenter the distal tendon on radial side, exiting through severed surface on the radial half. Tighten the string and tie a knot that will be buried between the two segments of tendon.

**Figure 1B - Modified Bunnell stitch:** Similar to the Kessler stitch in that the needle is inserted into proximal severed surface of tendon towards the radial side, but instead of exiting the tendon on that same side, the needle is guided diagonally towards ulnar side to exit the tendon. Wrap the suture around tendon and reenter tendon on radial side at same distance from severed surface that you exited on the opposite side. Travel diagonally to exit out severed surface towards the ulnar surface. Repeat the process on the distal end of the tendon except by starting at the ulnar surface and ending by exiting radial surface. Join the two fragments of tendon together and tighten the string, tying a buried knot.

Injury to the tendon at the distal finger near the DIP joint should be repaired by dermatotenodesis (see Figure 2). This is performed by anchoring a simple suture on one end of the skin incision, leaving the tail of the suture long enough to perform the rest of the repair. Then perform running sutures until you reach the area where the tendon is located, and upon reentering skin on distal end of the laceration take a bite into superior surface of distal tendon on its lateral side (⅓ through diameter), exiting out through severed surface of distal tendon. Enter the proximal tendon through the lateral aspect of the severed surface, and exit out through the superior surface, also grabbing overlying skin. Repeat this technique by reentering the skin that is overlying medial ⅓ tendon and grabbing distal and proximal tendon fragments, exiting out through the skin. Place a single suture at the medial end of the incision to anchor the skin.

For all repairs, apply a volar splint to keep the affected tendon and joints held in extension for at least six weeks, making sure that the dressing isn't too tight and the fingers are well perfused. Refer the patient to a hand surgeon or orthopedic surgeon for follow up. The splint pictured below can be used for injuries to the tendon at the distal finger involving DIP joint (repaired using dermatotenodesis).

Common complications after extensor tendon repair include infection, adhesions resulting in decreased mobility of hand, mallet deformity or swan neck deformity of finger, or ulceration to skin from splint application.

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Q&A ABOUT OUR LITTLEST PATIENTS

# KIDS KORNER

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# Do pediatric seizures have an association with the weather?

*by* RICHARD CANTOR, MD, FAAP, FACEP AND LANDON JONES, MD

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

Anecdotally, every time it rains, it seems like there are more pediatric seizures. Is this true? Is there an association between seizures in kiddos and falling barometric pressures? Maybe it's just our own recall bias? While it is unlikely to clinically change your practice, it may change your differential diagnosis on a rainy day.


Some of the earliest investigations on this topic started back in the mid-1960s when Boldrey and Millichap explored the relationship between seizure and atmospheric pressure in mice.[1] Interestingly, there is very little further exploration on this topic until the mid-to-late 2010s when there was renewed discussion on climate and climate change. Since then, a number of additional studies have looked at the association between weather and seizure. While there are some studies that include only adults, we're focusing on pediatric studies.

A retrospective study by Kim, et al., evaluated 11 years of emergency department (ED) visits in Changwon, South Korea, and their relationship to weather.[2] The authors retrieved weather data from a government website and looked at daily mean temperature, diurnal temperature range (difference between maximum and minimum temperature on a single day), humidity, atmospheric pressure, cloud cover, wind speed, and sunshine. The authors then looked at the association of total ED visits and visits for seizures, as well as the characteristics of these seizures.

During this 11-year period, there were 108,628 pediatric ED visits with 3,484 seizures (3.2 percent). First-time seizures accounted for 74 percent of the total seizures; the seizure types included first-time afebrile seizures, breakthrough seizures in known epileptic patients, febrile seizures, and status epilepticus. Overall, mean temperature was the only significant factor associated with seizures, and febrile seizure was the only type of seizure associated with mean temperature.

In brief, lower mean temperature was significantly associated with more febrile seizures. But it's important to note, though, that this is just an association and not necessarily a direct causation. Humidity, atmospheric pressure, sunshine, and diurnal temperature range were not statistically significant.

Unlike the prior study, a retrospective eight-year study at a single pediatric ED in Japan found no association between weather and febrile seizures (Kawakami, 2021).[3] The authors evaluated ambient temperature, atmospheric pressure, relative air humidity, rainfall amount, sunshine duration, and air concentrations of $NO_2$ and $SO_2$. The authors analyzed 560 children who had febrile seizures and noted that the presence of epidemic influenza and infectious gastroenteritis — but not the weather —were associated with febrile seizures.

A 2021 retrospective study by Yamaguchi, et al., specifically looked at the relationship between new onset nighttime seizures — described as "unprovoked seizures" by the authors — and weather and air pollutants in children younger than 16 years of age in a single pediatric ED in Japan.[4] So, we are only talking about nighttime seizures. This was a five-year retrospective study that looked specifically at unprovoked seizures, so febrile seizures were excluded from the study.

Data included atmospheric pressure, precipitation, temperature, relative humidity, wind speed, and hours of sunlight, along with multiple air pollutants such as NO, $NO_2$, $SO_2$, $CH_4$, and particulate matter. There were 98 unprovoked seizures over five years in 151,119 total children. This number of children with unprovoked seizures seems rather small but is consistent with prior data.[5]

In this study by Yamaguchi in children with nighttime unprovoked seizures, the authors noted a positive association between precipitation and unprovoked seizure (one additional patient with seizure per 87 mm precipitation; $P$=0.03) as well as $CH_4$ and seizure (one additional patient per 0.14 ppm; $P$=0.048).[4] While this study demonstrates a positive association between precipitation and new onset unprovoked seizures, it's rather difficult to apply broadly since unprovoked nighttime seizures are a small subset of all seizure types in children.

Finally, we were able to find one multicenter prospective study that looked at the relationship between weather and seizure. This study by Arai, et al., prospectively followed children over one year with known epilepsy.[6] Exclusion criteria included children with absence seizures, psychogenic non-epileptiform seizures (PNES), suspected parental neglect, and parents with intellectual disabilities. A seizure diary was used by families, and multiple characteristics/circumstances around the time of the seizure (e.g., sleep deprivation, menstruation, upper respiratory infection symptoms, missed medications) were recorded.

Interestingly, the seizure diary allowed the authors to explore not only seizures that presented to the ED, but seizures that occurred outside the ED in children with known epilepsy. The location of the seizure was documented by the family. Meteorological data preceding the seizure was collected by the authors via the Japan Meteorological Agency website at 6, 12, 24, and 48 hours prior to seizure onset. Data included atmospheric pressure, change in atmospheric pressure, temperature, and relative humidity. A total of 159 seizures in 29 patients were recorded during the observation period. No significant relationship between atmospheric pressure or temperature changes and seizure risk was observed. The study did note an association between humidity and seizure occurrence (OR 1.026; 95% confidence interval (CI) 1.003-1.048; P=0.023), but the effect size was very small.

