EQUITY EQUATION

Treating the Root Cause

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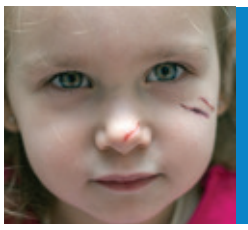

KIDS KORNER

Suture Strength & Topical Agents

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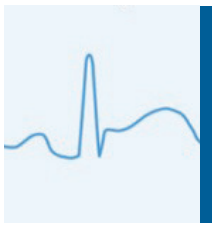

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Acute Pericarditis: A Diagnosis of Exclusion

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How the Scene Unfolded in Uvalde

by JORDAN GRANTHAM

When Gilberto Arbelaez, MD, arrived for his shift at Uvalde Memorial Hospital on May 24, he hit the ground running as usual. Though Uvalde, Texas only has 15,000 residents, Memorial has an emergency department that stays busy. That morning, Dr. Arbelaez had already managed a flash pulmonary edema patient who required intubation and diagnosed a thoracic aortic

CONTINUED *on page 6*

Wyoming has a Different Kind of Bounceback Problem

Their student loan contracts require them to work in Wyoming, but there aren't enough EM jobs to go around

Makenzie Bartsch, MD, was entering her third year of her emergency medicine residency in the summer of 2021 when her medical school leaders called a meeting with her and the other emergency medicine residents from Wyoming who had been part of the WWAMI Medical Education Program, the UW School of Medicine's multi-state medical education program. These residents were ready to find employment back in their home state of Wyoming—a requirement of the contract they signed with WWAMI on their first day of medical school—but the program directors had bad news for them: There were no emergency medicine jobs open in Wyoming. And if they couldn't find employment in Wyoming within a year of finishing residency, they would be on the hook for the loans provided by the state to pay for their medical

CONTINUED *on page 8*

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NEWS FROM THE COLLEGE

UPDATES AND ALERTS FROM ACEP

Annals of Emergency Medicine Announces New Editor in Chief

ACEP is pleased to announce that Donald M. Yealy, MD, FACEP, is the new editor in chief for *Annals of Emergency Medicine*. Dr. Yealy will oversee the largest and most frequently cited peer-reviewed journal in emergency medicine. He brings decades of expertise in research and scientific process, editing, and communications. "I am incredibly grateful for the opportunity to lead this distinguished publication," said Dr. Yealy. "Trusted medical research is the foundation for innovation that can change the practice of emergency medicine and save lives. I look forward to working with authors, editors, and readers to guide the data and dialogue that will propel emergency medicine forward for years to come." Dr. Yealy takes over following the retirement of Michael L. Callaham, MD, who held the role for 20 years.


Donald M. Yealy, MD, FACEP

New Diversity and Inclusion Committee Has its First Chair

At the close of 2021, the Board of Directors created a new ACEP committee to prioritize and address issues related to equity and inclusion. Ugo Ezenkwele, MD, FACEP, is the first chair of the ACEP Diversity, Equity and Inclusion Committee. Dr. Ezenkwele is chief of emergency medicine at Mount Sinai Queens, vice chair for Diversity and Inclusion and associate professor of clinical emergency medicine at Icahn Mount Sinai School of Medicine. He was the president of the Diversity Interest Group of the Society of Academic Emergency Medicine (SAEM) and later became the vice chairman of the Academy of Diversity & Inclusion in Emergency Medicine of SAEM. Recently, he was named to the Crains New York Business Notable Black Leaders and Executives for 2021. He is an ACEP councillor representing the Diversity, Inclusion and Health Equity Section and an oral board examiner for the American Board of Emergency Medicine (ABEM).


Ugo Ezenkwele, MD, FACEP

Urge Your Reps to Support New ED Violence Legislation

ACEP supports the Safety from Violence for Healthcare Employees (SAVE) Act that was introduced in the House of Representatives on June 7, 2022. This bipartisan bill would help curb violence in the emergency department and criminalize assault or intimidation against health workers. "We continue to hear terrifying and disheartening stories from health care workers who have been assaulted on the job," said ACEP President Gillian Schmitz, MD, FACEP. "Just the other day, our worst nightmares were realized once again when two physicians, an employee, and a patient were killed in a medical office. Physical and verbal attacks are not tolerated in any other workplace—they should not be allowed in a health care setting." Learn more about ACEP's advocacy efforts related to workplace safety on p. 4.

Urge your representatives to co-sponsor and support the Safety from Violence for Healthcare Employees (SAVE) Act (H.R. 7961) by visiting ACEP's Advocacy Action Center at acep.org/actioncenter.

Still Time to Save $100 on ACEP22 Registration

Connect with your peers at the world's largest and most prestigious emergency medicine conference, ACEP22. Save $100 on ACEP22 registration by using promo code GOLDENCITY before Aug. 25.

Conference Empowers You to be Your Own Boss

The emergency medicine paradigm is changing. More entrepreneurial emergency physicians are creating new, independent, and small groups, with policies and practices that matter most to them. ACEP's new Independent EM Group Master Class—called the Indy Class for short—will teach you how to succeed in group ownership and empower you to take control of your own destiny. The conference is Aug. 23–25 at ACEP headquarters in Irving, Texas. Learn more at acep.org/indyclass.

ACEP Now Welcomes New Resident Fellow

Sophia Görgens, MD, is the newest member of *ACEP Now*'s editorial team. As the 2022–23 Resident Fellow, Dr. Görgens will oversee the Resident Voice column while contributing the resident perspective to the editorial board. Dr. Görgens is part of the Zucker Emergency Medicine Residency at North Shore University Hospital and Long Island Jewish Medical Center. Her work has been published in the *Journal of the American Medical Association*, *Annals of Emergency Medicine*, and she is the newest guest resident editor for the *AMA Journal of Ethics*.


Sophia Görgens, MD

New National Suicide Prevention Hotline is Active

On July 16, 9-8-8 became the new direct, three-digit line to trained National Suicide Prevention Lifeline counselors, opening the door for millions of Americans to seek help. When people call or text 9-8-8, they will be connected to trained counselors through the National Suicide Prevention Lifeline's network who will listen and provide support. To better understand how this change affects emergency medicine, visit acep.org/988-lifeline for a comprehensive list of resources.

ACEP4U: Advocating for a Safer Workplace

PUSHING FORWARD ON STRATEGIC EFFORTS TO PREVENT WORKPLACE VIOLENCE IN THE EMERGENCY DEPARTMENT

by JORDAN GRANTHAM

As part of the Career Fulfillment pillar of ACEP's new strategic plan (acep.org/strategicplan), the College is committed to aggressively solving challenges and supporting well workplaces for all emergency physicians using evidence-driven tactics. There are many factors that contribute toward a "well workplace," but one of the most important is that emergency physicians need to be protected from violence in the emergency department (ED).

When it comes to the increase in ED and hospital violence, there is no one-size-fits-all solution. ACEP has been using a multipronged approach to combat this issue through federal advocacy, regulatory changes, and public awareness campaigns. The College believes employers and hospitals should develop workplace-violence prevention and response procedures that address the needs of their particular facilities, staff, contractors, and communities, as those needs and resources may vary significantly. ACEP is currently lobbying hard in Congress for two important workplace-violence bills, but let's go back to a few years ago when ACEP started collecting the evidence needed to confirm the problem.

ALEX MURPHY/ACEP

Jennifer Casaletto, MD, FACEP, spoke during ACEP's and ENA's May 4 press event at Capitol Hill to raise public awareness and push the Senate to move forward with the Workplace Violence Prevention for Health Care and Social Service Workers Act.

Collecting Evidence

In September 2018, ACEP conducted a poll of its members to illustrate the breadth and impact of workplace violence in the ED. The findings were powerful: Almost 50 percent of emergency physicians had been physically assaulted at work and more than 60 percent of those incidents had occurred in the year before the survey. Nearly seven out of 10 respondents said their hospitals reported the incidents, but only three percent pressed charges. And violence isn't limited to the clinicians either; more than 50 percent said that patients had been physically harmed during an incident.

Since the poll's release in October 2018, our data has been mentioned nearly 700 times across a broad variety of media outlets, including *CNN*, *The Washington Post*, *USA Today*, *Huffington Post*, *U.S. News & World Report*, and *Kaiser Health News*. The poll was also directly cited in the "Findings" section of the ACEP-supported Workplace Violence Prevention for Health Care and Social Service Workers Act (H.R. 1195), federal legislation introduced by Representative Joe Courtney (D-CT) to require the Occupational Safety and Health Administration (OSHA) to issue an enforceable workplace violence prevention standard for health care and social service employers.

Joining Forces

After the poll results were in, ACEP joined forces with the Emergency Nurses Association (ENA) to launch "No Silence on ED Violence," a campaign aiming to support, empower and protect ED personnel by raising awareness of the serious dangers health workers face every day, and by generating action among stakeholders and policymakers to ensure a violence-free workplace for emergency nurses and physicians. This partnership kicked off in October 2018 and is still going (stopEDviolence.org).

At the close of ACEP's 2022 Leadership & Advocacy Conference (LAC22) in early May, ACEP and ENA cohosted a press conference on Capitol Hill during which emergency physicians and nurses shared their personal experiences to raise awareness about the frequency of attacks within the emergency department and to push the Senate to move forward with the Workplace Violence Prevention for Health Care and Social Service Workers Act.

"The pandemic continues to show everyone how vital emergency care can be, but it has only exacerbated many of the factors that contribute to violence in the emergency department," said ACEP President Gillian Schmitz, MD, FACEP. "The health care professionals in our nation's emergency departments are fully dedicated to caring for patients and saving lives. Now Congress has a critical opportunity to pass legislation to protect each of them from violent attacks on the job."

Identifying Challenges

In 2020, ACEP was part of an action team sponsored by the National Quality Forum that included 27 experts and recognized leaders from the private and public sector committed to improving the safety of the health care workforce. The team developed an issue brief that includes specific set of priority challenges for policymakers and other stakeholders to address. *See sidebar for the full list.*

Reform Through Regulation

On Jan. 1, 2022, The Joint Commission (TJC) started enforcing new workplace violence prevention requirements to guide hospitals in developing strong workplace-violence prevention programs. ACEP helped develop these new requirements by participating in an expert workgroup and supplying comments. Here's an overview of the new standards:

- **Workplace Assessment:** Hospitals must conduct an annual worksite analysis related to their workplace violence prevention program, and based upon findings, leadership must take action to mitigate or resolve the workplace violence safety and security risks.
- **Monitoring:** Hospitals must establish processes for continually monitoring, internally reporting, and investigating workplace hazards, such as safety and security incidents involving patients, staff, or others within its facilities, including those related to workplace violence.

Priority Challenges Identified by the National Quality Partners Action Team to Prevent Healthcare Workplace Violence

- Limited integration between patient safety and worker safety culture to support reporting, collecting data, and intervening against violence with action-oriented strategies;
- Inconsistent definitions and standards for what is considered violence and what should be reported complicate reporting processes, data-collection, and data analysis;
- Limited reporting and data collection infrastructure make reporting harder, inhibiting the ability for data analytics to drive prompt interventions and meaningful systems changes;
- Lack of understanding or awareness of health care workplace-violence prevalence, reporting infrastructure, and interventions from employees, patients, senior leaders, board members, and external stakeholders complicates and reduces a health care workplace safety program's success;
- Competing priorities limit the time, resources, and funding an organization can allocate to advocating for change, creating education programs, and supporting initiatives that protect health care workers;
- Insufficient funding and research at the national and organizational level for evidence-based practices, training, innovative interventions, and follow-up activities; and,
- Limited mechanisms to support accountability for following strategies, policies, and legislation that discourage violence.

- **Education and Training:** Hospitals must provide training, education, and resources to leadership, staff, and licensed practitioners to address prevention, recognition, response, and reporting of workplace violence, including training in de-escalation, nonphysical intervention skills, physical intervention techniques, and response to emergency incidents.
- **Response Plans:** Hospital response plans will specify policies and procedures to prevent and respond to workplace violence, processes to report incidents to analyze incidents and trends, and processes for follow-up and support to affected victims and witnesses.

ACEP is also working with the U.S. Occupational Safety and Health Administration (OSHA) to seek input from emergency physicians to create federal workplace standards and protections for health care workers. However, OSHA's regulatory process has been put on hold during the COVID-19 public health emergency.

Lobbying for Legislation

Protecting emergency physicians from ED violence has been a core component of ACEP's federal advocacy efforts for years and was a priority issue during LAC22 in early May. Hundreds of emergency physicians shared their stories about encountering ED violence with their legislators and asked them to establish important, common sense procedures to protect emergency physicians, health care workers, and patients from violence in the health care workplace.

ACEP is lobbying for two bills on the table right now that seek to prevent workplace violence, working closely with the sponsors throughout:

H.R. 1195/S. 4182: Workplace Violence Prevention for Health Care and Social Service Workers Act

Senate version introduced by Sen. Tammy Baldwin (D-WI) on May 11, 2022, 27 cosponsors as of June 17, 2022

This bipartisan effort takes critical steps to address ED violence by requiring OSHA to issue enforceable standards to ensure health care and social services workplaces implement violence prevention, tracking, and response systems.

The House of Representatives version (H.R.1195), which ACEP played a critical role in shaping so that its protections extended to emergency physicians who are in a group rather than directly employed by the hospital, passed in a bipartisan 254-166 vote in the House on April 16, 2021. The Senate version of the bill (S. 4182) was introduced just after LAC22 and has 27 cosponsors. ACEP is urging the Senate to follow the House and swiftly consider and pass this important legislation.

H.R. 7961: Safety from Violence for Healthcare Employees (SAVE) Act

Introduced by Reps. Madeleine Dean (D-PA) and Larry Bucshon, MD (R-IN) on June 7, 2022, four additional cosponsors as of June 17, 2022.

This new, bipartisan legislation takes critical steps to address emergency department violence by establishing legal penalties for individuals who knowingly and intentionally assault or intimidate health care workers, and creates grants to help hospitals and medical facilities establish and improve workplace safety, security, and violence prevention efforts.

This legislation is modeled after protections that currently exist for aircraft and airport workers, such as flight crews and attendants, whose exposure to violence and assault from unruly passengers has been extensively and publicly documented in recent years.

Your Voice Matters

Want to push these workplace-violence bills forward? Urge your legislators to cosponsor these bills and thank them for their support. Use ACEP's Advocacy Action Center at acep.org/actioncenter for a simple way to contact your legislators and ask for their support of these critical bills. You can also call their offices and share your personal stories from the ED. Your firsthand experience with workplace violence is especially compelling and helps legislators put a face to the concern.

STRATEGIES FOR A WELL WORKPLACE

Each month, ACEP4U will highlight and expand on a specific pillar of ACEP's new strategic plan. This month, we focus on the second strategic pillar—Career Fulfillment.

More than 100 ACEP members were involved in developing ACEP's new strategic plan (acep.org/strategicplan) to guide the College for the next three to five years. Sue Nedza, MD, MBA, FACEP, was part of the planning group that developed the Career Fulfillment pillar of the plan.

"To be a caring health care professional or caring emergency physician, you need to be cared for," said Dr. Nedza. "That's really what career fulfillment is all about."

The Career Fulfillment portion of the strategic plan features four key strategies to address your career frustrations and help you seek avenues for greater job satisfaction:

1. Develop and implement an ongoing system for identifying and addressing the issues that hinder wellness and career satisfaction for emergency physicians.
2. Aggressively solve challenges and support well workplaces for all emergency physicians using evidence-driven tactics.
3. Provide tools and resources members can use to advocate for themselves and implement these action plans locally.
4. Create and communicate a map to educate and assist emergency physicians in finding career fulfilling opportunities based on different interests or at different life stages.

Visit acep.org/career-fulfillment to see more on this pillar of the strategic plan.

dissection. He was on the phone with specialists in San Antonio, trying to transfer these patients out for further care, when he heard the security guard's nearby radio: "Gun shots fired."

Then, hospital staffers started getting phone calls and texts as word spread through the small town: *The shooting is at the elementary school. Someone who was shot in the face is being flown out to San Antonio. This is real.*

The Response

Dr. Arbelaez and his team kicked into preparation mode. The hospital floors were being refinished that morning, so the emergency department had been temporarily relocated to a different, smaller area of the hospital. The flooring crew was dismissed, and everyone worked urgently to return the emergency department to its optimal setup. Some of the staffers worked to quickly discharge nonemergent patients, as the rest of the team gathered extra beds, intubation trays, chest tubes, and tourniquets.

And then, they waited. "It seemed like it took forever," Dr. Arbelaez said. He felt a sinking dread as the minutes of trauma's golden hour ticked away, the emergency department still empty. Never before had he wished for *more* patients in his emergency department. Finally, they got the call from EMS that their first patient was en route.

"Everybody was gowned and gloved. Lines were primed, everything was ready," Dr. Arbelaez said. "We were waiting for the ambulance to arrive in the emergency entrance when all of the sudden, we heard shouting from the lobby. For some reason the ambulances decided to bring the patients through the main doors."

They turned in unison and looked down the hallway to see two young girls being pushed toward them on gurneys. Dr. Arbelaez and the general surgeon received the first child who was in dire condition. "[The surgeon] did a cut to try a pericardial window, and there was no bleeding from her skin whatsoever," Dr. Arbelaez said. "She was completely exsanguinated by the time she got to us."

Next came a child shot in the shoulder and buttocks. Then a teacher with gunshot wounds in the arm, chest, and back. Then another young girl who had been shot in her chest, arm, and hand. A boy arrived, already covered in a white sheet. He was taken to the only space available for the deceased—the hospital chapel.

Dr. Arbelaez evaluated a young girl who had taken a ricocheting bullet to the face. It entered her right nostril and lodged in the upper left portion of her nose. She wasn't bleeding, wasn't even crying, and had only minimal associated fractures. For Dr. Arbelaez, viewing her scan was one of the few moments of relief during a day of horror. He shook his head and thought back to viewing her scan: "Millimeters in another direction and it could have killed her."

Dr. Arbelaez, the only emergency physician on staff that day, and his small emergency care team of one physician assistant and a few nurses were joined by family physicians and a pediatrician, who took the lower acuity patients, and a radiologist with a portable X-ray machine who helped read scans as quickly as possible. Off-shift staff who heard the news dropped everything to come help at the hospital.

The Southwest Texas Regional Advisory Council (STRAC), designated by the Texas Department of State Health Services (DSHS) to develop, implement, and maintain the regional trauma and emergency health care system for more than 26,000 square miles in southwest Texas, helped Uvalde Memorial coordinate transfers of patients to associated hospitals in San Antonio, including University Hospital, San Antonio Military Medical Center, and Methodist Children's Hospital.

GILBERTO ALBERAEZ

Gilberto "Gil" Arbelaez, MD, was the only emergency physician on shift at Uvalde Memorial Hospital the day of the school shooting.

> "I just don't know why we can't fix this problem. We're the most advanced country in the world, and we can't get out of this hole."

As they worked, the members of the medical team—some of whom had children and grandchildren at the school—were hearing bits and pieces of information: *The shooting has ceased. No, shots are still being fired. Kids are calling for help on cell phones. They're pulling them out of windows. Kids are running away barefoot because they were making paper maché shoes* ... The uncertainty was excruciating. Dr. Arbelaez could see his colleagues had tears in their eyes, but they stayed focused. "They never lost their cool," he said. "They never complained. Everyone just kept going."

Dr. Arbelaez has a five-year old daughter, and he kept imagining himself in the same situation as the Robb Elementary parents. He clicked into an "emotionless" state to cope with the horror of the situation and to continue providing his best care to the victims. "I'm not sure if that's the best way to put it, but I felt if I put any kind of emotion into it, I'd just be frozen and not be able to do what I'm supposed to do."

As the pace began to slow and the health care professionals finally were able to take a deep breath, the emotions came in waves. It wasn't until 6 p.m. when Dr. Arbelaez was dictating the charts for the 20 victims they received, that the gravity of what he had witnessed began to sink in. "I was like, my God, look at all these bullet wounds and lacerations and mangled arms and mangled hands," he recalled. He kept flashing back to that moment in the hallway when they turned around to see the first child being rushed through the lobby by EMS, but she was already gone.

At the end of their shift, the medical team gathered outside the ambulance bay to talk about what they had just been through together. They spent 10 minutes talking through the scene, the preparation, and their response. Team members shared how they were feeling and expressed gratitude for every member of the team. They hugged and cried and had a moment of silence for the victims. Taking a moment to pause and reflect "was helpful for everyone," Dr. Arbelaez said.

The Aftermath

In the days that followed, Dr. Arbelaez worked his string of day shifts as planned. He felt staying busy was his best option. "Very few people outside of work understand what we go through," he explained. He said it was therapeutic to be around his colleagues who were there that day. While they lean on one another as needed, Dr. Arbelaez and his coworkers are also receiving counseling to help them process and cope.

In addition to helping coordinate hospital transfers during the initial crisis, STRAC sent mental health professionals to help staff and local first responders process their trauma. The organization deployed extra health care workers to Uvalde in the weeks after the tragedy to relieve the usual emergency department (ED) team members who needed to rest and recharge.

Uvalde is a close-knit community where "everyone has only two degrees of separation," Dr. Arbelaez said. And if everyone is connected, everyone is sharing this pain. He thinks it's too soon to know how much this trauma will impact those involved, but he knows the anguish is acute and widespread.

"We've seen multiple parents coming in with anxiety," he said. "It sort of relives everything again, right? Because then you put a face to the parents who were searching for their kiddo. They're anxious and distraught and there's nothing, *nothing* I can say or do to help ease their pain and grief."

For his part, Dr. Arbelaez sometimes wakes up in the middle of the night, his mind racing through different aspects of the tragedy.

He thinks about the stoic looks on the kids' faces as he took care of them that day. "These kids did not cry at all—the kids who got shot," he said. "They came in scared, but I didn't see a single tear in those kids, not a single one."

He thinks about how his training prepared him for this day. Dr. Arbelaez is grateful that he had mass casualty training during his emergency medicine residency at the University of Connecticut. "I had a moment after all of this where I thought, 'Imagine if I had not trained at a Level I trauma center?' I'm just glad I had the tools and the staff to be able to save a couple lives that otherwise wouldn't have been saved."

He thinks about the way the Uvalde Memorial ED staff responded to the shooting. "[That hospital] has one of the most efficient and cohesive teams I've ever worked with," he said. His team was ready and waiting, but what if they didn't have to wait so long? Could they have saved more lives?

He thinks about school shootings. He was in high school when Columbine happened. He was an emergency medicine resident in Connecticut when 26 people were killed at Sandy Hook Elementary. And now this. "It feels like no kiddo is safe," he said.

And Dr. Arbelaez thinks about his own child. Her safety, her future. He remembers how the first two victims reminded him so much of her.

"We [emergency physicians] like to fix things ... it's just kind of the way we've been trained and sort of our personalities," he said. "I just don't know why we can't fix this problem. We're the most advanced country in the world, and we can't get out of this hole."

Board Blog Outlines ACEP's Stance on Firearm Injury Prevention

After the string of recent shootings, ACEP received questions from members about the College's stance on firearm violence and injury prevention, and political support of candidates related to this issue. As part of ACEP's ongoing commitment to transparency, we want to reaffirm the College's position around firearm safety, and injury prevention.

In a recent Board blog, President-elect Chris Kang, MD, FACEP, covers the following frequently asked questions:

- What's covered in ACEP's Policy Statement on Firearm Safety and Injury Prevention?
- Firearm violence: Is this ACEP's lane?
- What about the politics surrounding firearm-injury prevention?
- Does ACEP give to candidates who are supported by the NRA or have voted down firearm safety legislation?
- What kind of firearm-safety and injury-prevention legislation does ACEP support?

ACEP represents nearly 40,000 emergency physicians whose views span the political spectrum. ACEP's positions have long supported legislation, regulations, research, and policies that promote public health and delivery of better emergency care. As stated in ACEP's new strategic plan, the College is committed to tackling tough issues and updating you on those actions through open, two-way communication. Read Dr. Kang's full blog at www.acep.org/stance-firearm-injury-prevention.

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Simulating the Rural Emergency Physician

How to improve communication, efficiency, confidence, and quality

by DOMINIC PAPPAS, MD

The landscape of medical education is evolving. Medical schools are transitioning from full days of lectures and printed copies of Harrison's to the new age of small group, peer-directed learning with online texts and video/image-based learning. The same goes for residency training. One facet of this adaptation of our learning is the increasing use of simulation.

Learning Through Simulation

From its early origins in 1968 with Harvey, a cardiology patient simulator presented by Dr. Michael Gordon from the University of Miami Medical School, the continued advances in technology have led to simulation training becoming a preferred method of learning. In various specialties of medicine, simulation has been shown to be equally, if not more effective, compared to live scenarios.[1–3] Learning through simulation has many advantages including enhancing patient safety, exposing trainees to otherwise rare medical pathology, as well as the ability to manipulate multiple variables simultaneously thereby enhancing the complexity of cases with which trainees are presented.[4] Most importantly, simulation provides unlimited opportunity for repetition and pattern recognition, a crucial element in emergency medicine training.