In the end, there doesn't appear to be any clear-cut relationship between weather and pediatric seizure at this time.

## Summary

Overall, there are not definitive data that suggest that pediatric seizures are extrinsically affected by the weather. Some factors that have been explored include relative humidity, precipitation, temperature, wind speed, and hours of sunlight. No definite relationship between weather and seizures has been consistent across studies.

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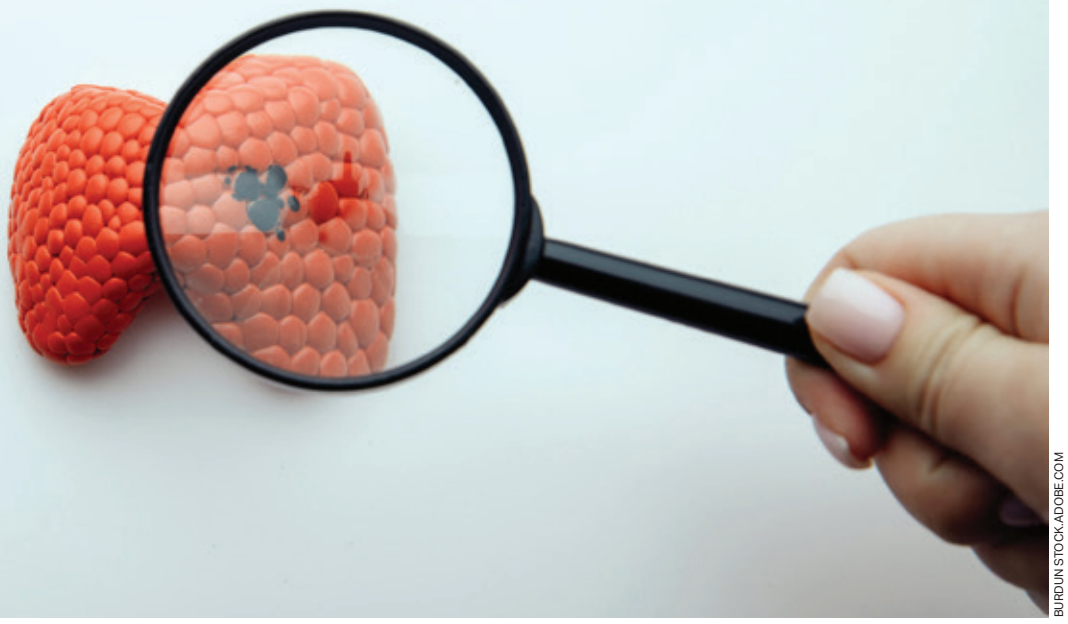
# The Silent Emergency

## Four Surprising Truths About Severe Hypothyroidism



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

When clinicians think of hypothyroidism, they typically envision a chronic, indolent condition characterized by fatigue, cold intolerance, and weight gain. While this reflects the vast majority of cases, a small subset of patients develops a severe, life-threatening form marked by multisystem failure. Decompensated hypothyroidism remains an easily missed and high-mortality endocrine emergency with a mortality rate approaching 7 percent among those hospitalized for decompensated hypothyroidism.[1]

This condition is a master mimicker. Patients frequently present with features indistinguishable from more common emergencies — sepsis, environmental hypothermia, sedative or opioid toxicity, or acute heart failure. The nonspecific nature of these presentations creates a substantial diagnostic blind spot. In one retrospective chart review, nearly 80 percent of emergency department patients later diagnosed with overt hypothyroidism were not identified at their initial encounter.[2] Early recognition hinges not on pattern completion, but on maintaining a high index of suspicion and understanding that many intuitive interventions may be harmful.

Recognition of decompensated hypothyroidism in the emergency department (ED) is challenging because the presentation is often subtle and incomplete. The classic triad — altered mental status, bradycardia, and hypothermia — is well described but, like many so-called "classic" triads in medicine, is frequently absent in its entirety.[3] Instead, clinicians should remain alert to a constellation of nonspecific physiologic derangements that may otherwise be attributed to sepsis or medication effects, including hypotension, hypoglycemia, hyponatremia, respiratory depression, and delayed deep tendon reflexes, particularly when no clear alternative explanation is identified. Unexplained altered mental status or presumed sepsis without an obvious source should further raise suspicion.

Importantly, decompensated hypothyroidism is often accompanied by life-threatening complications that shape the clinical picture and demand early recognition, including heart failure, pericardial effusion or tamponade, dysrhythmias, seizures, coma, hypercapnic respiratory failure, pleural effusions, and concurrent adrenal insufficiency.[4] A practical emergency medicine pearl is to maintain a low threshold for testing thyroid-stimulating hormone (TSH) and free thyroxine ($T_4$) in any patient presenting with otherwise unexplained hypothermia, bradycardia, hypotension, metabolic derangements, respiratory depression, or altered mental status. Early biochemical confirmation can meaningfully alter both diagnostic clarity and initial management.

Distinguishing decompensated hypothyroidism from more common ED presentations such as sepsis, toxidromes, and environmental hypothermia requires attention to physiologic incongruities rather than isolated findings. Although septic patients may present with altered mental status, hypotension, and even hypothermia, they are typically tachycardic and tachypneic. The presence of unexplained bradycardia or respiratory depression in an otherwise septic-appearing patient should prompt consideration of an endocrine etiology.

Similarly, several toxidromes — including beta-blocker, calcium-channel blocker, opioid, sedative-hypnotic, and cholinergic exposures — can produce a "low and slow" phenotype. But these syndromes usually evolve acutely, are often normothermic, display characteristic physical clues (such as pinpoint pupils with opioids, diaphoresis and secretions with cholinergics, or hyperglycemia with calcium-channel blockers), and typically demonstrate rapid physiologic improvement after appropriate antidote administration. In contrast, decompensated hypothyroidism evolves over days to weeks, often following a physiologic stressor, and is marked by hypothermia, dry skin, ileus or constipation, hyponatremia, and hypoventilation with hypercapnia; failure to improve after naloxone, atropine, calcium, or glucagon in the setting of a cold, dry, bradycardic patient should lower the threshold for empiric treatment.[3]

Environmental hypothermia is generally suggested by a clear exposure history and preserved shivering in mild hypothermia (32 to 35°C), whereas patients with hypothyroidism at similar temperatures often do not shiver and fail to normalize mental status or cardiorespiratory parameters with rewarming alone.[4] Persistent bradycardia, hypercapnia, encephalopathy, hyponatremia, or ileus despite rewarming should shift diagnostic momentum toward decompensated hypothyroidism and prompt early endocrine-directed therapy.