Outside of residency, simulation training has yet to gain a foothold. There is a belief that medical centers in large urban areas are the nucleus of the medical field, where the most cutting-edge medical care is being delivered. This often implies that rural hospitals or freestanding emergency departments are lagging in the quality or type of care they provide. While practicing physicians in urban environments likely get enough exposure to maintain their procedural and clinical skills, those practicing in rural environments may have less opportunity. On average, rural emergency departments, as compared to urban ones, have fewer overall patients per hour, leading to fewer critically ill patients, less exposure to rare pathology, and less trauma resuscitation.[5] Rural emergency medicine might demonstrate the greatest benefit for routine simulation training. As an adjunct to daily practice, simulation allows physicians to keep their skills sharp and prepared for live scenarios. Beyond just the individual emergency physician, simulation can be used to sharpen the dynamics within the physician-led medical team. Running a medical resuscitation or multi-patient trauma are some of the highest stress environments a medical team will face.

Simulation as a Method of Improved Care

Through simulation and subsequent analysis/reflection, staff can identify areas to improve communication, efficiency, and confidence, thus leading to improved quality of care. While most simulation centers are in urban areas, the technological advances have allowed development of less sophisticated mobile simulation units. Such units have increased the extent to which simulation training can be utilized. Research from Canada showed the use of these mobile simulation units has been well received by emergency physicians.[6] While this shows progress, opportunities for simulation in rural settings are fewer and farther between compared to those in urban institutions, emphasizing the lack of supply.[6]

The growing field of simulation training presents an opportunity to broaden the scope of medical education beyond residency and outside the typical academic setting. It can serve as a medium to connect practicing rural physicians with the data and tools of the robust urban academic centers and enable the same opportunity to improve medical care. Furthermore, the discrepancy between supply and demand regarding simulation training in rural emergency departments highlights future career opportunities within the field of emergency medicine.

DR. PAPPAS is a PGY3 emergency medicine resident at Maricopa Medical Center in Phoenix, Arizona, with interests in simulation and rural medicine.

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school education, plus additional financial penalties. It was an unexpected sucker punch to their future prospects.

Emergency medicine workforce issues play out across the country in a variety of ways, but the state of Wyoming has unique circumstances. It's part of the WWAMI program, a partnership with the University of Washington to supply the states involved—Wyoming, Alaska, Montana, and Idaho—with a guaranteed physician workforce. (The WWAMI acronym stands for all the states involved.) Due to the scarcity of medical schools in these states, legislators partnered with the state of Washington and the University of Washington to allot a specific number of the medical school's seats to each state.

Wyoming receives 20 seats per year and those spots are funded by the state. Students from Wyoming in the WWAMI program sign contracts requiring them to return to work in their home state within one year of completing their training. If they work in Wyoming for three years, the money that the state paid on their behalf to the University of Washington (estimated at approximately $240,000) will be forgiven. Once their training is completed, Wyoming WWAMI-funded physicians get a 12-month grace period to find a job before their contracts enter repayment status, with eight percent interest accruing during those 12 months.

Wyoming native Carol Wright Becker, MD, FACEP, went to medical school through the WWAMI program and was working in different emergency departments in the state when she started precepting for WWAMI. As Dr. Wright Becker got more involved in the educational side of WWAMI, she was keeping an eye on what was happening at the national level. She was serving as president of the Wyoming Chapter of ACEP in early 2021 when the results of the Emergency Medicine Physician Workforce Report were released, projecting an oversupply of emergency physicians by the year 2030. (Visit acep.org/workforce to view the report.) Dr. Bartsch was actually one of the first medical students Dr. Wright Becker mentored as a preceptor.

The potential implications of the national workforce report hit home locally when Dr. Wright Becker was asked to help another WWAMI-funded emergency physician find a job in summer 2021, a couple of months after the workforce report results were made public. Finding work as an emergency physician in Wyoming had never been an issue before, Dr. Wright Becker explained, so she was confident this young physician could find employment in emergency medicine. "I was hired under critical staffing shortages," she remembered. "Wyoming never has enough physicians."

It was the same story told to Dr. Bartsch and her fellow medical school classmates. Three years ago, Dr. Bartsch said they were consistently assured that Wyoming was "really hurting for doctors" and they'd "be able to work in any town they wanted."

But by summer 2021, the pandemic had changed the landscape in Wyoming. In a state used to ongoing physician shortages, there were suddenly no emergency medicine jobs to be found.

Perhaps the social distancing of the pandemic led emergency physicians to see the appeal of working in wide-open Wyoming with fresh eyes. Maybe those who were planning to retire felt so essential during the pandemic that they delayed their end date. It's likely that the hospitals and facilities that desperately needed more staff during pandemic peaks brought in physicians from neighboring states as a temporary measure, and they ended up staying. Whatever the contributing causes, the end result was that for the first time ever, there was no urgent need for more emergency physicians in Wyoming.

ACEP

Sen. Barraso and Dr. Wright Becker

Wyoming is not immune to scope-of-practice issues, either. Some of the acute care positions that could open up for emergency physicians are being filled by family physicians who are generally paid less. Historically, Wyoming WWAMI's main goal was to fill primary care positions, but many WWAMI students are not going into that specialty. For the Wyoming students currently in WWAMI residency, 10 are pursuing emergency medicine—that's tied with anesthesiology for second-highest total for any specialty. (Internal medicine is first with 20 residents.)

Dr. Bartsch and the other emergency physicians coming out of the WWAMI program who wanted desperately to work in Wyoming were forced to scramble. Dr. Bartsch did what many young physicians have done in recent years—she went the fellowship route in hopes that her extra year of training would allow the Wyoming job market to open up. She made that choice knowing WWAMI will continue to produce new emergency physicians who need to find work in the state, so the workforce problem may not go away. At least the fellowship bought her some time.

Similarly to emergency physician workforce issues on a national level, Wyoming faces a complicated problem with a multitude of contributing factors. Job markets historically ebb and flow and eventually adjust, but that long-term outlook doesn't help freshly minted emergency physicians who need to find jobs *now* to avoid serious monetary penalties.

Altering the contractual obligations for Wyoming participants in the WWAMI program would require a legislative change, and state legislators are hesitant to fix something that is still working for the other specialties within the state. WWAMI's return rate of 63 percent is "amazing," said Sheila Bush, who has served as executive director of the Wyoming Medical Society for 16 years. "There has to be a balance so you don't undermine WWAMI," she explained.

Senator John Barrasso, MD, worked 24 years as an orthopedic surgeon and once served as President of the Wyoming Medical Society. "Wyoming's collaboration with Washington, Alaska, Montana, and Idaho delivers an innovative and state-based solution for medical education," Sen. Barrasso said. "We need to keep WWAMI strong and able to educate the next generation of physicians, many of which come from rural communities."

Sen. Barrasso believes the situation in Wyoming is indicative of a broader issue. "The challenges facing emergency medicine residents are part of a much larger problem with Graduate Medical Education (GME). Our federal GME funding structure is broken and does not reflect the health care workforce we need in the 21st century. Specifically, GME concentrates funding in large academic medical centers located on the east coast," he said. "Senators from rural states, especially in the west, agree changes must be made. I'm personally committed to working with both sides of the aisle on GME reform. Fixing GME is essential to close health care disparities in rural America."

There are no legislative proposals on the table as of this writing, but potential solutions are being discussed: Should the time for return to Wyoming be extended past one year so that physicians have more time to find work within the state without incurring such harsh financial penalties from their WWAMI contracts? Should the law be tweaked to specify that those WWAMI medical students who plan to return to work in Wyoming must pick a certain specialty with more guaranteed employment? Should Wyoming hospitals and health care facilities be incentivized to hire WWAMI graduates? Can the interest rate be reduced or eliminated?

With the clock ticking for Dr. Bartsch, she decided to "get creative" in her search for a position that would fulfill her contractual obligations. Six months into her search, she found a job back in Wyoming, allowing her to breathe a deep sigh of relief as she finishes her fellowship year.

For Dr. Wright Becker, navigating Wyoming's current emergency medicine workforce issue—and improving the outlook for rural emergency medicine as a whole—has become a personal quest. After surviving cancer in 2019 and losing a colleague in a motorcycle accident, she was in a reflective state when this Wyoming workforce problem landed in her lap. "God kept me on Earth for something," she explained. "Maybe I should work on this."

And so, she is. Dr. Wright Becker packed up her family and moved them to West Virginia, where she is developing an emergency academic program with focus on rural medicine inspired by her time in Wyoming. She hopes her program and research will help develop some long-term solutions for rural acute care. At the same time, she remains devoted to the students and residents she mentored in her home state and she is still working closely with her WWAMI colleagues back in Wyoming to look for solutions.

"I think what's going on in Wyoming is the crux of what's going on [nationally]," she said. "Somehow, this tiny state is having the [emergency medicine] workforce issues play out in the biggest, baddest way."

Jordan Grantham is senior content manager at ACEP.

Q&A with ACEP President DR. GILLIAN SCHMITZ

Our mid-year overview of the College, from ACEP's President

by CEDRIC DARK, MD, MPH, FACEP, MEIC

Speaking with Dr. Gillian Schmitz as she continues her tireless work at the College, we reviewed hot topics like violence in the emergency department (ED), mental health, and the future of the profession.

Question: The emergency department should be a safe place for everyone, but just recently we have seen orthopedic physicians and staff murdered and emergency workers stabbed. What has ACEP done to address workplace safety?

Dr. Schmitz: ACEP has made addressing violence in the ED a top advocacy priority. ACEP initiated the "No Silence on ED Violence" campaign with the Emergency Nurses Association (ENA) in 2019. This joint effort equips and empowers our respective members to effect needed safety improvements at their hospitals, while engaging state and federal policymakers, stakeholder organizations, and the public at large to generate action to address this crisis. In 2020, ACEP and ENA were part of an action team sponsored by the National Quality Forum, which included 27 experts and recognized leaders from the private and public sector committed to improving the safety of the health care workforce. Throughout the pandemic, we all felt a rise in the hostility of our patients and the public and increased emotional and physical violence in the ED. ACEP surveyed our membership and found some startling statistics. Almost half of emergency physicians report being physically assaulted at work, while about 70 percent of emergency nurses report being hit and kicked while on the job.

Getting kicked, punched, or emotionally assaulted at work should never be "part of the job." Assailants who threaten health care workers need to be held accountable. Physicians and nurses need to feel safe. ACEP felt so strongly about this issue that we made it one of our three major advocacy focuses at our Leadership and Advocacy Conference (LAC) in 2022. We hosted hundreds of meetings with legislators to support the Workplace Violence Prevention Act for Health Care and Social Service Workers (H.R. 1195) and its companion bill in the Senate. This bill would require OSHA to create standards to curb ED violence and track and report cases of assault. ACEP also contributed to the development of new The Joint Commission (TJC) workplace violence prevention requirements that became effective at the beginning of this year.

Question: The COVID-19 pandemic has taken a toll on emergency physicians.

ACEP

Dr. Schmitz speaking at ACEP's 2021 Scientific Assembly.

ACEP recently celebrated the success of the Dr. Lorna Breen Act. Last year, when we spoke to ACEP Immediate Past President Rosenberg, govtrack.us gave the bill a three percent chance of ever passing. How did ACEP succeed where the experts thought we would fail?

Dr. Schmitz: Isn't that the very essence of emergency medicine—that we succeed when everyone else thinks we're going to fail? I love to keep proving them wrong. Advocacy is what ACEP does best. Most people don't understand that 99.9 percent of bills never become a law; they rarely even get out of committee. I want to particularly highlight the work of Brad Gruehn, Laura Wooster, Ryan McBride, and Jeff Davis, who fought relentlessly to help pass the bipartisan legislation that is the Lorna Breen Act.

I also want to recognize the grassroots efforts of emergency physicians nationwide, the ACEP members who specifically met with their legislators during our LAC conference to garner support, Senator Tim Kaine (D-VA) who helped introduce the bill, and of course Lorna's family and the Lorna Breen Heroes Foundation that helped this come to fruition.

ACEP continues working on both the legislative and regulatory front at the federal and state level to address some of the remaining challenges and barriers to mental health for health care workers and our patients. This is really just the beginning.

Question: This year's Match was concerning due to hundreds of empty residency spots. Anecdotally, people have said this might be due to ACEP's workforce projections or due to the explosion of EM residency programs in recent years. What's your take on why so many EM programs went unfilled?

Dr. Schmitz: I believe the results of this year's Match were a good wake-up call and an opportunity to do things differently. The

CONTINUED *on page 12*

By the Numbers

Contrast-Shortage

A brief look at the nationwide shortage.

SENSITIVITY OF UNENHANCED CT FOR VARIOUS EMERGENT DIAGNOSES

AORTIC DISSECTION

94%

TYPE A

71%

TYPE B

APPENDICITIS

91%

TRAUMATIC BLUNT ABDOMINAL INJURY

64%

Visit **ACEPNow.com** for the sources of these statistics.

FACEPs IN THE CROWD

Get to know the Fellows of the American College of Emergency Physicians

KIM KEITH, MD, FACEP

Valley Health System, Virginia

ACEP Fellow Dr. Kim Keith and her husband have raised a family that shares the same mindset—work hard and play hard! She has six children ages 20-35, including three who have followed in her footsteps by going into emergency medicine. They're very busy, but they still make time to have fun together. You can find them competing in triathlons, experimenting with new cocktail recipes, and waking up early to oversee the neighborhood 5K race on Thanksgiving.

How do you fill your personal time when you aren't working?

My husband and I are project people—that's one of the things that has made our family successful—we love projects. Our current project is reviving a family farm. We have learned to raise chickens, and we have a huge asparagus bed. We dabble in fruit trees. That's where I spend my extra time—farming. It's fun, and [we are] trying to learn how to be self-sufficient, which is a skill that has been lost. If you can figure that out and leave that infrastructure for your family, that would be great. Now we've seen what pandemics can do, and if you had a place where, when everything fell apart, you had a place to go and could sustain yourself—I think that's a worthy goal.

Are there any parallels between raising a big family and working in the emergency department?

Absolutely! I always describe emergency medicine as trying to make order out of chaos, and I think that it's the same if you have a large family … Multitasking is the key to both jobs.

KIM KEITH, MD, FACEP

5 Fun Things with Dr. Keith

1. **Browsing:** My kids will tell you that Realtor.com is one of my hobbies. I'm always looking and seeing what's out there.
2. **Sipping:** I'm a beer girl through and through, but our family's best drink that we've ever come up with is our version of a hurricane—we throw a Mardi Gras party like no other!
3. **Exercising:** I'm religious about exercise. I run before every shift. I dabble in triathlons, and sometimes I get to run them with my kids.
4. **Go-to treat:** Whenever my daughter and I finish a triathlon, we always treat ourselves with a double cheeseburger from McDonalds as our reward.
5. **Looking forward to:** I'm looking forward to seeing all my kids get out on their own, being established, and knowing that they can take care of themselves. I'm almost there.

KNOW AN EMERGENCY PHYSICIAN WHO SHOULD BE FEATURED IN "**FACEPs in the Crowd**"? SEND YOUR SUGGESTIONS TO **ACEPNOW@ACEP.ORG.** LEARN HOW TO BECOME A FACEP AT **WWW.ACEP.ORG/FACEPSINTHECROWD.**

ACEP Clinical Policies Committee Guideline Update

American College of Gastroenterology published guideline update for upper gastrointestinal and ulcer bleeding

by MELISSA VILLARS, MD, MPH, AND STEPHEN WOLF, MD

In 2021, the American College of Gastroenterology (ACG) published an update of their 2012 management guideline on upper gastrointestinal bleeding (UGIB).[1,2] The updated guideline included a total of sixteen recommendations, of which five are relevant to emergency medicine practice:

1. ACG suggests that patients presenting to the emergency department with upper gastrointestinal bleeding (UGIB) who are classified as very low risk, defined as a risk assessment score with ≤1% false negative rate for the outcome of hospital-based intervention or death (e.g., Glasgow-Blatchford score 0–1), be discharged with outpatient follow-up rather than admitted to hospital (conditional recommendation, very-low-quality evidence).
2. ACG suggests a restrictive policy of red blood cell transfusion with a threshold for transfusion at a hemoglobin of 7 g/dL for patients with UGIB (conditional recommendation, low-quality evidence).
3. ACG suggests an infusion of erythromycin before endoscopy in patients with UGIB (conditional recommendation, very-low-quality evidence).
4. ACG could not reach a recommendation for or against pre-endoscopic proton pump inhibitor (PPI) therapy for patients with UGIB.
5. ACG suggests that patients admitted to or under observation in hospital for UGIB undergo endoscopy within 24 hr of presentation (conditional recommendation, very-low-quality evidence).

Of these five recommendations there were three notable changes from the 2012 guideline.

First, in risk stratifying patients, the 2021 recommendation now incorporates risk assessment scores in determining which patients are safe for discharge from the emergency department. ACG defined an appropriate risk assessment score as one with a sensitivity of ≥ 99% (i.e., a false negative rate ≤ 1%). Comparing meta-analyses, systemic reviews, and individual test accuracy studies of the Glasgow-Blatchford score, AIMS65 score, pre-endoscopy Rockwell score, and a published machine learning model,only the Glasgow-Blatchford and the machine learning model consistently met this standard.[3] Therefore, the Glasgow-Blatchford score is the only readily available risk assessment score appropriate for use (sensitivity 0.99). Additionally, ACG expanded the number of patients the recommendation reaches suggesting that patients with a score of either 0 or 1 on the Glasgow-Blatchford score have a sufficiently small false negative rate and can be safely discharged from the emergency department. (See Figure.)

The second change revolved around the lack of recommendation for, or against, pre-endoscopic PPI use for patients with UGIB. The 2012 management guideline stated that pre-endoscopy PPI use may be considered whereas no recommendation could be reached for this 2021 guideline. This change was based on several factors. One was additional evidence available since the 2012 management guideline and subsequent meta-analysis by ACG which showed no difference in further bleeding or mortality with pre-endoscopy PPI (the benefit of PPI post-endoscopy is well known and accepted). Additionally, evolving consensus on the structure of guideline recommendations focuses on recommending specific actions. With this evolution, the ACG's 2012 statement of "pre-endoscopic intravenous PPI may be considered" no longer fits current guideline structure. The meta-analysis conducted by ACG revealed patients with pre-endoscopic PPI had lower rates of evidence of recent hemorrhage and lower rates of hemostatic treatment during endoscopy compared to placebo. Further, indirect evidence from randomized controlled trials (RCTs) and meta-analyses indicate that pre-endoscopic PPI may reduce need for endoscopic treatment and may benefit a minority of patients. However, ACG was specifically looking at mortality benefit and reduced risk of rebleeding, neither of which were consistently found among the various studies included in this guideline.

This lack of recommendation for pre-endoscopic PPI does not align with other societies. Both the European Gastroenterology (2021) and an International Consensus Group (2019) recommend for the use of pre-endoscopic PPI use.[4,5] However, the National Institute for Health and Care Excellence (2012) in the United Kingdom recommends against it.[6]

The third and final significant change revolved around the timing of endoscopy. In the 2012 guideline, ACG recommended considering endoscopy within 12 hours for patients with high-risk clinical features (e.g., tachycardia, hypotension, bloody emesis, or bloody nasogastric aspiration within the hospital). The 2021 guideline solely recommends endoscopy within 24 hours without a separate recommendation for high-risk patients. This change is based on new evidence since the 2012 guideline including a RCT of 516 patients, a nationwide cohort study of nearly 4,000 patients, and a single center cohort study of nearly 1,000 patients, all of which show no significant improvement in mortality or rebleeding with early endoscopy.[7,8,9] In the body of the guideline, ACG did make an anecdotal comment in favor of urgent intervention with endoscopy or interventional radiology in the subset of patients that remain in hypotensive shock after initial resuscitation.

This 2021 update provides important guidance on management of UGIB based on the best available evidence allowing emergency medicine to work in conjunction with gastroenterology to care for our patients. It should be incorporated into our standard practice as emergency physicians.

Figure: Example of Glasgow-Blatchford score[10]

Admission risk marker		Score
Blood Urea Nitrogen (mmol/l)	≥6.5 to <8	2
	≥8 to <10	3
	≥10 to <25	4
	≥25	6
Hemoglobin (g/L) for men	≥12 to <13	1
	≥10 to <12	3
	<10	6
Hemoglobin (g/L) for women	≥10 to <12	1
	<10	6
Systolic blood pressure (mmHg)	≥100 to <109	1
	≥90 to <100	2
	<90	3
Other markers	Pulse ≥100	1
	Melena	1
	Syncope	2
	Hepatic disease	2
	Cardiac failure	2

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reasons so many EM programs went unfilled is multifactorial. First and foremost, it was not because we had a drop-off in applicants. Emergency medicine continues to be one of the most competitive specialties in medicine and we would like it to stay that way. The number of applicants in 2022 was roughly on par with where we have been over the past five years. We had more students apply this year than we did in 2019. We did see a drop from last year, but that's only because 2021 was an anomaly and we saw a record number of applicants during the beginning and peak of the pandemic. If you take out the 2020–2021 match season as an outlier, the number of applicants were exactly what we expected.

I believe the match went initially unfilled for a number of other reasons. First, there were more residency spots as a few new EM programs were approved and some existing programs expanded their class size. Financial pressures will incentivize residency programs to grow. We need to start having some difficult conversations on how we control that growth in a responsible manner and put the needs of the specialty ahead of an individual residency program's best interests. Second, we had another year of virtual rotations and interviews. One of the main reasons applicants cite when creating their rank list is perceived overall "fit" with the program. It is hard to replicate those personal experiences over webcam and the virtual recruitment season likely swayed the match results. Finally, there are probably some residency programs who miscalculated their overall competitiveness amongst applicants. If a program only submitted 50 names (when they should have submitted 100+), they are likely not going to fill all of their spots. It is possible that many of the applicants ranked all the same programs and that impacted the match.

To help better match interest with demand, CORD has discussed piloting a "preference signaling" system next year. This would allow students to indicate early on if a program is one of their top five choices and would allow residencies to better predict which applicants they are likely to recruit. This method worked really well for ENT, and I'm excited to see how this may help us better align student interest with available slots in the future.

Question: We hope you have you been reading *ACEP Now*. What is your favorite story from this past year?

Dr. Schmitz: My favorite was the story on Ukraine. It is empowering to see that even in our darkest moments, emergency physicians rally together to protect, serve, and care for our patients and for each other. It highlighted to me that while others may run away from danger and the unknown, emergency physicians run to it and do whatever is needed in the moment. It restored my faith in humanity and is a constant reminder that what we do has purpose.

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

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If you have a story idea or drafted article, contact Editor Danielle Galian, MPS, or Medical Editor in Chief Cedric Dark, MD, MPH, FACEP. Our editorial team will review your submission and update you on next steps. Include 250 words with bullet points if you're submitting a story pitch with the following:

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DOING THE MATH TO BENEFIT OUR SPECIALTY

THE EQUITY EQUATION

DR. HAAMID (@HaamidtheMD) is a practicing emergency physician at the University of Chicago.

Treating the Root Cause

How trauma-informed care can help mitigate gun violence

by AMEERA HAAMID, MD

SHUTTERSTOCK.COM

"Everybody dies in the summer. Want to say your goodbyes, tell them while it's spring. I heard everybody's dying in the summer, so pray to God for a little more spring."

These are the words of Chicago native Chancellor Bennet, also known as Chance the Rapper. He wrote these lyrics while he was just a high school student on the south side of Chicago. In this hidden track on his adolescent mixtape, he depicts the realities faced by an inner-city child in low-income areas of many American cities.

Summer is here and for many of us it's our favorite season. Summer is a joyous time for the vast majority of our country: filled with beaches, sand, playing sports, and relaxing outdoors with friends and family. However, in some parts of America, summer is a season that is feared. It's a time when violence rings out throughout the neighborhoods, when loved ones are lost and children are killed.

All throughout the United States we see the effects of gun-related injuries and deaths play out on the screens in our homes and on our personal devices. As a society we've become grossly desensitized and burned out by the habitual exposure to violence in media. Most of society has the privilege to remove the unwanted stimulus by changing the channel or scrolling past whatever harrowing event is in the headlines of the day, but this is not an option for us as emergency physicians. As emergency physicians, we will always be on the receiving end of tragedy.

Victim Demographics

When analyzing gun violence, the United States ranks number one in comparison to other high-income countries for the degree of gun-related deaths and injuries. Each year, over 40,000 Americans are killed due to gun-related injuries. About two thirds of these deaths are due to suicide and about one third are due to homicide. When we observe populations affected, what we find is that victims of suicide are mostly middle-aged white men, while victims of homicide are mostly young Black men.[1,2] In fact, in Chicago where I work, 75 percent of the city's gun-related deaths are in young Black males age 18–24 years old. This disparate distribution of injuries mirrors those seen in many urban environments in our country. Nationally, 60 percent of firearm homicide victims in the United States are Black Americans; however, Black Americans account for less than 15 percent of the population.[3] In comparison with white men, Black men are 18 times more likely to suffer from gun-related assaults and 10 times more likely to die from gun-related homicide.[2]

There have been many resources created to help those in crisis who may cause harm. There is a large amount of public health messaging surrounding suicide and a plethora of suicide-specific resources that include easily accessible counseling, support services, and prevention hotlines. However, there have not been similar amounts of investment in homicide prevention resources. Most of our nation's investment in homicide prevention resides in the form of safe gun usage and storage, stricter gun ownership laws, and heavy sentencing for those who commit interpersonal harm. Despite these efforts, gun-related shootings have spiked in the last two years with the U.S. seeing a 33 percent increase in gun violence between 2019 and 2020, and a further seven percent increase from 2020 to 2021.[4] Harm reduction interventions are necessary, but the commonly used avenues miss the mark on addressing the root causes.