Now that we have outlined the recognition of decompensated hypothyroidism, I would like to devote the rest of the column to highlight four critical, and often counterintuitive, truths that every emergency clinician should understand.

### 1. The Name "Myxedema Coma" Is a Dangerous Misnomer

The historical term "myxedema coma" creates dangerous diagnostic expectations that are often not met, causing physicians to miss the diagnosis in patients who don't fit the classic, but flawed, description. The "coma" part of the name is misleading because most patients are not in a full coma. They typically present with a milder altered mental status, such as confusion or drowsiness, but are not fully obtunded. The clinical danger is that a physician expecting a comatose patient may not even consider the diagnosis — and therefore fail to order a TSH and free $T_4$ level — in someone who is merely confused.[3]

Similarly, the "myxedema" part is also a diagnostic trap. While myxedema refers to a classic sign of non-pitting edema of the shins, this is often absent. Furthermore, this swelling can appear anywhere, including the face, the oropharynx, or within the abdominal wall tissue. A physician who only checks the patient's lower legs for this sign will miss it, overlooking the significant airway implications of oropharyngeal swelling.[4]

For these reasons, the more accurate term is "decompensated hypothyroidism." This name correctly focuses on the core problem: end-organ dysfunction caused by a severe, systemic lack of thyroid hormone. Shifting the terminology is essential for accurate diagnosis.

### 2. Active Rewarming a Hypothermic Patient May Cause More Harm

When a patient arrives in the emergency department with a dangerously low body temperature, the immediate medical reflex is to rewarm them aggressively. This often involves using tools like a Bair Hugger (a forced-air warming blanket) or administering warmed intravenous (IV) fluids. In the case of decompensated hypothyroidism, this intuitive action can be fatal.[5]

The danger lies in the patient's underlying physiology. Patients in this state are already maximally vasodilated. Aggressive external warming worsens this vasodilation, which can lead to a sudden, catastrophic drop in blood pressure and circulatory collapse. The correct approach is passive rewarming. This involves gentle measures such as increasing the temperature in the room and covering the patient with room-temperature blankets.

The primary and safest way to restore the patient's body temperature is to treat the underlying hormonal deficiency. This distinction provides a critical diagnostic clue: In environmental hypothermia, mental status improves with rewarming alone. If a patient remains bradycardic, hypercapnic, or encephalopathic despite rewarming, decompensated hypothyroidism should be strongly suspected.

### 3. Treating the Main Problem First Can Trigger a Second Crisis

Once decompensated hypothyroidism is suspected, the obvious treatment is to administer thyroid hormone (IV levothyroxine) to correct the deficiency. However, giving this medication first can precipitate an adrenal crisis.[4] This is because many patients with severe hypothyroidism have a concurrent, undiagnosed adrenal insufficiency. When IV levothyroxine is administered, it immediately ramps up the patient's metabolism. This metabolic surge significantly increases the body's clearance of cortisol. If the adrenal glands are already struggling, this sudden demand can unmask the underlying insufficiency and push the patient into a life-threatening adrenal crisis.

The correct, life-saving sequence of intervention is to give stress-dose steroids (hydrocortisone) before administering IV levothyroxine. This simple but crucial step supports the adrenal glands and prevents the secondary crisis that could otherwise prove dangerous.

## 4. The Trigger Can Be as Deadly as the Disease Itself

Decompensated hypothyroidism does not occur in a vacuum. A patient with chronic, stable hypothyroidism is almost always tipped into this emergency state by an acute trigger. Identifying and treating this trigger is just as important as treating the thyroid deficiency itself. Treating the patient with thyroxine without discovering and treating the trigger is like bailing the water while the hole in the boat stays open. The most common precipitant is noncompliance with or abrupt withdrawal of thyroid hormone.[5]

However, when it comes to acute illness, the most common trigger is infection.[5] A thorough search for a source of infection is mandatory. A crucial take-home point for clinicians is to cover for sepsis; empiric broad-spectrum antibiotics should be started immediately. Other triggers include acute coronary syndrome, stroke, gastrointestinal bleeding, or certain medications like amiodarone, lithium, or opioids.[6] Failing to "plug the hole in the boat" may mean the patient clinically deteriorates from their trigger while focus is on the thyroid.

Decompensated hypothyroidism is a rare diagnosis, but it is precisely its rarity, and its ability to masquerade as more common emergencies, that makes it so dangerous in emergency practice. The central lesson of this condition is not simply to recognize an uncommon endocrine disorder, but to challenge reflexive thinking when the physiology does not quite fit.

Unexplained bradycardia in a septic-appearing patient, hypothermia without shivering, respiratory depression without a clear toxidrome, or shock that worsens despite otherwise appropriate interventions should all prompt a deliberate pause. The management principles are equally counterintuitive: passive rather than aggressive rewarming, corticosteroids before thyroid hormone, and relentless attention to the precipitating trigger alongside endocrine replacement.

For emergency physicians, the takeaway is straightforward but critical: When a patient is cold, slow, and altered, and the usual explanations fall short, think decompensated hypothyroidism. Doing so can convert what is often a fatal missed diagnosis into a decisive, life-saving intervention initiated in the emergency department.

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PUTTING RESEARCH TO WORK FOR YOU

# PRACTICE CHANGERS

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# D-Dimer Testing for Risk of Thoracic Aortic Dissection Could Be a Game Changer

BY LAUREN WESTAFER, DO, MPH, MS, FACEP

ACEP released a game-changing clinical policy on nontraumatic thoracic aortic dissection (AoD) that shifts the approach to risk stratification for patients with suspected AoD: clinical decision tools combined with a D-dimer are officially in.[1] A decade after an ACEP clinical policy declared we could rely on neither clinical decision tools nor D-dimer alone, the tides have changed.[2] What happened?

AoD is taught as a "can't miss" diagnosis in emergency medicine. Yet AoD is rare, with an estimated incidence of 2 to 4 per 100,000 individuals.[3,4] Two seemingly contradictory truths exist regarding the contemporary evaluation of AoD in the emergency department (ED) — we miss aortic dissections although we simultaneously overtest patients for this disease process.[5] This paradox is driven by the variable clinical presentations of nontraumatic AoD and the historical lack of strategy to reasonably exclude AoD outside of advanced imaging such as computed tomographic angiogram (CTA).

Frustratingly, few history and physical examination features meaningfully change the pre-test probability of AoD. A matched case-control study evaluating 194 cases of AoD and 776 controls with an ED visit for truncal pain of fewer than 14 days duration and no clear diagnosis found abysmal diagnostic characteristics for clinical features. The single negative likelihood ratio (LR) that was able to decrease the probability of AoD was abrupt onset of pain (-LR 0.07; 95% CI 0.03-0.14). The study found essentially useless negative likelihood ratios for the absence of classic features such as pulse deficit, murmur, bilateral blood pressure differential, subjective neurological deficit, and widened mediastinum on chest radiograph (CXR).[6] Further, bedside testing such as point-of-care ultrasound has been found to be specific for AoD but insufficiently sensitive.[7]

Given these limitations, it is unsurprising that attempts to validate bedside risk stratification tools for AoD have fallen short. Although several scores exist, the Aortic Dissection Detection Risk Score (ADD-RS) is the most widely studied. The tool is comprised of three questions: (1) high-risk condition for AoD (2) high-risk pain features (3) high-risk examination features. Alone, the risk score is insufficiently sensitive, with a pooled sensitivities of 43.4 percent to 94.6 percent, depending on the scoring threshold used to define low risk.[8]

Enter new evidence. Owing to prior limitations, investigators have evaluated a framework for AoD analogous to the evaluation of pulmonary embolism, in which D-dimer testing is used in combination with clinical risk stratification. In a prospective study of 1,850 ED patients with a differential diagnosis including acute aortic syndromes, the failure rate of an ADD-RS less than or equal to 1 combined with a D-dimer less than 500 ng/mL was 0.3 percent (95 percent CI 0.1-1).[9] As a result, the new ACEP clinical policy states: *In adult patients who have an AoD detection risk score (ADD-RS) of 1 or less (i.e., low risk) and a highly sensitive D-dimer of less than 500 ng/mL, emergency physicians can exclude acute nontraumatic AoD without obtaining advanced imaging (ie, CTA, MRI, or TEE)* (Level B).

There are potential pitfalls. The D-dimer is a notoriously nonspecific test, and indiscriminate use could increase unnecessary CTAs. It is critical that clinicians apply the ADD-RS and D-dimer only in patients in whom they suspect of having an AoD and who would otherwise undergo imaging — not all comers. Further, the efficiency of the strategy (i.e., those in whom AoD could be excluded without a CTA) decreases when applied to lower-risk populations. For context, the patients enrolled in the aforementioned study were very high risk with nearly 10 percent diagnosed with an AoD.[9]

Although no evaluation strategy has a zero percent failure rate, we now have an algorithm to approach the evaluation of AoD without diagnostic imaging in patients with a low-risk ADD-RS and normal D-dimer. How this strategy performs in real-world settings depends on an appropriate application.

***Disclosure:*** *Dr. Westafer is a member of the ACEP Clinical Policy Committee (CPC) and an author on the discussed clinical policy. However, the views in this article do not represent ACEP or the ACEP CPC and are Dr. Westafer's alone.*

**Aortic Dissection Detection Risk Score (ADD-RS)**

| | |
|---|---|
| **HIGH RISK CONDITION** | |
| Marfan syndrome | Yes = 1<br>No = 0 |
| Family history of aortic disease | |
| Known aortic valve disease | |
| Recent aortic manipulation | |
| Known thoracic aortic aneurysm | |
| **HIGH RISK PAIN FEATURE** | |
| Chest, back, or abdominal pain described as abrupt onset severe intensity, or ripping or tearing | Yes = 1<br>No = 0 |
| **HIGH RISK EXAMINATION FEATURE** | |
| Evidence of perfusion deficit (pulse deficit, systolic BP differential, or focal neuro deficit plus pain) | Yes = 1<br>No = 0 |
| New aortic insufficiency murmur (with pain) | |
| Hypotension/shock | |

Score of ≤1 = Low risk: order D-dimer and use standard threshold
Score of ≥2 = High risk: proceed to computed tomography

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DR. CHRISTOPHER LOGUE AND MR. FRANK NAWROCKI.


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Leaves of the manchineel tree are deep green, pointed and oval, about 2-3 inches long with a deep central vein sulcus.

# Toxicology Q&A Answer

QUESTION ON PAGE 12

## ANSWER: Manchineel tree

The manchineel tree (Hippomane mancinella, Manchineel, Tree of Death) is an aptly named tropical tree designated by the Guinness Book of World Records in 2011 as The Most Dangerous Tree — a plant whose bark is as bad as its bite.

*H. mancinella* is found widely in the Caribbean, coastal Mexico, West Africa, Puerto Rico, and some areas of Florida and the Virgin Islands. It forms dense groves primarily on beaches or in mangroves where its roots limit coastal erosion and provide nesting for birds and insects.

Plant description: The manchineel tree is an attractive tall shrub or round-topped tree that can reach 30 to 40 feet in height and grows in high-salt environments. The plant is identified by: bark that is brownish-grey, deeply furrowed, and smooth (Image 1, p. 12); leaves that are deep green, pointed, 2- to 3-inch ovate with a deep central vein sulcus; milky white sap or latex (Image 1, yellow arrows) that leaks from any cuts or breaks in the plant; and fruits that are deeply green when ripe, often clustered, walnut-sized and round, and have a sweet smell if you take a whiff (but don't do it).

### Exposure

"The manchineel is one of the most notorious of all irritant trees…".[9] Every part of this plant is extremely toxic. Not only is this plant "don't touch," it is also a "don't be near" organism. The sap is so irritating that people have sustained blistering and burns after seeking shelter under the tree from the rain by contact with the water-soluble diterpene ester-containing latex contaminating the leaf run-off or in the puddles beneath the tree; burning the wood or leaves results in ocular and pulmonary injury from the downwind exposure to the smoke and ash. The sawdust from fresh wood causes severe rhinitis and cough, and many cabinetmakers refuse to work with it.[4]

### At Risk

The most frequently manchineel-exposed people described in the literature are 1) tourists, 2) woodcutters, 3) military troops, 4) manchineel researchers.