The root causes of gun-related homicide have been thoroughly investigated. Gun violence has been attributed to social inequity and intentional disinvestment of our marginalized communities. Specifically, the structural drivers are income inequality, poverty, underfunded public housing, underfunded public services, underperforming schools, easy gun access by high-risk individuals, and a sense of hopelessness.[3] A lack of upward social mobility has also been found to have a strong relationship to interpersonal violence.

Gun-related homicide is a public-health epidemic that deserves a robust public health response. As emergency physicians, we are trained very well to treat the wounds of injured patients, but what can be done to prevent the injury? Active investment in the root causes of this epidemic are just as important as treating the downstream effects.

Tackling root causes can seem daunting, but there are some feasible ways that everyday emergency physicians can impact the upstream causes of gun-related injuries without overstretching. Emergency physicians can utilize a trauma-informed approach to patient care, actively work to mitigate bias toward those affected by gun violence, invest in violence-recovery support staff in our emergency departments (EDs), advocate for hospital partnerships with local community violence prevention programs and when able, increase physician support for community programming that addresses the root causes of interpersonal violence.

Trauma-Informed Care

It can be argued that *every* emergency physician should be trained in trauma-informed care and utilize this approach with every patient interaction. Taking a trauma-informed approach means to not only treat the patient's chief complaint, but to acknowledge the adverse events that have occurred to our patients that led them to their behavior and health outcomes. As physicians, it's important to realize how trauma affects our patient's presentation. With trauma-informed care training, we are better equipped to recognize the signs of trauma and utilize tools to respond appropriately without re-traumatizing the patient. Taking this perspective and adding empathy to the visit has been found to improve patient engagement, adoption of treatment plans, and patient health outcomes. It can also boost staff wellness.

Mitigating Bias

At times we may have difficulty taking an empathetic approach to our patients' experiences if we have already prejudged them. When treating gunshot victims, there can

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BE A MEDICAL DETECTIVE– BONE UP ON YOUR FORENSIC SKILLS

FORENSIC FACTS

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When the Patient is a Male

Breaking down the stigma of male rape

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

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The Case

A 25-year-old male presents to the emergency department (ED) after being sexually assaulted. The patient reports no physical violence, but was at a party with some friends when he got separated from them. He had a few alcoholic drinks and later felt dizzy. The next thing he remembers is waking up in a bedroom with at least two other males, whom he did not recognize, standing over him, naked, and laughing. A few minutes after waking up, he was more alert and realized he was naked and had pain in his anus. His vital signs are normal. He was quiet and tearful. His physical exam is unremarkable. He requests police to be called. While calling the police, your charge nurse asks if the Sexual Assault Nurse Examiner (SANE) Hotline should be called? What about the rape crisis advocate?

Discussion

Males can be victims of sexual assault (SA) at any age and these assaults may be perpetrated by other males or females regardless of the victim's and assailant's sexual orientation. Though most people are aware of female SA survivors, male victims are often forgotten and neglected due to shame and stigma. It is estimated that one in six boys have been sexually assaulted by their 18th birthday and one in four men will sustain unwanted sexual events in their lifetime.[1,2] Overall, about five to 10 percent of rape victims are males.[3–5] Male victims may experience SA as part of hazing or initiation rituals, in institutionalized settings, in the military, or while incarcerated.

There are several differences between male and female victims. However, they each require the same basic health care response:

1. Safety
2. Ability to report to law enforcement and to have an appropriate police investigation
3. Access to a rape crisis advocate
4. Access to a medical forensic examination
5. Access to counseling services
6. Adjudication in court

Male victims are often more reluctant to seek health care and even less likely to seek law enforcement response.[3,5–8] They often are ashamed, embarrassed, and feel they will not be believed or taken seriously. They feel, as a man, they should have been able to prevent or fight off the assault. In addition, some teenagers may think it is a status symbol to have sex with an older woman or man (even if perceived by the victim to be consensual), even if according to state law the act counts as sexual assault.

There are also several male rape myths that perpetuate the stigma and keep men from seeking treatment.[9–11] First, the reality is that what happened was not controllable or preventable by the victim. And if the perpetrator is male, it does not imply or form the basis for sexual orientation of the victim. Arousal, erection, and ejaculation are not fully controllable and can occur due to stress, anxiety, and penile/anal stimulation. This can cause confusion around consent, enjoyment of the activity, and the victim's sexual orientation. Table 1 highlights common rape myths.[11] Fear of being labeled as homosexual and/or that the rape will make them become homosexual are powerful motivators for males to keep silent and not seek medical, behavioral health, or law enforcement services. Even a feminized name of a rape crisis center may deter male victims from seeking care. However, the majority of programs do offer very competent, trauma-informed, victim-centered services for males.

Studies have shown that females suffer higher rates of penile rape than males, but males show higher rates of digital or object penetration.[4,5,12,13] Thus, anal injury rates are higher in males. Women also sustain higher percentages of bodily injuries.[13] Also, males tend to have higher rates of multiple assailants, and may have higher rates of rapes involving a weapon.[5,13–15]

Table 1: Male Rape Myths

MYTH	FACT
Men cannot be forced to have sex against their will.	Anyone can be forced to have sex against their will. If someone does not want to have sex, or is unable to give informed consent, for whatever reason (including intoxication), then they are being forced or coerced into unwanted sexual activity.
Men are less affected by sexual assault than women.	Men are just as affected by sexual assault as women, although they may express it differently.
Men who become sexually aroused, have an erection, or even ejaculate during the assault must have wanted it or enjoyed it.	Many men have experienced unwanted or unintentional arousal during sexual assault, as men often get erections in painful or traumatic situations. Arousal from abuse can be confusing to survivors, but physiological reactions, like erections and ejaculation, are beyond a man's control.
A male cannot be raped by a female.	Men can be raped by women. This crime is often underreported due to gender stereotypes. Any unwanted sexual contact is sexual assault regardless of offender's gender. Men can be made to penetrate and forced into oral sex, among other acts.
People become LGBTQ+ when they are sexually abused/assaulted by someone of the same sex.	Sexual abuse and assault are prevalent in the sexual and gender minority community, it is most often the result of stigma and prejudice against a person who already identifies as or is labelled to be different than the accepted sexual orientation or assigned gender identity.

Adapted from Cook JM, Ellis A. The other #MeToo:male sexual abuse survivors. *Psychiatric Times*. 2020;36(4):1,15-16.

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WARNING: Graphic Content

Emergency Department Care

Emergency departments need to provide male SA victims the same trauma-informed, victim-centered care as female victims.[14] All protocols and procedures should be the same. Rapid triage assessment, including evaluation for potential injuries, should occur. The patient should be placed in a quiet area to await evaluation. All the options should be explained to the patient. The patient should be offered a medical forensic examination by the SANE nurse, accompaniment by the rape crisis advocate, and law enforcement notification. The patient can then accept or decline any or all of the services. Male victims are entitled to the same rights as female victims and exams are to be provided without charge to the patient. These services can be billed to State Crime Victims' Compensation programs. Patients also have the right to request no law enforcement response and to have anonymous reporting and evidence collection.

The emergency physician should evaluate the male patient as they would any other female victim. Detailed forensic history should be reserved for the SANE nurse, and the clinician needs to rule out potentially serious injuries and instability. Laboratory and radiographic testing should be performed as indicated. Although rare, some serious injuries seen in male victims include: head injury, fractures, genital injury/mutilation, and anorectal tears and perforation (the patient may present with peritoneal signs).

Sexually transmitted infection screening and prophylaxis, including HIV, should be provided as per protocol. For those starting HIV post-exposure prophylaxis, medications/prescriptions should be provided and the patient linked to outpatient services.

The SANE nurse should be consulted for forensic medical examination.[16] The steps and processes are essentially the same for the male patient except for the genital examination. Swabs of the male genitalia should be obtained, paying attention to the penile glans/prepuce, shaft, base, and anterior scrotum. Two moistened swabs are used, but more can be used on each specific outlined area. Male victims may experience anal penetration at a higher rate than female victims, so an anorectal examination should be performed. Swabs should be obtained from the perineum, perianal area, and anal canal.[17] Anoscopy can be performed to look for injuries to more internal structures.[18] Some SANE nurse programs use anoscopy within their scope of practice. Significant anal or rectal trauma may require evaluation by general, trauma, or colorectal surgery.

Case Resolution

The patient was seen by the emergency physician. No serious injuries were identified during the medical screening examination. Sexually transmitted infection and HIV prophylaxis were initiated. The on-call rape crisis advocate and SANE nurse were called in and law enforcement notified. The SANE nurse collected evidence and turned it over to the police. The SANE nurse found swelling and redness of the anal fold and a small tear. It was determined with the emergency physician that no specific treatment was required and the patient was discharged with all the standard sexual assault referrals.

KEY POINTS

- Males can be victims of sexual assault and abuse.
- Male sexual assault victims have the same rights as female victims.
- Male sexual assault victims report to law enforcement and seek health care services much less frequently than females.
- Certain unique aspects of male sexual assault and rape myths can lead to shame, stigma, and mental health crisis in male victims.
- Your emergency department has the same duties to the male victims of sexual assault as to female victims.

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EQUITY EQUATION

CONTINUED FROM PAGE 13

be automatic assumptions of wrongdoing of those injured. It's important to recognize that our explicit and implicit biases play a major role in our interactions with our patients and the health care that we deliver. They have been found to be drivers of health inequities amongst marginalized populations and should be mitigated with proper training and continual self-improvement.

Violence-Recovery Support Staff

Emergency physicians should push to hire ED support personnel for patients who are victimized by gun-related violence and their families. A number of hospitals have incorporated the use of "violence recovery specialists" or "coaches" (social workers, mental health professionals, or peers with specialized training) to provide emotional and psychological first aid for victims and their loved ones at the time of the event. Awareness of how mental health is affected after having a loved one violently killed can promote active decisions in getting the necessary resources involved. After being traumatized by gun-related violence, patients may develop acute stress disorder or post-traumatic stress disorder followed by self-medication and further injury (victims of intentional violence have a high risk of being reinjured or injuring someone themselves). The violence recovery specialist works to decrease the risk of reinjury and recidivism by providing psychological first aid and organized access to social work, counseling services, spiritual services and social support programs. There are several different names and models of this support framework. Emergency physicians should research who provides this level of care in their area and advocate for their presence in their ED to assist with patients affected by gun violence.

Violence Intervention Programs

In addition to adding a violence recovery support staff in the ED, some hospital systems have created their own hospital-based violence intervention programs or partnered with community-based intervention programs. These programs to support victims and their families through their traumatization and simultaneously decrease recidivism. There are a myriad of violence intervention programs throughout the United States with various approaches to community health. Many focus on addressing the psychological impact and the cause behind the violence, dispatching peers to the scene to mitigate further violence. Several have joined forces to create the National Network of Hospital-Based Violence Intervention Programs spread throughout 25 cities. As emergency physicians we can advocate for our institutions to partner with these programs to be present in our ED, and if we are ambitious, we could follow a framework to create our own.[5]

Community Investment through Community Programming

There are several local community initiatives that address the social determinants of health. Emergency physicians can invest their time and energy into advocacy for these programs or thorough direct participation. Some examples include food pantry services in the ED to decrease food insecurity or mentoring with middle-school or high-school students. These interventions can decrease psychological stress and lead to less interpersonal violence. Investment in our youth can also boost self-perceived societal worth and can lead to fewer feelings of hopelessness. As physicians who work with our communities, we are well-positioned to advocate for initiatives that augment our patients' health status.

With the summer here and the continued rise of gun-related injuries and deaths across the U.S. anticipated, there is a great disparity that is seen amongst those who suffer from gun-related homicide. As emergency physicians it is our responsibility to provide equitable care and resources to all of our patients regardless of their background or social circumstances. Many efforts have been put into addressing gun violence, but few address the root causes and attempt to provide equitable resources specific to those who are injured. At times, it can seem impossible to make an impact within our role of emergency physicians, however there are some tangible efforts that we can lead to make a difference. When we start focusing on these tools, we may finally start moving the needle in the right direction to address the needs of inner-city kids and adults disproportionately victimized by gun violence.

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Suture Strength and Topical Agents

Looking into correlations between the two

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

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

Question: Do topical antibiotics/agents weaken suture tensile strength?

Anecdotally, we have heard that topical agents diminish the tensile strength of sutures. While this may be true, it is important to consider very briefly other aspects of wound care. To begin, a Cochrane meta-analysis explored prophylactic topical antibiotics and surgical site infection prevention, finding that topical antibiotics "probably reduce" the risk of surgical site infection in wounds healing by primary intention when compared to no topical antibiotics.[1] So, topical antibiotics may be helpful in preventing infection. Conversely, some literature suggests a contact dermatitis reaction to triple antibiotic ointment in approximately 20 percent of cases.[2] There seem to be both positive and negative aspects of topical antibiotics following suture repair. Do these topical agents, though, diminish the tensile strength of suture after wound closure?

Dissolvable sutures are commonly used on children for laceration repair. We are unable to find any specific studies addressing topical antibiotics and suture tensile strength and degradation. We did find two studies on petrolatum (i.e., petroleum jelly) and suture tensile strength. An in vitro study evaluated suture tensile strength, using a tensometer of nine different absorbable sutures after continuous incubation in petrolatum for seven days.[3] Three units of each suture type and suture size were measured and the authors found no significant difference in tensile strength when comparing the pre- and post-incubation measurements at seven days. While this is an in vitro study, this would suggest that petrolatum does not significantly weaken the tensile strength of the absorbable suture tested.

A second study was a single-blinded, controlled study (n=14) that evaluated the effect of petrolatum on fast-absorbing gut.[4] A 6-0 fast-absorbing gut suture was placed into two sites in the arms of healthy adults. One suture was coated with petrolatum; the other was not coated. There was no significant difference in absorption time between the two groups. The average absorption time was 223 hours (9.3 days), suggesting that petrolatum coating did not significantly affect the absorption time of fast-absorbing gut suture.

Summary

Regarding suture degradation, we were unable to find any studies specific to children or antibiotic ointment. The studies in adults are very limited and explore suture tensile strength in the setting of petrolatum (petroleum jelly) exposure. There does not appear to be any significant degradation of absorbable suture after exposure to petrolatum.

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EM LITERATURE OF NOTE

PEARLS FROM THE MEDICAL LITERATURE

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Diagnosing Sepsis, the Next Generation

by RYAN RADECKI, MD, MS

Whether in the context of febrile illness, mild delirium, or the dreaded "weak and dizzy," sepsis lurks around every corner. Then, in an era replete with serious respiratory viruses such as SARS-CoV-2, influenza, and respiratory syncytial virus, the challenge persists of differentiating systemic viral illness from bacteremia. However, where practicing clinicians see problems, diagnostics companies see opportunities.

Diagnostic and Supplemental Testing

Most emergency physicians are well acquainted with the process of teasing out a diagnosis of infection from otherwise deranged physiology, and likewise further clarifying an underlying bacterial source. As the pressures mount for ever-earlier intervention and even greater diagnostic accuracy, clinical evaluation is supplemented by laboratory testing. Generationally, the simplest tool remains the complete blood count (CBC) and differential, using the white blood cell count and its differentiation between neutrophils, lymphocytes, and other immature forms as clues to further inform the presence and type of infection.

The well-described limitations in sensitivity and specificity for the CBC have led further afield to supplementary tests. Most commonly, and dependent upon local practice patterns, these supplemental tests are typically C-reactive protein (CRP) and procalcitonin. These non-specific markers of systemic inflammation provide incremental predictive value in determining the presence of a serious bacterial infection. Unfortunately, each of these tests generally displays a normal result in concert with a correspondingly benign clinical picture, and a grossly abnormal result when infection is clearly present. In cases where a diagnosis is less clear, results from these tests tend to land squarely in uninformative, indeterminate ranges. Furthermore, each test may be confounded by chronic inflammatory conditions, or falsely reassuring in immunosuppressed patients and early in a disease process.

Despite the marketing push behind procalcitonin over the past decade, growing recognition of its limitations has led to the development of several novel objective tools attempting to improve upon the current state of disarray. One of these is the monocyte distribution width (MDW), branded by Beckman Coulter as the Early Sepsis Indicator (ESId).[1] Similar to technologies in automated analyzers in which leukocyte type and red cell size can be evaluated, MDW can likewise be observed. Because monocytes with inflammatory phenotypes increase in size, and these changes may be observed in response to sepsis, MDW has been proposed as another early marker of sepsis.

Early Detection of Sepsis in the Emergency Department Comparing Monocyte Distribution Width (MDW) to Other Assays:

Test	Diagnostic AUC [95% CI]
MDW alone	0.81 [0.78–0.84]
MDW plus WBC	0.86 [0.84–0.88]
C-Reactive Protein alone	0.85 [0.83–0.87]
Procalcitonin alone	0.78 [0.75–0.81]

This novel measurement has ultimately shown little added value over current non-specific markers. Across various studies evaluating its performance, the area under the receiver operating curve (AUROC) for MDW is in the range of 0.70 to 0.80.[2] While this has better diagnostic precision than a coin flip, in various retrospective and prospective evaluations MDW performed similarly to both CRP and procalcitonin.[3] At the MDW cut-off value of 20 (defined at regulatory approval), sensitivity is reported as 95.5 percent, with a specificity of 26.5 percent. This product thus slots in precariously as a one-way decision tool to reinforce a clinical decision of the absence of sepsis, but with extremely poor positive predictive value.[4] The primary advantage of this test compared to CRP or procalcitonin, is that the result is embedded in the CBC, rather than necessitating a separate assay.

Additional proprietary biomarker assays under development, include the IntelliSep and Immunix tests. The IntelliSep test pushes samples through microfluidic channels with a camera performing image acquisition of WBCs under deformation stress.[5] The behavior of WBCs under deformation stress is measured by automated methods as their primary metric, reflecting host response to infection. These properties were then correlated with clinical outcomes, as validated on a set of emergency department patients presenting with potential sepsis and a set of healthy volunteers. Similarly to other inflammatory markers, the output of the test is risk-stratification into low- and high-risk cohorts alongside an indeterminate zone.

What the Studies Show

Few published studies of the IntelliSep test exist, and none include direct comparisons against other conventional markers of inflammation.[6,7] Using the most conservative interpretation of published performance, the lowest-risk category demonstrated an 87.5 percent sensitivity, while the highest-risk category demonstrated an 86.2 percent specificity. The number analyzed was low enough that even small changes in sepsis outcome adjudication had dramatic effects on positive and negative likelihood ratios. To put it mildly, many data remain to be presented to evaluate both this test's performance and its feasibility in clinical deployment.

The Immunix test is another biomarker-based evaluation with a slightly different twist. In this instance, biomarker data is combined with electronic health record (EHR) data to produce a prediction superior to either biomarkers or EHR data in isolation.[8,9] For emergency department applications, their proprietary implementation utilizes IL-6, CRP, and procalcitonin, while a hospital-wide version includes additional biomarkers and an expanded set of EHR variables. An even greater paucity of data is available to evaluate this technology for use in the emergency department. A single observational study on frozen remnant blood samples revealed an AUROC on their validation set of 0.83, with a sensitivity of 80 percent and a specificity of 70 percent at their selected optimal threshold to identify a low-risk population.[10] In my opinion, this test is even further from operational consideration as it requires the added complexity of direct access to clinical information systems.

The final new test worth discussion is a biomarker marketed to differentiate bacterial and viral infections. The MeMed BV test combines CRP, tumour necrosis factor-related apoptosis-inducing ligand (TRAIL), and interferon-gamma-induced protein-10 (IP-10). Each of these biomarkers in isolation generates an AUROC around 0.60 to 0.68, and their combined characteristics are used to generate a score.[11] The scores are then binned into five levels of likelihood of bacterial infection. At the extremes, the positive likelihood ratio is approximately 8.1, with a negative likelihood ratio of 0.1. However, the vast majority of scores have much lower LRs. The U.S. Food and Drug Administration approved this assay based on assessment of equivalence to procalcitonin, leading to the obvious follow-up question of whether it improves on this generally ubiquitous test.[12]

Generally speaking, all of these potential tools fall far short of demonstrating their value. Each shows some predictive power to address their problem of interest. Many lack prospective, operational comparisons with presently available objective adjuncts to clinical judgment, such as procalcitonin and CRP, and none robustly demonstrate superiority. Most importantly, no studies of these tests report on prospective implementation and impact on either surrogates for sepsis management, such as antibiotic administration and appropriateness, or patient-oriented outcomes relating to morbidity or mortality. While these are exciting times to witness the development of new tools, remain cautious about adoption before their value is proven.

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The Death of Diphenhydramine

A common aid may actually cause harm to patients

by LAUREN WESTAFER, DO, MPH, MS, FACEP

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Diphenhydramine (Benadryl), is ubiquitous in the emergency department (ED) and has historically been a component of many treatment algorithms. Urticaria? Take some diphenhydramine. Allergic reaction or anaphylaxis? Give them diphenhydramine. Migraine? Let's add some diphenhydramine to the mix. Yet, there is essentially no reason to administer diphenhydramine to ED patients. Alternatives to diphenhydramine exist that are less sedating, possess fewer anticholinergic effects, and are equally efficacious. In fact, many professional society guidelines have urged emergency physicians to stop using diphenhydramine for years.

Not-So-Commonly Known Side Effects

Diphenhydramine is the most popular first-generation antihistamine in the United States—a medicine cabinet staple—probably because it has been around for over 70 years. However, many suggest that the medication would not be approved today as an over-the-counter medication. There are significant safety concerns regarding diphenhydramine. As a first-generation antihistamine, diphenhydramine readily crosses the blood-brain barrier. As a result, it is associated with sleepiness, even persisting the morning after a single evening dose. Its sedative effects throughout the central nervous system can last longer than 12 hours, far beyond its therapeutic actions. Sleepiness alone, however, isn't the only side effect. This class of antihistamines that diphenhydramine is associated with cause impaired cognition and psychomotor performance, including during driving, and has been linked to accidental injury.[1] One randomized trial found that a dose of diphenhydramine was associated with markers of impaired driving worse than a blood alcohol concentration of roughly 0.1 percent.[2]

In addition to the cognitive side effects, first-generation antihistamines have poor selectivity to the brain's H1 histamine receptors and can result in heightened anticholinergic and antimuscarinic responses. Older patients are particularly at risk of cognitive decline and other adverse effects.[3] In addition to these adverse events, diphenhydramine is abused by some to generate hallucinations or a sensation of being "high" (particularly associated with rapid intravenous administration).

Alternatives, like second- and third-generation antihistamines, offer more favorable risk-benefit profiles. These medications less readily cross the blood-brain barrier, translating to less sedation, less cognitive impairment, and less potential for abuse. Oral second-generation antihistamines such as cetirizine, fexofenadine, and levocetirizine work at least as fast as diphenhydramine.[1]

Allergic Reactions and Anaphylaxis

Of the indications for diphenhydramine, immediate hypersensitivity reactions such as allergic conditions and anaphylaxis may seem obvious. Yet, a 2020 practice statement from the American Academy of Allergy Asthma, and Immunology (AAAAI) recommends against the administration of any antihistamine in the acute phase of anaphylaxis or for the prevention of biphasic reactions.[4] Indeed, the treatment for anaphylaxis is epinephrine and antihistamines do not have life-saving effects in this disease process. The practice update states that antihistamines may be used as adjuncts but, in this case, they advocate for the use of second-generation H1-blockers. One argument for the continued use of diphenhydramine is the ability to administer the medication intravenously or intramuscularly. However, diphenhydramine does not need to be given emergently in anaphylaxis or allergic reactions. It is an adjunct, an aid for symptomatic control and, as such it can be given orally after epinephrine has stabilized the patient.

Urticaria

In a similar vein to anaphylaxis and allergic reactions, international guidelines have recommended the use of second-generation antihistamines over diphenhydramine and other first-generation antihistamines for over two decades.[5,6] The initial treatment for urticaria, these guidelines urge, is a second-generation antihistamine. If the initial treatment isn't successful, the guidelines recommend up-dosing the second-generation antihistamine to four times the daily dose (e.g., 40 mg of cetirizine daily rather than the standard daily dose of 10 mg), even before the addition of steroids.[7] Use of diphenhydramine does not allow for this updosing for persistent urticaria.

Headaches

Diphenhydramine has historically been a common adjunct to migraine cocktails. Some administer diphenhydramine to reduce pain, relying on the purported role of histamine in migraine pathophysiology. Others add diphenhydramine to migraine cocktails to prevent adverse events such as akathisia from simultaneous medications such as metoclopramide or prochlorperazine. In 2016, however, Friedman et al., published a randomized controlled trial demonstrating that in adult patients with migraine headaches, the addition of diphenhydramine to 10 mg of metoclopramide did not result in greater improvement in pain scores, sustained headache freedom, or desire for the same medication again.[8] Although this study was not designed to examine akathisia as a primary outcome, diphenhydramine did not reduce the incidence of akathisia, one of the other reasons given to add the medication to migraine cocktails. However, the risk of akathisia varies in studies. Another randomized trial found a whopping one in three patients given prochlorperazine 10 mg IV over two minutes developed akathisia compared with only 14 percent among those who received diphenhydramine.[9] The incidence of extrapyramidal symptoms such as akathisia varies widely in headache studies, probably explained by the dose, type, and rate of medication administered. As such, emergency physicians can choose medications and doses less likely to be associated with extrapyramidal side effects (e.g., low dose haloperidol, droperidol, or metoclopramide) or longer infusion times (e.g., a 15-minute infusion). Additionally, like ketamine emergence reactions, which occur on occasion and can be mitigated to an extent by manipulating dosing, environment, and rate of administration, emergency physicians can be prepared to treat extrapyramidal side effects should they occur.