### Toxins

Although many are listed, the most cited chemicals or compounds found in the manchineel includes diterpene esters (responsible for skin and eye irritation) and huratoxin, hippomanin A and B, and various phenolic compounds responsible for gastrointestinal (GI) and systemic toxicity. Physostigmine was initially thought to be present in the manchineel fruits, but this has not been borne out in subsequent reports.[6] An analysis of the fruits in a study of 97 cases of manchineel fruit poisoning failed to identify physostigmine.[2]

### Results of Exposure

**Skin:** Intense burning and itching begins within minutes of contact. The extent of subsequent injuries varies from "red swaths with pustulation" to bullous dermatitis.[5] Because thickness of the skin (calluses) can delay onset of symptoms, asymptomatic sap-contaminated hands can transmit the latex to other sensitive areas; Bodeau reported two men having "…severe burning pain of the penis, [followed by] … total sphacelation of the skin and mucous membrane of the preputial sac … [followed later by] … desquamation in shreds of the mucous membrane of the glans penis." This can last for weeks.[1]

**Eyes:** Immediate symptoms of lacrimation and burning pain with conjunctival irritation and lid swelling occur with transfer from hands or sweat tainted with the sap. More severe toxicity occurs with direct ocular exposure resulting in keratoconjunctivitis through direct epithelial cytotoxicity. A review article followed 19 patients with ocular injuries; 14 had both eyes affected; with corneal damage seen in most — varying from large corneal epithelial defects to superficial punctate keratitis. Most eye injuries healed completely, with only one exposure causing persistent corneal opacity.[8]

**Aerodigestive tract:** Eating the small, round, sweet-smelling green fruits is associated with severe GI effects, mucosal blistering, pharyngeal edema (requiring intubation or tracheostomy), vomiting, abdominal pain, diarrhea, and death.

**Cardiovascular:** Hypotension has been documented in animal models of exposure and bradycardia lasting up to 10 days from exposure has been documented, with one patient requiring a pacemaker.[3,7]

### Prevention

Key to prevention is broad public awareness campaigns primarily targeted at people unfamiliar with the tree (e.g., tourists) — warning signs, fences, and literature.

### Treatment

The opportunity to limit toxicity is immediately after contact to shorten the time of exposure as much as possible. The most effective acute treatment is copious irrigation with soap and water or seawater if freshwater is unavailable.

**Antidote:** There are no known antidotes.

### Historical Interest

The sap of this tree has been used to poison hunting and war darts and arrows, and the leaves were used to poison the water supply of enemies. Used as a form of torture; with victims tied to the tree. Explorer Christopher Columbus reportedly named it the "*manzanilla de la muerte*" ("little apple of death") after several of his hungry sailors suffered severe symptoms after tasting the fruits.

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ONE MORE REASON NOT TO ORDER AN X-RAY

# SOUND ADVICE

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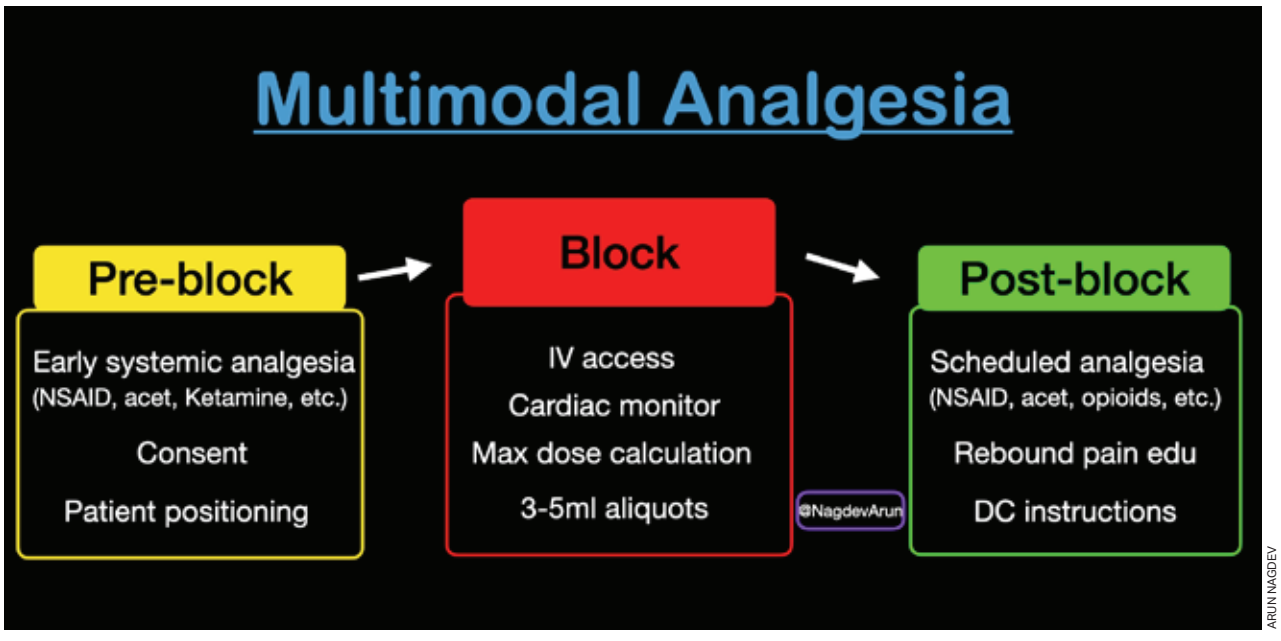
# Before, During, and After the Block

## A holistic approach to multimodal pain management in the emergency department

*by* ARUN NAGDEV, MD, DAVID MARTIN, MD, JOE STEGEMAN, MD, MBA, JOE BROWN, MD, AND ANDREW GOLDSMITH, MD, MBA



ARUN NAGDEV

Ultrasound-guided nerve blocks (UGNBs) have become an integral part of emergency medicine practice, offering targeted analgesia while reducing reliance on opioids. Yet, in the rush to master anatomy, technique, and ultrasound visualization, clinicians may overlook the broader context of pain management. A nerve block should not exist in isolation; rather, it should function as one component of a structured, multimodal pain strategy that spans from patient arrival through disposition.[1,2]

We recommend approaching every block — and the patient's overall pain control — through three deliberate phases:

- Pre-block analgesia
- Intra-procedural safe anesthetic deposition
- Post-block pain planning

Thinking about pain across these stages allows clinicians to provide safe, durable analgesia while anticipating and addressing common pitfalls at each phase.

### Pre-Block Analgesia: Foundational Pain Management

Optimal pain control begins well before the needle touches the skin. Patients in acute pain deserve early administration of systemic analgesics. When not contraindicated, acetaminophen and nonsteroidal anti-inflammatory drugs (NSAIDs) should be initiated promptly to reduce baseline discomfort and overall nociceptive input. In some cases, this early intervention may also reduce the anesthetic dose or volume required for effective blockade.