Sleep Aid

Oftentimes, the discussion around diphenhydramine turns to sleep. As discussed, first-generation antihistamines including diphenhydramine are sedating. However, this does not translate into improved sleep quality, because the medications increase the time to onset of rapid eye movement (REM) sleep and reduce the duration of REM sleep.[10]

Risk Versus Reward

Diphenhydramine has an unfavorable risk-benefit profile. For nearly every indication, a less risky alternative exists. It remains unclear why, despite the mountain of evidence that we should not use diphenhydramine, this medication remains one of the most commonly used antihistamines. It is time to get with the guidelines and drop diphenhydramine, for nearly any indication, and encourage our patients to do the same.

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JACKSON MEMORIAL HOSPITAL/UNIVERSITY OF MIAMI

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—Kristopher A. Hendershot, MD
PGY2, Department of Emergency Medicine

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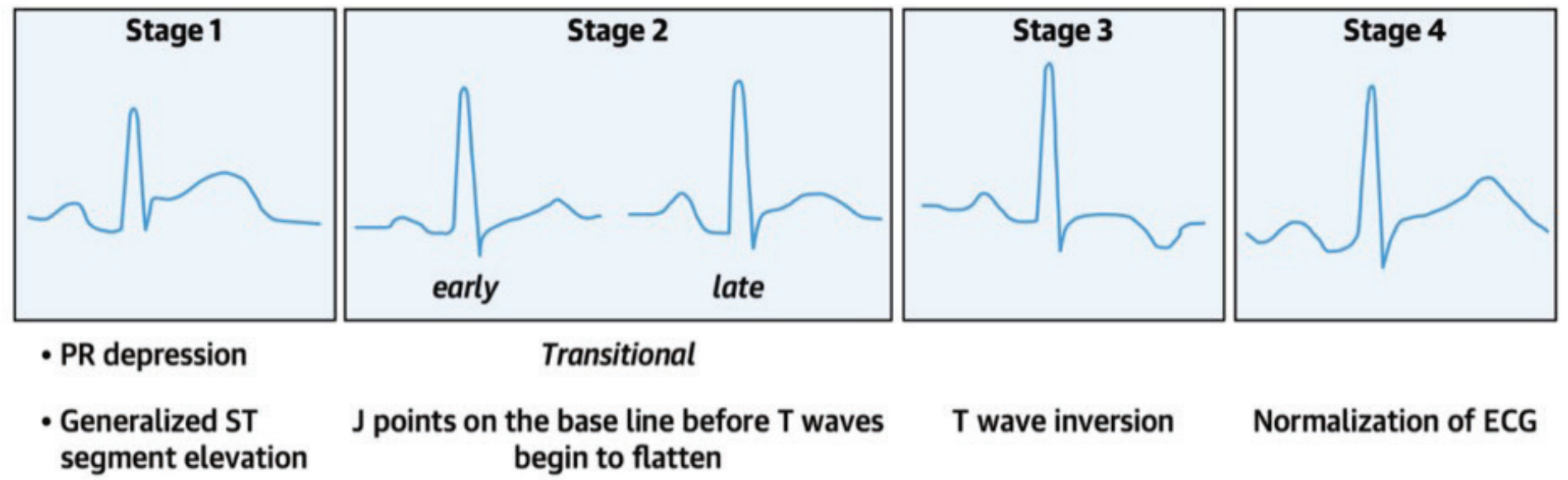
Acute Pericarditis: A Diagnosis of Exclusion

Practical tips and literature review for more accurate diagnosis



JACC VOL. 75, NO. 1, 2020 Chiabrando et al.

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

While pericarditis is an unusual diagnosis, with an annual incidence of 27.7 per 100,000 persons, the recurrence rate of almost 30 percent is surprisingly high.[1] Many of the patients diagnosed with acute pericarditis in the emergency department (ED) will relapse and some will develop debilitating, chronic, constrictive pericarditis. The mortality rate of 1.1 percent in developed countries is also significant.[1] The good news is that timely diagnosis and appropriate treatment options have been shown to decrease recurrence rates and help prevent chronic complications.[2] However, considering that the clinical presentation, electrocardiogram (ECG), and laboratory findings may be confused with more deadly causes of chest pain such as myocardial infarction (MI), aortic dissection, and pulmonary embolism, pericarditis should be considered a diagnosis of exclusion in the ED. Here are some practical tips on how to distinguish pericarditis from more deadly causes of chest pain and a review of the literature on time-sensitive treatment that reduces recurrence and complications of pericarditis.

What Sets Pericarditis Apart?

The clinical presentation of pericarditis overlaps with MI, pulmonary embolism, and aortic dissection, but usually includes several features that can help distinguish it from these more deadly causes of chest pain. Persistent chest pain for weeks is not typical for these other deadly diagnoses and should raise suspicion for pericarditis. Pericarditis can occur at any age, and these other deadly diseases can occur in young patients, however, young, otherwise healthy patients with chest pain and no risk factors for MI, aortic dissection, or pulmonary embolism should raise the suspicion for pericarditis. A respiratory or gastroenterological viral prodrome that may include malaise, myalgias, and low-grade fever is common in patients with acute pericarditis and less common in patients with MI.

Chest pain in patients with pericarditis is typically central, pleuritic, sharp, worse on lying supine, and better on sitting up and leaning forward. The pleuritic chest pain of pericarditis is usually central and diffuse as opposed to pulmonary embolism and pneumothorax where the pain is usually lateralized and focal. Sometimes the pain radiates to the back, neck, or shoulder, as in patients with MI. Radiation to the trapezius ridge is common. A cardiac friction rub—while traditionally thought of as highly specific for pericarditis—may be falsely identified in hirsute patients when chest hair rubs against the stethoscope with rise and fall of the chest during auscultation. Despite these distinguishing features, however, there is no group of clinical features with sufficient specificity to rule in pericarditis with certainty, underlining the concept that it should be considered a diagnosis of exclusion. It is important to realize, as well, that pericarditis may occur concurrently with aortic dissection and MI.

On inspection of the guideline-based diagnostic criteria of pericarditis listed below, one can plainly realize that each of the criteria can occur in patients with other more deadly diagnoses.[3] For example, pleuritic chest pain is common in pulmonary embolism. As explained above, pericardial friction rub can be misinterpreted as present in hirsute patients. New widespread ST elevation can occur in MI. New or worsening pericardial effusion can occur with aortic dissection.

The diagnosis of pericarditis requires two out of four of the following criteria:[3]

1. Pericarditis chest pain—typically sharp, pleuritic, positional (greater than 80–90 percent of cases)
2. Pericardial rub on auscultation (less than one third of cases)
3. New widespread ST elevation or PR depression on ECG (up to 60 percent of cases)
4. New or worsening pericardial effusion (up to 60 percent of cases)

Additional supporting findings:

A. Elevation of markers of inflammation (e.g., C-reactive protein (CRP), erythrocyte sedimentation rate (ESR), white blood cell (WBC) count)

B. Evidence of pericardial inflammation by imaging technique (contrast computed tomography, cardiac magnetic resonance)

The ECG findings of pericarditis, in particular, may be confused with early repolarization and acute MI. It is important to understand that the ECG findings in patients with pericarditis evolve through four stages (see image) and that patients may present during any of the stages.[4] The classic diffuse ST elevation/PR depression (Stage 1) is found in only 60 percent of patients. The evolution of the four changes over time is highly variable and some patients may skip directly from Stage 1 to Stage 4 (normalization). In addition, uremic pericarditis typically does not cause significant inflammation of the epicardium, hence the ECG and the inflammatory markers are more likely to be normal in this subgroup of patients.

Here is a list of ECG features that may help to distinguish pericarditis from MI and early repolarization.[5–8] Nonetheless, all of these findings can be seen in patients with cardiac ischemia, underlining again the importance of approaching pericarditis as a diagnosis of exclusion.

- Widespread/diffuse PR depression and/or ST elevation (STE)
- J-point in pericarditis is usually sharper compared to a more blurred J point in MI
- STEs are more commonly convex shaped in ST-elevation myocardial infarction (STEMI), while concave upwards ST elevations are more typical of pericarditis
- If STE or PR depression is present, there is typically a preservation of the normal upright T-waves in pericarditis (note however, that Stage 3 is defined by T-wave inversions)
- STE is rarely >5mm in pericarditis
- ST depressions in V1 and aVR favor pericarditis
- aVL ST segment is typically elevated in pericarditis while aVL ST depression is highly specific for inferior MI
- STE II>STE III favors pericarditis while STE III>STE II is highly suspicious for inferior STEMI
- Spodick's sign (80 percent of patients with acute pericarditis and five percent of MI) is characterized by down-sloping from the T wave to the QRS segments with the terminal PR segment depressed; this is best seen in lead II and the lateral precordial leads.

Distinguishing ECG findings of pericarditis versus early repolarization:

- PR deviation strongly favors pericarditis
- Evolution of ST and T changes strongly favors pericarditis

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PROTECT YOURSELF FROM LEGAL RISK

MEDICOLEGAL MIND

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Due Process and Employee Retaliation Laws

Protecting emergency physicians on social media during challenging times

by WILLIAM J. NABER, MD, JD

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There have been several headlines recently about emergency physicians being fired or suspended from their jobs after speaking out on social media about their concerns related to how their hospital systems were handling the COVID-19 pandemic. For example, Dr. Ming Lin was, "fired from his position as an emergency room physician at PeaceHealth St. Joseph Medical Center in Bellingham, Washington, after publicly complaining about the hospital's infection control procedures."[1] Dr. Cleavon Gilman was, "asked not to return to his work at Yuma Regional Medical Center for his social media posts about the severity of the COVID-19 pandemic in Arizona . . ."[2] Dr. Kristin Carmody, formerly of NYU Langone Hospitals, filed a lawsuit, "alleging that her December 2020 termination was an act of retaliation, and that she was defamed and discriminated against in the process of her ousting."[3]

These highly publicized cases have led to significant discussion on social media, an approved resolution at the ACEP 2021 Council Meeting, and for one state, Arizona, passage of an anti-retaliation law. I want to discuss some history behind the current due process and anti-retaliation laws as well as current efforts to provide more protection for physicians in these challenging situations.

Due Process Rights

The United States concept of due process rights is firmly rooted in our Constitution's 14th Amendment ratified on July 9, 1868. Section 1 states in part, "No State shall . . . deprive any person of life, liberty, or property, without the due process of law . . .." "Property" is defined by the courts as, "tangible and intangible possessions . . . if they have real value."[4] This amendment's protections, "in the medical setting . . . only protects individuals working in government hospitals, including federal, state, county, and municipal hospitals. Likewise, when a physician faces a suspension or loss of licensure from a state medical board, the physician has a right to a predeprivation hearing. Physicians working in private hospitals receive their due process rights from other sources."[5]

Larry Weiss, MD, JD, FAAEM, wrote "Due Process White Paper" 15 years ago and it remains just as relevant today as it did then. He explains how due process rights were clarified by the Supreme Court in Matthews v. Eldridge, 424 U.S. 319 (1976). He explains the Matthews court held "the amount of procedural protection depends on a flexible balance between the interests of government and those of the individual."[5] In Darlak v. Bobear, 814 F.2d 1055 (5th Cir. 1987), the Darlak court used the "flexible balancing rule to conclude an informal hearing satisfied the due process rights of a temporarily suspended physician, and a formal hearing before the hospital credentials committee satisfied the physician's hearing rights prior to a final suspension."[5] Keep in mind, this is referring to credentials and privileges and not employment.

The Health Care Quality Improvement Act of 1986 (HCQIA), which applies to all hospitals receiving federal dollars, further clarified physicians' rights around due process, requiring, in part, a reasonable 30 day notice, right to legal representation at the hearing, right to call and question witnesses, opportunity to present evidence, a mutually agreed upon hearing officer, and receiving a written response as to the result of the hearing with a final right to appeal the decision (42 U.S.C. Sections 11101-11152). The Joint Commission also requires hospital medical staff to have due process rights and fair hearing procedures for physicians. It is the role of the hospital medical executive committee (MEC) to initiate these fair hearing processes as required, and any decision by the MEC regarding suspension of privileges must be approved by the hospital's board of directors as a final check and balance. Some reasons for these type of actions against physicians include significant patient safety or quality events, disruptive behavior, or incompetent physicians.