For patients with more severe pain, small doses of intravenous opioids or ketamine can improve comfort and facilitate positioning for the block. In our experience, ketamine 0.2–0.3 mg/kg diluted in 50 mL of normal saline and administered over 15 minutes is effective for reducing pain and procedure-related anxiety. This mirrors a familiar principle seen with lumbar punctures and other bedside procedures: early analgesia and anxiolysis often determine procedural success and patient satisfaction.[3,4] patients scheduled for shoulder arthroscopy received ultrasoundguided single-shot Interscalene Brachial Plexus Block preoperatively and were randomized to receive either intravenous esketamine (0.5 mg/kg bolus + 0.25 mg/ kg/h infusion).

Finally, informed consent should include a brief explanation of the block's purpose, expected duration, and potential risks. The clinician should clarify that the goal is multimodal pain control and not surgical anesthesia. This helps align expectations and reassure patients before the procedure.

### Intra-Procedural Management: Precision and Safety

During the procedure, the clinician's focus shifts to technical execution and patient safety. Patients undergoing blocks that require larger anesthetic volumes (generally >10–15 mL) or are performed near vascular structures should have intravenous access and continuous cardiac monitoring, maintained during the procedure and for approximately 30 minutes afterward.

The maximum safe anesthetic dose should be calculated in advance, particularly when using long-acting agents such as bupivacaine or ropivacaine. We recommend using an anesthetic dosing calculator or electronic health record-embedded tools to minimize dosing errors.

After skin wheal placement and needle entry, the goal is continuous visualization of the needle tip as it is advanced toward the target nerve or fascial plane. In our

**CONTINUED** *on page 22*

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## EDITOR'S NOTE

*With this article, Dr. Nagdev shares his final Sound Advice column for* ACEP Now *and his thoughts on the practice below.* ACEP Now *thanks him for his contributions.*

It has been a privilege to write about point-of-care ultrasound (POCUS) for *ACEP Now*'s **Sound Advice**, and in particular to introduce and expand the conversation around ultrasound-guided regional analgesia for emergency clinicians. In my opinion, POCUS has become a critical imaging modality for all emergency physicians and continues to grow rapidly beyond the ED into nearly every area of medicine. As the field evolves, having new authors bring fresh perspectives on how we teach, apply, and integrate POCUS is essential to the continued growth of *Sound Advice*. POCUS is the future of medicine, and I look forward to reading the outstanding work ahead in the years to come.

Thanks,
Arun

BE A MEDICAL DETECTIVE—BONE UP ON YOUR FORENSIC SKILLS

**FORENSIC FACTS**

**DR. ROZZI** is an emergency physician, medical director of the Forensic Examiner Team at WellSpan York Hospital in York, Pennsylvania, and secretary of ACEP's Forensic Section.

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# Beyond SANE

## How to Develop a Comprehensive Forensic Care Program

*by* HEATHER V. ROZZI, MD, FACEP, AND RALPH RIVIELLO, MD, MS, FACEP

Last year, you added to your busy schedule the role of your hospital's Sexual Assault Nurse Examiner (SANE) Program medical director. As your hospital also has recently become a trauma center, your department now treats many patients who are victims of violence. The department has a very active Sexual Assault Nurse Examiner (SANE) program. The emergency department (ED) nurse manager comes to you one day and asks for your help in converting the SANE program into a forensic care program. How should you proceed? What is your answer?

**Discussion:** SANE programs in the United States were first established in the mid- to late 1970s, to address inadequate or unprofessional treatment of sexual assault victims in EDs and to improve the collection of forensic evidence.[1] Since then, more than 1,000 programs have been established across the country to provide this vital service.[2] Over the past one to two decades, many hospitals have transitioned these programs into comprehensive forensic programs. These programs use SANE nurses as forensic nurse examiners to provide comprehensive care for *all* victims of violence. Typical victims treated include adult/adolescent sexual assault, domestic violence, pediatric sexual assault, child abuse and neglect, elder/vulnerable adult abuse and neglect, strangulation, assault, firearms injury, stabbings, and other violent crimes.

The backbone of these programs is SANE training. Another important part of the program is providing survivor-centered, trauma-informed care. These services complement the emergency/trauma care already provided by the hospital and provide a crucial link to the criminal justice response for victims of violence. Studies have shown the importance of a criminal justice response for victims.[3] Historically, studies have found improper injury identification, gunshot wound identification, and forensic evidence handling in the ED.[4-6]

Several recommended steps can guide the expansion from a SANE program to a comprehensive forensic program.

### Step 1: Define the Expanded Scope

This answer will help guide you along the rest of the process. Which of the previously mentioned patient types will be included in your scope of services? Once determined, you will need to create scope statements for the patient populations, examination types, and on-call/on-shift coverage expectations.

### MORE ONLINE


- **SANE Program and Development Guide. Office for Victims of Crime**
  https://www.ovcttac.gov/downloads/saneguide/sane-guide-revised-2025-formatted-508-12092025_JA.pdf
- **International Association of Forensic Nurses**
  https://www.forensicnurses.org/
- **Emergency Nurses Association and International Association of Forensic Nurses. Forensic Nursing in the Emergency Care Setting: Joint Policy Statement**
  https://www.forensicnurses.org/wp-content/uploads/2023/08/Forensic-Nursing-in-the-ECS-V9-ENA-Final.pdf

### Step 2: Update Clinical Protocols and Policies.

Your SANE policies will not be enough on their own. You will need to expand examination policies and procedures beyond sexual assault and create a policy for each category of patient. You will also need a non-sexual assault evidence collection policy and procedure. You should also create strangulation and physical assault documentation standards if those are not already a part of your forensic documentation. Consent forms will need to be updated highlighting the uniqueness of different exams and potentially different evidence pathways. You will also need to address how to manage patients who decline law enforcement involvement. Other key policies that will require development and/or revision include:

- Evidence handling and chain of custody;
- Photography standards;
- Mandatory reporting (especially for pediatric, vulnerable adult, and violent crime patients);
- Safety planning and advocacy referrals; and
- Subpoena and testimony response.

It is best practice to involve advocacy centers and crime victim centers early in the development of your center. They can provide valuable information, insight, and training of your staff, but also may provide an advocate response to the hospital when a patient presents.