This long but important legal background of due process and anti-retaliation protections for physicians is important to better understand the current real-world situation we practice in. The 14th amendment applies to the government, and what is required if the government tries to take away real or tangible property from an individual. The subsequent court cases from the Supreme Court and the 5th Circuit Court of Appeals apply the concepts in the 14th Amendment to hospital MECs. The MEC controls credentialing and privileging, and the denial or suspension of these property rights. The HCQIA of 1986 and the Joint Commission add specific requirements to what due process means in

CONTINUED *on page 22*

ARIZONA HOUSE BILL 2622 (2021)

Arizona House Bill 2622 (2021) was signed into law and has the following provisions:

1. Prohibits a third-party contractor of a health care institution from taking retaliatory action against a health professional.
2. Makes the period of time before there is a rebuttable presumption six months.
3. Defines third-party contractor as an entity that contracts with a health care institution to provide health care services in the health care institution by contracting or hiring health professionals.[6]

- STE: T-wave amplitude ratio >0.25 has a 100 percent positive predictive value and negative predictive value for pericarditis
- Pericarditis STE is typically more evenly distributed and sometimes more prominent in the inferior leads, whereas early repolarization STE is more prominent in anterior leads.

Troponin, in one study, was elevated in one third of cases of pericarditis, and is often associated with STE on ECG and pericardial effusion.[9] Inflammatory markers (WBC, ESR, and CRP) are elevated in up to 80 percent of cases, but these markers are not sensitive or specific for the diagnosis of acute pericarditis.[10] Patients with elevated CRP are at higher risk for recurrence and should be treated in a timely and aggressive manner.[11]

Prevention of recurrence is perhaps the most important aspect of ED treatment of acute uncomplicated pericarditis because recurrence leads to long-term morbidity. Colchicine is the mainstay of ED treatment of acute pericarditis and has been shown in multiple randomized control trials to decrease recurrence and long-term morbidity.[12–15] A common cause of recurrent pericarditis is inadequate treatment of the first episode. Up to 30 percent of patients with idiopathic acute pericarditis who are not treated with colchicine will develop either recurrent or incessant disease. Outpatient management of presumed viral/idiopathic uncomplicated pericarditis should include the following:

- Restrict strenuous physical activity (as exercise may trigger recurrence of symptoms)
- Ibuprofen 600–800 mg three times daily or indomethacin 50 mg three times daily
- Colchicine 0.6 mg daily for <70 kg, twice daily for ≥70 kg
- Proton pump inhibitors for those at high risk of upper gastrointestinal bleeding

Duration of uncomplicated pericarditis treatment is usually one to two weeks and is based on resolution of symptoms and normalization of CRP, typically followed by a taper of medications. Corticosteroids should be considered only as a second-line option after nonsteroidal anti-inflammatory drugs (NSAIDs) in patients with absolute contraindications to or failure of NSAIDS because of the risk of chronicity of disease and drug dependence with steroids.

Next time you are faced with a patient with chest pain in the ED, first, rule out other more deadly causes of chest pain first (understanding that there are no clinical features specific to pericarditis), carefully scrutinize the ECG (realizing that no finding is 100 percent specific for pericarditis), and if you arrive at a diagnosis of uncomplicated viral or idiopathic acute pericarditis, be sure to start the patient on colchicine and NSAIDs and also ensure tight follow-up to monitor the clinical course and consideration of serial CRP measurements.

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the hospital setting and with the MEC.

What Does Your State Say?

Where emergency physicians may get confused is that these protections do not currently apply to *private employers* in all states, except potentially Arizona. If a private employer wishes to terminate a physician, the employer and physician are both bound to the terms of the contract between the parties, which may or may not include any of the above due process rights. Assuming no duress in the process, these contracts are negotiated and agreed upon by both parties. It is easy to argue that these contracts are written by employer's attorneys, and therefore are slanted in favor of the employer. However, the physician is ultimately responsible for understanding all the terms of the contract signed. Looking closely at reasons for, and the process of, termination is something many young physicians do not think about when they get their first employment contract out of residency. Also, with the current tight market for new graduates, I am concerned there will be fear from new graduates, or anyone looking for a new job, of asking too many questions or sharing too many concerns around termination conditions. The pressure to get a job could push someone to accept unfavorable contract conditions out of concern for unemployment. Clearly this creates a potentially unbalanced negotiation process.

This concern led leaders in ACEP to introduce Resolution 31(21) at the 2021 Council Meeting. "The ACEP Council adopted the resolution to submit a resolution to the June 2022 American Medical Association (AMA) House of Delegates Annual Meeting, 'promoting the concepts of the Arizona House Bill 2622 (2021).' The resolution also states the College will develop model legislation fashioned after the Arizona bill, which it will share with all ACEP chapters."[6] The resolution addresses these issues about doctors losing their jobs when they speak out about real concerns around patient safety and quality of care. It goes on to say "[e]mergency physicians have been retaliated against numerous times for raising concerns regarding patient safety, harassment, and/or fraud and these physicians have been affected mentally and financially as results of such retaliation and job loss and many report worsening anxiety, depression, financial hardships, family trouble and need to relocate…."[6] Clearly there is work to be done in this area to level the playing field for doctors working for private groups and private systems. The State of Arizona understood this and what happened to Dr. Cleavon Gilman and acted upon these issues.

Rebuttable Presumption

Rebuttal presumption is a brand new civil law which has not been tested in the courts. It is strongly worded in favor of physicians and puts third party contractors in Arizona on notice, that if they terminate a health care professional within six months of an action the contractor does not approve of, it will be considered retaliatory until proven otherwise in court. Because Arizona chose to call this retaliatory action a "rebuttable presumption," the employer taking the retaliatory action against a health care provider would have to prove more likely than not they *did not* do it based on retaliation. This is similar to, but somewhat opposite of, the rebuttable presumption in criminal law of innocent until proven guilty. In the criminal world, the prosecuting attorney has to prove guilt beyond a reasonable doubt. For example, if this was law in Washington state, Dr. Ming Lin could use this law against his employer, TeamHealth, as a presumptive retaliatory action for his letter to the CMO at PeaceHealth St. Joseph Medical Center that he posted on Facebook. He still may have violated a termination clause in his contract, and his employer could be found justified, but this would force his employer to prove Dr. Lin's termination was not retaliatory. If this was law in the State of New York, then Dr. Kristin Carmody could also use it in her case against NYU Langone Hospitals.

Safely Reporting Concerns

Health care workers do have other protected ways to report patient and employee safety concerns. There are federal and state laws that "prohibit employers from retaliating against employees who report practices by employers that threaten public health and safety, or violate the law . . . Although the laws vary from state to state, anti-retaliation laws generally prohibit adverse actions such as termination, layoff, demotion, suspension, denial of benefits, reduction in pay, and discipline, when the adverse action is taken in retaliation for employees' reports of unsafe or unlawful practices."[7] In most situations this reporting can be done publicly or anonymously if a health care worker is concerned about retaliation from their employer. The state and federal government want to protect appropriate whistle blowers and encourage reporting of concerning events, even if after investigation found to be not significant or a violation of state or federal law.

I hope after reading this, emergency physicians understand there are multiple ways to report perceived unsafe practices to the local, state, and federal authorities. These include state and local health departments, state Medicaid officials, your state Medicare contracted BFCC-QIO contractor such as Livanta and Kepro, the Joint Commission, and OSHA to name just a handful. Many of these can be anonymous if that is your preferred way to report. Also, if you send emails/other correspondence, save them, and consider even sending things certified mail when needed. Your first step should *not* be social media. Familiarize yourself with all of these options, your contract terms, and your medical staff bylaws before you go to social media. The social media postings may get the most publicity, but may not always result in the desired outcome of increasing patient and employee safety efficiently and effectively. ACEP is helping move the protection of physicians forward through the AMA and local state ACEP Chapters. It is estimated that only 15 percent of practicing physicians belong to the AMA, so hard work at the state chapter level will be needed to move the Arizona concept forward to other states for adoption.

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110 bed community hospital non-stemi/non-stroke. Only 0.8 pts/hr, competitive salary with incentives, 12 hr shifts.

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Baylor College of Medicine (www.bcm.edu) is recognized as one of the nation's premier academic health science centers and is known for excellence in education, research, healthcare and community service. Located in the heart of the world's largest medical center (Texas Medical Center), Baylor is affiliated with multiple educational, healthcare and research affiliates (Baylor Affiliates).

The Henry JN Taub Department of Emergency Medicine at Baylor College of Medicine seeks a Vice Chair of Research to oversee research operations for the department.

Salary, rank, and tenure status are contingent upon candidate qualifications. The rank and tenure status awarded will be based upon qualifications in alignment with Baylor College of Medicine's promotion and tenure policy.

Qualified applicants are expected to have a research record with significant extramural funding and leadership skills to develop a strong multidisciplinary collaborative Emergency Medicine research program and continue to grow current departmental research efforts. In addition to the above responsibilities, other duties may be assigned by the Chair.

Please include a cover letter and current curriculum vitae to your application.

This position is open until filled. For more information about the position, please contact Dick Kuo, MD via email [dckuo@bcm.edu].

MINIMUM REQUIREMENTS

Education: M.D. degree or equivalent
Experience: Research Fellowship not required for application
Licensure: Must be currently boarded in Emergency Medicine and eligible for licensure in state of Texas.

Baylor College of Medicine
HENRY J.N. TAUB DEPARTMENT OF EMERGENCY MEDICINE

Academic & Clinical Faculty Opening

The Department of Emergency Medicine at Baylor College of Medicine (BCM) is looking for **Faculty** who are interested in a career in Academic Emergency Medicine. We are currently hiring faculty of all ranks commensurate with prior experience and seeking applicants who have demonstrated a strong interest and background in a variety of areas (eg. research, simulation, ultrasound, disaster medicine, ems, toxicology, etc…). Clinical opportunities are also available at our affiliated hospitals.

Baylor College of Medicine is located in the world's largest medical center in Houston, Texas. The Baylor Emergency Medicine Residency was established in 2010, and received department status in Jan 2017. Our residency program has grown to 16 residents per year in a 3-year format. We offer a highly competitive academic salary and benefits commiserate to academic level and experience.

Our academic program is based out of Ben Taub General Hospital, Baylor St. Luke's Medical Center, DeBakey VA Medical Center, and Texas Children's Hospital. Ben Taub General Hospital is the largest Level 1 trauma center in southeast Texas with certified stroke and STEMI programs that sees nearly 80,000 emergency visits per year. Baylor St. Luke's Medical Center is home to the Texas Heart Institute and is a tertiary referral center with multiple transplant programs and many high acuity patients. Texas Children's Hospital is consistently ranked as one of the nation's best, largest and most comprehensive specialty care pediatric hospitals. These affiliations, along with the medical school's preeminence in education and research, help to create one of the strongest emergency medicine experiences in the country.

MINIMUM REQUIREMENTS
Education: M.D. degree or equivalent
Experience: Previous experience in Research, Simulation and Toxicology strongly preferred but not required
Licensure: Must be currently boarded or board eligible in Emergency Medicine and eligible for licensure in state of Texas.

Those interested in a position or further information may contact Dr. Dick Kuo via email dckuo@bcm.edu or by phone at 713-873-2626. Please send a CV and cover letter with your past experience and interests.

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Penn State Health Emergency Medicine

About Us:

Penn State Health is a multi-hospital health system serving patients and communities across 29 counties in central Pennsylvania. The system includes Penn State Health Milton S. Hershey Medical Center, Penn State Children's Hospital, and Penn State Cancer Institute based in Hershey, PA; Penn State Health Holy Spirit Medical Center in Camp Hill, PA; Penn State Health St. Joseph Medical Center in Reading, PA; and more than 2,300 physicians and direct care providers at more than 125 medical office locations. Additionally, the system jointly operates various health care providers, including Penn State Health Rehabilitation Hospital, Hershey Outpatient Surgery Center, Hershey Endoscopy Center, Horizon Home Healthcare and Pennsylvania Psychiatric Institute.

JOIN OUR TEAM
EMERGENCY MEDICINE
OPPORTUNITIES AVAILABLE

In December 2017, Penn State Health partnered with Highmark Health to facilitate creation of a value-based, community care network in the region. Penn State Health shares an integrated strategic plan and operations with Penn State College of Medicine, the university's medical school.

We foster a collaborative environment rich with diversity, share a passion for patient care, and have a space for those who share our spark of innovative research interests. Our health system is expanding and we have opportunities in both an academic hospital as well community hospital settings.

Benefit highlights include:

- Competitive salary with sign-on bonus
- Comprehensive benefits and retirement package
- Relocation assistance & CME allowance
- Attractive neighborhoods in scenic Central Pennsylvania

PennState Health

FOR MORE INFORMATION PLEASE CONTACT:

Heather Peffley, PHR CPRP - Penn State Health Physician Recruiter
hpeffley@pennstatehealth.psu.edu