### Step 3: Expand Staff Education and Certification

SANE training alone does not equal Comprehensive Forensic Examiner readiness. Nurses should maintain their SANE-A/SANE-P credentials and certifications. Additional courses required can include:

- Strangulation assessment training;
- Injury interpretation and documentation;
- Advanced forensic photography;
- Intimate partner violence (IPV) and trafficking identification;
- Pediatric-focused training;
- Elder and vulnerable adult-focused training;
- Firearms injury identification training; and
- Court testimony.

Create a list of all available courses and training required and how the nurses can complete them. Online and local/ regional courses provide the most cost-effective options. Seek grants and charitable contributions to help pay for registration and attendance fees. Most programs will cross-train experienced SANEs first.

Additionally, program leadership should create tiered competency levels and minimal educational standards for the examiners. This often includes requiring proctored exams by experienced SANEs when new populations are added.

### Step 4: Strengthen Medical–Legal Partnerships.

A comprehensive forensic program lives or dies by its relationships with community entities. Formal memoranda of understanding should be developed with law enforcement agencies, prosecutors' offices, child protective and adult protective services, advocacy organizations, crime labs, and violence intervention programs. This can become a daunting task when you provide services to multiple police jurisdictions and counties. You may want to focus on the largest and busiest ones first. Consider having a representative from each agency serve on your multidisciplinary team to meet regularly to discuss successes, challenges, and barriers. Important concepts include provision of medical-forensic examinations without police presence and management of evidence collected.

**Step 5: Upgrade Equipment and Infrastructure.** Beyond your standard SANE kits, you will need dedicated forensic cameras and secure image storage (which require their own policies and procedures), alternate evidence collection kits and supplies (clothing, swabs, weapons, projectiles, etc.), strangulation documentation tools, body maps and injury measurement tools, and secure evidence storage and handling/transfer. Supplies should be pediatric appropriate, centrally located, and mobile to go to wherever the patient is in your ED.

### KEY POINTS

- Development of a comprehensive forensic program can augment existing SANE services and assist victims of crime presenting to an emergency department.
- Identification and early involvement of key stakeholders are crucial to the program's success.
- A phased rollout of additional patient types served is important.
- Any plan to create a comprehensive forensic program should require a financial and stability assessment and plan.
- Staff will require additional education and training beyond their SANE training.

### Step 6: Revise Documentation and Electronic Medical Record (EMR) Workflows.

Comprehensive programs require different documentation than sexual assault medical forensic exam documentation. Many of the principles are the same and can be incorporated into the new forms. New EMR templates for different exam types will need to be created and should include photo upload integration. There should also be clear separation of medical versus forensic documentation.

### Step 7: Address Funding and Stability.

SANE funding is often restricted to sexual assault. A small number of states provide reimbursement for other specific examinations. How your program will be funded and sustained is key to its success. Often, blended funding streams are required (hospital support, victims of crime assistance, federal and state grants, foundation grants, and philanthropic donations). It will need to be determined whether the center should be its own cost center or rolled up into the ED/trauma center cost center. Will the staff be dedicated to the program or share work responsibilities in the ED? Keeping statistics on the patient types seen and outcomes can help when seeking outside funding. You can show your return on investment by reduced ED lengths of stay, improved prosecution outcomes, trauma-informed care metrics, and links to crucial services.

### Step 8: Change the Program Identity.

This is a crucial step. You may need to rename the program to adequately describe the work being done. You will need to reeducate the ED and trauma staff on when to call the team. Call schedules, policies, and marketing strategies will need to be updated. Finally, you will need to manage the expectations of your partners and the community.

**CONTINUED** *on page 23*

EM LITERATURE OF NOTE

# PEARLS FROM THE MEDICAL LITERATURE

**DR. RADECKI (@EMLITOFNOTE)** 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.

# "I Found Measles: Now What?"

*by* RYAN PATRICK RADECKI, MD

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Acute measles in the emergency department, once a rarity, is now a reality. This means it is time for all departments to dust off old protocols for its immediate treatment and subsequent management. The good news — and the bad — is that little has changed over the intervening decades of measles eradication. However, the quiver of effective treatments, from back in the days when universal vaccination had not yet taken root, remains fairly empty.

The first, and simplest, concern following identification of acute measles in the emergency department is isolation. The most cited basic reproduction number for measles virus is in the 12 to 18 range, although variability exists beyond that general estimate. This reproduction number represents a rough proxy for the practical infectivity of a virus, and the measles virus shows dramatically greater transmission than its common comparators.

For example, SARS-CoV-2, the world-altering scourge, carried $R_0$ estimates of generally between 2 to 4, while varicella is approximately 9, mumps and rubella around 7, and poliomyelitis around 5. Isolation in a negative-pressure room is necessary to minimize risk of transmission, accompanied by fit-tested respiratory masks such as N95 or P2.

For the vast majority of identified measles cases, nonspecific supportive care will be the only necessary treatment. For ambulatory patients not displaying any signs of dehydration, pneumonia, or encephalitis, no immediate treatment is universally indicated. The most commonly cited treatment for acute measles, if any is deemed appropriate, is vitamin A.

High-quality randomized controlled trial evidence exists regarding the benefit of vitamin A supplementation in measles, with the effect most prominently seen in patients with vitamin A deficiency. Most children and adults in the United States should not be expected to be suffering from vitamin A deficiency, in contrast to those living in resource-limited countries. Due to the beneficial effects seen, however, the American Academy of Pediatrics (AAP) and the Centers for Disease Control and Prevention (CDC) offer strong recommendations to provide vitamin A in patients being hospitalized for severe measles, regardless of suspected nutritional status.

Useful evidence to support vitamin A in non-severe measles is substantially less robust, but supplementation is unlikely to be harmful at the recommended doses. Excessive vitamin A can result in a range of toxic effects, and should therefore be limited to the recommended doses:

- 50,000 IU for infants younger than 6 months of age
- 100,000 IU for infants 6–11 months of age
- 200,000 IU for children 12 months of age and older

An initial dose can be provided immediately upon diagnosis, and the treatment course concludes with a second dose repeated the following day.

Cod liver oil supplementation should be discouraged in lieu of the recommended dosing regimen from the AAP and CDC. Although one tablespoon of cod liver oil ought to contain 13,600 IU of vitamin A, the exact amount may vary by preparation, and continued use may contribute to aforementioned vitamin A toxicity.

No additional validated treatments for measles exist, neither antibiotics nor antivirals are presently shown to be useful for the outpatient management of measles. In hospitalized patients, ribavirin can be considered due to its demonstrated effects *in vitro,* and from case report-level evidence supporting its use in subacute sclerosing panencephalitis. However, ribavirin is only available under the auspices of an emergency investigational new drug (eIND) application, and not a consideration for use in the emergency department.

Secondary bacterial infections in a patient already suffering from measles should be treated when identified, but prophylaxis is not appropriate. A 2013 Cochrane review noted beneficial effects seen in acute measles patients treated with antibiotics, but cautioned that the vast majority of included randomized controlled trials published between 1939 and 1967. Treatment regimens that include clarithromycin or inhaled budesonide have no evidence backing their utility and should not be used.

The other acute consideration for the emergency department following identification of measles is a determination of whether any post-exposure prophylaxis (PEP) is indicated. Older adults are typically considered immune to measles as a result of exposure prior to eradication of the virus. In the United States, that includes all adults born before 1957, but may include younger adults in other countries. Otherwise, the vast majority of children and adults will be immune due to having received two doses of a measles-containing vaccine.

The mainstays of post-exposure prophylaxis in patients not immune to measles are immune globulin and the measles-mumps-rubella (MMR) vaccine. For infants younger than 6 months, the recommended post-exposure prophylaxis is intramuscular immune globulin at 0.5 mL/kg (maximum dose 15 mL).

For older infants and children, if treated within 72 hours of exposure, the MMR vaccine can be administered. If the exposure history falls into the four- to-six-day window, older infants can be considered for immune globulin, but children typically are not. Once a child or adult has received their first dose of MMR, they do not need to quarantine. In contrast, those who are not immune or have received immune globulin should be instructed to quarantine. Recommended quarantine duration is 21 days from exposure in those who have not received immune globulin, and 28 days in those who do. Edge cases occur in children and adults who have had only one dose of the vaccine, and specific management can be found with the AAP or CDC.

Severely immunocompromised and non-immune pregnant patients present a slightly different pathway for PEP. These patients require a dose of intravenous immune globulin (400 mg/kg of body weight), rather than intramuscular dosing. The immunocompromised and non-immune pregnant patients can receive PEP if treated within 6 days of exposure. The MMR vaccine is not provided to these patients as part of their acute treatment.

The return of measles and other vaccine-preventable illnesses represents avoidable suffering and risk in the emergency department. Regardless, treatment considerations for the affected individual are not complex and primarily supportive. Despite enthusiasm for aspirational alternatives, unproven therapies are more likely to be harmful than beneficial. Long-standing trusted reference sources should take precedence over those of more recent provenance.

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practice, small volumes of normal saline are frequently used for hydrolocation (to confirm needle tip position) and hydrodissection (to open appropriate fascial planes). Once the ideal location is achieved, anesthetic should be injected in 3–5 mL aliquots, with pauses between injections to confirm negative aspiration and reassess the patient for early signs of local anesthetic systemic toxicity. Maintaining needle tip visualization under ultrasound guidance remains the most effective method to prevent inadvertent intravascular or intraneural injection.[5]

For higher-volume blocks — such as the serratus anterior plane block or erector spinae plane block — additional time between aliquots is warranted. Clinicians should monitor closely for changes in heart rate, blood pressure, or mental status. In our experience, slowing the injection process not only improves safety but also reduces operator stress during these procedures.

## Post-Block Pain Planning: Completing the Arc

The post-block phase is often underappreciated, yet it is critical to long-term analgesic success. As the block wears off, patients may experience abrupt and severe pain—commonly referred to as rebound pain. Although the precise mechanism and evidence base remain incompletely defined, this phenomenon is well recognized and should be anticipated whenever a single-injection nerve block is performed.

Clinicians should establish a clear post-block medication strategy for all patients receiving single-shot UGNBs. We recommend a scheduled multimodal analgesia regimen (for discharged and admitted patients) for the first 24 hours following the block. In our experience, "as needed" dosing should be discouraged, because patients frequently decline analgesics while the block is effective, and request medication only after the block is starting to wear off. The resultant increased pain can be extremely distressing and very difficult to control.

Patient and staff education is essential. A multimodal regimen incorporating NSAIDs, acetaminophen, and, when appropriate, short-course opioids can significantly reduce the severity of rebound pain. After the initial 24-hour period, patients can taper medications as tolerated. Clear written instructions and discharge counseling should accompany all outpatient blocks.[6]

Although continuous peripheral nerve catheters may mitigate rebound pain, they are not commonly used in the ED setting due to logistical and follow-up limitations. As such, thoughtful post-block planning remains essential for single-shot techniques.

Implementing a holistic approach to nerve blocks does not require a complex protocol—it requires a mindset. Each block should be viewed as one pillar of a broader, patient-centered analgesic strategy. In practice, this means:

- Initiating multimodal analgesia early, before performing the UGNB
- Performing the block safely, with appropriate dosing and continuous ultrasound visualization
- Planning proactively for rebound pain, with a documented and communicated post-block regimen

As UGNBs become increasingly routine in emergency care, this approach can help standardize practice and improve pain outcomes for patients with acute injuries.

## Summary: The Block Is Just the Beginning

Ultrasound-guided nerve blocks are among the most powerful tools available for acute pain management in the emergency department. However, procedural expertise alone is insufficient. Developing a comprehensive analgesic plan, from early systemic pain control to precise block performance to intentional post-block care, enhances both block efficacy and the patient experience. By thinking holistically about the lifecycle of a nerve block, we move beyond procedural success toward comprehensive, patient-centered pain care. The result is safer, more compassionate, and more durable analgesia for the patients we serve.

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## FORENSIC FACTS | CONTINUED FROM PAGE 20

### Step 9: Plan Your Rollout.

Successful programs rarely flip a switch. A carefully planned phased approach is essential. Many programs first add strangulation and physical assault, then IPV and trafficking, and finally, pediatric and elder/ vulnerable adult services. Each phase will require training, protocol development and updates, partner notification, and go-live evaluation.

### Step 10: Quality Assurance and Outcomes Tracking.

Program scrutiny is important and can be a key to its success. Data on case types and volumes, evidence acceptance rates and outcomes, and legal outcomes should be tracked. Response metrics and patient data should be tracked as well.

Additionally, the comprehensive forensic program should build upon the existing peer review and continuous quality improvement (CQI) frameworks. Peer review and CQI standards should be created for each patient type.

In summary, a SANE program focuses on one crime while a comprehensive forensic program focuses on forensic excellence across many trauma types. It can be a valuable service the hospital provides to patients and the community but must be well planned and involve key stakeholders.

### Conclusion

You and your nurse manager embarked on the journey and followed the steps outlined here and consulted other programs in the country. A phased program outline was developed, and within six months, the program expanded to care for strangulation survivors, with a plan to expand to all crime victims over the next year.

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